EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: March 6, 2025

MEMO TO: Board of Directors

THROUGH: Clifford C. Chan, General Manager CCC

FROM: Sophia D. Skoda, Director of Finance SDS

SUBJECT: Asset Allocation Study

SUMMARY

This memo provides additional information requested by the February 25, 2025 Finance/Administration Committee regarding the Employees' Retirement System's (ERS) new Asset Allocation Study and asset class targets.

DISCUSSION

At the February 25, 2025 Finance/Administration Committee, staff provided a presentation on the District's ERS Fiscal Year 2024 Update, Actuarial Valuations, and Fiscal Year 2026 Employee and Employer Contribution Rates. The Committee requested additional information regarding the updated Asset Allocation Study and new asset class targets.

Under the East Bay Municipal Utility District Employees' Retirement System Ordinance, the Retirement System conducts an Asset Allocation Study every five years to review its investment strategy in relation to its long-term liabilities and current market conditions. The ERS completed the Asset Allocation Study in May 2024 and is now implementing new asset class targets over two years.

The details of the ERS' process to establish a new Asset Allocation Study and the study's results are included in the attached from the May 23, 2024 Retirement Board Meeting. This report provides several options for new asset allocation targets. The Retirement Board unanimously chose Sample 2 presented in the attachment.

CCC:SDS:SGL

Attachment: Report – Asset-Liability Study: Updated Results

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MEKETA
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Attachment

East Bay Municipal Utility District Employees' Retirement System

May 2024

Asset-Liability Study:

Updated Results

East Bay Municipal Utility District Employees' Retirement System

Agenda

Month	Preliminary Asset-Liability Study Timeline
November 2023	• Introduction to Asset-Liability Studies • Key Risks to the Plan • Actuarial Background and Strategic Considerations
March 2024	• Capital Market Assumptions • Baseline Model Output and Risk Philosophy Selection • Optimization Process • Sample Portfolio Comparisons
May 2024	• Updated Model Results • Live Demonstration • Potential Portfolio Selection

Key Requests/Considerations from March	
Topic	**Updated Approach**
Consider limit on aggregate fixed income assets	• No limit imposed, but asset class percentages are shown to provide further clarity. • It is important to note that "expected return" includes both appreciation and yield, both of which grow a portfolio in identical manners.
Desire to see portfolio allocations prior to major risk/return and asset-liability metrics	• We will show the potential policy allocations for consideration earlier in the presentation to improve transparency.
Initial feedback indicated the Board was attracted to portfolios with similar/lower risk levels as the current policy	• Potential portfolio options have been narrowed to a smaller subset that align with this feedback. • This corresponds to previously presented "B" and "C" samples presented in March.

Modeling Approach Review

Setting Capital Market Assumptions

→ CMAs are the inputs needed to calculate a portfolio's expected return, volatility, and relationships (i.e., correlations) to the broader markets.

- CMAs are also used in mean-variance optimization, simulation-based optimization, asset-liability modeling, and every other technique for finding "optimal" portfolios.

→ Consultants (including Meketa) generally set them once per year.

- Our results are published in January based on December 31 data.

→ This involves setting long-term expectations for a variety of asset class/strategy attributes:

- Returns
- Standard Deviations
- Correlations

→ Our process relies on both quantitative and qualitative methodologies.

Developing Expected Returns

→ Market practitioners generally make use of three methods for developing long-term expected returns:

- Historical average returns
- Financial/economic theory (e.g., higher risk = higher returns, capital structures, etc.)
- Current measures (e.g., starting valuations relative to history)

→ In addition to the above, practitioners also incorporate general projections for macroeconomic metrics such as GDP and inflation, among others.

→ Meketa's methods are in-line with industry standards and represent a mixture of the three mechanisms.

- Historical average returns play the smallest role in our assumptions.

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Capital Market Assumptions

→ Compared to our 2023 CMAs, the majority of the below asset classes exhibit lower expected returns as of January 2024.

→ Expected volatilities are generally the same or slightly lower than in 2023.

2024 CMAs – EBMUDERS Asset Classes					
Strategic Class	10-year Return*	20-year Return*	Standard Deviation	2023 CMAs 10-year Return	2023 CMAs 20-year Return
US Equity	6.9%	8.5%	17%	7.8%	8.7%
Non-US Equity	7.7%	8.9%	18%	10.3%	10.0%
Buy Write (Covered Calls)	5.8%	7.0%	13%	6.7%	7.2%
REITs	5.6%	7.8%	24%	6.4%	8.0%
Core Private Real Estate	4.8%	6.9%	12%	4.3%	6.5%
Investment Grade Bonds	4.6%	4.8%	4%	4.8%	4.7%
High Yield Bonds	6.5%	6.8%	11%	8.0%	7.3%
Bank Loans	6.5%	6.6%	10%	7.6%	7.0%
Private Debt	9.2%	9.2%	15%	9.4%	9.0%

* Geometric returns (annual compound returns)

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Constraints

→ The constraints below were developed to provide a spectrum of expectation and risk measure profiles.

Strategic Class	Min.	Max.	Current Target	10-year Return*	20-year Return*	Standard Deviation
US Equity	20%	40%	25%	6.9%	8.5%	17%
Non-US Equity	20%	40%	25%	7.7%	8.9%	18%
Buy Write (Covered Calls)	0%	20%	20%	5.8%	7.0%	13%
REITs	0%	7.5%	2.5%	5.6%	7.8%	24%
Core Private Real Estate	0%	7.5%	2.5%	4.8%	6.9%	12%
Investment Grade Bonds	10%	30%	20%	4.6%	4.8%	4%
High Yield Bonds	0%	7.5%	2.5%	6.5%	6.8%	11%
Bank Loans	0%	7.5%	2.5%	6.5%	6.6%	10%
Private Debt	0%	5%	0%	9.2%	9.2%	15%

* Geometric returns (annual compound returns)

Modeling/Simulation Process

→ An asset-liability study is a dimension reducing exercise.

- Take the immense complexities of a retirement system and the global capital markets and reduce them to a digestible form.

→ Analysis is based on integrated, Monte Carlo asset-liability simulations.

- Asset returns are simulated based on the utilized CMAs and asset class constraints.
- Liability behavior is based on Segal-provided projections/data.[1]

→ All portfolios[2] are examined across thousands of potential long-term scenarios (e.g., 20-years).

- Scenarios encompass a multitude of economic/asset return scenarios and how the liability/funding attributes react based on the portfolio returns over time.
- After each year in the simulation, full asset-liability metrics are updated (e.g., funding level, contribution levels, payroll, etc.). The model then proceeds to the next year.

[1] Note that Meketa's modeling is not expected to produce the same results as any forecasting Segal has completed with the primary reason being our asset forecasts/simulations are stochastically modeled and use Meketa's capital market assumptions. Other less material modeling differences exist and can be discussed.

[2] Based on the asset class constraints, there are trillions of potential portfolio options that are explored during the process.

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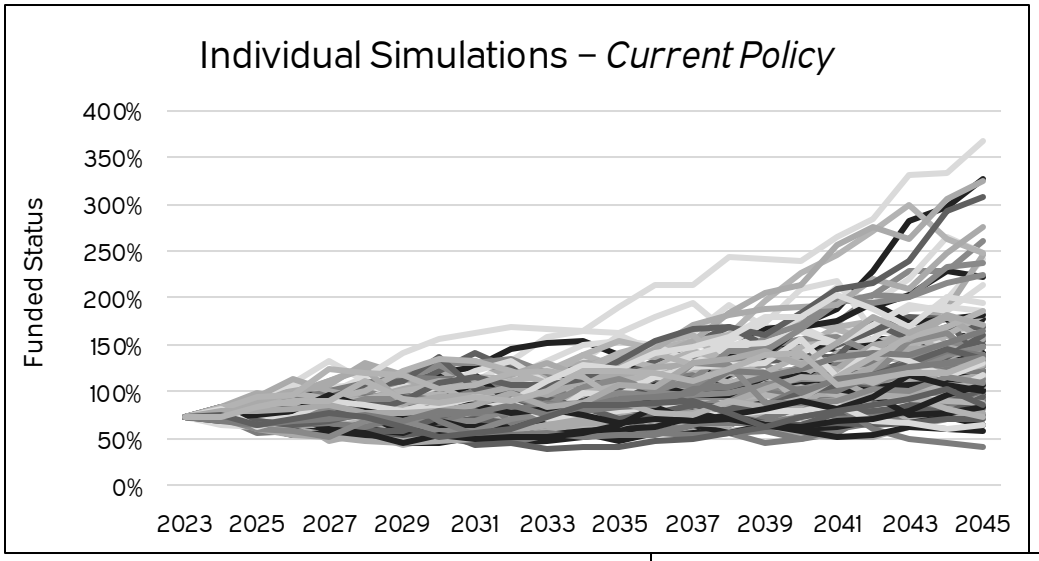
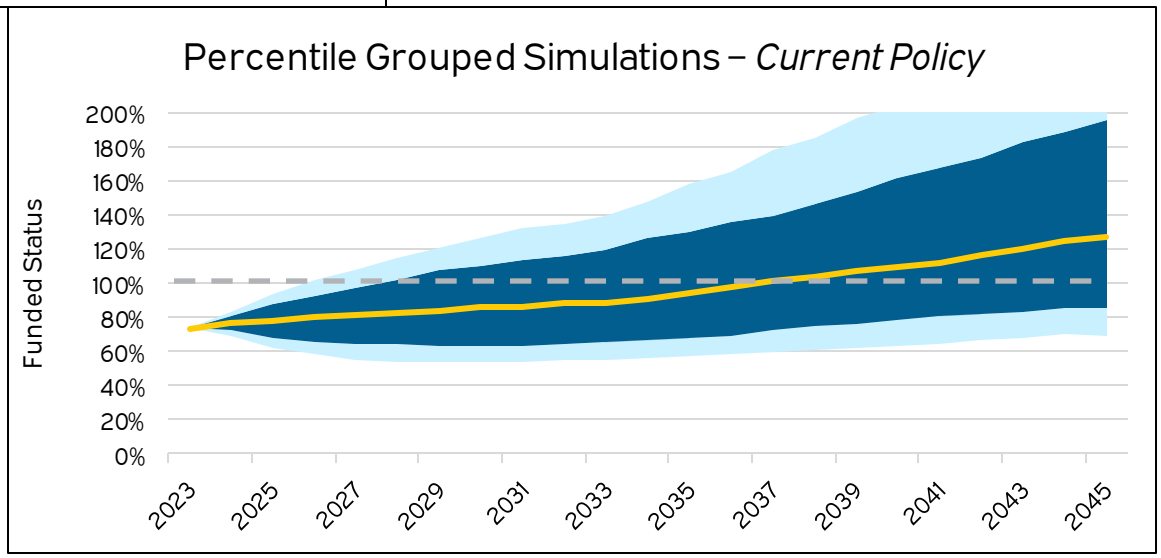
Simulation Process



Model Output Explanation

→ For each examined portfolio, there are thousands of simulations and corresponding asset-liability metrics (e.g., funding ratio).

→ These are then grouped into percentiles for improved interpretability and comparability among portfolio options.



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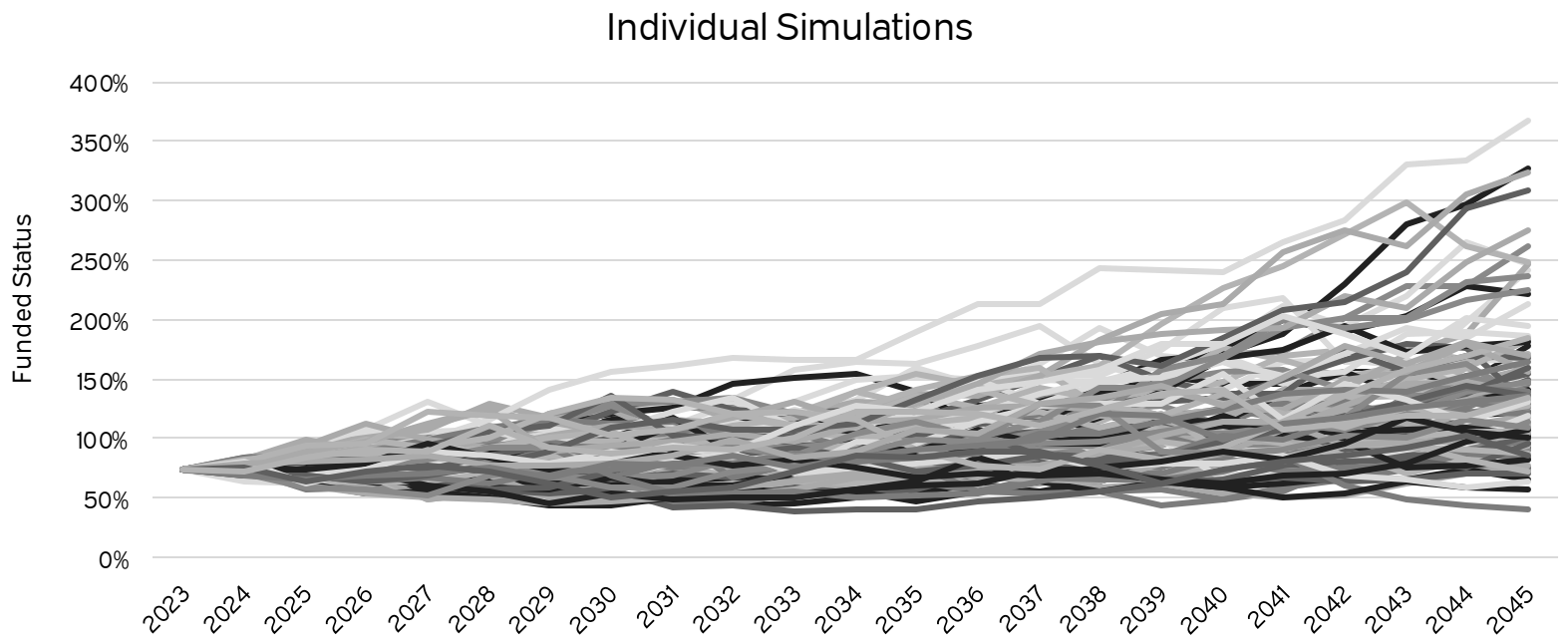
Stochastic Forecast of the Current Policy Allocation



- Funded Status (assets divided by liabilities) are simulated in a variety of market environments
- Analysis reflects the current:
  - Asset allocation
  - Actuarial funded status
  - Projected benefit payments
  - Funding policy
  - Plan provisions
  - Actuarial assumptions
  - Meketa 2024 Capital Market Assumptions

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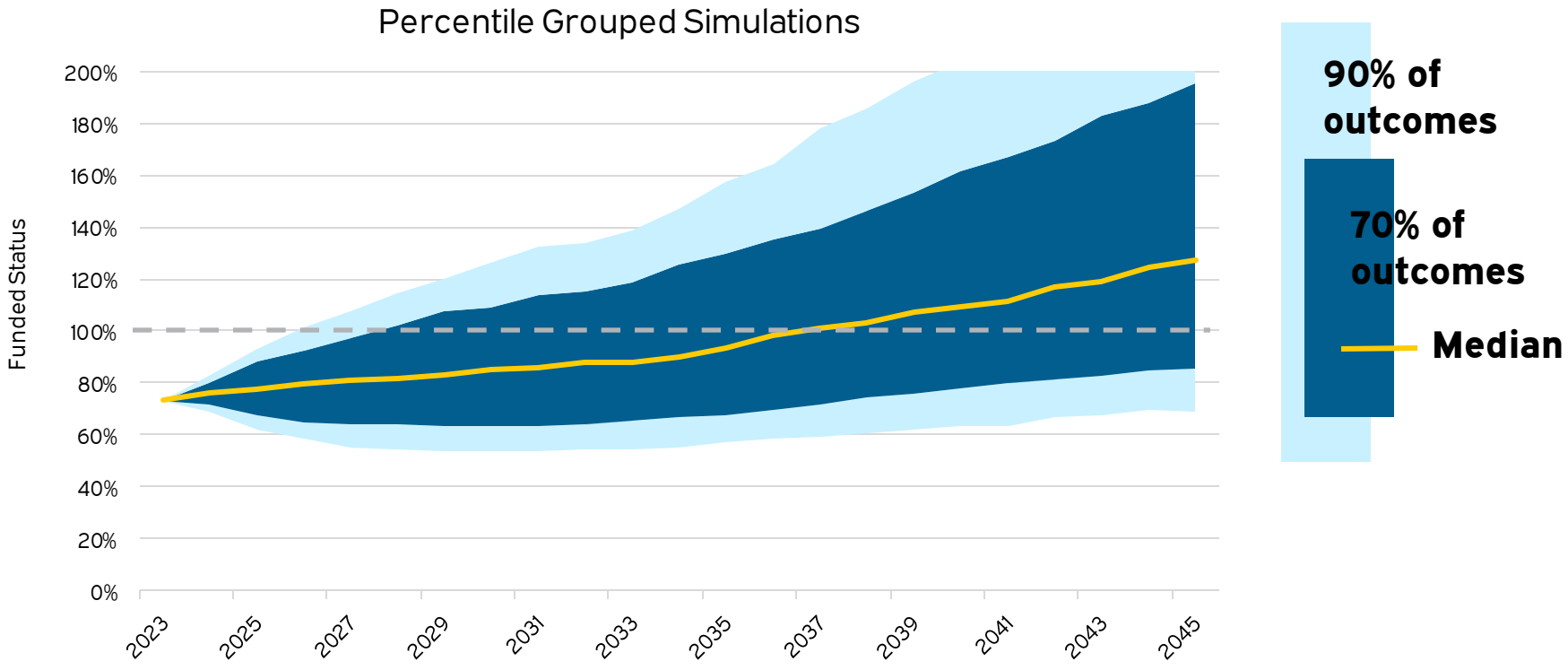
Stochastic Forecast of the Current Policy Allocation (cont.)



- Simulations are summarized in percentiles, providing an analysis of enterprise risk, given the current asset allocation.
- As an example, the median (50th Percentile) Funded Status in 2037 is 100% -> there is a 50% probability the Funded Status will be greater than 100% and 50% probability it will be less than 100%.

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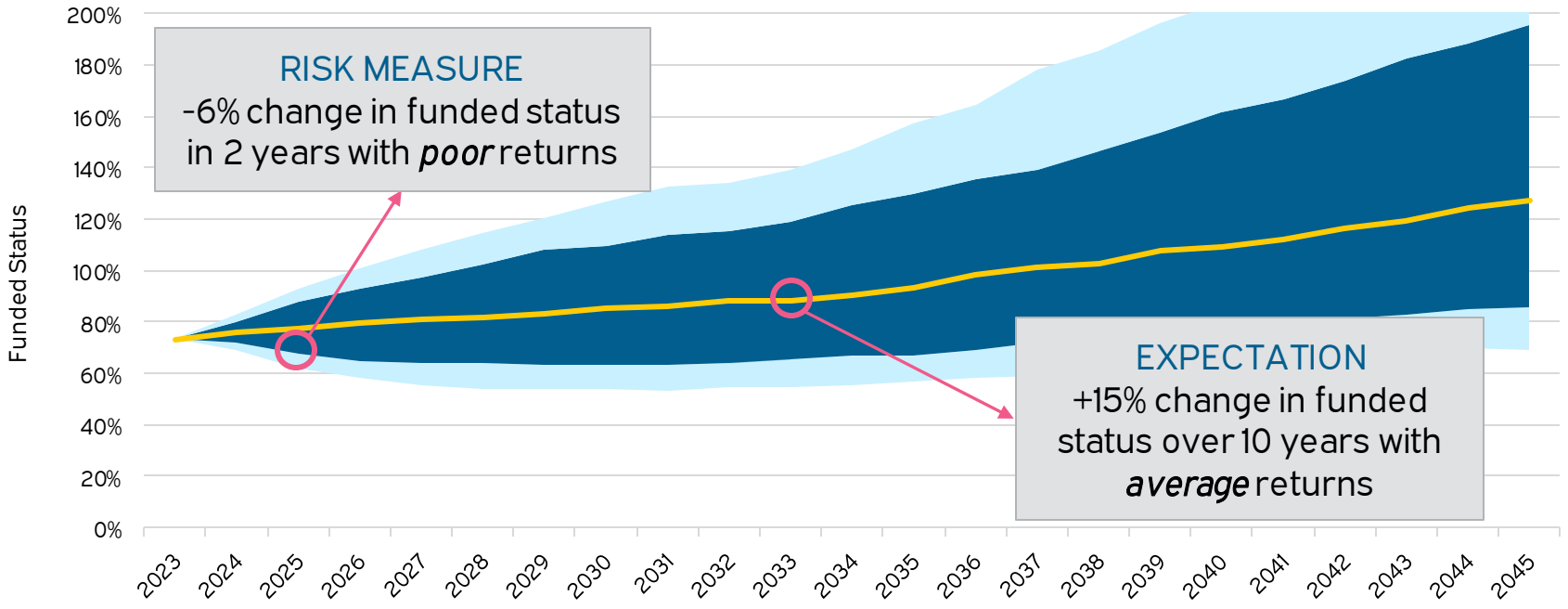
Key Observations

- Key observations are determined during objective setting discussion and analyzed in a "Expectation/Risk Measure" framework.
  - **Expectation** – Outcome where all the underlying assumptions prove to be accurate over the long-term (Example: 50th percentile over a 10-year time horizon).
  - **Risk Measure –** Outcome with a lower probability (Ex: 15th percentile) and detrimental impact, especially when that outcome occurs in the short-term (Ex: 2-year time horizon).



Updated Model Results

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Current and Proposed Portfolios

	Current Policy	Sample 1	Sample 2	Sample 3
US Equity	25.0%	30.0%	35.0%	25.0%
Non-US Equity	25.0%	30.0%	25.0%	25.0%
Buy Write (Covered Calls)	20.0%	0.0%	0.0%	0.0%
REITs	2.5%	2.5%	0.0%	2.5%
Core Private Real Estate	2.5%	0.0%	2.5%	0.0%
Investment Grade Bonds	20.0%	20.0%	20.0%	30.0%
High Yield Bonds	2.5%	7.5%	7.5%	7.5%
Bank Loans	2.5%	5.0%	5.0%	5.0%
Private Debt	0.0%	5.0%	5.0%	5.0%
Total	100%	100%	100%	100%
Expected Return (20 Years)	8.0%	8.2%	8.2%	7.8%
Standard Deviation	13.1%	13.3%	12.9%	11.6%
Sharpe Ratio	0.42	0.43	0.44	0.46
Probability of 6.75% Over 20 Years	68%	72%	72%	68%

↑ More Volatility

↑ Less Volatility

Key Takeaways:

Sample 1: Reallocation of less efficient asset classes into classes that will boost overall return.

Sample 2: Same as Sample 1, but with a US Equity bias and retention of current Core Real Estate Allocation.

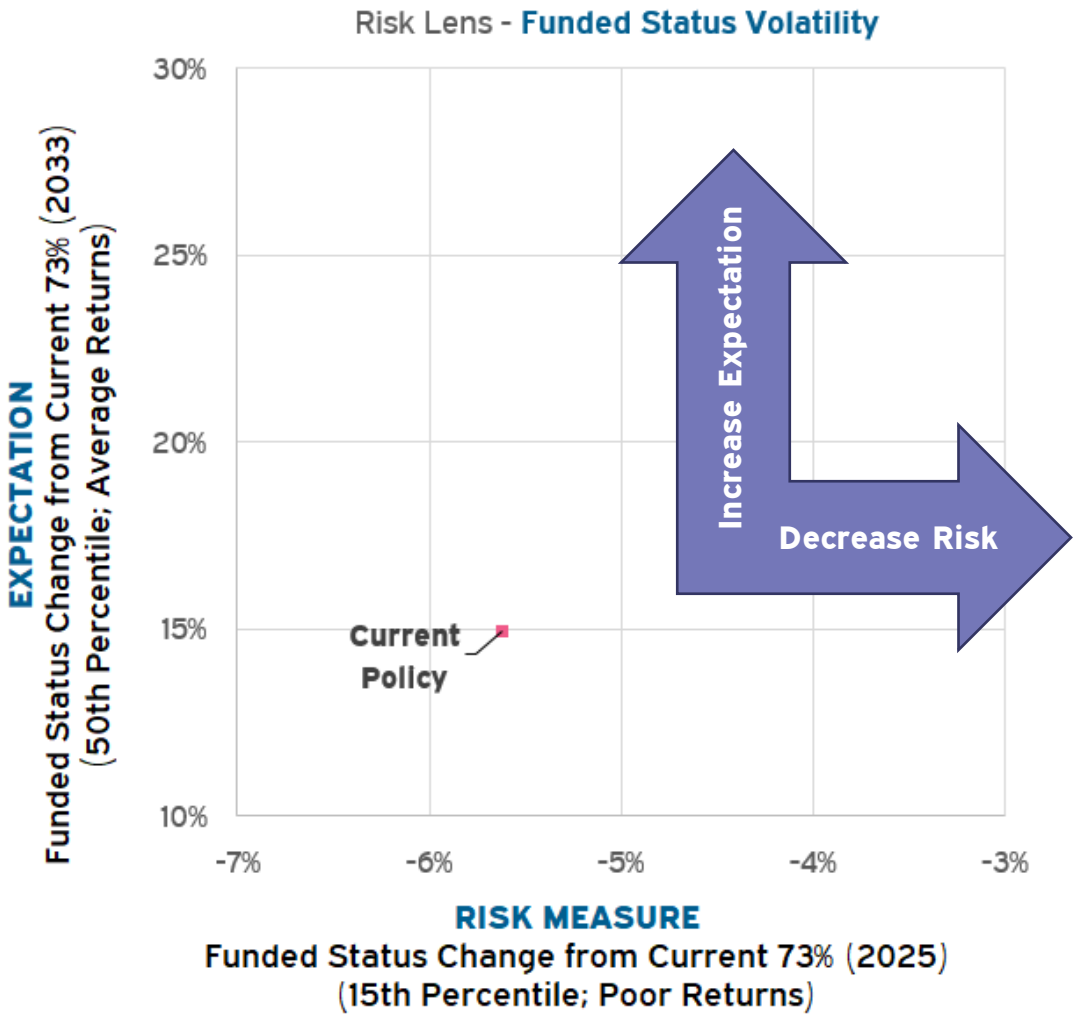
Sample 3: Reallocation of Covered Calls into yield-oriented investments (Public and Private debt)

East Bay Municipal Utility District Employees' Retirement System

Plot the Baseline (i.e., Current Policy)

Notes

- The goal of Optimization is to align the projected health of the pension plan to match the objectives and risk tolerance of the Board.
- Market value funded status as of 6/30/2023 = 73%



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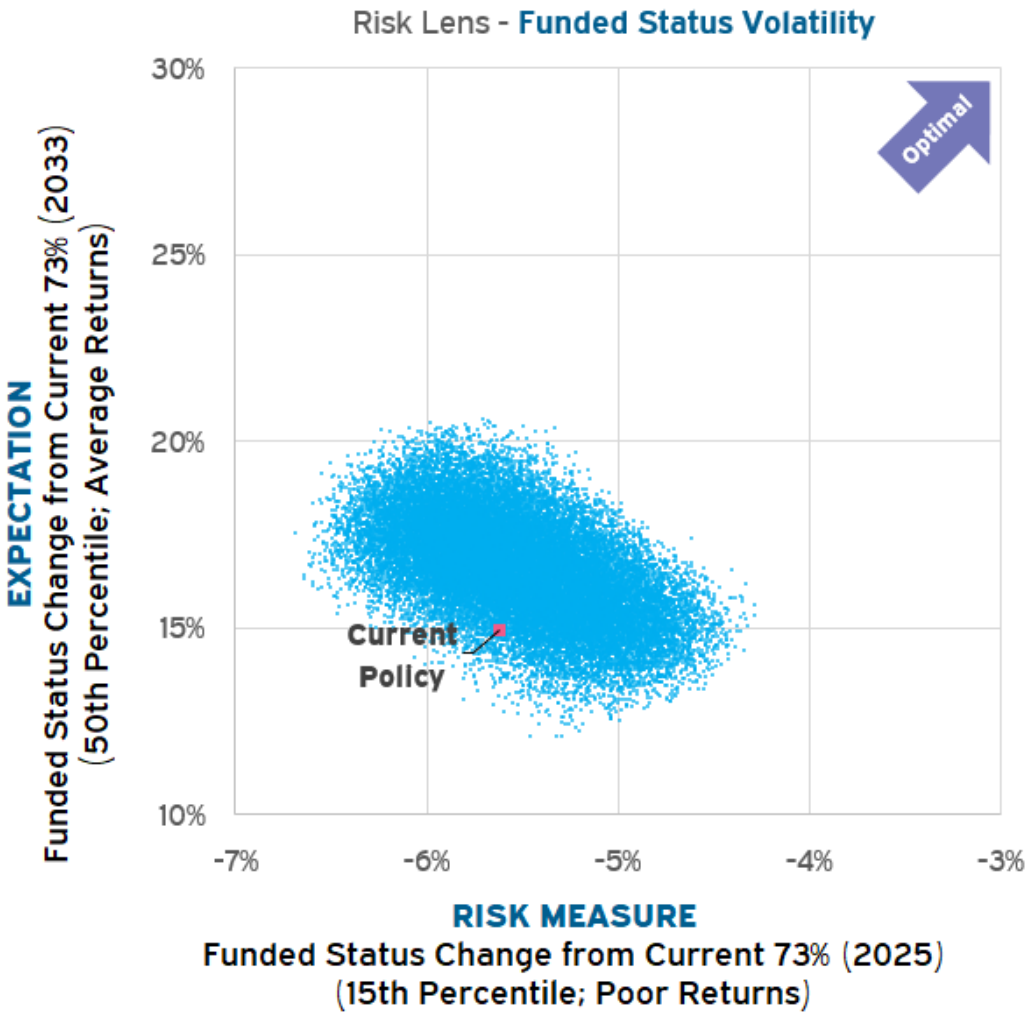
Compare Current Policy to Alternative Asset Allocations

Notes

- The constraints are used to create thousands of combinations of asset allocations.
- The Current Policy is compared to these alternative asset allocations to determine if an alternative provides more optimal outcomes.
- Each blue dot represents a unique asset allocation within the asset class constraints shown on the prior slide.
- Market value funded status as of 6/30/2023 = 73%



Review from March

→ The following two slides were presented in March and remain unchanged.

→ They are presented in this presentation to help review the process and highlight where the proposed portfolio options (#1, #2, and #3) compared to the previously presented sample portfolio options (A, B, and C).

→ Following this review, portfolios #1, #2, and #3 will be presented on similar graphics to illustrate how they compare to the Current Policy and previously highlighted samples.

- Of note, portfolios A, B, and C were presented not as recommendations, but rather, to gauge the relative attractiveness of portfolios that exhibit different attributes (e.g., risk).

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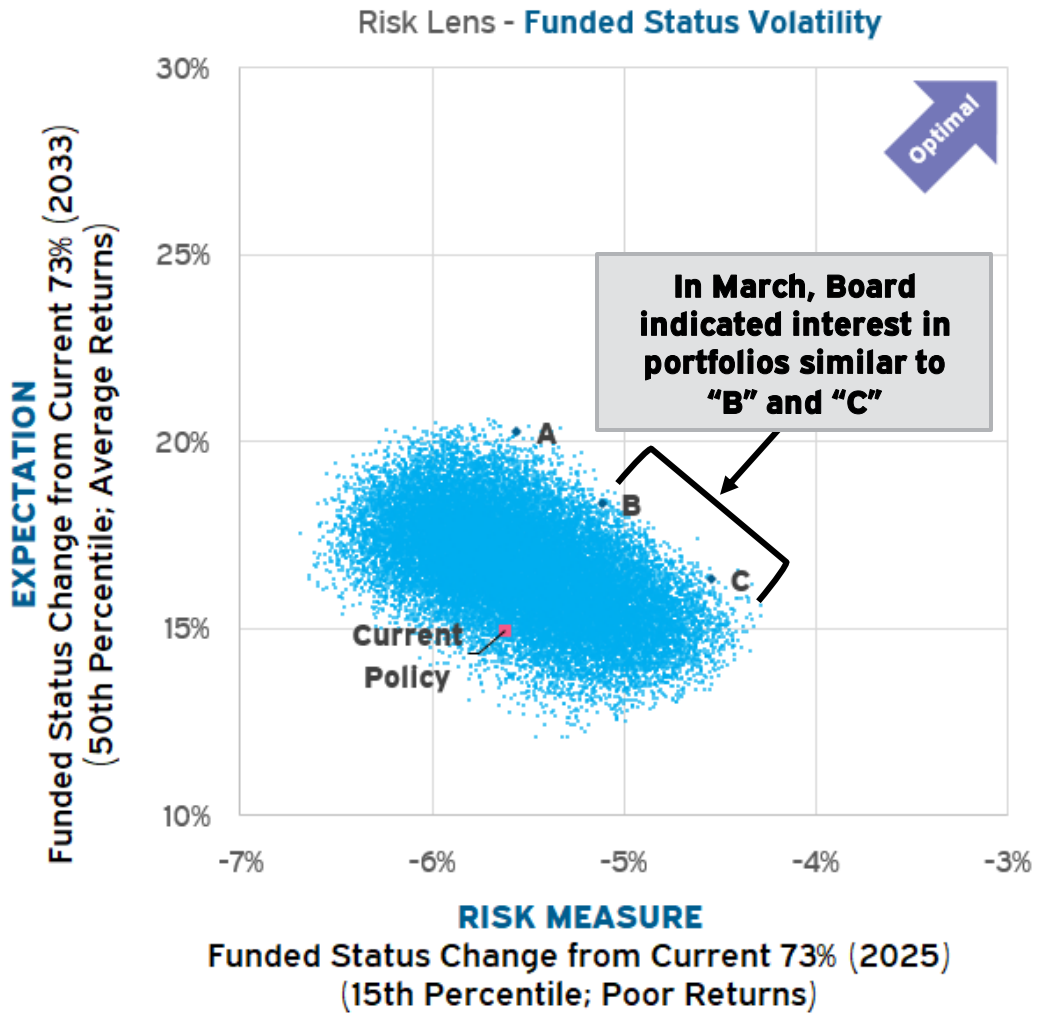
Preliminary Samples

PRESENTED IN MARCH



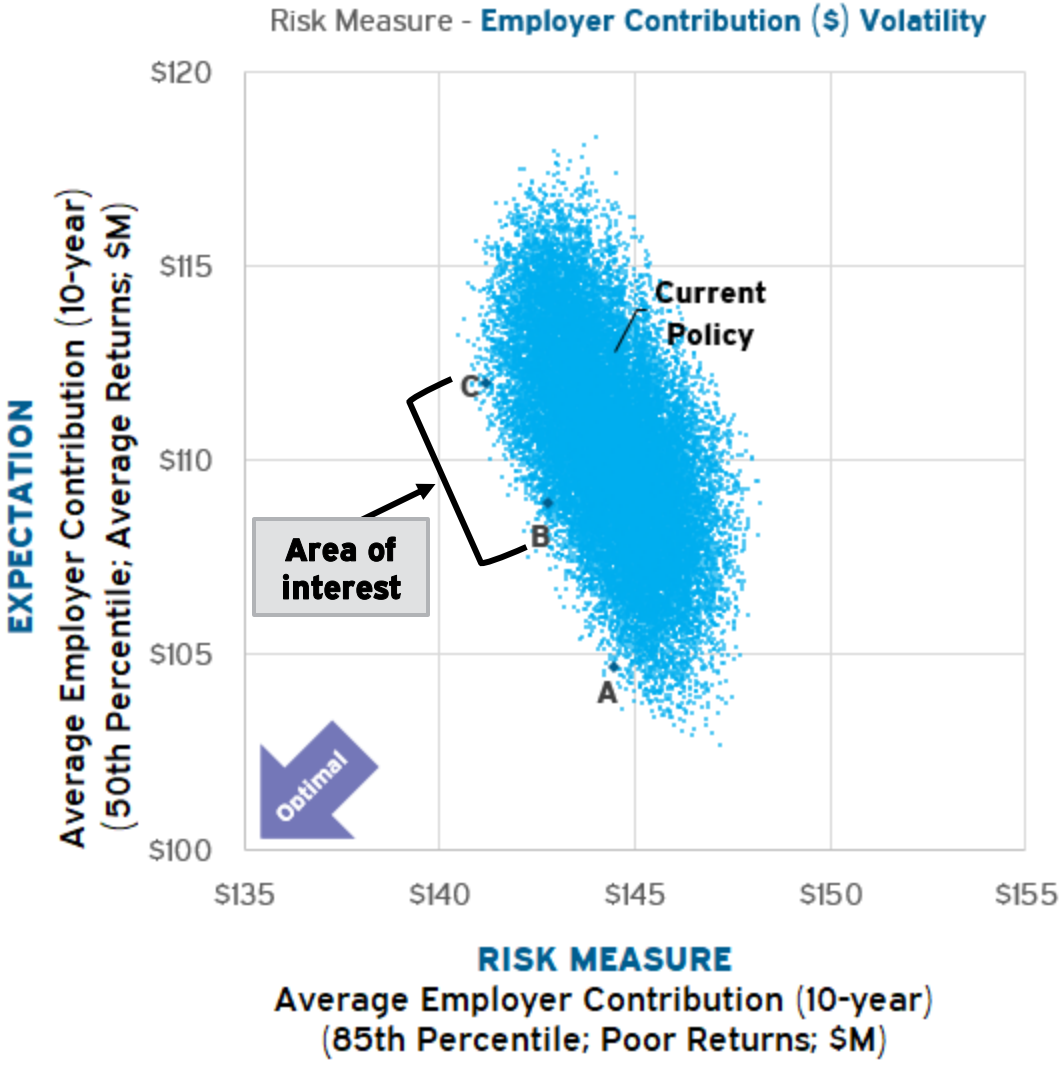
Notes

- Alternative asset allocations (Samples A to C) are identified as having "efficient" funded status outcomes.
- Samples are selected spanning the spectrum of expectation/risk measure.
- Sample A is an example of a higher expectation alternative relative to Policy.
- Sample C is the opposite - lower funded status volatility.
- No outcome is "better" than another given each have beneficial quantitative outcomes.

East Bay Municipal Utility District Employees' Retirement System

Preliminary Samples

PRESENTED IN MARCH



Notes

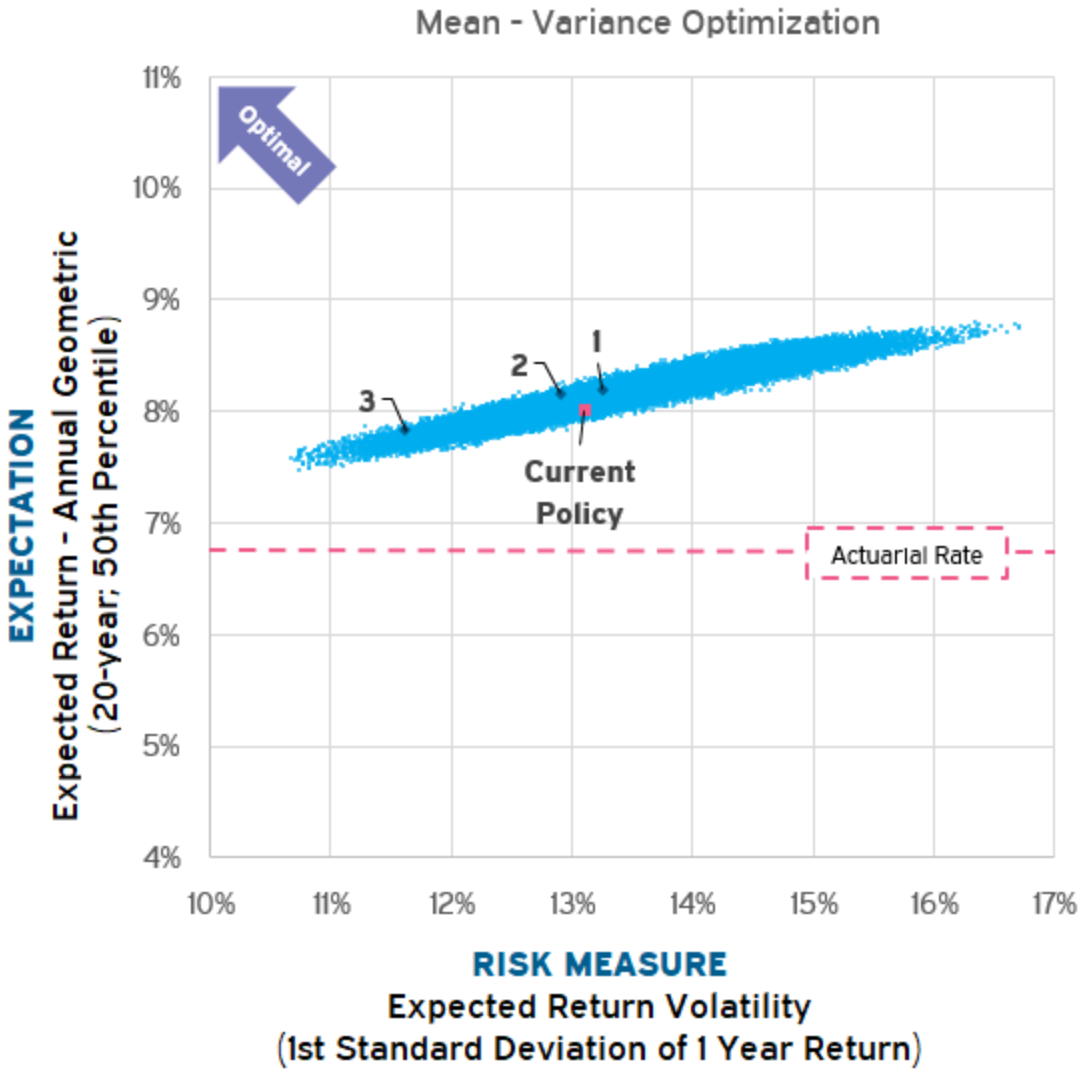
- Plan risk is viewed through another lens – Employer Contributions.
- Current Policy is expected to have average recommended contributions of $113M for 10 years with *average* returns.
- With *poor* returns, the average recommended contribution is expected to be $144M for 10 years.
- Similar to the funded status optimization, samples A-C attempt to reduce expected and/or risk measure contributions.

East Bay Municipal Utility District Employees' Retirement System

Mean-Variance Optimization

Notes

- While expected return is not an asset/liability risk measure, it's important to ensure the expected return exceeds the current assumption (6.75%).
- Within the constraints, every asset allocation has an expected return greater than the actuarial assumption (blue dots).



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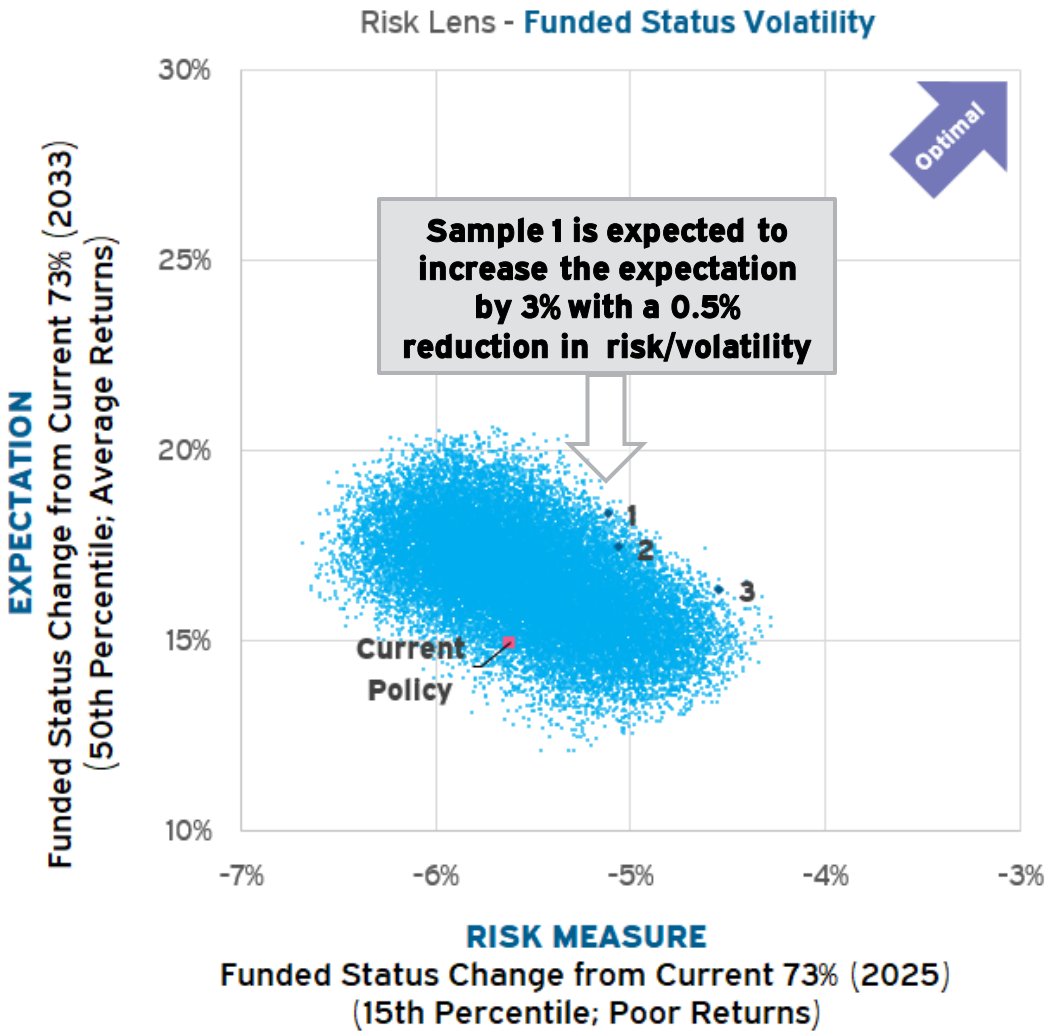
Examine Sample Portfolios

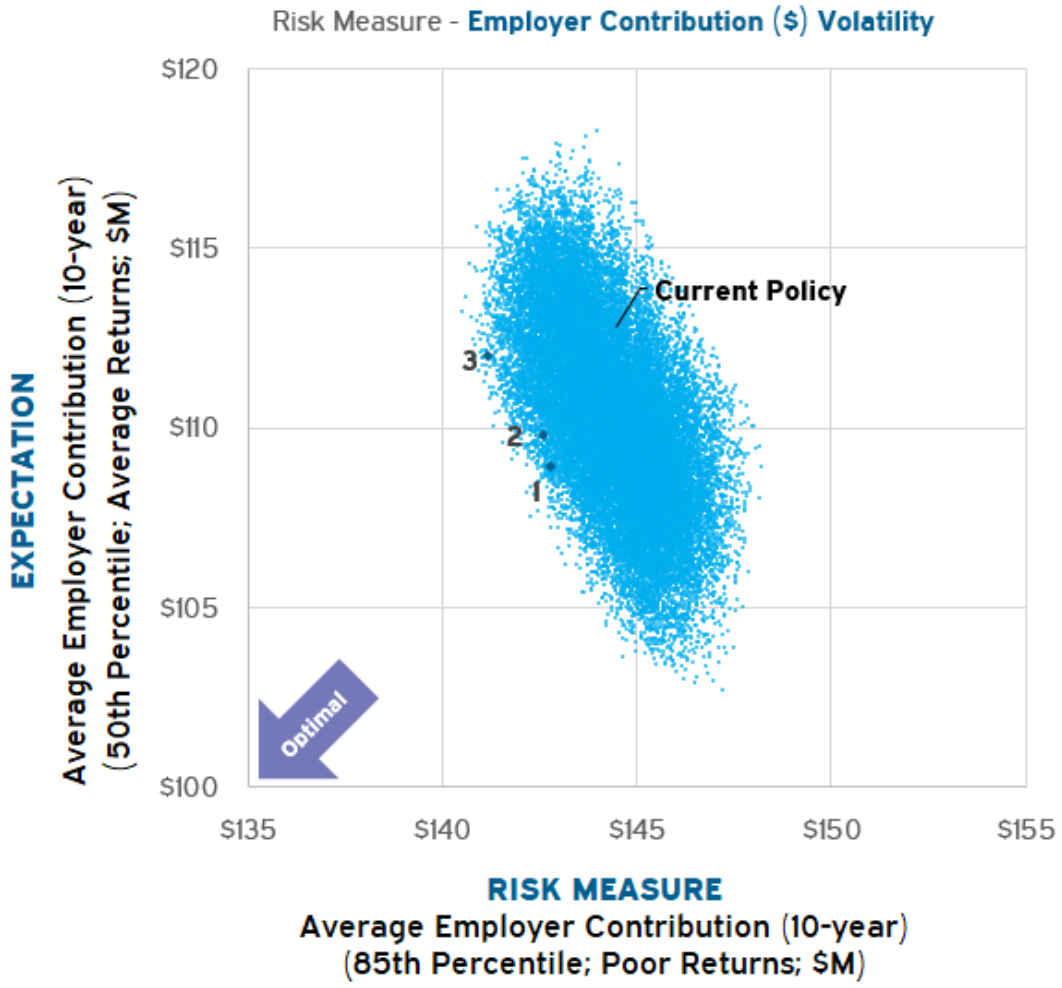


Notes

- Alternative asset allocations (Samples 1 to 3) are identified as having relatively "efficient" funded status outcomes.
- Samples are selected spanning the spectrum of expectation/risk measure in accordance with the Board's risk reduction instructions.
- Sample 1-3 are examples with higher expectations and reductions in risk/volatility relative to Policy.
- No Sample is "better" than another given each have beneficial quantitative outcomes.

East Bay Municipal Utility District Employees' Retirement System

Analyze Additional Risk Measures



Notes

- Plan risk is viewed through another lens – Recommended Employer Contributions.
- Current Policy is expected to have average recommended contributions of $113M for 10 years with *average* returns.
- With *poor* returns, the average recommended contribution is expected to be $144M for 10 years.
- Similar to the funded status optimization, Samples 1-3 attempt to reduce expected and/or risk measure recommended employer contributions.

Conclusion

→ Additional portfolios can be explored via live modeling.

→ After further discussion and exploration of alternative portfolios, Meketa recommends that the Board select a new long-term policy portfolio.

→ Based on the approved long-term policy portfolio, an *Evolving Policy Plan* will be presented to the Board at a subsequent meeting.

- This seeks to outline the general timeline for transitioning to the new long-term policy portfolio in a prudent and efficient manner.

→ Furthermore, corresponding policy documents (e.g., "Statement of Investment Policy and Procedures") will be updated to reflect the Board's decision.

Appendix

East Bay Municipal Utility District Employees' Retirement System

Strategy Definitions

EBMUDERS Asset Classes	Basic Definition
US Equity	Ownership interests in small, medium, and large market capitalization publicly traded companies across the United States. Represented by the Russell 3000 Index (i.e., largest 3,000 stocks in the US).
Non-US Equity	Ownership interests in medium and large market capitalization publicly traded companies across developed and emerging markets. Represented by the MSCI ACWI ex. US Index.
Buy Write (Covered Calls)	An equity-related strategy that contains long equity positions and writes call options (i.e., covered calls) against those positions. Seeks to generate equity-like returns but with lower volatility over full market cycles.
REITs	Publicly traded companies that mainly own, and in most cases operate, income-producing real estate such as apartments, shopping centers, offices, hotels, and warehouses. REITs distribute at least 90% of their taxable income to shareholders annually.
Core Private Real Estate	Equity ownership in established/stable, income-producing properties that tend to exist in major markets in the United States. Includes sectors such as apartments, industrial, office, retail, and other (e.g., data centers, storage, etc.). As private funds, entry/exit from the vehicles may be limited.
Investment Grade Bonds	High-quality (i.e., investment-grade) debt in U.S. dollars of corporations, governmental entities or agencies, and securitized products (e.g., mortgage-backed securities). All instruments are "fixed rate" and exposed to interest rate risk.
High Yield Bonds	Lower credit quality debt in U.S. dollars of corporations. All instruments are "fixed rate" and exposed to both interest rate risk and credit risk (i.e., risk of default).
Bank Loans	Similar to High Yield Bonds, but the instruments are "floating rate" where coupon payments will vary based on interest rate levels. Referred to as "bank loans" due to the original underwriting and syndication across banking institutions. They historically were "senior" to fixed rate debt in the capital structure of companies.
Private Debt	The largest segment of the market (direct lending) is similar to that of Bank Loans but is originated in private transactions. Other sectors (e.g., asset backed securities) represent pools of other forms of debt (e.g., credit card receivables) that are packaged together into a broader security. Primarily "floating rate".

Summary of the Key Risks

1. Investments: Asset return volatility is the biggest risk to the Plan.
2. Cash Inflow: While unlikely, the risk of not meeting recommended contribution is important to the Plan due to the underfunded state.

Recommendation: Optimize the asset return and asset return volatility to ensure all investment risks are compensated appropriately. Secondarily, discuss strategies for consideration when the Plan reaches higher funded status levels.

East Bay Municipal Utility District Employees' Retirement System

Risk Philosophy

- The Risk Philosophy summarizes the different "lenses" that will be used to evaluate the financial condition of the Plan.
- Most systems will primarily rely on an analysis of:
  - ✓ The funded status to evaluate the ongoing health of the Plan; and
  - ✓ The size of the recommended employer contribution to evaluate the resources required to achieve the health of the Plan
- *Proposed* risk measures to be analyzed during this asset-liability study:

Risk Lens	Risk Measure	Expectation
Funded Status Volatility	Change in Funded Status by 2025 with Poor Returns (15th Percentile)*	Change in Funded Status by 2033 with Average Returns (50th Percentile)*
Recommended Employer Contribution ($) Volatility	Average actuarial recommended contribution for the next 10 years with Poor Returns (85th Percentile)	Average actuarial recommended contribution for the next 10 years with Average Returns (50th Percentile)

* 6/30/20XX

How does Meketa optimize the asset allocation?

1 – Plot the Baseline	Plot the primary expectation and risk measure for the asset allocation in the Investment Policy Statement
2 – Create Constraints	Asset classes are constrained to a minimum and maximum allocation to prevent impractical allocation recommendations
3 – Compare Alternatives	The Board agrees on tolerance for allocation levels for each existing or new asset classes
4 – Produce Samples	Meketa will provide samples of asset allocations that reflect the feedback received from the Board with regards to risk tolerance and return expectations
5 – Analyze Additional Risks	Repeat the process for additional risk measures that are important to the Board's decision making

Assumptions and Methods

- Capital Market Assumptions: Meketa 2024 Capital Market Expectations – 10 & 20-year assumptions.
- Assets: Market value of assets of $2.2B as of June 2023, updated to reflect Q3 and Q4 2023 returns from the performance reports.
- Asset Rebalancing: annual
- Liabilities and normal cost: The liabilities, normal cost and expected benefit payments used in this study were provided by Segal as of June 30, 2023. All liability projections assume a 6.75% long-term rate of return unless the dynamic capital market expectation suggest a discount rate of lower than 6.75%. In that event, the discount rate is set equal to the 20-year geometric capital market expectation. The liabilities and normal cost are then adjusted based on their estimated duration.
- Funding policy: Assumes recommended contributions are made in full as described in the actuarial valuation report.
- Plan Provisions and Additional Assumptions: Additional details regarding provisions and assumptions are documented in the June 30, 2023 actuarial valuation report issued by Segal.

East Bay Municipal Utility District Employees' Retirement System

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