



VCERA
VENTURA COUNTY EMPLOYEES'
RETIREMENT ASSOCIATION

ASSET-LIABILITY STUDY

VENTURA COUNTY EMPLOYEES'
RETIREMENT ASSOCIATION

APRIL 2024

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EXECUTIVE SUMMARY

VENTURA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

- **VCERA remains in an excellent funded position and is on track to achieve full funding in the near future**
 - June 30, 2023 funded ratio:
 - Actuarial Basis: 97.1%
 - Market Basis: 96.3%
- **VCERA has taken steps to reduce overall plan risk while improving funded status over the last decade**
 - Lowering the investment return assumption steadily in-line with public fund median from 8.00% in 2011 to 7.00% in 2021 by 25 basis points every 3 years
 - Improves financial stability due to less reliance on investment returns and reduced potential of future contribution increases
 - Plan has improved funded status over this same time horizon from 81% in 2011 to 97% in 2023

Notes: Funded ratio based on June 30, 2023 actuarial valuation produced by Segal




EXECUTIVE SUMMARY

VENTURA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

- **Market environment has shifted significantly**
 - Economic resiliency in the U.S. despite higher interest rates and above target inflation
 - From low rates/low growth/low expected returns...
 - To higher inflation, higher growth, and tightening monetary policy
- **VCERA Staff and NEPC are recommending incremental changes to the policy mix**
 - Generally closer to the current actual allocation
 - Reduce overall public equity exposure by 2% and add it to private debt
 - Reduce non-U.S. developed and emerging market equity exposures
 - Shift 2% from core real estate to non-core
 - **Result is a portfolio that maintains a similar return expectation as the Current Policy with lower asset volatility and increased risk/return efficiency**

Notes: Funded ratio based on June 30, 2023 actuarial valuation produced by Segal





PURPOSE & METHODOLOGY OF AI STUDY



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PURPOSE OF ASSET-LIABILITY STUDY

- **Review the current/projected financial status of the plan over long-term horizon**
- **Determine appropriateness of current asset allocation with consideration of:**
 - Expected progress of liabilities and cash flows/liquidity needs
 - Path of funded status
- **Test sensitivity of plan (Assets and Liabilities) to various range of outcomes**
 - Market performance across range of economic environments
 - Contribution volatility
 - Range of liquidity environments
- **Consider appropriate asset mixes and expected return on assets**
 - Assess return target against tradeoff of volatility/range of outcomes
 - Analyze inclusion/exclusion of various asset classes/strategies

FIRST PRINCIPLES

- **The funding of pension benefits is made possible through the combination of member and employer contributions and returns on investment**
- **The long-term expected return on assets drives the selection of an appropriate discount rate for public pension liabilities**
- **Expected return on assets is based on assumptions – actual experience will likely depart from those assumptions**
- **Long-term nature of pension obligations positions well-funded pension plans to take advantage of long-term investment opportunities**
- **It is critical and healthy for pension trustees to regularly review fundamental characteristics of the pension plan:**
 - Risk tolerance
 - Viability of long-term investment return
- **Risk is multi-dimensional and should be considered from different perspectives – Risk is not just volatility!**
 - Volatility, potential for drawdowns, illiquidity, exposure to economic factors, etc.
- **Return expectations are generally lower than historical returns, forcing many investors to reconsider both return expectations and appropriate levels of risk**

BALANCING THE PENSION EQUATION

- All the complexities of pension plans boil down to the classic equation:

$$B + E = C + I$$

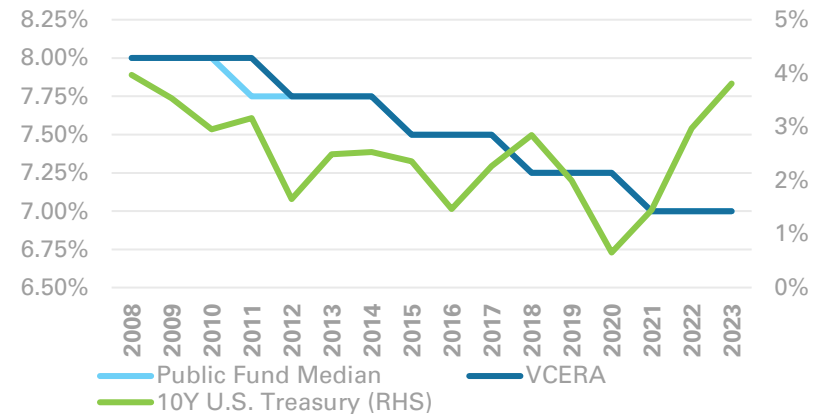
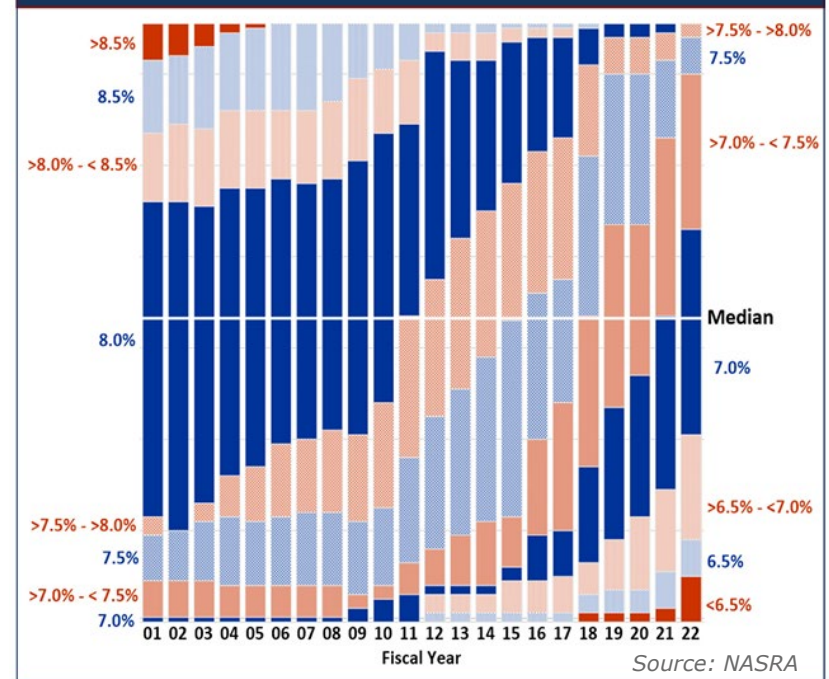
- Benefits (B), Expenses (E), Contributions (C), and Investment Earnings (I)

Plan Factor	Flexibility/Constraint
(B + E) Benefits & Expenses	Lower “C” and/or “I” can be offset with an equivalent reduction in outflows: <ul style="list-style-type: none">• Vested benefits generally cannot be reduced• Non-vested benefits can be reduced, but challenging on many levels• Political, paternal, generational equity, etc.
(C) Contributions	VCERA contribution model offers adequate flexibility to balance equation: <ul style="list-style-type: none">• Dynamic employer contribution rates• Layered amortizations of annual gains/loss designed to fully fund the plan within 15 years• Recommended employer and employee contribution obligations are assumed to be made each year
(I) Investment Return	Investment pool can be restructured to maintain target return <ul style="list-style-type: none">• Increase risk and/or portfolio efficiency• Expected return (and risk level) could be scaled down over time as funded status improves allowing for maintenance of long-term plan stability• Low annual returns (below expectations) require adjusting other levers<ul style="list-style-type: none">• Higher Contributions• Higher Investment Returns in later years

EXPECTED RETURN

- **Expected return and liability discount rate are closely linked for public pension plans**
 - Corporate DB: stringent regulations
 - Going-concern of government entities has historically provided comfort in public plans taking longer term approach
 - Expected returns are forward-looking
- **Historical market environment has led to downward trend in EROAs for public pensions**
 - Median 2023 EROA = 7.0%
- **Low expected returns put pressure on assumptions and outcomes but...**
 - Market re-pricing and higher inflation may push return expectations higher looking forward

Figure 4: Change in Distribution of Public Pension Investment Return Assumptions, FY 01 to FY 22



CURRENT POLICY

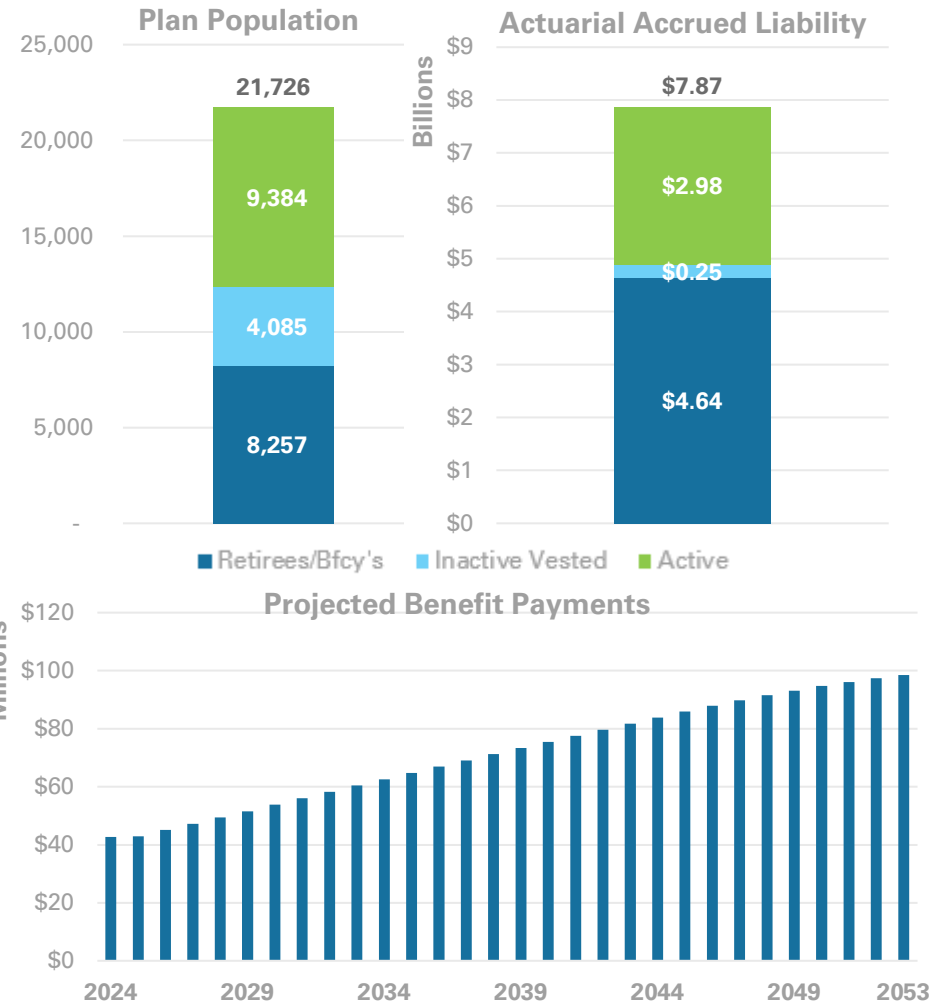


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PLAN CHARACTERISTICS

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- **With funded status nearing 100%, employer contributions are expected to decrease to the amount required to fund active member benefit accruals each year**
 - Employer/member share of accrual costs is roughly 50/50
- **With employer contributions stabilizing, the plan can get a better sense of long-term liquidity as it relates to its private markets program**
- **Current Policy allocation is expected to achieve the investment return assumption set by the Board**
 - 7.00% investment return assumption
 - 10-yr expected return of 6.7% (Beta only)
 - 30-yr expected return of 8.0% (Beta only)

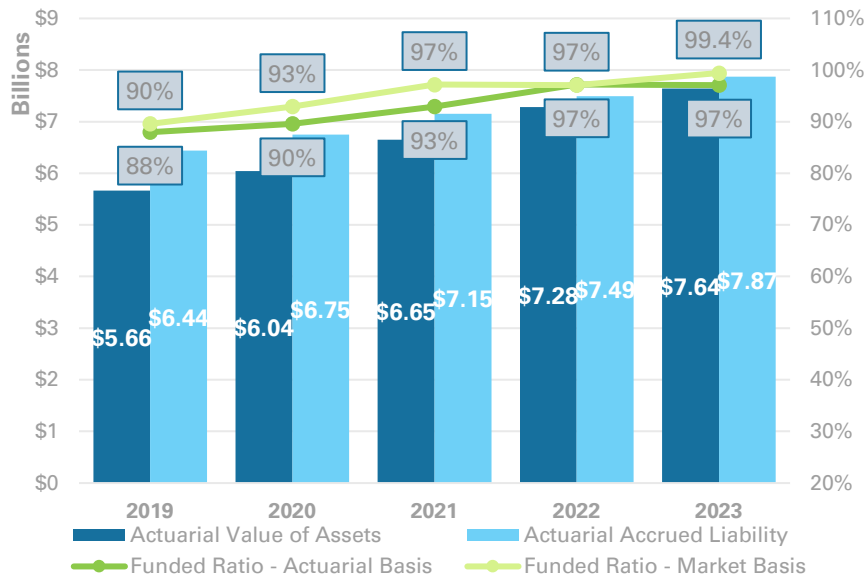


Notes: Participant count, liabilities, and projected benefit payments as of June 30, 2023; expected returns based on NEPC's 12/31/2023 capital market assumptions

ASSET-LIABILITY PROFILE

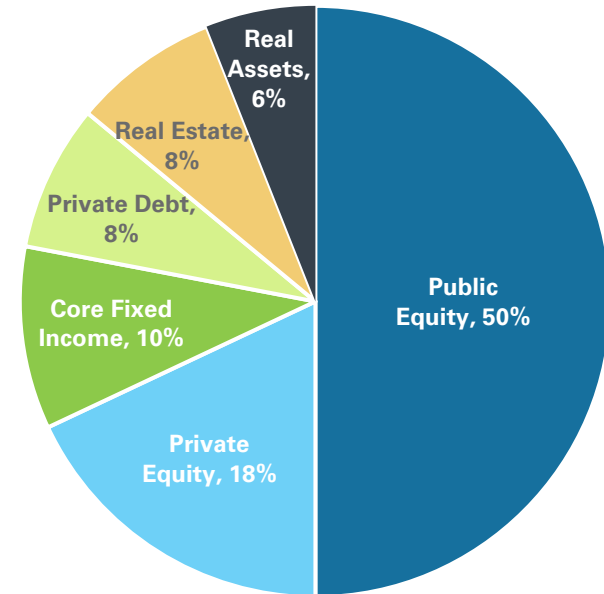
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Funded Status History



Investment Return Assumption/Liability Discount Rate	7.00%
Funded Ratio – Actuarial Basis	97.1%
Funded Ratio – Market Basis	99.4%

Asset Allocation

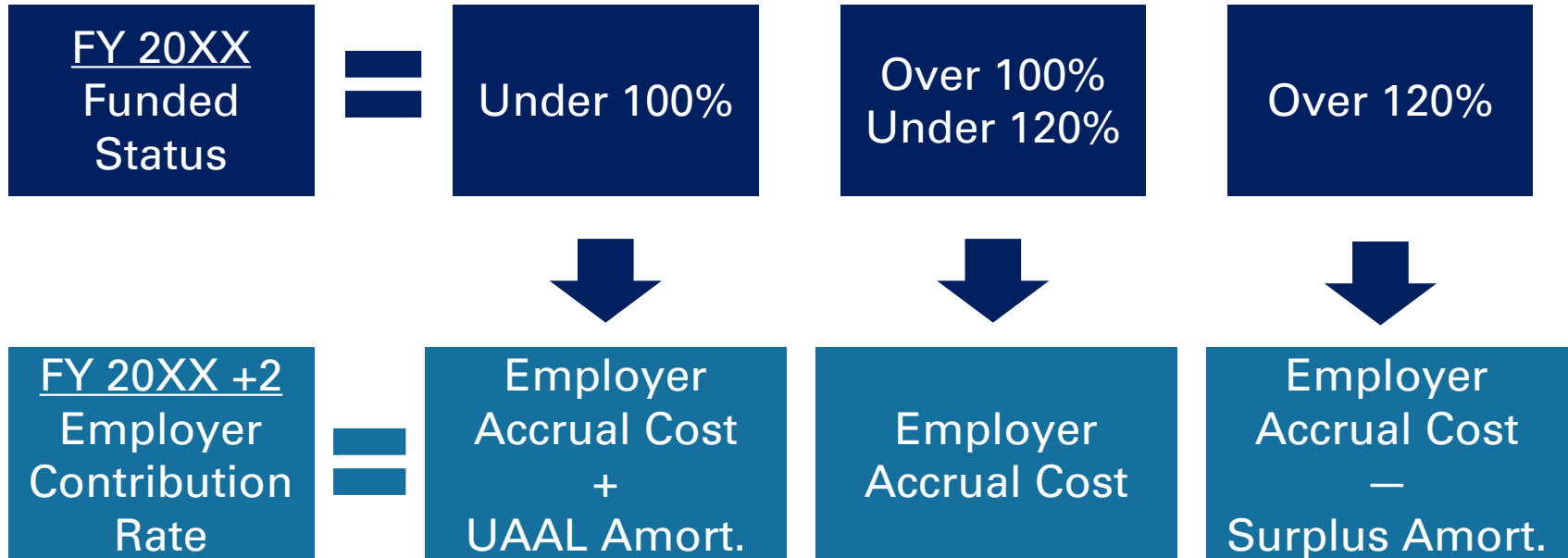


10-Year Expected Return	6.7%
30-Year Expected Return	8.0%
Asset Volatility	15.9%

Notes: Market basis funded status based on market value of liability relative to market value of assets and estimated by NEPC; portfolio mean/variance assumptions based on NEPC's 12/31/2023 capital market assumptions for the Current Policy allocation

FUNDED STATUS & CONTRIBUTION MECHANICS

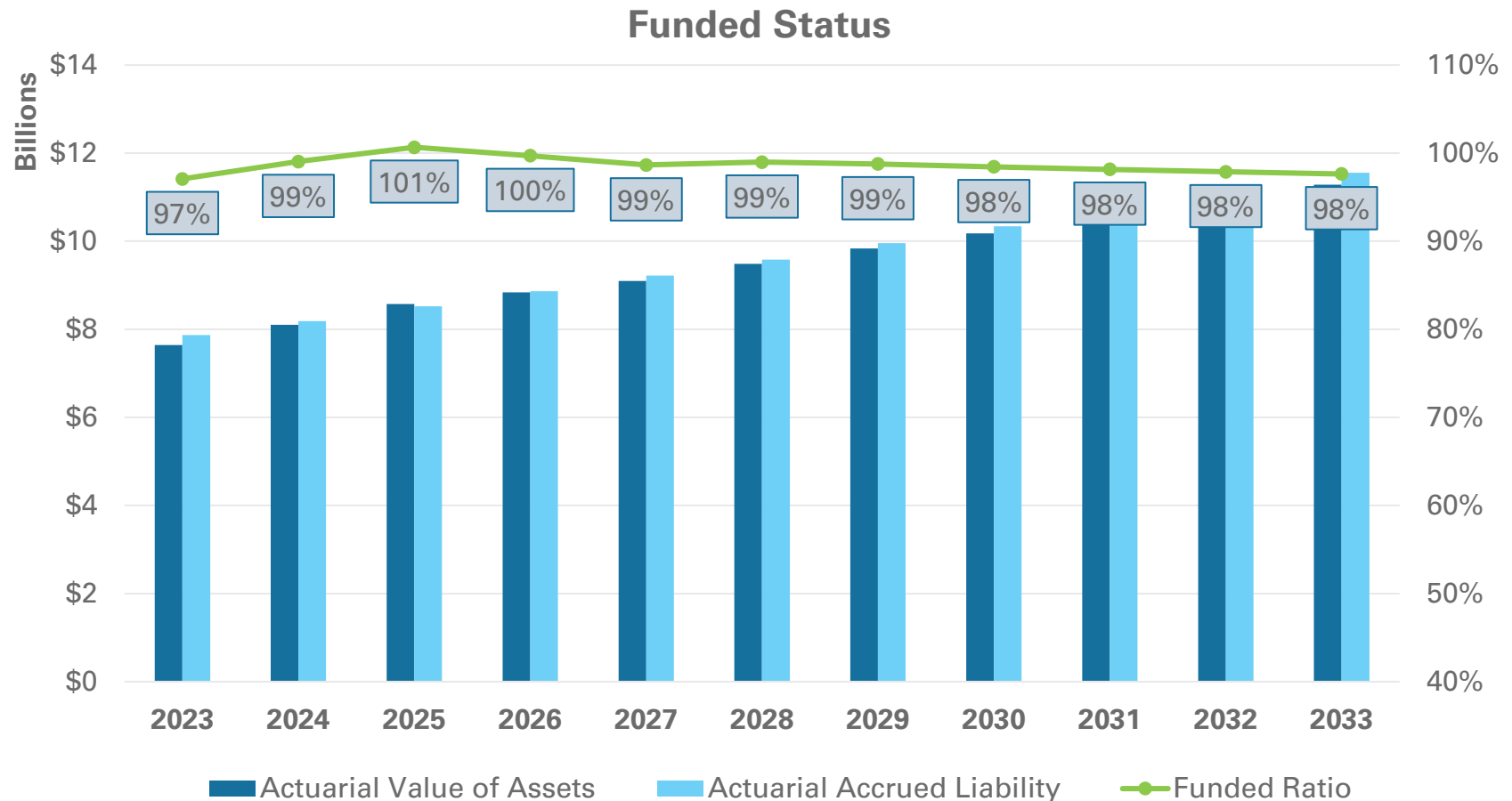
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- Due to the lagged nature of actuarial valuations, changes in employer contribution rates are delayed from changes in funded status
- In the case of VCERA, a given valuation year will determine the contribution rate 2 years forward
 - For example, the June 30, 2030 valuation will determine contribution rates for the fiscal year ending June 30, 2032

10-YEAR FUNDED STATUS PROJECTION

VENTURA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

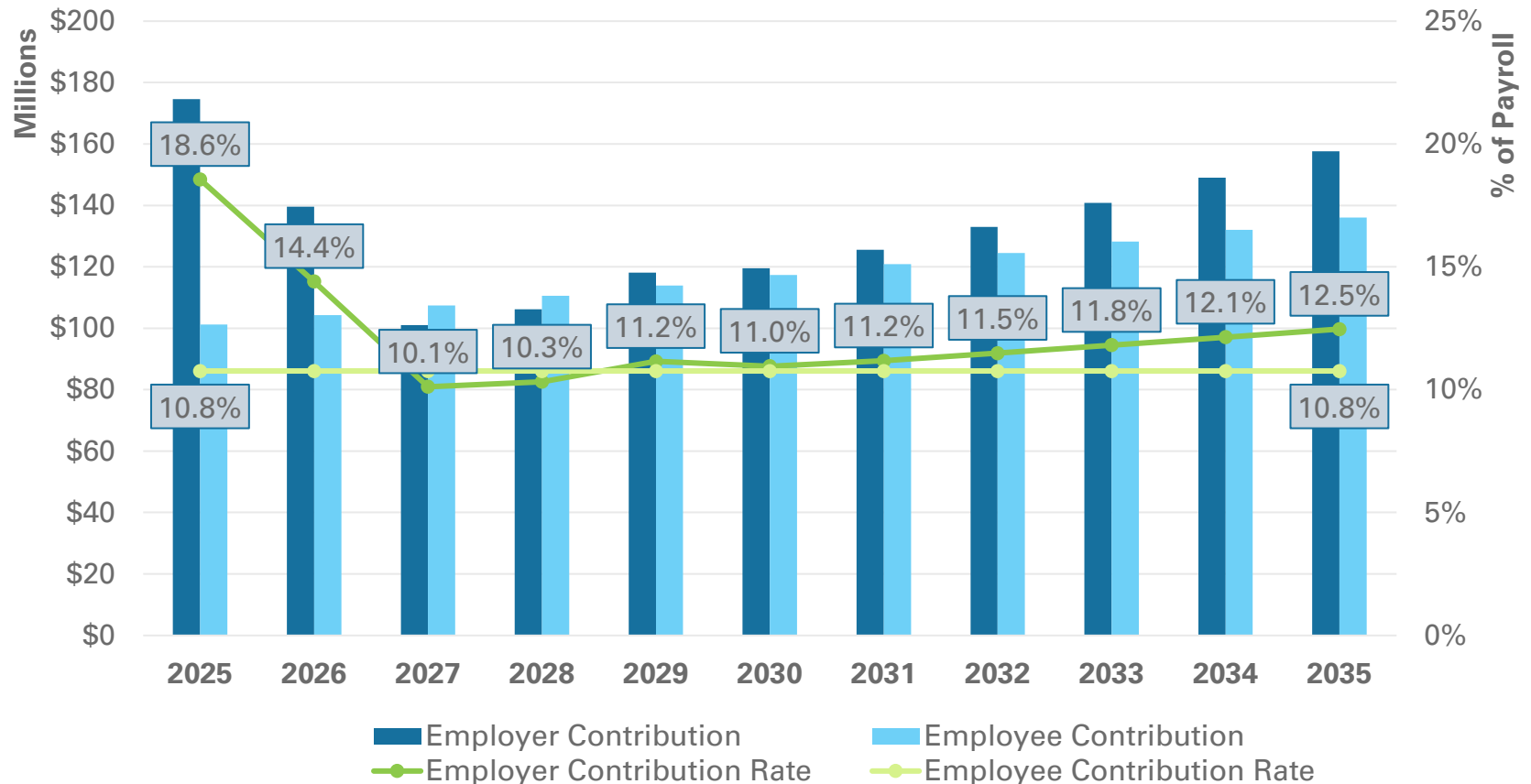


Notes: As of June 30; reflects 5.0% FYTD return thru 12/31/2023 and Current Policy 10-year expected return of 6.7% per annum thereafter

10-YEAR CONTRIBUTION PROJECTION

VENTURA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

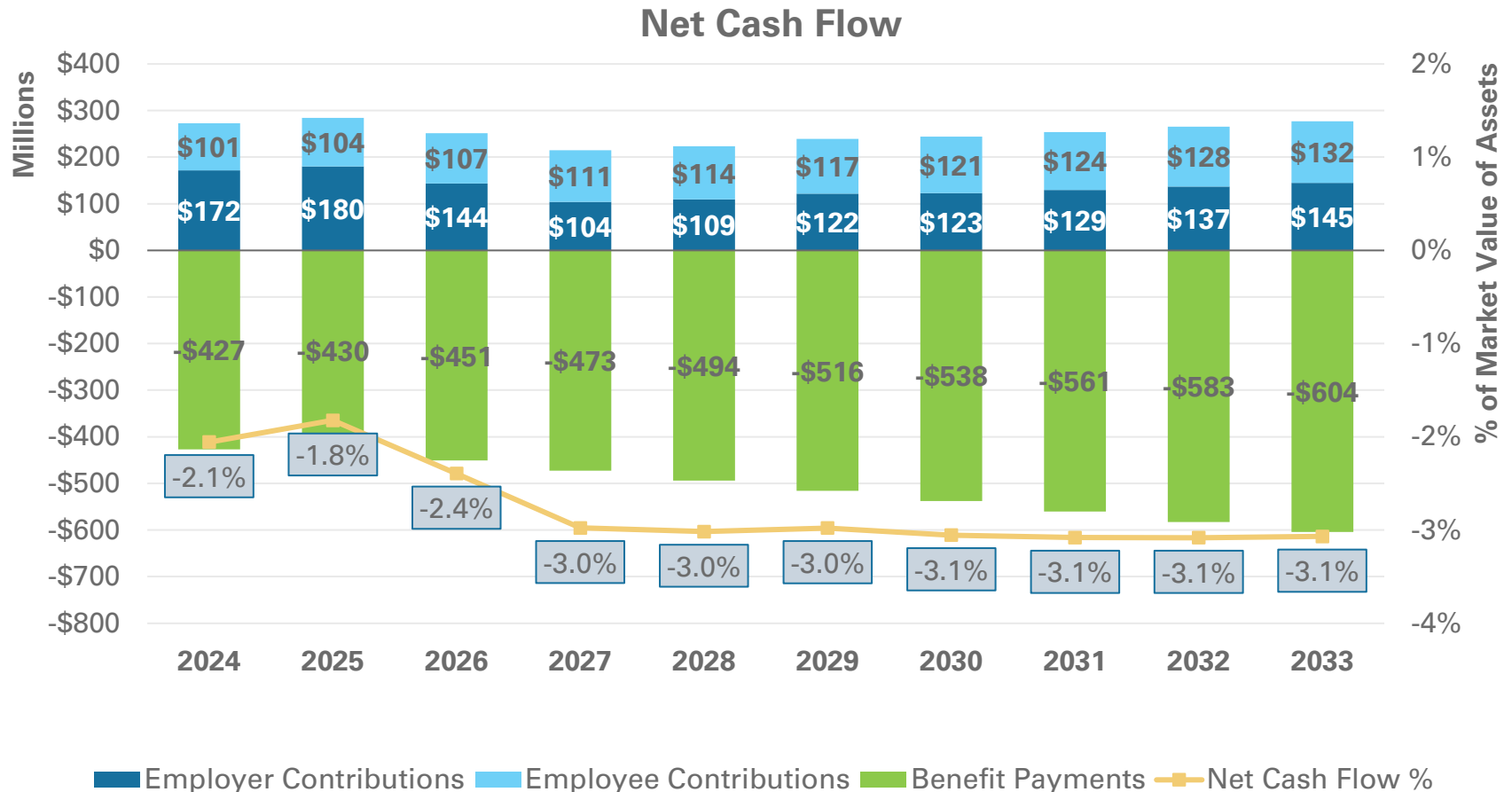
Contributions



Notes: For the fiscal year ending June 30; reflects 5.0% FYTD return thru 12/31/2023 and Current Policy 10-year expected return of 6.7% per annum thereafter; employer rate reflects the weighted average rate across General and Safety member groups; employee rate reflects the average member rate

10-YEAR NET CASH FLOW PROJECTION

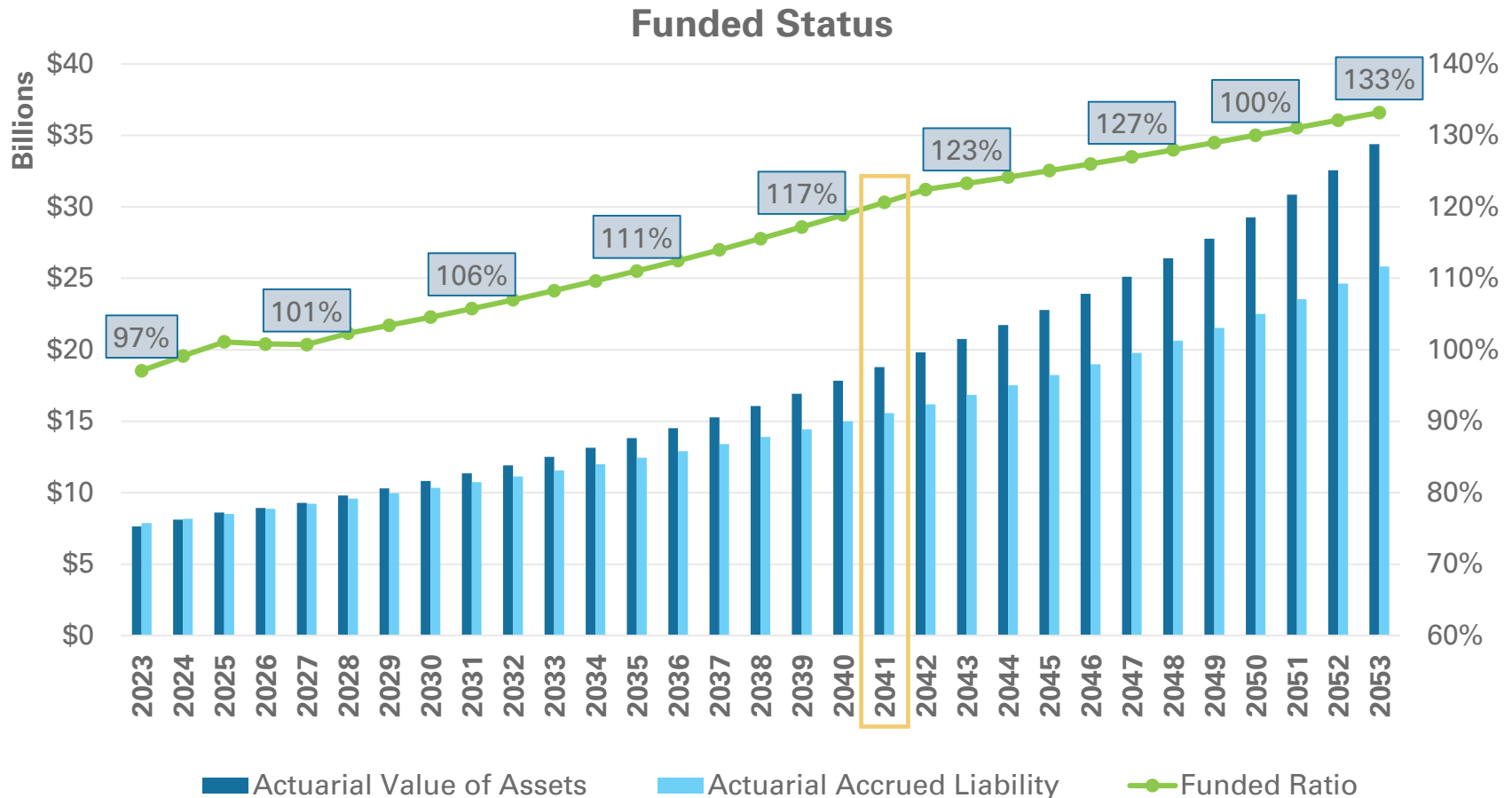
VENTURA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION



Notes: For the fiscal year ending June 30; reflects 5.0% FYTD return thru 12/31/2023 and Current Policy 10-year expected return of 6.7% per annum thereafter

30-YEAR FUNDED STATUS PROJECTION

VENTURA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

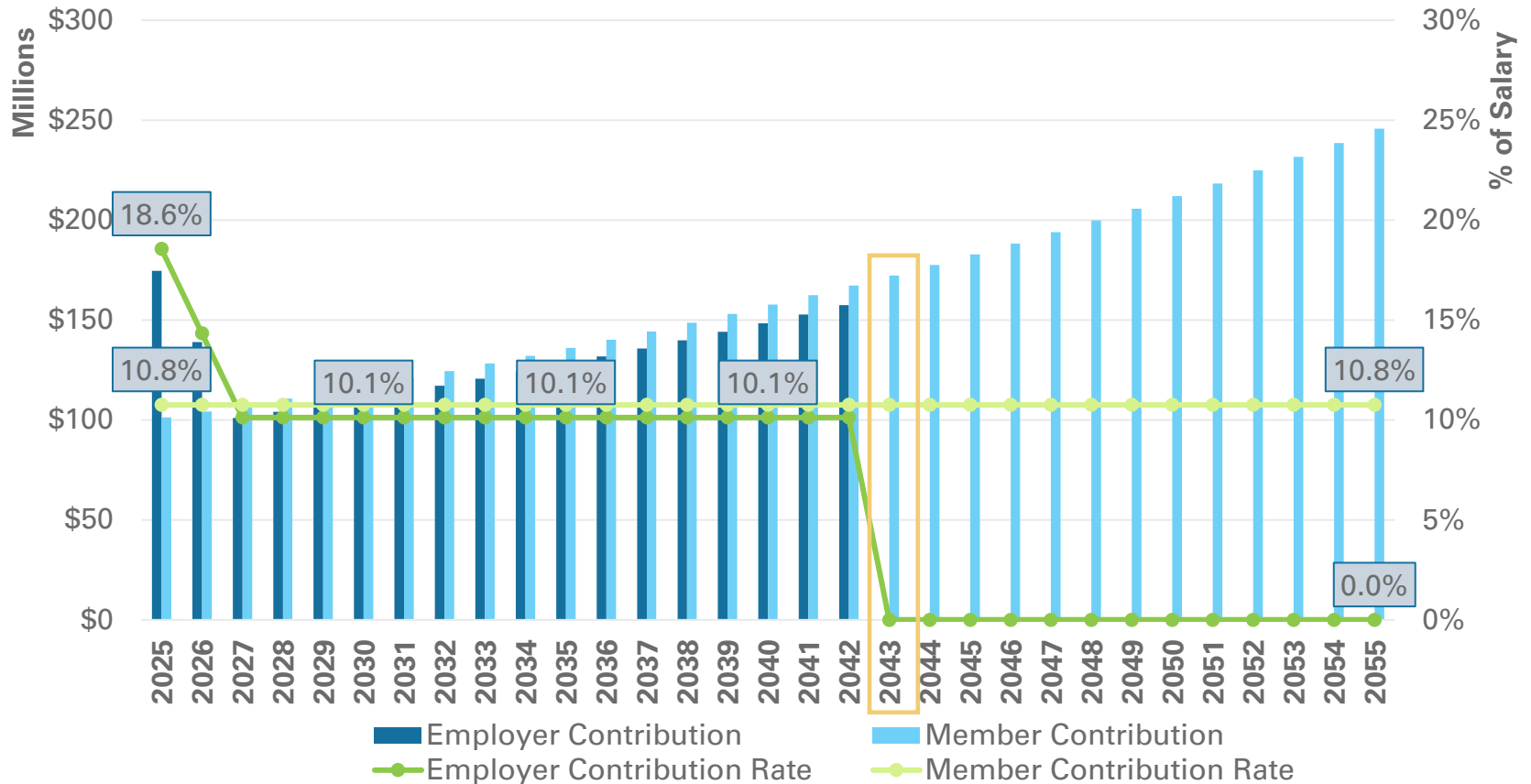


Notes: As of June 30; reflects 5.0% FYTD return thru 12/31/2023 and Current Policy 30-year expected return of 8.0% per annum thereafter

30-YEAR CONTRIBUTION PROJECTION

VENTURA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

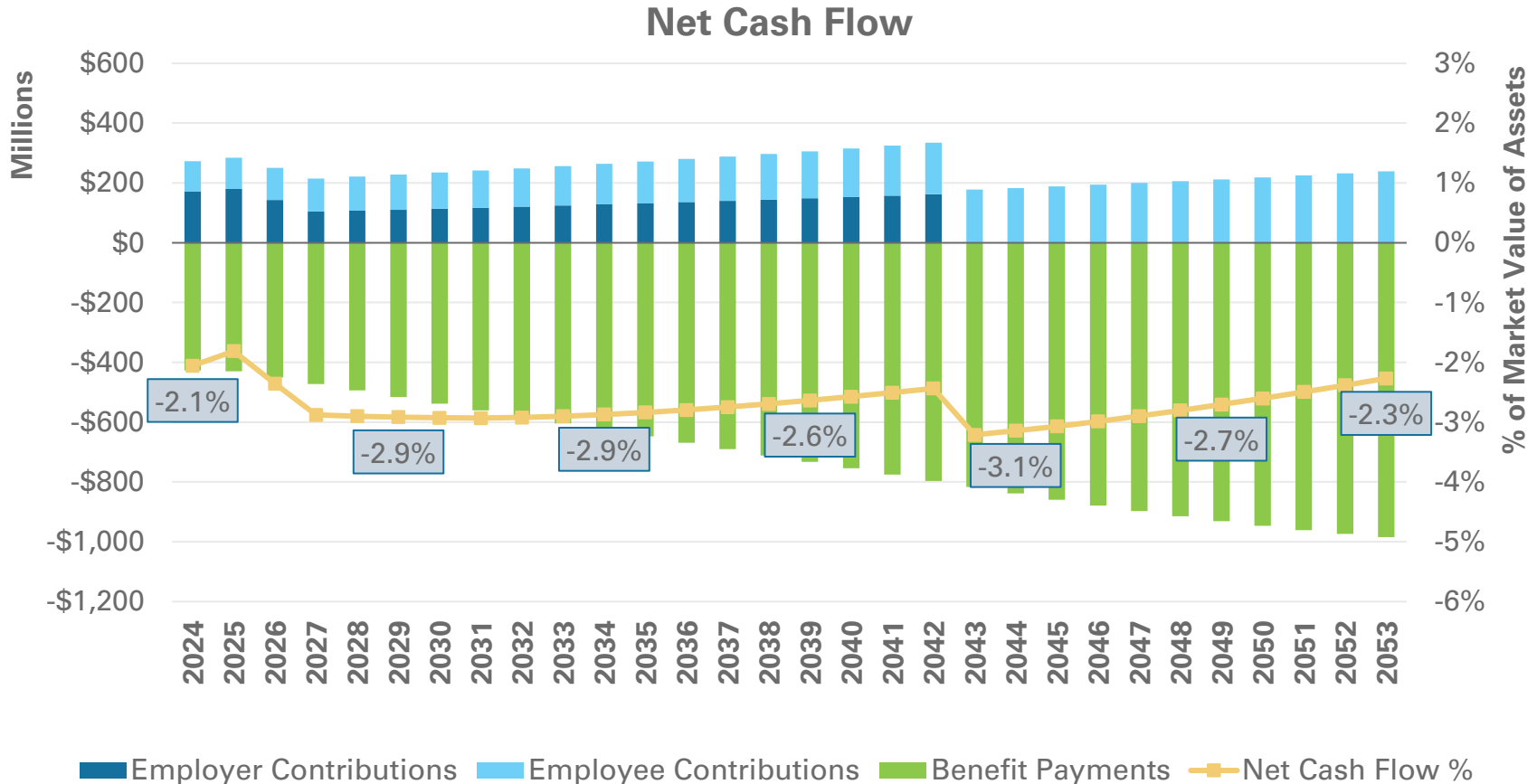
Contributions



Notes: For the fiscal year ending June 30; reflects 5.0% FYTD return thru 12/31/2023 and Current Policy 30-year expected return of 8.0% per annum thereafter; employer rate reflects the weighted average rate across General and Safety member groups; employee rate reflects the average member rate

30-YEAR NET CASH FLOW PROJECTION

VENTURA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

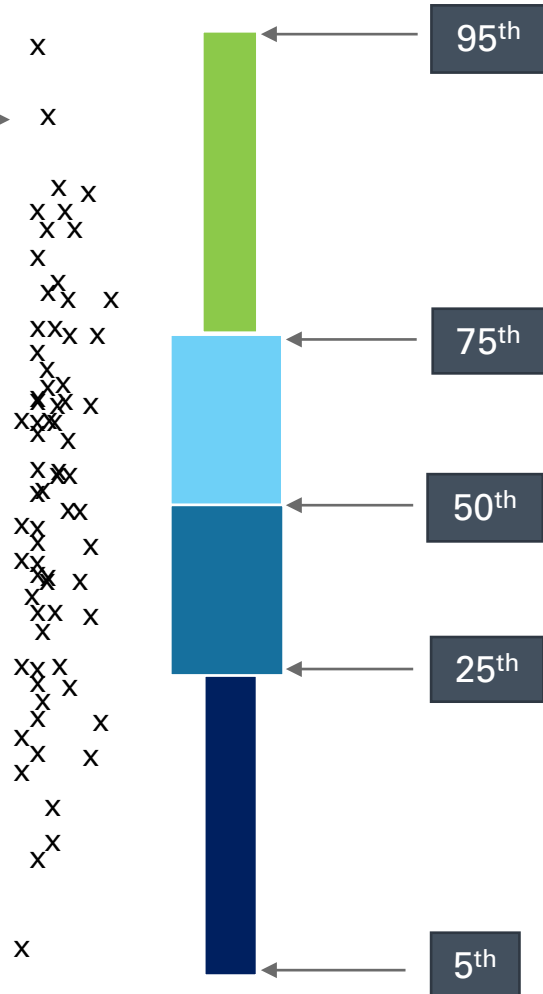


Notes: For the fiscal year ending June 30; reflects 5.0% FYTD return thru 12/31/2023 and Current Policy 30-year expected return of 8.0% per annum thereafter

INTERPRETING STOCHASTIC RESULTS

Model ranks 10,000 forecasts each year

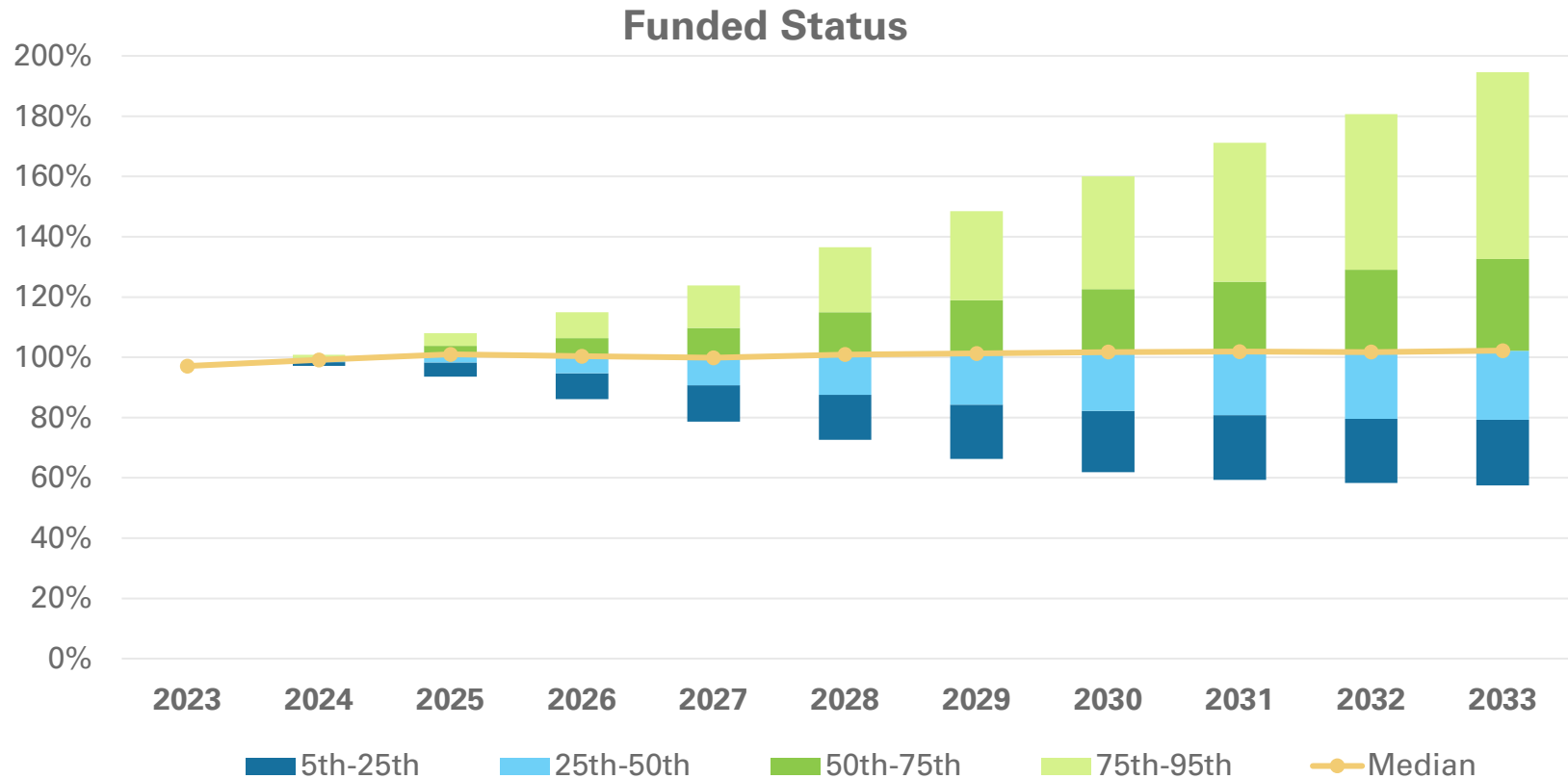
*Individual
forecast*



- **95th percentile**
 - Exceeds 95% of all forecasts
 - Overly optimistic outcome
- **75th percentile**
 - Exceeds 75% of all forecasts
 - Optimistic outcome
- **50th percentile**
 - Exceeds 50% of all forecasts
 - Median outcome
- **25th percentile**
 - Exceeds 25% of all forecasts
 - Pessimistic outcome
- **5th percentile**
 - Exceeds 5% of all forecasts
 - Overly pessimistic outcome

10-YEAR STOCHASTIC FUNDED STATUS PROJECTION

VENTURA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

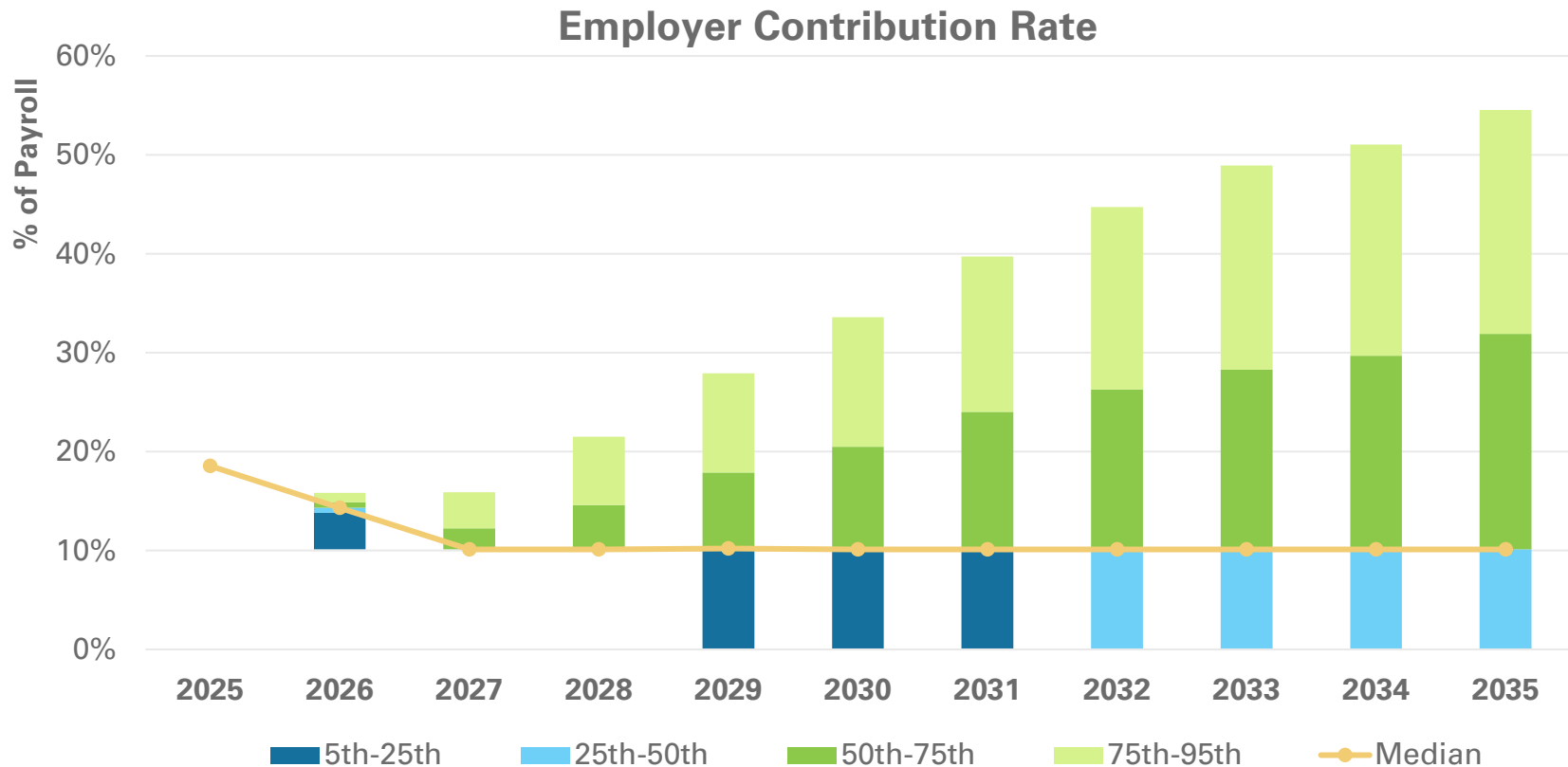


- **Probability of funded ratio below 80% anytime in next 10 years is 39.7%**
- **Probability of funded ratio above 120% anytime in next 10 years is 31.4%**

Notes: As of June 30; reflects 5.0% FYTD return thru 12/31/2023 and Current Policy 10-year mean arithmetic return of 7.7% with 15.9% volatility

10-YEAR STOCHASTIC CONTRIBUTION PROJECTION

VENTURA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION



- **Probability of contribution rate above 20% anytime in next 10 years is 43.8%**
- **Probability of contribution rate below 10% anytime in next 10 years is 39.8%**

Notes: For the fiscal year ending June 30; reflects 5.0% FYTD return thru 12/31/2023 and Current Policy 10-year mean arithmetic return of 7.7% with 15.9% volatility; employer rate reflects the weighted average rate across General and Safety member groups

ALTERNATIVE PORTFOLIOS



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ASSET ALLOCATION PROFILES

VENTURA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

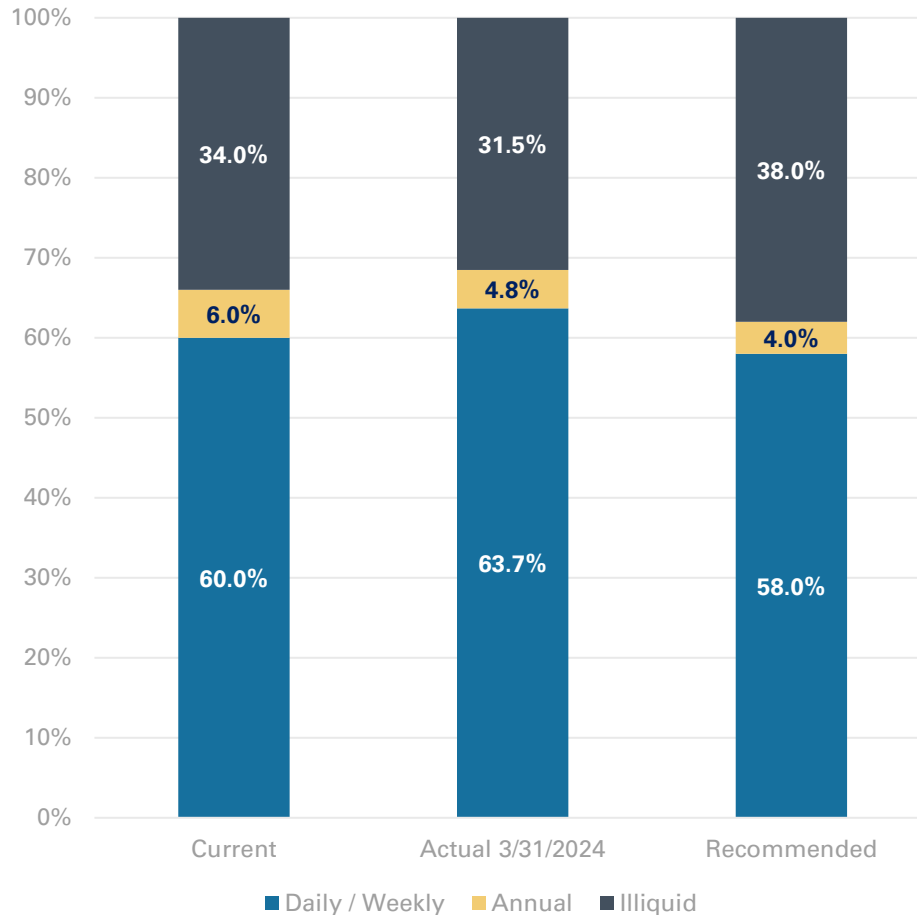
	Current Policy	Actual Allocation as of 3/31/2024	Recommended
Cash	0.0%	0.7%	0.0%
Total Cash	0.0%	0.7%	0.0%
US Large-Cap Equity	22.4%	27.1%	24.0%
US Small/Mid-Cap Equity	3.6%	1.3%	2.0%
Non-US Developed Equity	10.8%	11.8%	10.0%
Emerging Market Equity	4.3%	3.0%	3.0%
Global Equity	9.0%	10.1%	9.0%
Private Equity	18.0%	17.7%	18.0%
Total Equity	68.0%	71.0%	66.0%
US Aggregate Bond	4.0%	4.4%	4.0%
Absolute Return Fixed Income	4.0%	4.4%	4.0%
Private Debt	8.0%	7.5%	10.0%
10 Year US Treasury Bond	2.0%	0.9%	2.0%
Total Fixed Income	18.0%	17.2%	20.0%
Real Estate - Core	6.0%	4.8%	4.0%
Real Estate - Non-Core	2.0%	1.3%	4.0%
Private Real Assets - Natural Resources	2.0%	2.5%	2.0%
Private Real Assets - Infrastructure	4.0%	2.5%	4.0%
Total Real Assets	14.0%	11.1%	14.0%

Expected Return - 10 Year	6.7%	6.5%	6.7%
Expected Return - 30 Year	8.0%	7.9%	8.1%
Asset Volatility	15.9%	16.0%	15.9%
Sharpe Ratio - 10 Year	0.17	0.16	0.18
Sharpe Ratio - 30 Year	0.29	0.28	0.30

Notes: Shaded regions reflect changes relative to Current Policy allocation

LIQUIDITY PROFILE

VENTURA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

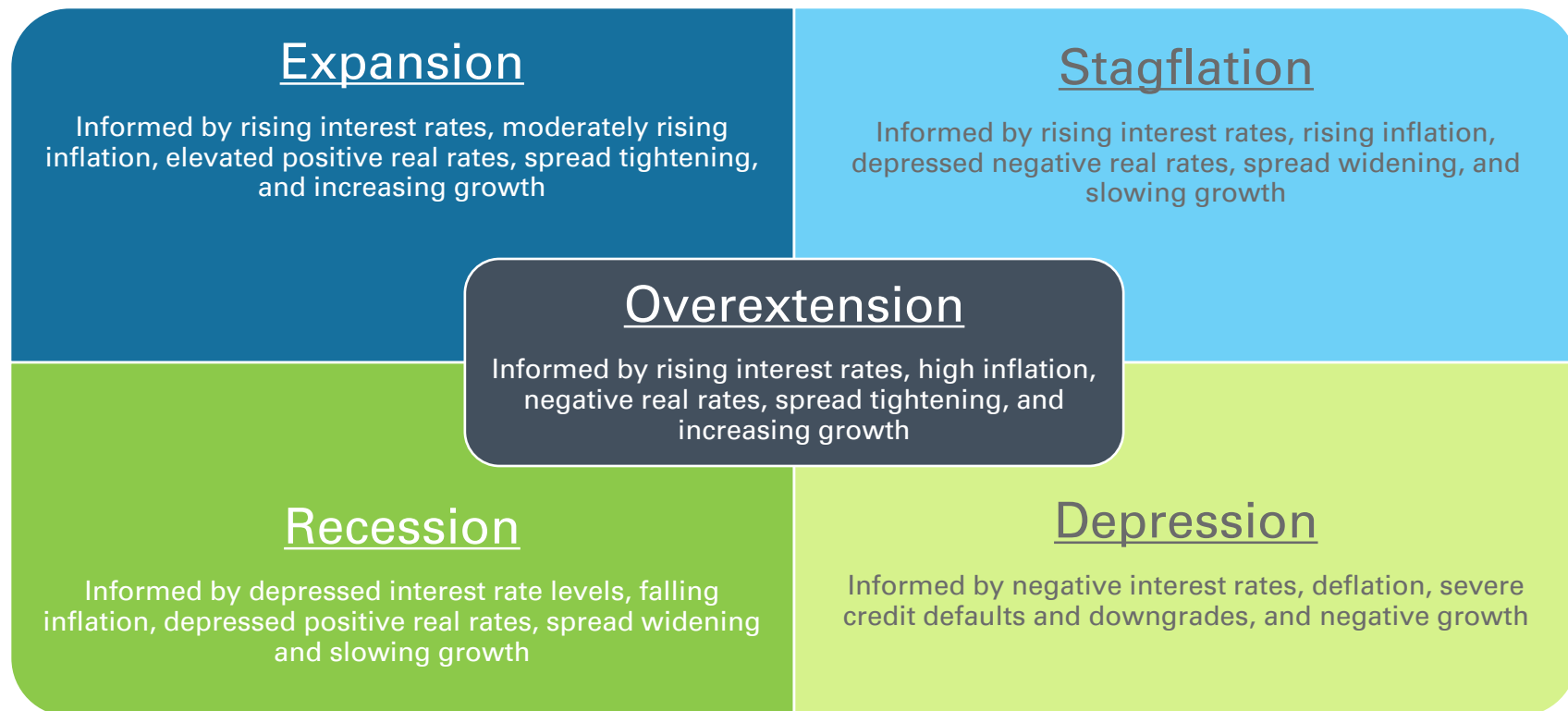


- **Recommended Mix increases Annual / Illiquid allocation by 2% of the portfolio**
- **Net cash flow is expected to average -3% of assets for next 10 years**
 - Public funds average between -2% and -4% net cash flow
- **Funding policy will trigger contribution increases if needed, providing a backstop to plan liquidity**
- **NEPC believes the plan can take on the recommended increase in illiquids with no material impact in the plan's ability to meet its obligations**

SCENARIO ANALYSIS: REGIME CHANGES

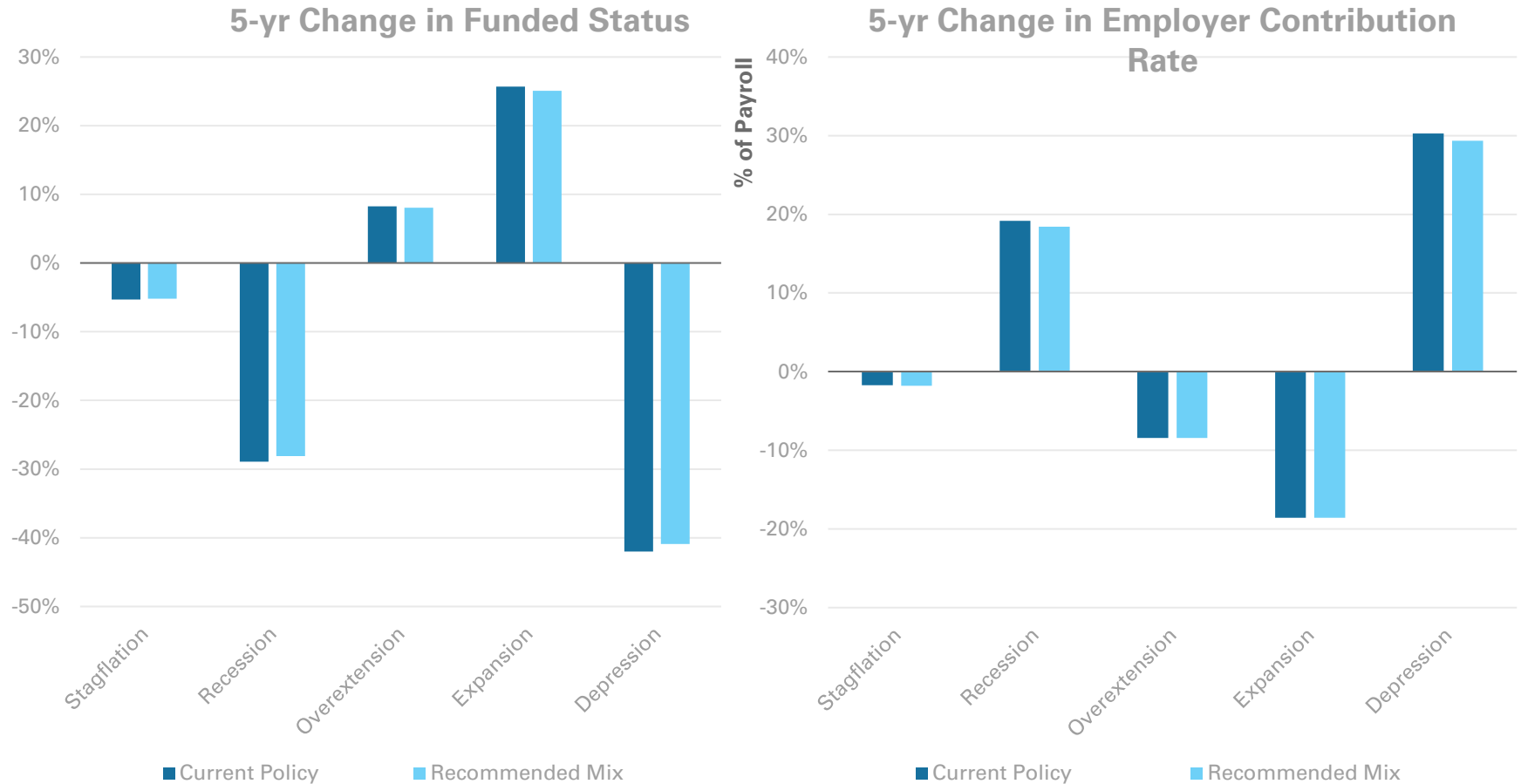
NEPC scenario analysis highlights the impact of shifting economic and market regimes on the portfolio and potential asset allocation mixes

- Risk asset returns are informed by credit returns which are based on changes in real rate, inflation, and credit spreads experienced across market regimes



ECONOMIC SCENARIO ANALYSIS

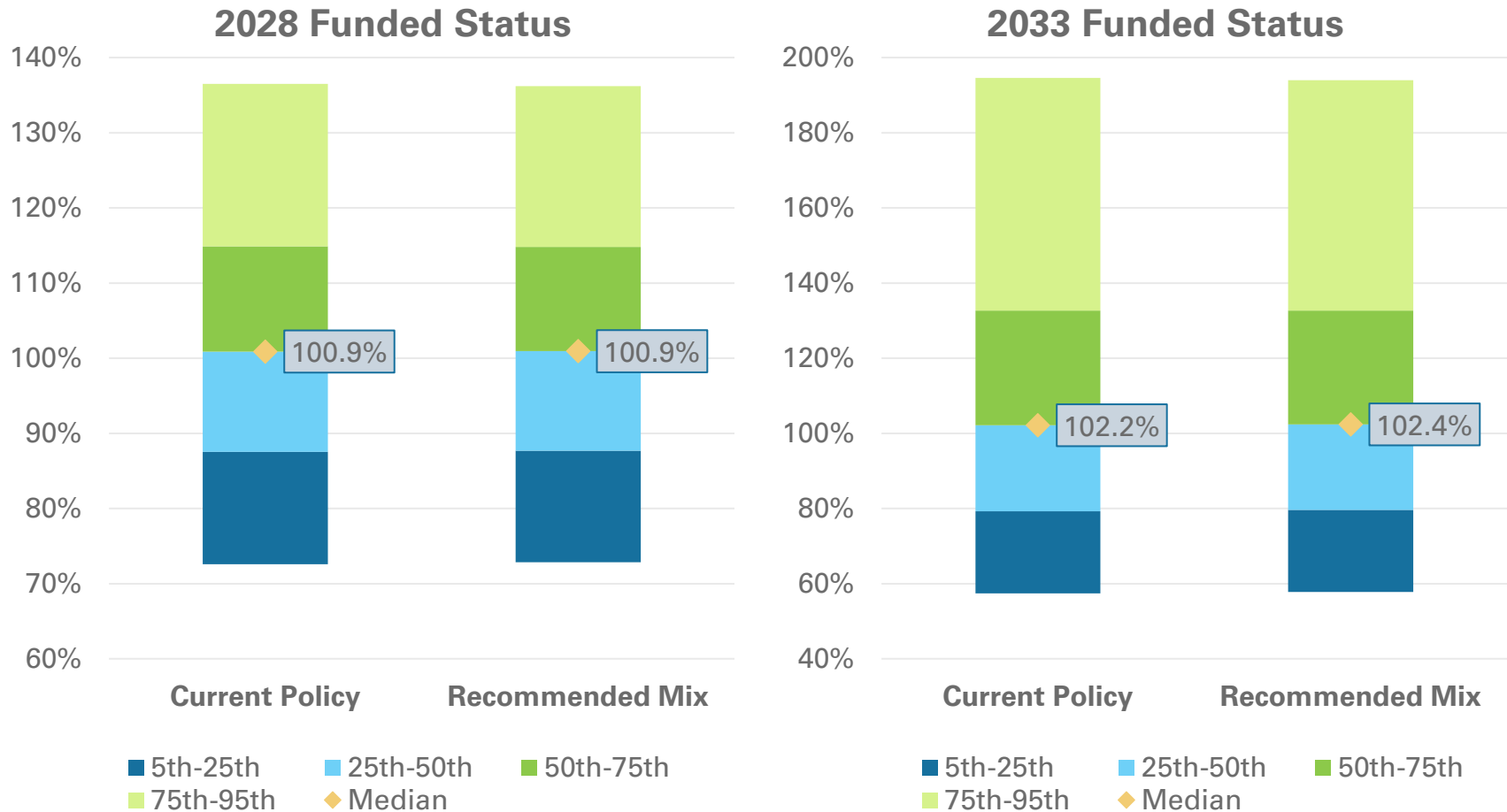
VENTURA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION



Notes: Change in funded status based on 97.1% starting funded status; change in contribution rate based on 18.6% starting contribution rate

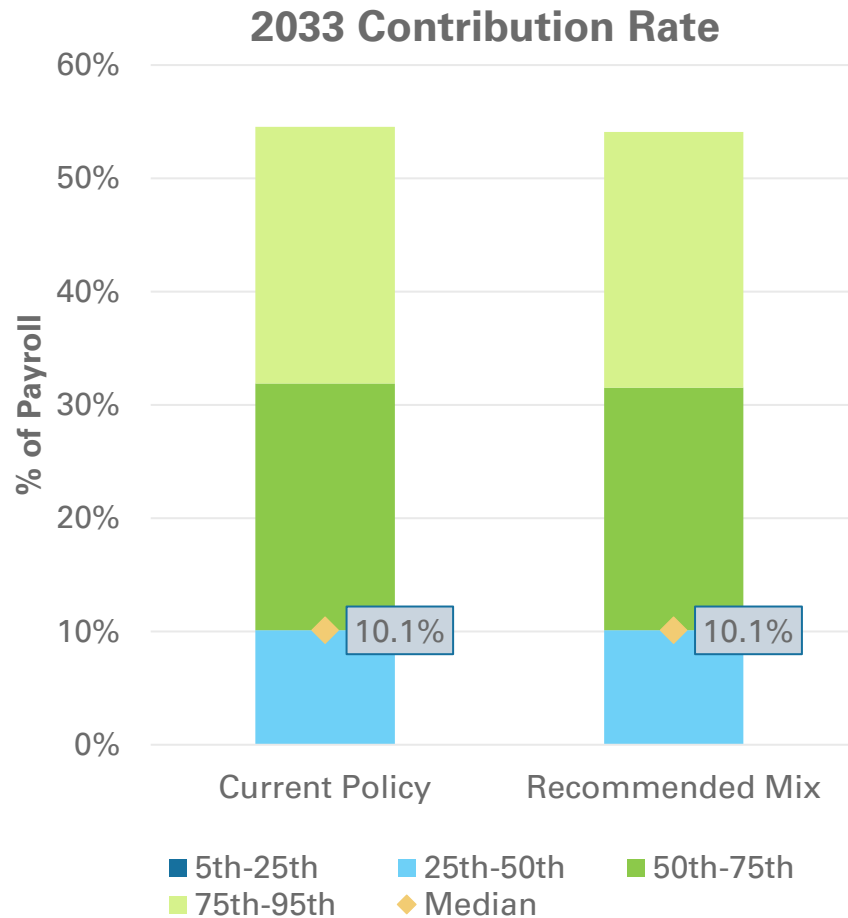
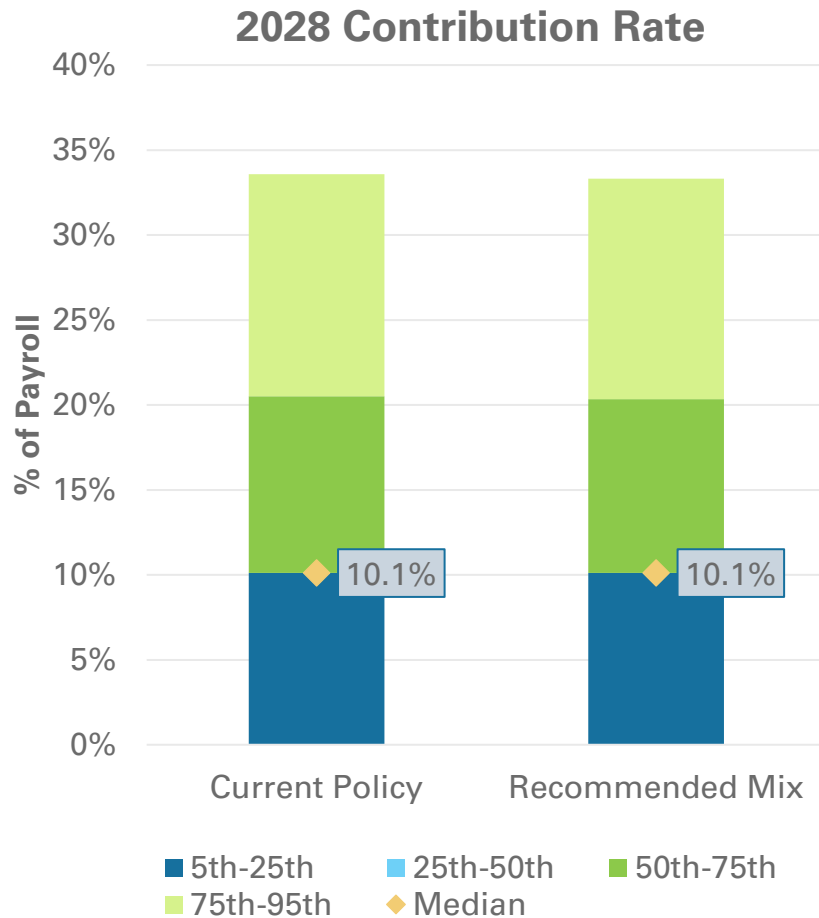
STOCHASTIC ANALYSIS – FUNDED STATUS

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STOCHASTIC ANALYSIS – CONTRIBUTION RATE

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APPENDIX



ASSUMPTIONS AND METHODS

VENTURA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

- **Deterministic and stochastic return projections are based on NEPC's 12/31/2023 capital market assumptions**
 - Projections reflect 5.0% FYTD return thru 12/31/2023 per December 2023 Flash Report
 - NEPC's 10-year & 30-year return assumptions
- **Asset-liability projections follow a roll-forward methodology based on the June 30, 2023 Actuarial Valuation Report produced by Segal**
 - Benefit payment projections provided by Segal
 - Other than those described herein, all assumptions remain unchanged from the valuation
 - No experience gains or losses are assumed other than those attributed to investment experience
- **Employer contributions based on stated funded policy**
 - Normal cost less member contributions plus amortization of unfunded liability
 - Amortization of unfunded liability based on level percent of pay layered amortizations of annual gains/losses over 15 years
 - Prior amortizations layers considered fully amortized if surplus exists
 - Employer normal cost not reduced unless surplus exceeds 20%
 - If surplus exceeds 20%, surplus is amortized over an open 30-year period
- **Employee contributions assumed to remain level at 10.76%**

12/31/2023 CAPITAL MARKET ASSUMPTIONS

	Asset Class	10-Year Return	30-Year Return	Standard Deviation
MACRO	Inflation	2.6%	2.6%	—
	Cash	3.9%	3.4%	0.6%
	US Leverage Cost	4.1%	3.6%	0.7%
	Non-US Cash	2.2%	2.5%	0.6%
EQUITY	US Large-Cap Equity	4.4%	6.7%	17.2%
	US Small/Mid-Cap Equity	6.0%	7.4%	21.0%
	Non-US Developed Equity	4.6%	6.4%	19.7%
	Non-US Developed Equity (USD Hedge)	4.8%	6.6%	17.7%
	Non-US Developed Small-Cap Equity	6.4%	7.5%	24.2%
	Emerging Market Equity	8.6%	9.2%	28.1%
	Emerging Market Small-Cap Equity	7.9%	9.1%	31.4%
	<i>Global Equity*</i>	<i>5.4%</i>	<i>7.3%</i>	<i>18.2%</i>
	Hedge Fund – Equity	5.5%	6.0%	11.0%
	Private Equity – Buyout	7.4%	8.8%	20.0%
	Private Equity – Growth	8.7%	9.7%	31.5%
	Private Equity – Venture	9.8%	10.6%	46.5%
	Private Equity – Secondary	6.9%	8.2%	20.4%
	Non-US Private Equity	10.3%	10.8%	32.0%
	<i>Private Equity*</i>	<i>9.0%</i>	<i>10.1%</i>	<i>25.9%</i>
	China Equity	9.9%	9.5%	30.6%

*Calculated as a blend of other asset classes



12/31/2022 CAPITAL MARKET ASSUMPTIONS

	Asset Class	10-Year Return	30-Year Return	Standard Deviation
CREDIT	US TIPS	4.6%	4.7%	6.0%
	US Treasury Bond	4.2%	4.3%	5.4%
	US Corporate Bond	5.3%	5.9%	7.7%
	US Mortgage-Backed Securities	4.4%	4.6%	6.5%
	<i>US Aggregate Bond*</i>	4.6%	4.9%	5.8%
	US High Yield Corporate Bond	6.1%	7.1%	11.2%
	US Leveraged Loan	7.2%	6.6%	9.1%
	Emerging Market External Debt	7.1%	7.3%	12.3%
	Emerging Market Local Currency Debt	6.1%	5.5%	12.7%
	Non-US Government Bond	2.4%	2.9%	9.5%
	Non-US Government Bond (USD Hedge)	2.6%	3.2%	4.1%
	<i>Global Government Bond*</i>	3.0%	3.4%	7.7%
	<i>Global Government Bond (USD Hedge)*</i>	3.1%	3.5%	4.2%
	Non-US Inflation-Linked Bond (USD Hedge)	3.2%	3.3%	6.7%
	<i>Global Multi-Sector Fixed Income*</i>	5.7%	6.1%	8.1%
	<i>Absolute Return Fixed Income*</i>	5.6%	5.8%	5.9%
	US Municipal Bond	3.5%	3.8%	6.0%
	US Municipal Bond (1-10 Year)	2.9%	3.5%	4.5%
	US High Yield Municipal Bond	4.5%	4.9%	12.0%
	Hedge Fund - Credit	6.6%	7.0%	9.9%
	Private Debt - Credit Opportunities	7.8%	8.4%	14.5%
	Private Debt – Distressed	8.6%	9.3%	14.4%
	Private Debt - Direct Lending	8.1%	8.9%	11.0%
	<i>Private Debt*</i>	8.3%	9.0%	11.8%

*Calculated as a blend of other asset classes

12/31/2022 CAPITAL MARKET ASSUMPTIONS

	Asset Class	10-Year Return	30-Year Return	Standard Deviation
CREDIT	US Short-Term TIPS (1-3 Year)	4.7%	4.4%	3.3%
	US Short-Term Treasury Bond (1-3 Year)	4.4%	4.2%	2.3%
	US Short-Term Corporate Bond (1-3 Year)	5.4%	5.2%	2.8%
	US Short-Term High Yield Corporate Bond (1-3 Year)	5.5%	5.6%	8.2%
	US Intermediate-Term TIPS (3-10 Year)	4.6%	4.7%	6.0%
	US Intermediate-Term Treasury Bond (3-10 Year)	4.2%	4.4%	5.9%
	US Intermediate-Term Corporate Bond (3-10 Year)	5.6%	6.0%	7.1%
	US Long-Term Treasury Bond (10-30 Year)	4.5%	4.8%	12.4%
	US Long-Term TIPS (10-30 Year)	3.7%	4.3%	11.8%
	US Long-Term Corporate Bond (10-30 Year)	4.7%	6.0%	11.9%
	20+ Year US Treasury STRIPS	3.3%	4.2%	20.7%
	<i>US Long-Term Government/Credit*</i>	4.3%	5.2%	11.0%
	US Corporate Bond - AAA	4.4%	5.1%	6.8%
	US Corporate Bond – AA	4.6%	5.1%	6.6%
	US Corporate Bond – A	5.1%	5.5%	7.6%
	US Corporate Bond – BBB	5.6%	6.1%	8.4%
	US Corporate Bond – BB	6.8%	7.7%	9.7%
	US Corporate Bond – B	6.3%	7.1%	11.6%
	US Corporate Bond - CCC/Below	1.4%	1.9%	20.3%
	US Securitized Bond	5.2%	5.4%	8.0%
	US Collateralized Loan Obligation	5.5%	4.9%	7.7%
	US High Yield Securitized Bond	8.7%	8.3%	11.2%
	US High Yield Collateralized Loan Obligation	7.8%	7.3%	10.4%
	US Taxable Municipal Bond	5.3%	6.0%	7.5%
	10 Year US Treasury Bond	4.2%	4.8%	7.5%
	10 Year Non-US Government Bond (USD Hedge)	2.1%	2.8%	5.0%

*Calculated as a blend of other asset classes

12/31/2022 CAPITAL MARKET ASSUMPTIONS

	Asset Class	10-Year Return	30-Year Return	Standard Deviation
REAL ASSETS	Commodity Futures	4.6%	3.9%	18.5%
	Midstream Energy	5.5%	6.6%	28.2%
	<i>Public Real Assets (Multi-Asset)*</i>	<i>6.1%</i>	<i>6.4%</i>	<i>14.2%</i>
	US REIT	6.0%	7.3%	21.8%
	Global Infrastructure Equity	6.6%	7.0%	19.4%
	Global Natural Resources Equity	6.2%	7.1%	23.3%
	Gold	4.9%	4.8%	16.4%
	Core Real Estate	5.4%	6.1%	15.0%
	Non-Core Real Estate	7.1%	7.8%	24.3%
	Private Debt - Real Estate	6.3%	6.6%	11.9%
	Private Real Assets - Natural Resources	8.2%	8.7%	32.3%
	Private Real Assets – Infrastructure	6.8%	7.1%	12.4%
MULTI-ASSET	Hedge Fund – Macro	5.4%	5.8%	9.4%
	<i>Hedge Fund*</i>	<i>6.1%</i>	<i>6.5%</i>	<i>8.6%</i>
	<i>60% S&P 500 & 40% US Aggregate Bond*</i>	<i>4.8%</i>	<i>6.3%</i>	<i>10.9%</i>
	<i>60% MSCI ACWI & 40% US Aggregate Bond*</i>	<i>5.4%</i>	<i>6.6%</i>	<i>11.5%</i>

*Calculated as a blend of other asset classes



PRIVATE MARKETS COMPOSITES

PUBLIC MARKET BETA INPUTS FOR PRIVATE MARKETS

PRIVATE EQUITY

Buyout: 25% U.S. Large Cap, 75% U.S. Small/Mid Cap

Secondary: 25% U.S. Large Cap, 75% U.S. Small/Mid Cap

Growth: 50% U.S. Small/Mid Cap, 50% U.S. Microcap

Early-Stage Venture: 25% U.S. Small/Mid Cap, 75% U.S. Microcap

Non-U.S.: 70% International Small Cap, 30% Emerging Small Cap

Composite: 34% Buyout, 34% Growth, 15 % Non-U.S., 8.5% Secondary, 8.5% Early Venture

PRIVATE CREDIT

Direct Lending: 100% Bank Loans

Distressed: 20% U.S. Small/Mid Cap, 60% U.S. High Yield, 20% Bank Loans

Credit Opportunities: 34% U.S. SMID Cap, 33% U.S. High Yield, 33% Bank Loans

Composite: 50% Direct Lending, 25% Credit Opportunities, 25% Distressed

PRIVATE REAL ASSETS

Energy: 30% Comm., 35% Midstream, 35% Public Resource Equity

Infra/Land: 30% Commodities, 70% Public Infrastructure

Private Real Estate Debt: 50% CMBS, 50% Real Estate – Core

NEPC DISCLOSURES

Past performance is no guarantee of future results.

NEPC, LLC is an investment consulting firm. We provide asset-liability studies for certain clients but we do not provide actuarial services. Any projections of funded ratio or contributions contained in this report should not be used for budgeting purposes. We recommend contacting the plan's actuary to obtain budgeting estimates.

The goal of this report is to provide a basis for substantiating asset allocation recommendations. The opinions presented herein represent the good faith views of NEPC as of the date of this report and are subject to change at any time.

Information on market indices was provided by sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.

The projection of liabilities in this report uses standard actuarial projection methods and does not rely on actual participant data. Asset and liability information was received from the plan's actuary, and other projection assumptions are stated in the report.

All investments carry some level of risk. Diversification and other asset allocation techniques do not ensure profit or protect against losses.

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