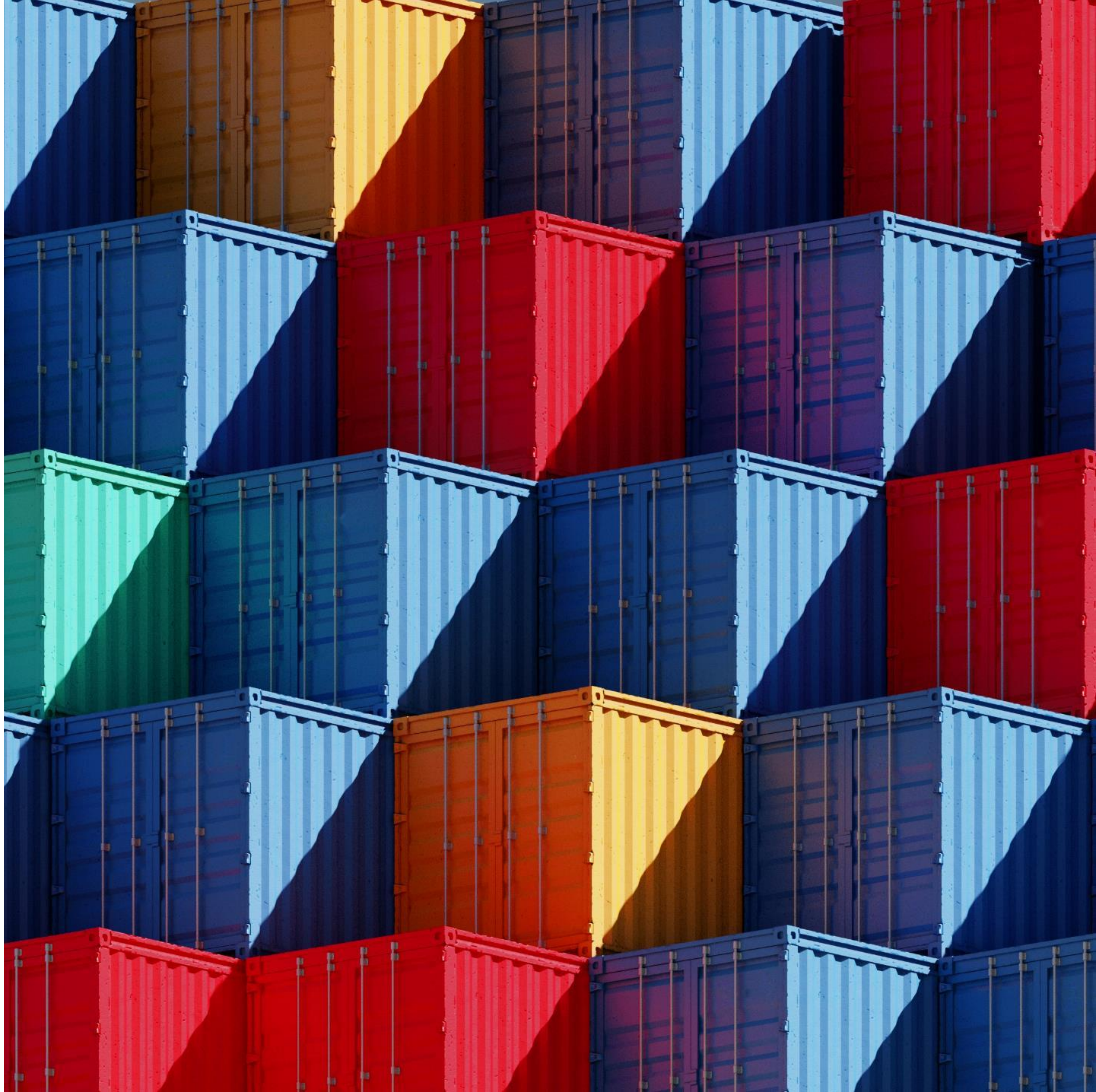
Asset-Liability Study Follow-up: Review of Economic Assumptions and Policy Options

Colorado Public Employees' Retirement Association (PERA)

August 2024



PNYX Recommendation #2
Return Assumption

Assuming no change to its target asset allocation, PERA's return assumption should be revised downward. Our modeling projects a portfolio rate of return of 6.71%, compared with the currently assumed rate of 7.25%.

Description of Aon Economic Model: Capital Market Assumptions

Expected returns use a building block approach based on history, current market data, and forecasts

Aon's capital market assumption process, described below, was presented to the PERA Board on September 22, 2023

Expected return estimates for equity and fixed income are developed using a building block approach

Expected returns based on observable information in the equity and fixed income markets and consensus estimates for major economic and capital market inputs, such as earnings and inflation

Where necessary, judgment-based modifications are made to these inputs

Return assumptions for other asset classes are based on historical results, current market characteristics, and professional judgment from our specialist research teams

Example: Public Equities

INCOME (Earnings Yield x Sustainable Payout Ratio)	+	**GROWTH** (Real EPS Growth)	+	**INFLATION**	=	**TOTAL** (Equity Return)
Earnings yield moves directly with market; Sustainable payout ratio is a constant and based on Aon's assumptions		Based on Aon's in-house trend analysis, I/B/E/S estimates and Consensus Economics		Based on consensus forecasts; Primary source is Consensus Economics		FORWARD LOOKING ASSUMPTION

Comparison of Aon vs. PNYX Capital Market Assumptions ("CMAs")

Compared to PNYX, Aon's equity and fixed income assumptions are somewhat higher

		Aon's Prior Study: 12/31/18 30-Year CMAs		*Aon's Current Study: 9/30/23 30-Year CMAs*		*PNYX[3]: Date of CMAs not provided*	
Asset Classes	Long-Term Asset Allocation	Expected Nominal Return	Expected Risk	Expected Nominal Return	Expected Risk	Expected Nominal Return	Expected Risk
Global Equity	*54.0%*	8.00%	19.00%	7.40%	18.70%	7.26%	17.55%
Real Estate[1]	*8.5*	6.65	20.00	6.50	20.30	7.01	19.17
Private Equity	*8.5*	9.60	24.50	10.10	20.50	9.59	30.87
Alternatives[2]	*6.0*	7.50	7.50	6.60	8.10	7.08	8.14
Total Return-Seeking	***77.0***						
Core Fixed Income	*23.0*	3.60	5.00	5.00	5.20	4.11	6.87
Total Risk-Reducing	***23.0***						
Total Fund	***100.0***	***7.51%***	**12.78%**	***7.43%***	**12.67%**	**6.71%**	**12.47%**

[1] Modeled as 50% core real estate / 50% non-core real estate

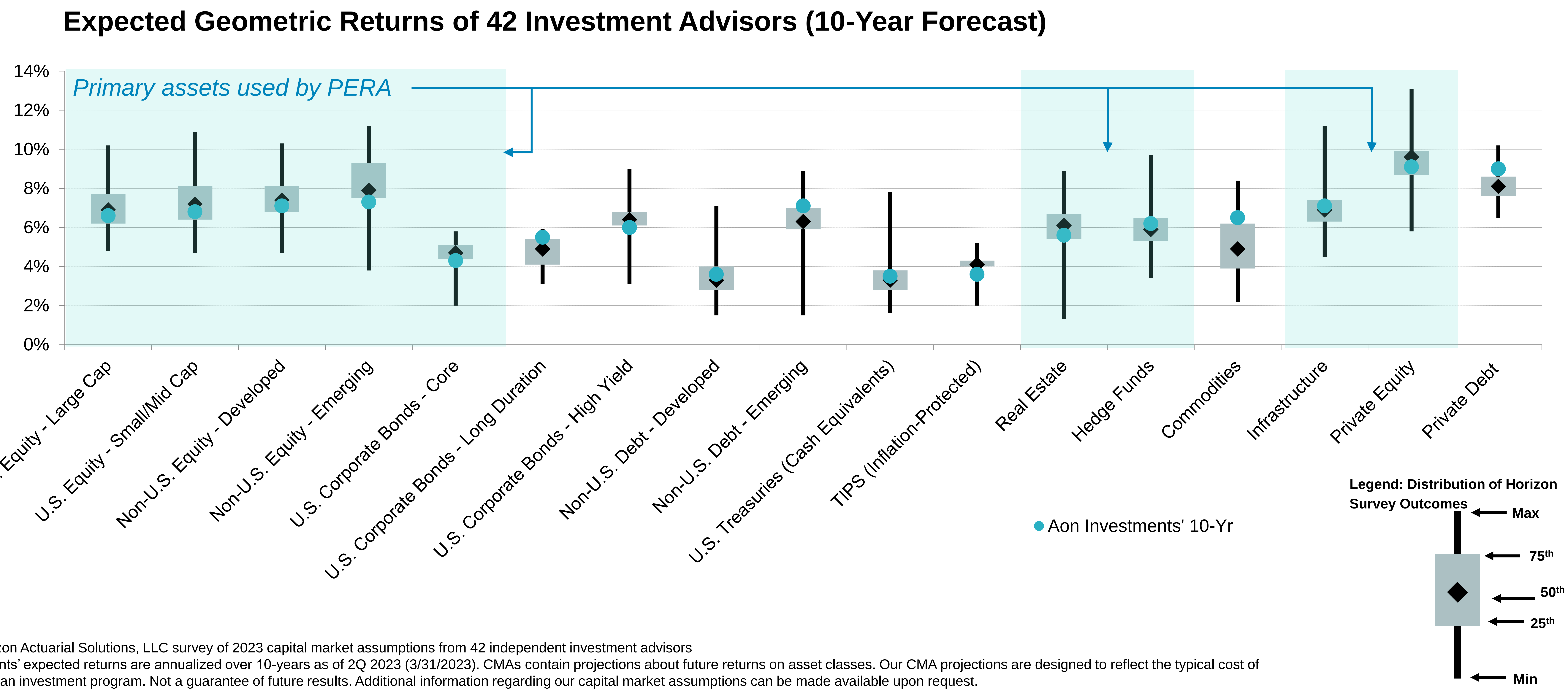
[2] Reflects allocation of Real Assets at 27.5% CPI+4% (modeled as 50% Infrastructure, 25% Timber, 25% Farmland) / Hedge Funds at 27.5% HFRI FOF Defensive Index / Opportunistic at 45% PERA Public Market + 1.5% (modeled as 76% Global Equity / 24% Fixed Income)

3 Source: Source: PNYX/Ortec Finance, 2023 Annual Comprehensive Financial Report. Date of assumptions not provided.

Percentages may not sum due to rounding

Comparison of Aon vs. Other Advisors' CMAs

Aon generally falls in the middle 50 percent of Horizon survey results across asset classes



Source: Horizon Actuarial Solutions, LLC survey of 2023 capital market assumptions from 42 independent investment advisors
Aon Investments' expected returns are annualized over 10-years as of 2Q 2023 (3/31/2023). CMAs contain projections about future returns on asset classes. Our CMA projections are designed to reflect the typical cost of implementing an investment program. Not a guarantee of future results. Additional information regarding our capital market assumptions can be made available upon request.

PNYX Recommendations #3 and #4
Economic Model

A review of the portfolio's economic modeling approach should be undertaken, including a revision in methodology to incorporate correlations and asymmetries that can deliver more representative projections.

The return assumption should be considered against the backdrop of the wide dispersion in projected portfolio performance, and risk measures such as tail risk should be used to develop a more representative risk picture.

Description of Aon Economic Model: Volatility and Correlations

Volatilities and correlations are forward-looking, derived from market data, and vary over the course of a projection

Volatility

- We take a forward-looking view when setting volatility assumptions as opposed to using purely historic averages. The credit crisis demonstrated the dangers of relying solely on historical values.
- We consider:
  - Implied volatilities priced into option contracts of various terms.
  - Historical volatility levels.
  - The broad economic/market environment.
- We assume that volatilities are not constant over time; we assume that the volatility of "risky" asset classes such as equities will be at historically high levels in the next few years before declining over time.
- For illiquid asset classes such as real estate, de-smoothing techniques are employed when assessing historic volatility levels.

Correlations

- Correlation assumptions are formulated with reference to historic experience over different time periods and during different economic conditions.
- We take into account the fact that correlations are highly unstable over time and, in particular, the fact that correlations are very different in stressed environments.

Description of Aon Economic Model: Monte Carlo Simulations

Robust economic model capturing asymmetric risks in market falls

Overview

- Outsourced, industry standard software
- Well-established stochastic models open to public scrutiny
- Calibrated quarterly to Capital Market Assumptions, including expected returns, volatilities, and correlations

Key Features

- 5,000 stochastic trials
- Arbitrage-free
- Globally consistent
- Full yield curve
- “Fat tails” reflect real world market characteristics- returns exhibit more small and large magnitude events (“black swans”) than implied by lognormal distributions

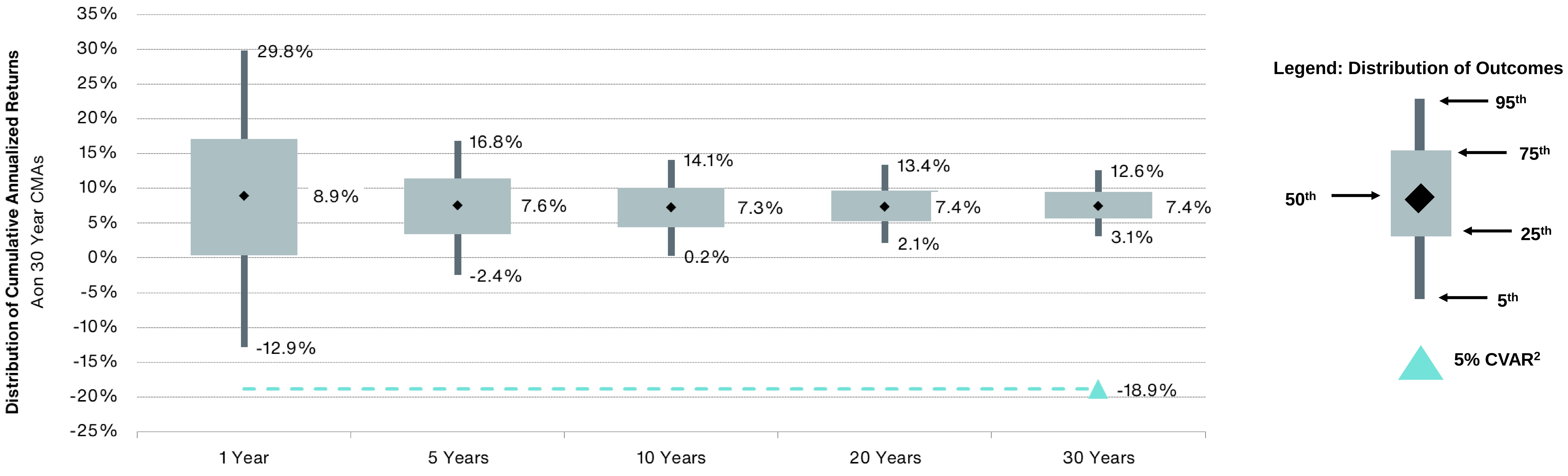
3-Part Asset Model

1. Main Process- with either fixed or varying volatility over time
2. Volatility of Volatility Process- stochastic; volatility increases in times of market stress
3. “Merton Jump” Process- allows for sudden shocks to returns, enabling us to capture the limitations of diversification during large market falls

Aon Model Result: Portfolio Risk/Return

Aon studied a wide dispersion of projected returns

Aon's projection of investment returns, shown below, was used in the analysis presented to the PERA Board on January 19, 2024



[1] Expected returns are using AIUSA Q4 2023 30-Year Capital Market Assumptions (CMAs) as of 9/30/2023. CMAs contain projections about future returns on asset classes. Our CMA projections are designed to reflect the typical cost of implementing an investment program. Expected returns are calculated using weighted allocations of the underlying CMAs. Expected Returns are geometric (long-term compounded; rounded to the nearest decimal) assuming portfolio weights are rebalanced annually. Expected returns presented are models and do not represent the returns of an actual client account. Your actual returns may differ from model returns presented based on your plan's individual fees/expenses. Aon's advisory fees are described in Part 2A of Aon's Form ADV. Not a guarantee of future results. See appendix for capital market assumptions disclosure pages.

[2] CVAR (conditional value-at-risk), defined as the average of the worst 5% of modeled annual losses in a projection period

Comparison of Aon vs. PNYX Results: Portfolio Risk/Return

Compared to PNYX, Aon modeled a higher expected return and similar measures of risk

Comparison of Aon vs. PNYX assumptions	Aon 30 year capital market assumptions[1]	PNYX 20 year capital market assumptions
Expected nominal return (30 year)	7.43%	6.71%
Expected volatility (annual standard deviation)	12.67%	12.47%
CVAR (avg. of worst 5% annual losses)	-18.89%	-20.34%

Risk Measures

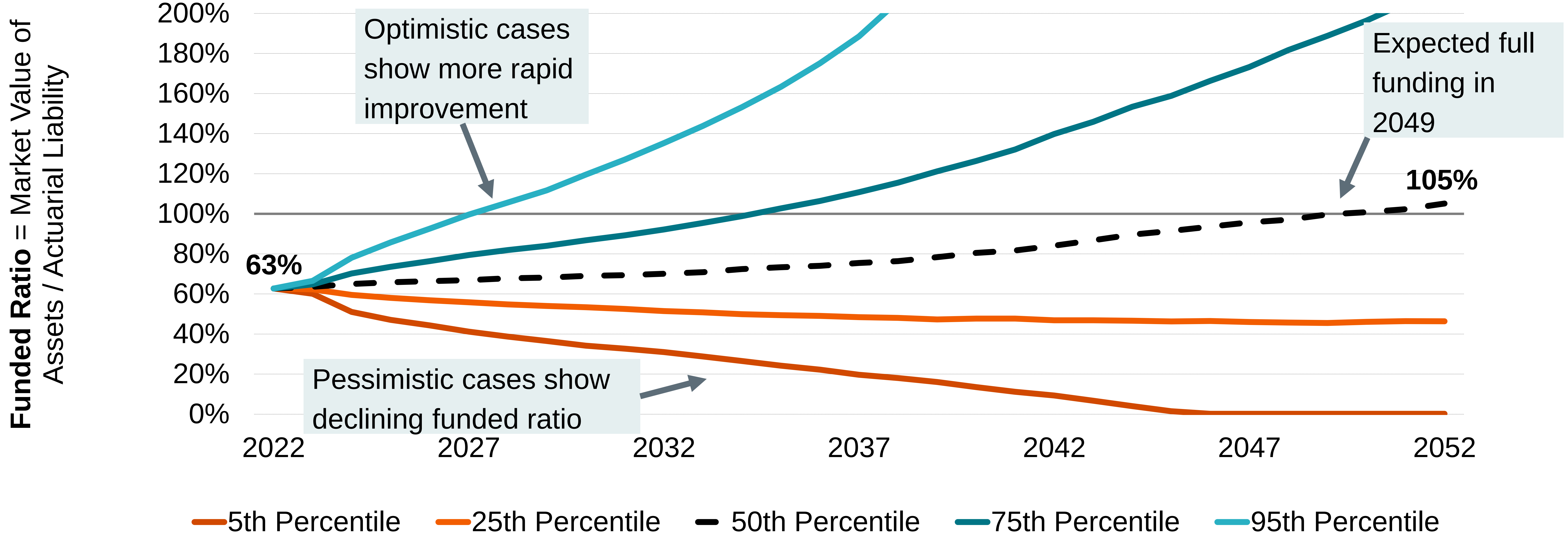
- There are many ways to measure portfolio risk:
  - Expected Volatility, defined as the volatility of returns under a one standard deviation event over a one-year period
  - Value-at-Risk, defined as the 95th percentile modeled loss outcome (5% probability of outcomes being as bad or worse)
  - CVAR (conditional value-at-risk), defined as the average of the worst 5% of modeled annual losses in a projection period
- While Aon's study focuses on Expected Volatility and Value-at-Risk, using CVAR instead would not affect Aon's recommendations
  - Aon's modeled CVAR result is similar to PNYX CVAR result
  - Comparison of CVAR across asset allocations leads to similar conclusions, as shown later in this report "Comparison of Aon vs. PNYX Asset Allocation Analysis"

[1]Expected returns are using AIUSA Q4 2023 30-Year Capital Market Assumptions (CMAs) as of 9/30/2023. CMAs contain projections about future returns on asset classes. Our CMA projections are designed to reflect the typical cost of implementing an investment program. Expected returns are calculated using weighted allocations of the underlying CMAs. Expected Returns are geometric (long-term compounded; rounded to the nearest decimal) assuming portfolio weights are rebalanced annually. Expected returns presented are models and do not represent the returns of an actual client account. Your actual returns may differ from model returns presented based on your plan's individual fees/expenses. Aon's advisory fees are described in Part 2A of Aon's Form ADV. Not a guarantee of future results. See appendix for capital market assumptions disclosure pages.

Aon Model Result: Funded Ratio & Tail Risk

Aon studied a wide dispersion of projected funded ratios

Aon's projection of funded ratio, shown below, was presented to the PERA Board on January 19, 2024

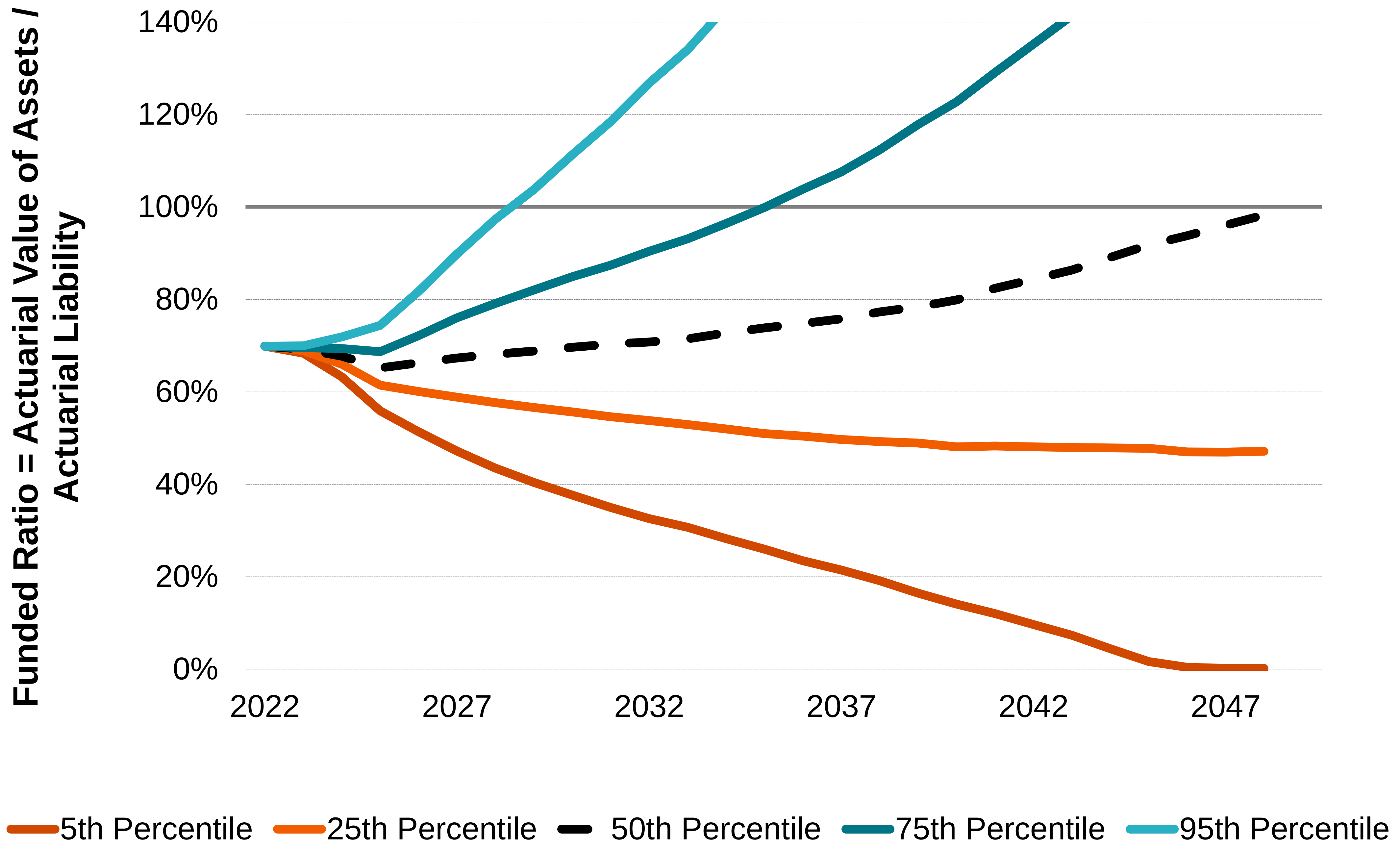


Projections assume a constant 7.25% discount rate for pension liabilities for all investment policies studied and reflect actual investment returns through September 30, 2023. Projections in this material include estimated expenses paid from plan assets, estimated to be $44.1 million for fiscal year ending 12/31/2023, which is assumed to be inclusive of investment management fees. These are increased with inflation for projection purposes. Actual fees and expenses may differ from those presented.

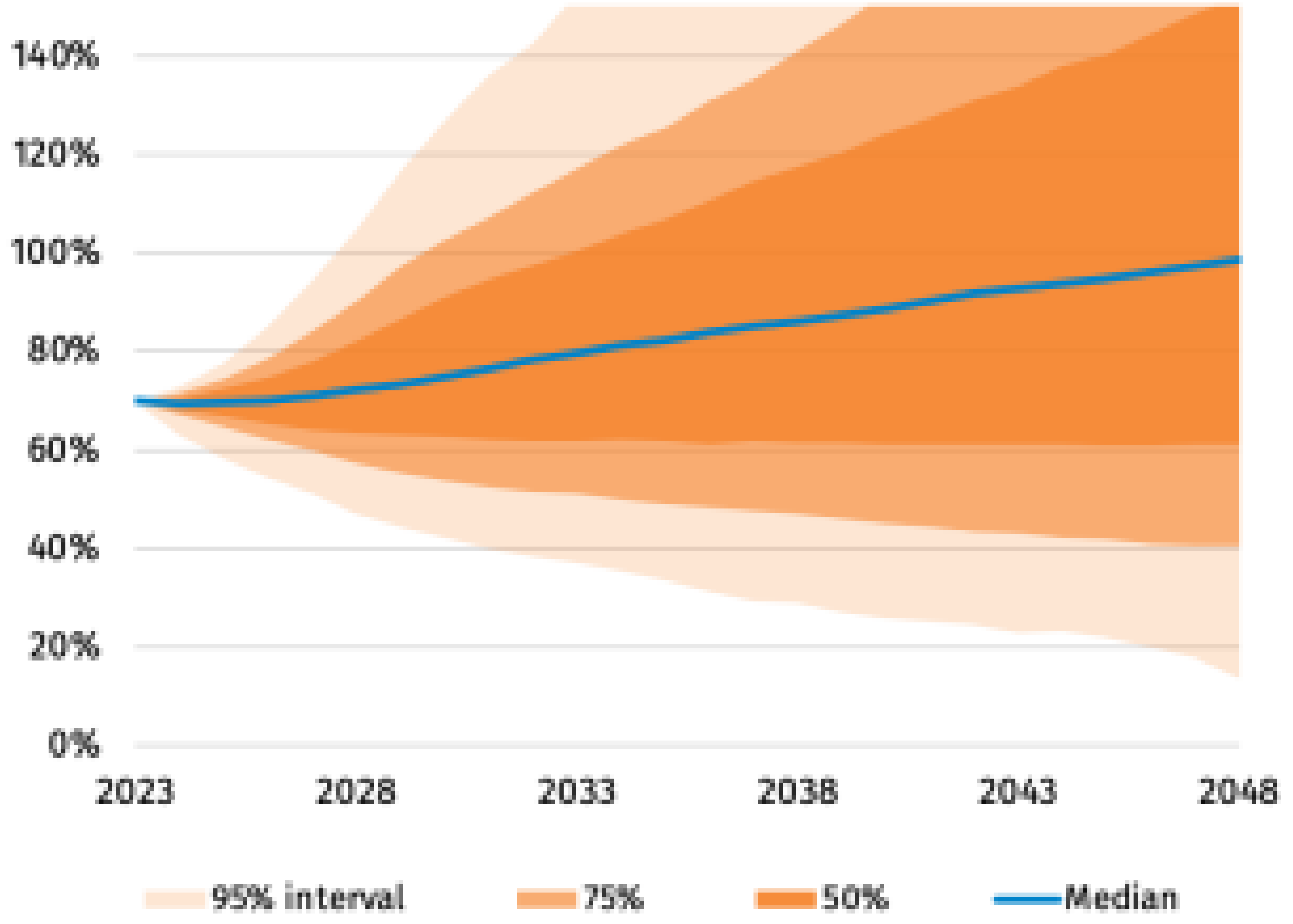
Comparison of Aon vs. PNYX Results: Funded Ratio & Tail Risk

Compared to PNYX, Aon modeled similar expected funded ratio with more extreme tails

Aon[1]



PNYX[2]



Comparison of Aon vs. PNYX Projected Funded Ratio in 2048	Aon	PNYX
10th Percentile Funded Ratio in 2048	11%	36%
50th Percentile Funded Ratio in 2048	98%	99%
90th Percentile Funded Ratio in 2048	303%	216%

[1]Aon projections assume a constant 7.25% discount rate for pension liabilities for all investment policies studied and reflect actual investment returns through September 30, 2023. Projections in this material include estimated expenses paid from plan assets, estimated to be $44.1 million for fiscal year ending 12/31/2023, which is assumed to be inclusive of investment management fees. These are increased with inflation for projection purposes. Actual fees and expenses may differ from those presented.

[2]Source: PNYX/Ortec Finance

PNYX Recommendation #5
Defining Risk Tolerance

A more specific approach to risk should be adopted, including by adding a quantified measure of acceptable risk to the funding target. This would provide the basis for more holistic monitoring of PERA's position over time, and for evaluating the need for, and benefits of, risk mitigating actions.

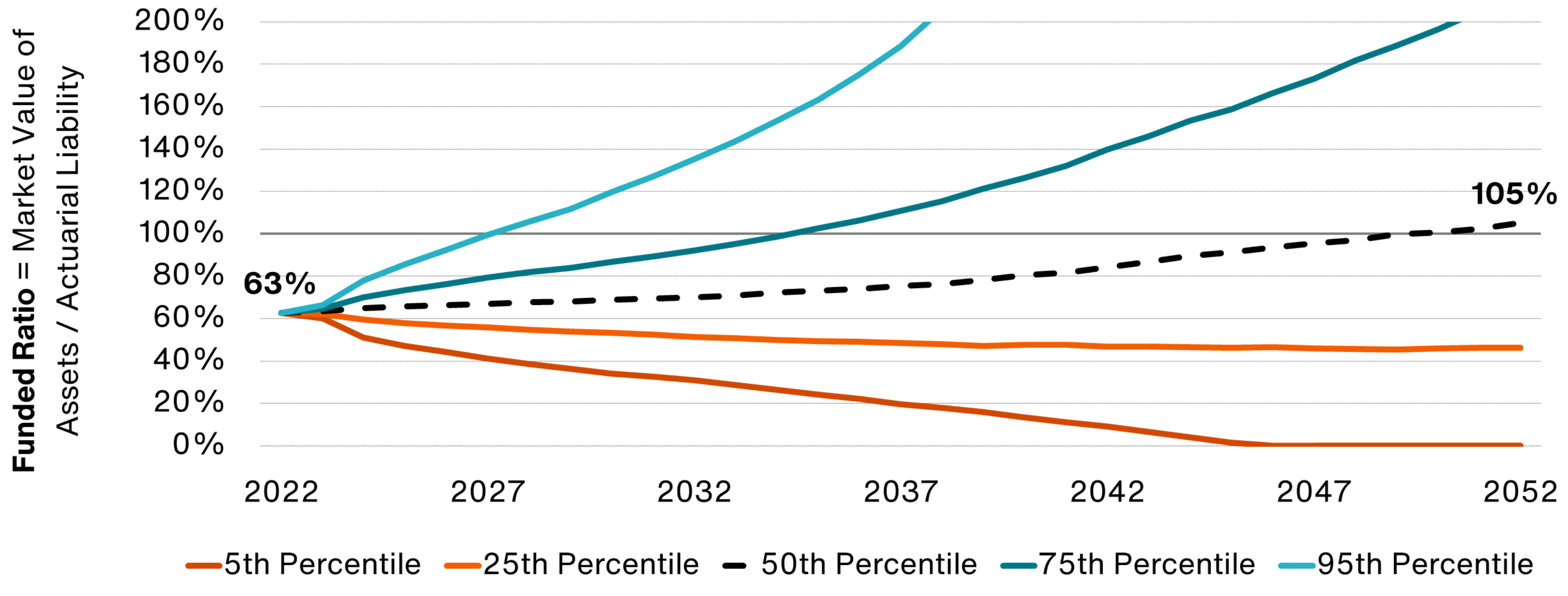
Recap of 2024 Asset-Liability Study

Aon provided analysis of many key financial metrics for PERA

Analyses of many key financial metrics, shown below, were presented to the PERA Board on March 15, 2024

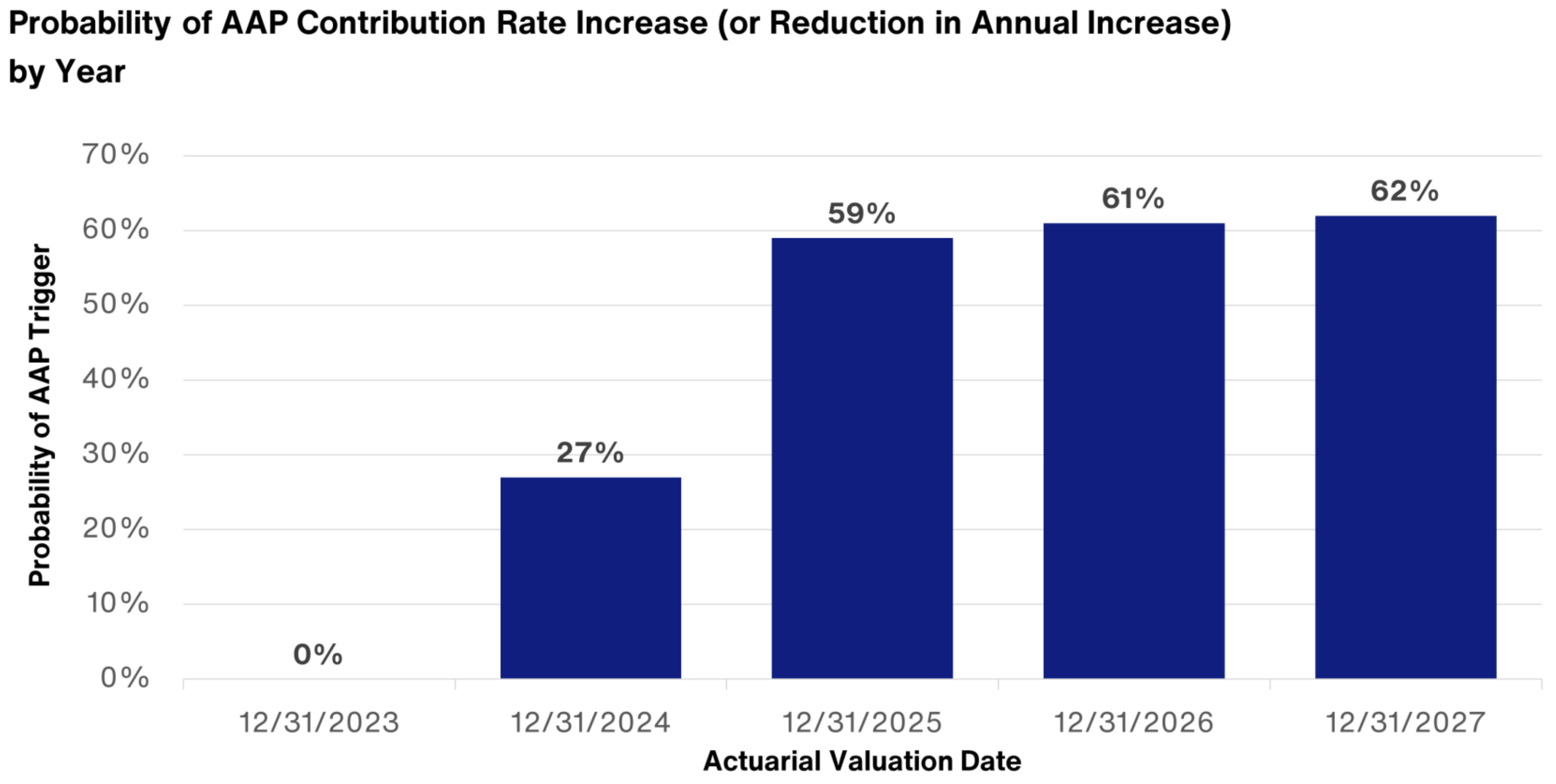
Solvency metrics: Projected funded ratio

Projected to reach full funding in 2049



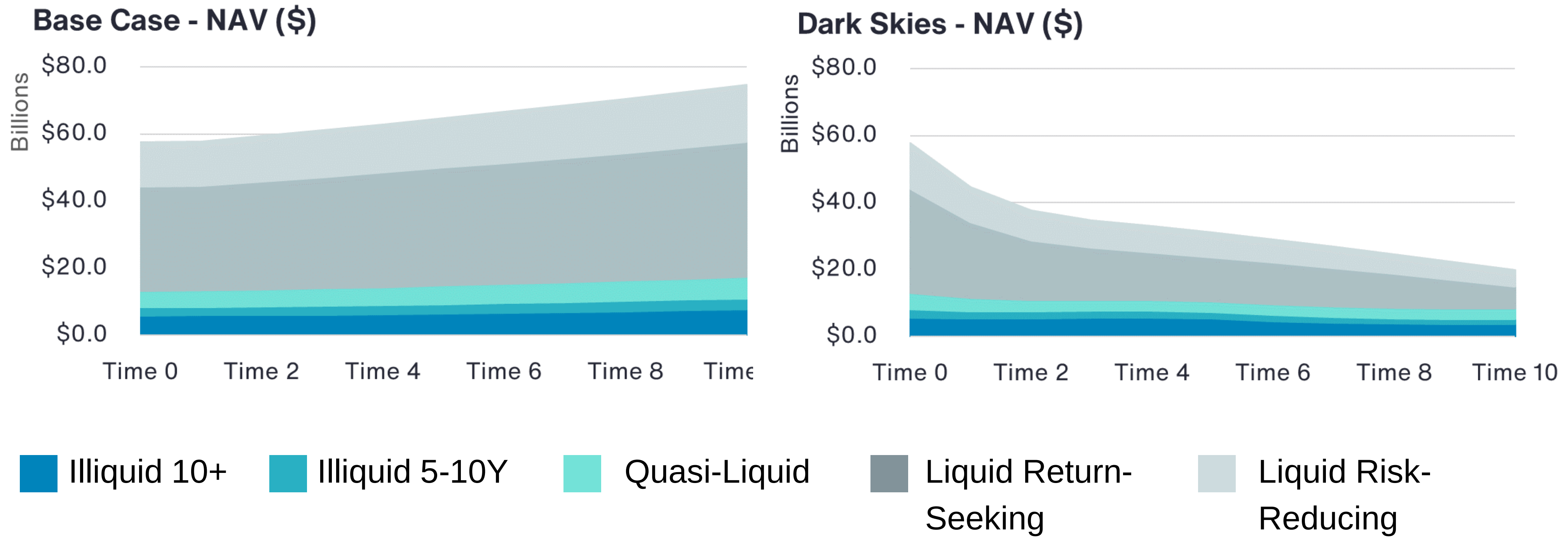
Program specific metrics: Projected AAP impact

AAP likely to trigger by the 12/31/2025 actuarial valuation



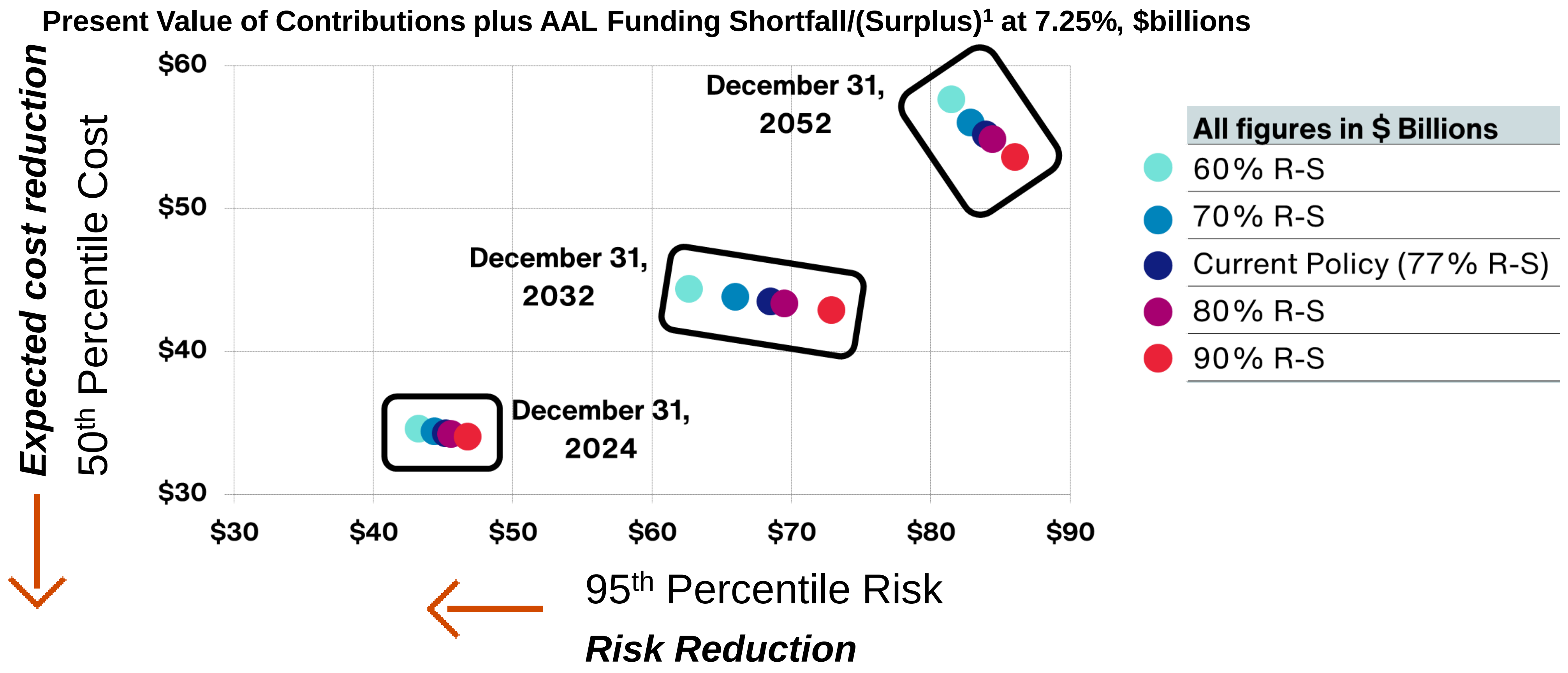
Liquidity metrics: Projected asset mix

Liquid assets decline in very pessimistic markets



Risk/reward metrics: Projected Economic Cost

Longer time horizons support risk-taking



Recap of 2024 Asset-Liability Study

Aon's recommendations were formed from a mosaic of these metrics

Current asset allocation is in the reasonable range given the actuarial return target and funding goal

- Aon capital market assumptions show expected return near 7.25% at most points over recent market cycle[1]
- Lower return-seeking allocation may not reach 100% funding within 30 years
- Higher return-seeking allocation may accelerate funded ratio growth, but with more severe downside tail outcomes
- Different asset allocations have modest impact on projected contribution rates and probabilities of triggering Automatic Adjustment Provision[2]

Portfolios with additional diversification can slightly improve expected funded ratio growth

- While the current portfolio is well diversified, additional allocations to private equity, real assets, and private debt can enhance expected return, reduce volatility, and improve probability of reaching 100% funding
- Benefits of diversification should be considered relative to cost of implementation and desired liquidity

Current and alternative portfolios have sufficient liquidity over 10 years in the scenarios studied

- Liquidity becomes more stressed in severe economic scenarios due to declining asset values
- A more diversified, less liquid portfolio is projected to have 3-6% higher allocation to illiquid and quasi-liquid assets than the current portfolio in the modeled stress tests

Expected returns are using AIUSA 30-Year Capital Market Assumptions (CMAs). CMAs contain projections about future returns on asset classes. Our CMA projections are designed to reflect the typical cost of implementing an investment program. Expected returns are calculated using weighted allocations of the underlying CMAs. Expected Returns are geometric (long-term compounded; rounded to the nearest decimal) assuming portfolio weights are rebalanced annually. Expected returns presented are models and do not represent the returns of an actual client account. Your actual returns may differ from model returns presented based on your plan's individual fees/expenses. Aon's advisory fees are described in Part 2A of Aon's Form ADV. Not a guarantee of future results. See appendix for capital market assumptions disclosure pages.

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Diversification does not ensure a profit, nor does it protect against loss of principal. Diversification among investment options and asset classes may help to reduce overall volatility.

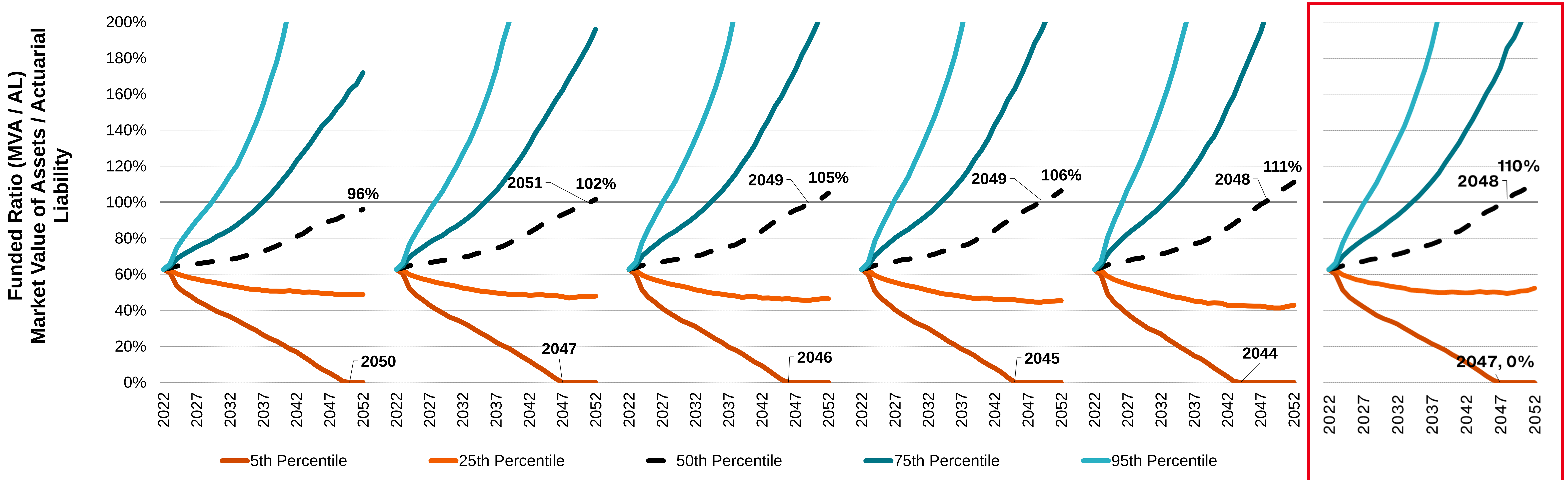
PNYX Recommendation #6
Optimize Asset Allocation & Ranges

Given PERA's projected funding path, options for improving its position should be considered. The target allocation bands should be widened, and the actual allocation should be optimized within them, based on a decision on whether to prioritize return or risk management.

Aon Model Result: Asset Allocation Analysis

70%+ allocation to return-seeking is projected to provide 50%+ probability of full funding

Aon's comparison of asset allocations, shown below, was presented to the PERA Board on March 15, 2024



Strategy	(1) 60% Return-Seeking			(2) 70% Return-Seeking			(3) Current Policy (77% R-S)			(4) 80% Return-Seeking			(5) 90% Return-Seeking			(3D) Add'l Diversification		
Year	**2032**	**2042**	**2052**	**2032**	**2042**	**2052**	**2032**	**2042**	**2052**	**2032**	**2042**	**2052**	**2032**	**2042**	**2052**	**2032**	**2042**	**2052**
5th Percentile	37%	17%	0%	33%	12%	0%	31%	9%	0%	30%	8%	0%	27%	3%	0%	27%	3%	0%
25th Percentile	54%	50%	49%	52%	48%	48%	51%	47%	46%	51%	46%	45%	50%	43%	43%	50%	43%	43%
50th Percentile	68%	81%	96%	69%	83%	102%	70%	84%	105%	70%	84%	106%	71%	86%	111%	71%	86%	111%
75th Percentile	85%	123%	172%	89%	132%	196%	92%	140%	>200%	93%	143%	>200%	98%	153%	>200%	98%	153%	>200%
95th Percentile	115%	>200%	>200%	127%	>200%	>200%	135%	>200%	>200%	139%	>200%	>200%	152%	>200%	>200%	152%	>200%	>200%
Probability > 100%	15%	39%	49%	19%	41%	51%	21%	43%	52%	22%	43%	53%	24%	45%	54%	24%	45%	54%

Projections assume a constant 7.25% discount rate for pension liabilities for all investment policies studied and reflect actual investment returns through September 30, 2023. Projections in this material include estimated expenses paid from plan assets, estimated to be $44.1 million for fiscal year ending 12/31/2023, which is assumed to be inclusive of investment management fees. These are increased with inflation for projection purposes. Actual fees and expenses may differ from those presented.

Comparison of Aon vs. PNYX Results: Asset Allocation Analysis

Compared to PNYX, Aon study included wider range of asset allocation scenarios

Aon's Recommended "Portfolio 3D" improves expected funding and reduces CVAR

Aon[1]	Return-Seeking Asset Allocation	CVAR	Expected Year to Reach 100% Funded	Probability above 100% funded ratio by 2048	Probability below 50% funded ratio by 2048
Current Long-Term Asset Allocation	77%	-18.89%	2049	49%	27%
"Portfolio 3D" Recommendation	77%	-18.32%	2048	51%	25%
Highest-Return Allocation	90%	-22.78%	2048	50%	28%
Higher-Return Allocation	80%	-19.78%	2049	49%	28%
Lower-Risk Allocation	70%	-16.84%	2051	48%	27%
Lowest-Risk Allocation	60%	-14.00%	>2052	46%	26%

PNYX[2]	Return-Seeking Asset Allocation	CVAR	Expected Year to Reach 100% Funded	Probability above 100% funded ratio by 2048	Probability below 50% funded ratio by 2048
Current Long-Term Asset Allocation	77%	-20.34%	2049	49%	18%
High-Return Allocation	82%	-23.04%	2048	50%	20%
Low-Risk Allocation	72%	-17.58%	2051	48%	15%

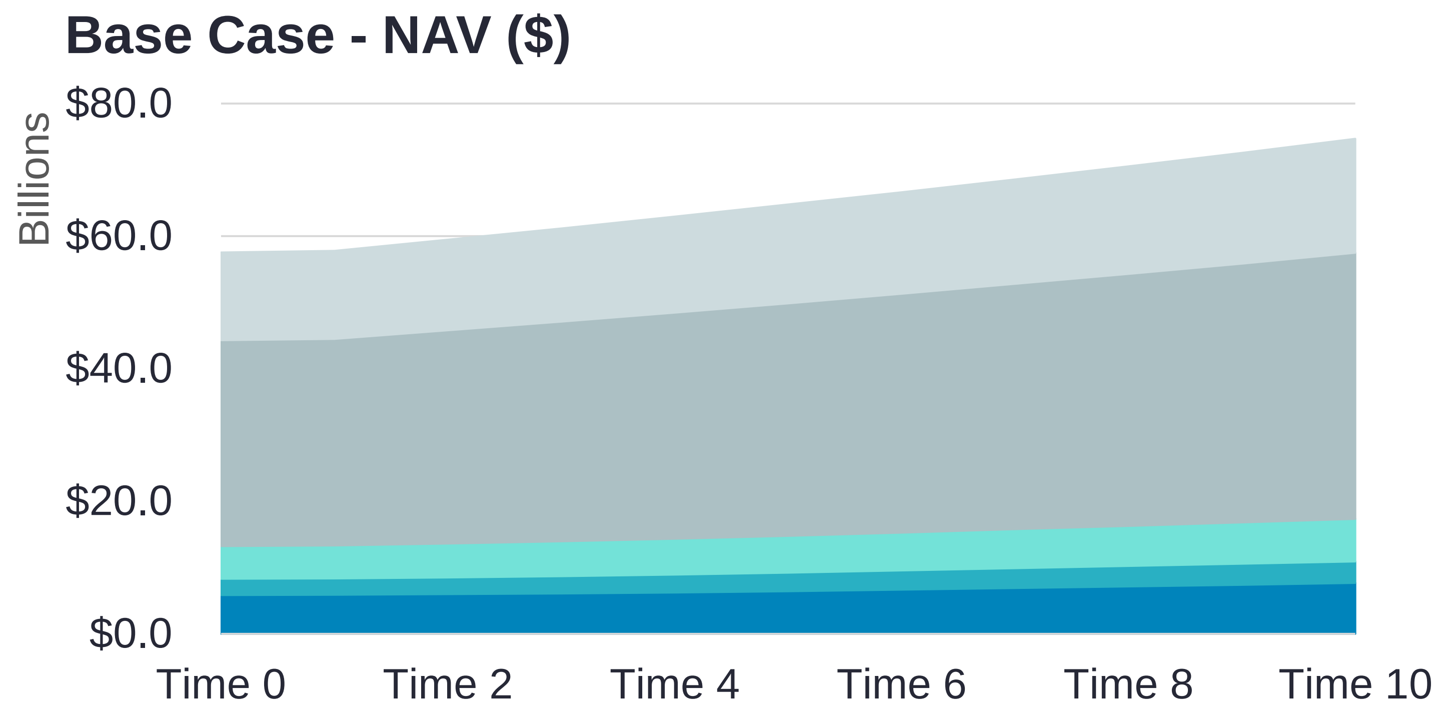
[1]Aon projections assume a constant 7.25% discount rate for pension liabilities for all investment policies studied and reflect actual investment returns through September 30, 2023. Projections in this material include estimated expenses paid from plan assets, estimated to be $44.1 million for fiscal year ending 12/31/2023, which is assumed to be inclusive of investment management fees. These are increased with inflation for projection purposes. Actual fees and expenses may differ from those presented.
[2]Source: PNYX/Ortec Finance

Aon Model Result: Assets and Liquidity

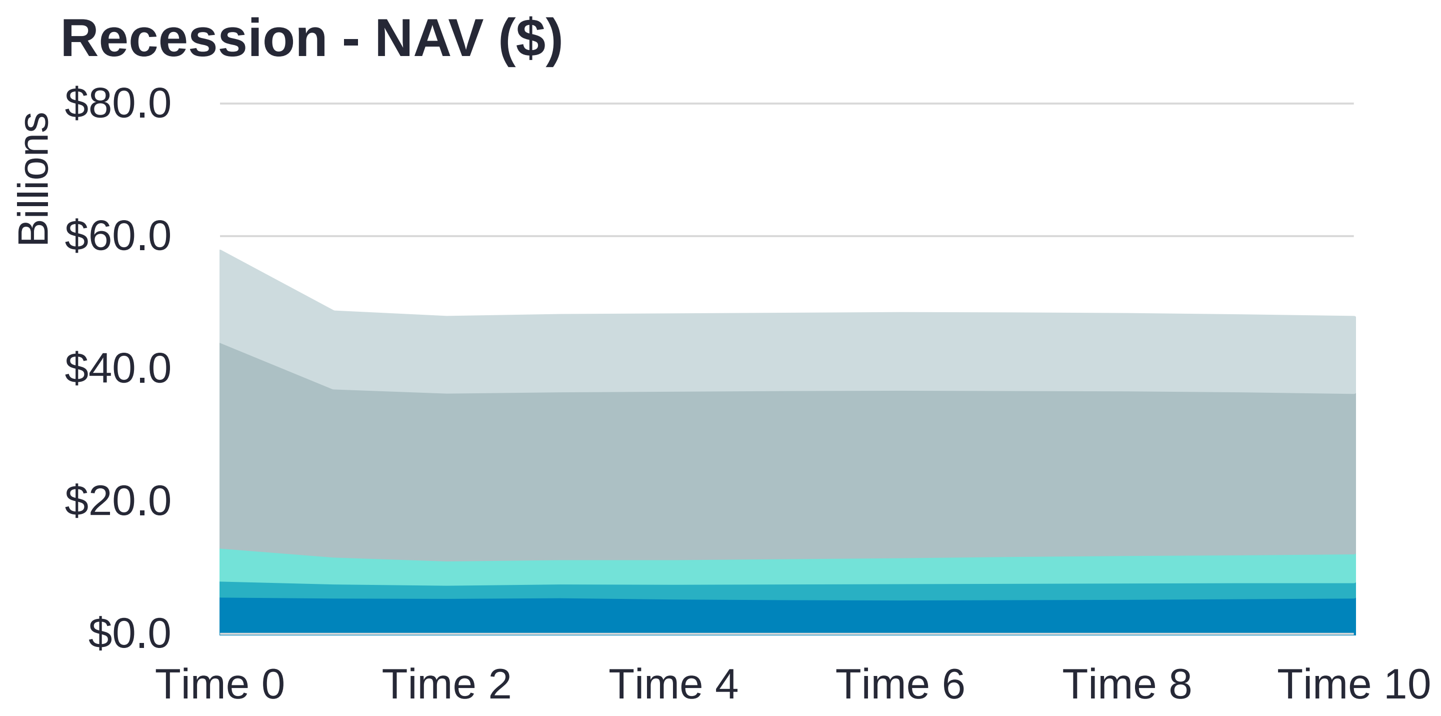
In the modeled Base Case, assets are projected to increase over time driven by investment returns;
In the modeled stress cases, assets are projected to decline driven by outflows and investment losses

Aon's projection of assets, shown below, was presented to the PERA Board on June 21, 2024

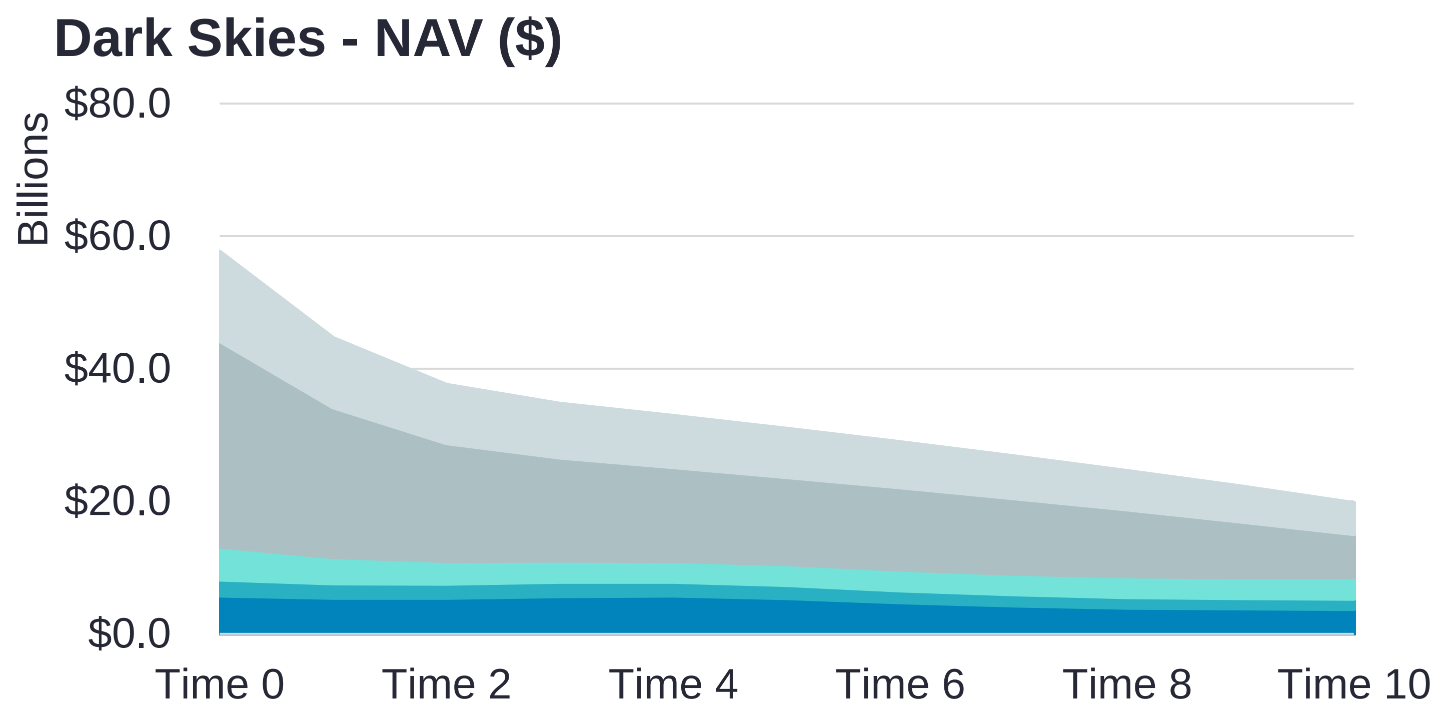
Base Case



Recession



Dark Skies



Legend (Assets by liquidity category) Illiquid: 10+ Years | Illiquid: 5-10 Years | Quasi-Liquid | Liquid (Return-Seeking Assets) | Liquid (Risk-Reducing Assets)

Note: Time 0 represents a starting point of September 30, 2023

Projections assume a constant 7.25% discount rate for pension liabilities for all investment policies studied and reflect actual investment returns through September 30, 2023. Projections in this material include estimated expenses paid from plan assets, estimated to be $44.1 million for fiscal year ending 12/31/2023, which is assumed to be inclusive of investment management fees. These are increased with inflation for projection purposes. Actual fees and expenses may differ from those presented.

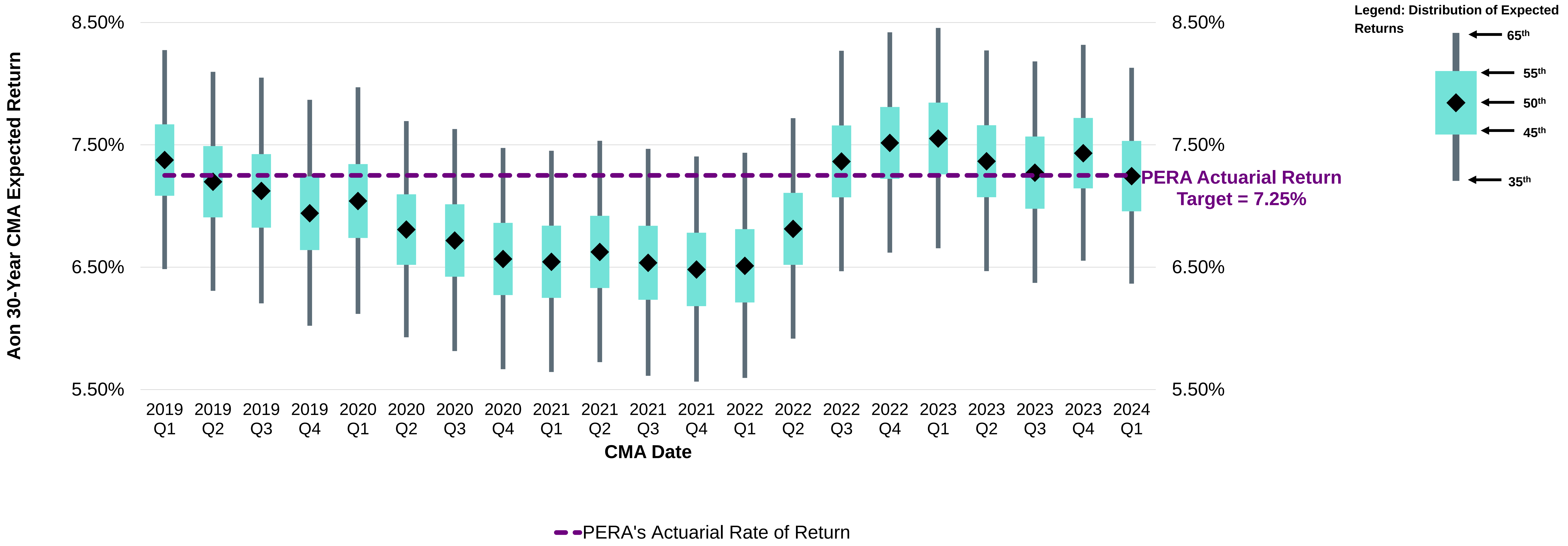
Additional Analysis

Appendix

Aon Model Result: Range of Return Expectations Over Time

Aon CMAs show expected return near 7.25% at most points over recent market cycle

Historical CMA Returns- Aon 30-Year Capital Market Assumption distribution of expected returns using current policy targets



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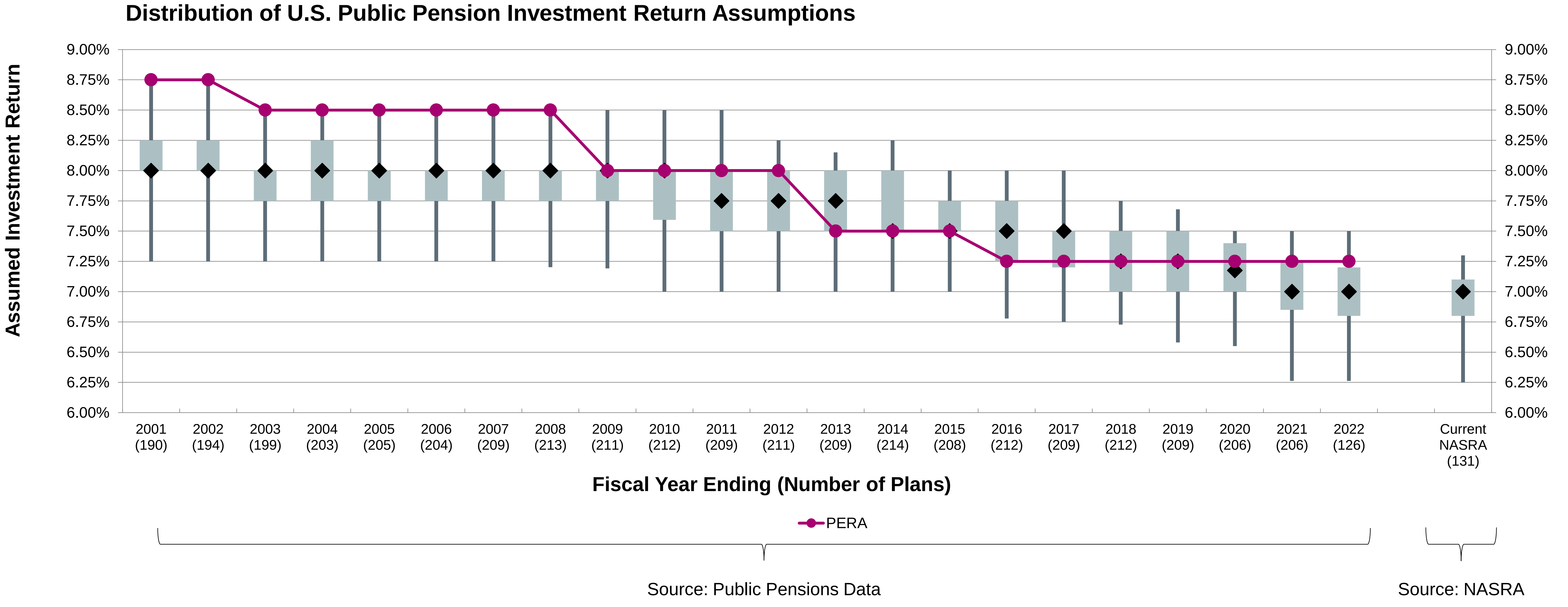
Comparison of PERA Return Assumption vs. Peers

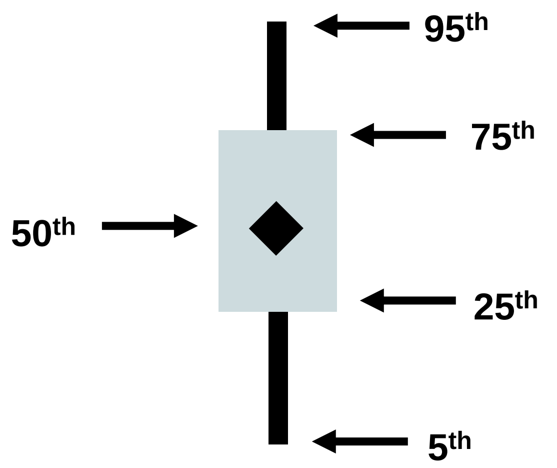
PERA assumption has trended lower, similar to peers[1]



Key Takeaways:

- The historical actuarial assumption trend for investment returns has declined from an 8.00% median in FYE 2010 to 7.00% as of FYE 2022, per Public Plans Data[1]
- Current actuarial assumptions, as tracked by NASRA as of June 2023, have a median actuarial assumption of 7.00%

Legend: Distribution of Outcomes

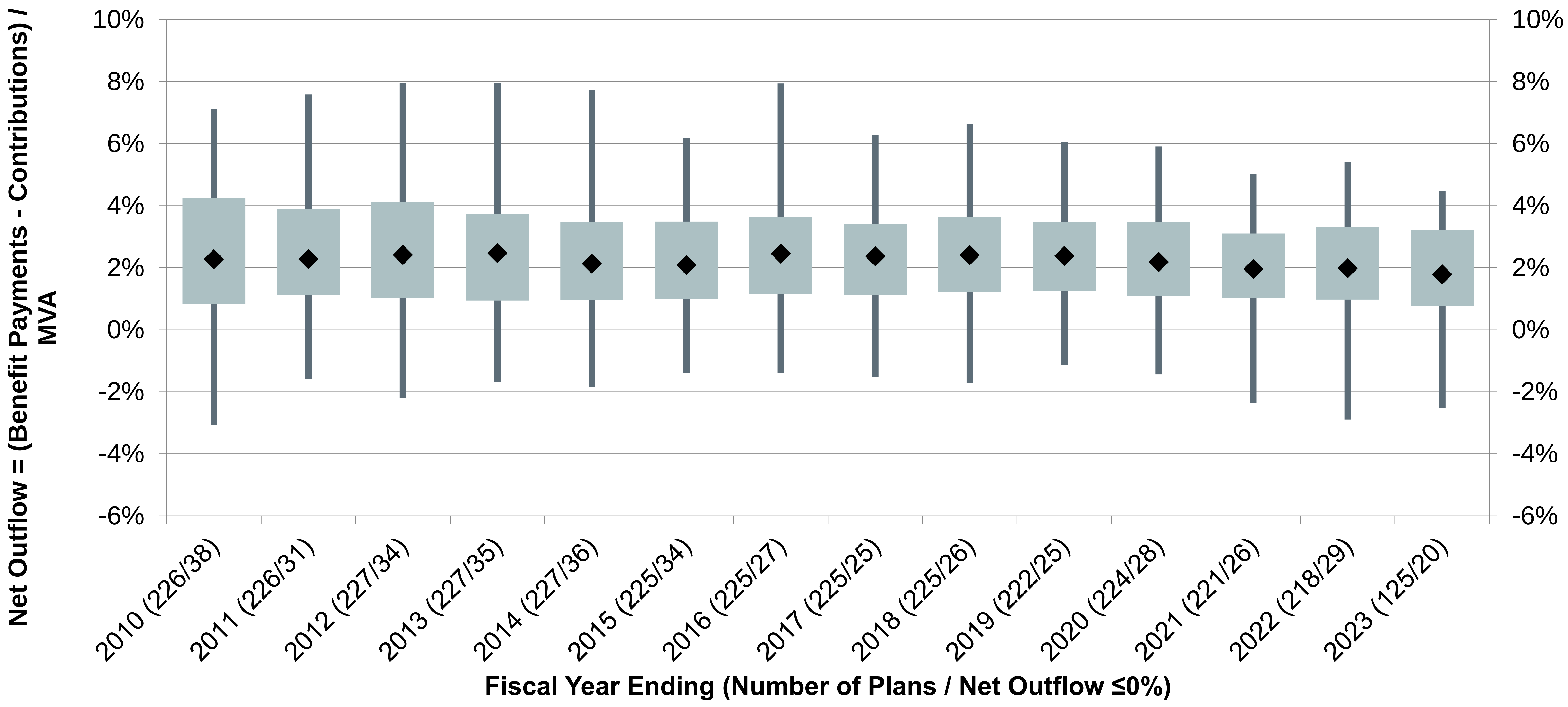


Sources: Public Plans Data (publicplansdata.org) as of June 2023; NASRA downloadable investment return assumptions as of June 2023
[1] Peers defined as public funds published within publicplansdata.org as of June 2023; Number of plans per year are shown in parentheses

Comparison of Peer Cash Flow Rates

Majority of plans are in a net outflow position

Distribution of U.S. Public Pension Net Outflow

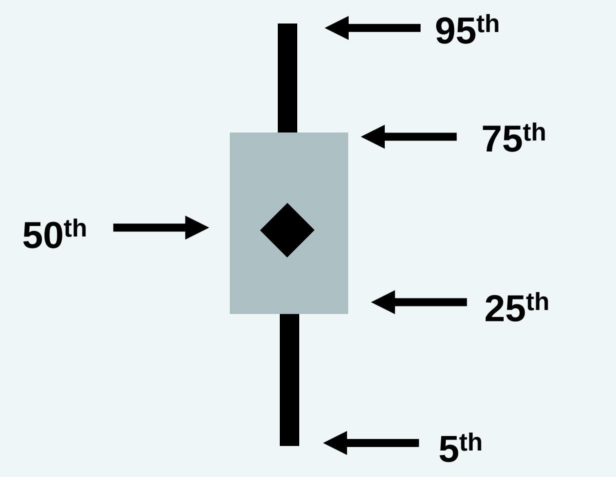


Source: Public Plans Data (publicplansdata.org) as of June 2024
Number of plans per year are shown in parentheses

Key Observations:

- Since FYE 2010, roughly 10-15% of U.S. public pension plan have been in a net inflow position with contributions exceeding the benefit payments
- The vast majority of plans are in a net outflow position with benefit payments exceeding contributions

Legend: Distribution of Outcomes



Actuarial Assumptions and Methods

Section 5: Appendix

Actuarial Assumptions and Methods

Data used & actuarial assumptions

Data

Actuarial projections for the full asset-liability study reflected open group projections from the plan actuary (Segal) as of December 31, 2022. The information was supplied for all five (5) plans with sensitivity for realized inflation (intended to proxy the annual increase impact). These plan figures were combined to study the aggregate division trust funds for purposes of this study.

Actuarial assumptions:

- Valuation Rate of Interest = 7.25%
- Inflation = 2.30%
- Payroll Growth = 3.00%
- Actuarial Value of Assets: determined by recognizing differences between actual and expected investment income over a closed four-year period with no corridor
- Administrative Expenses: Assumed $44.1 million payable from the trust for 2023 consistent with the provided actuarial projections
  - Assumed annual growth consistent with inflation
- Annual Increase rate = 1.00%
- All other assumptions as documented in the Actuarial Valuation Report as of December 31, 2022 unless noted otherwise

Source: 12/31/2022 Actuarial Valuation

Capital Market Assumptions

Appendix

Aon's Capital Market Assumptions
Background

- Long-term (10- and 30-year forecasts) forward-looking assumptions (asset class geometric return, volatility, and correlations)
- Building block approach, primarily based on consensus expectations and market-based inputs
- Best estimates of annualized returns (50/50 better or worse)
- Market returns: no active management value added (except for certain assets classes, such as hedge funds)
- Net of investment fees
- Updated quarterly

AON

Summary of Capital Market Assumptions

As of September 30, 2023

		10-Year CMAs				30-Year CMAs			
		Expected Real Return[1]	Expected Nominal Return[1]	Expected Nominal Volatility	Assumed Global Equity Beta	Expected Real Return[1]	Expected Nominal Return[1]	Expected Nominal Volatility	Assumed Global Equity Beta
	Equity								
1	Large Cap U.S. Equity	4.3%	6.7%	18.0%	0.96	4.6%	7.0%	18.5%	0.97
2	Small Cap U.S. Equity	4.5%	6.9%	24.0%	1.23	5.1%	7.5%	24.8%	1.24
3	Global Equity IMI	4.5%	6.9%	18.2%	1.00	5.0%	7.4%	18.7%	1.00
4	International Equity (Developed)	4.3%	6.7%	19.2%	0.94	4.6%	7.0%	19.7%	0.94
5	Emerging Markets Equity	4.5%	6.9%	22.0%	0.99	4.9%	7.3%	22.5%	0.98
	Fixed Income								
6	Cash (Gov't)	2.2%	4.6%	1.4%	0.01	1.9%	4.2%	2.2%	0.01
7	Core Fixed Income	2.9%	5.3%	5.0%	0.00	2.6%	5.0%	5.2%	0.00
8	Long Duration Bonds – Credit	4.0%	6.4%	9.7%	0.03	3.8%	6.2%	10.1%	0.03
9	Long Duration Bonds – Gov't	3.1%	5.5%	10.2%	-0.08	2.6%	5.0%	9.9%	-0.07
10	Multi-Asset Credit[2]	5.0%	7.4%	8.8%	0.30	4.9%	7.3%	9.0%	0.30
	Alternatives								
11	Hedge Funds – Low Beta[3]	3.2%	5.6%	4.0%	0.09	2.8%	5.2%	4.3%	0.09
12	Core Real Estate	3.2%	5.6%	15.0%	0.30	3.1%	5.5%	15.4%	0.30
13	Non-Core Real Estate	5.1%	7.5%	25.0%	0.65	4.8%	7.2%	25.5%	0.65
14	Private Equity	6.7%	9.2%	20.0%	0.69	7.6%	10.1%	20.5%	0.69
15	Infrastructure	4.8%	7.2%	14.5%	0.28	4.7%	7.1%	15.0%	0.28
16	Closed-End Real Assets	5.6%	8.0%	15.7%	0.47	5.6%	8.0%	16.2%	0.47
17	Farmland	3.1%	5.5%	15.0%	0.01	3.1%	5.5%	15.5%	0.01
18	Timber	2.4%	4.8%	11.9%	0.01	2.4%	4.8%	12.3%	0.01
19	Private Debt	5.8%	8.2%	16.5%	0.33	5.3%	7.7%	17.5%	0.34
	Inflation								
20	Inflation	0.0%	2.3%	1.7%		0.0%	2.3%	1.8%	

[1] Expected returns are using Aon's 10/30-Year Capital Market Assumptions as of 6/30/2023. CMAs contain projections about future returns on asset classes. Our CMA projections are designed to reflect the typical cost of implementing an investment program. Expected returns are calculated using weighted allocations of the underlying CMAs. Expected Returns are geometric (long-term compounded; rounded to the nearest decimal) assuming portfolio weights are rebalanced annually. Expected returns presented are models and do not represent the returns of an actual client account. Your actual returns will be reduced by your advisory fees and other expenses you may incur as a client. Aon's advisory fees are described in Part 2A of Aon's Form ADV. Not a guarantee of future results.

[2] Alpha incorporated in Expected Nominal Return

[3] Represents diversified portfolio of Direct hedge fund investments.

Summary of Capital Market Assumptions

As of September 30, 2023

	Nominal Correlations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	Large Cap U.S. Equity	**1.00**	0.93	0.98	0.79	0.73	0.09	0.00	0.06	-0.13	0.61	0.40	0.35	0.46	0.62	0.35	0.29	0.52	0.01	0.01	0.34	0.97	0.09
2	Small Cap U.S. Equity	0.93	**1.00**	0.93	0.74	0.69	0.08	0.00	0.05	-0.13	0.56	0.38	0.33	0.44	0.60	0.34	0.28	0.50	0.01	0.01	0.33	0.93	0.08
3	Global Equity IMI	0.98	0.93	**1.00**	0.89	0.82	0.09	-0.01	0.06	-0.14	0.65	0.41	0.36	0.48	0.63	0.35	0.29	0.54	0.01	0.02	0.37	1.00	0.10
4	International Equity (Developed)	0.79	0.74	0.89	**1.00**	0.75	0.05	-0.01	0.05	-0.13	0.61	0.36	0.34	0.44	0.55	0.31	0.26	0.49	0.01	0.03	0.34	0.88	0.11
5	Emerging Markets Equity	0.73	0.69	0.82	0.75	**1.00**	0.07	0.00	0.07	-0.13	0.63	0.34	0.33	0.41	0.53	0.30	0.25	0.46	0.01	0.02	0.37	0.81	0.09
6	Cash (Gov't)	0.09	0.08	0.09	0.05	0.07	**1.00**	0.43	0.23	0.23	0.05	0.20	0.16	0.15	0.10	0.14	0.16	0.18	0.06	0.09	-0.23	0.12	0.41
7	Core Fixed Income	0.00	0.00	-0.01	-0.01	0.00	0.43	**1.00**	0.88	0.80	0.20	0.11	0.05	0.04	0.01	0.04	0.03	0.05	0.00	0.00	-0.03	0.08	-0.01
8	Long Duration Bonds – Credit	0.06	0.05	0.06	0.05	0.07	0.23	0.88	**1.00**	0.81	0.35	0.16	0.05	0.05	0.06	0.05	0.03	0.06	-0.01	-0.02	0.15	0.14	-0.11
9	Long Duration Bonds – Gov't	-0.13	-0.13	-0.14	-0.13	-0.13	0.23	0.80	0.81	**1.00**	-0.15	-0.07	-0.04	-0.06	-0.11	-0.04	-0.05	-0.06	-0.02	-0.04	-0.28	-0.06	-0.16
10	Multi-Asset Credit	0.61	0.56	0.65	0.61	0.63	0.05	0.20	0.35	-0.15	**1.00**	0.45	0.22	0.29	0.40	0.22	0.19	0.33	0.02	0.02	0.70	0.66	0.10
11	Hedge Funds - Low Beta	0.40	0.38	0.41	0.36	0.34	0.20	0.11	0.16	-0.07	0.45	**1.00**	0.19	0.23	0.29	0.18	0.16	0.26	0.01	0.03	0.29	0.42	0.11
12	Core Real Estate	0.35	0.33	0.36	0.34	0.33	0.16	0.05	0.05	-0.04	0.22	0.19	**1.00**	0.96	0.32	0.19	0.16	0.85	0.01	0.01	0.12	0.37	0.09
13	Non-Core Real Estate	0.46	0.44	0.48	0.44	0.41	0.15	0.04	0.05	-0.06	0.29	0.23	0.96	**1.00**	0.38	0.22	0.19	0.89	0.02	0.02	0.16	0.48	0.10
14	Private Equity	0.62	0.60	0.63	0.55	0.53	0.10	0.01	0.06	-0.11	0.40	0.29	0.32	0.38	**1.00**	0.33	0.27	0.45	0.01	0.02	0.27	0.63	0.08
15	Infrastructure	0.35	0.34	0.35	0.31	0.30	0.14	0.04	0.05	-0.04	0.22	0.18	0.19	0.22	0.33	**1.00**	0.81	0.64	0.01	0.02	0.13	0.36	0.08
16	Real Assets (PERA)	0.29	0.28	0.29	0.26	0.25	0.16	0.03	0.03	-0.05	0.19	0.16	0.16	0.19	0.27	0.81	**1.00**	0.52	0.51	0.47	0.11	0.30	0.19
17	Closed-End Real Assets	0.52	0.50	0.54	0.49	0.46	0.18	0.05	0.06	-0.06	0.33	0.26	0.85	0.89	0.45	0.64	0.52	**1.00**	0.01	0.02	0.19	0.54	0.12
18	Farmland	0.01	0.01	0.01	0.01	0.01	0.06	0.00	-0.01	-0.02	0.02	0.01	0.01	0.02	0.01	0.01	0.51	0.01	**1.00**	0.32	0.00	0.01	0.13
19	Timber	0.01	0.01	0.02	0.03	0.02	0.09	0.00	-0.02	-0.04	0.02	0.03	0.01	0.02	0.02	0.02	0.47	0.02	0.32	**1.00**	0.01	0.02	0.21
20	Private Debt	0.34	0.33	0.37	0.34	0.37	-0.23	-0.03	0.15	-0.28	0.70	0.29	0.12	0.16	0.27	0.13	0.11	0.19	0.00	0.01	**1.00**	0.36	-0.01
21	Opportunistic (PERA)	0.97	0.93	1.00	0.88	0.81	0.12	0.08	0.14	-0.06	0.66	0.42	0.37	0.48	0.63	0.36	0.30	0.54	0.01	0.02	0.36	**1.00**	0.10
22	Inflation	0.09	0.08	0.10	0.11	0.09	0.41	-0.01	-0.11	-0.16	0.10	0.11	0.09	0.10	0.08	0.08	0.19	0.12	0.13	0.21	-0.01	0.10	**1.00**

Aon Investments’ Capital Market Assumptions

Explanation of Capital Market Assumptions—09/30/2023

The following capital market assumptions were developed by Aon’s Global Asset Allocation Team and represent the long-term capital market outlook (i.e., 30 years) based on data at the end of the third quarter of 2023. The assumptions were developed using a building block approach, reflecting observable inflation and interest rate information available in the fixed income markets as well as Consensus Economics forecasts. Our long-term assumptions for other asset classes are based on historical results, current market characteristics, and our professional judgment. Expected returns are using Aon 30 Year Capital Market Assumptions as of 09/30/2023. CMAs contain projections about future returns on asset classes. Our CMA projections are designed to reflect the typical cost of implementing an investment program. Expected returns are calculated using weighted allocations of the underlying CMAs. Expected Returns are geometric (long-term compounded; rounded to the nearest decimal) assuming portfolio weights are rebalanced annually. Expected returns presented are models and do not represent the returns of an actual client account. Your actual returns will be reduced by your advisory fees and other expenses you may incur as a client. Aon's advisory fees are described in Part 2A of Aon's Form ADV. Not a guarantee of future results.

Inflation – Expected Level (2.3%)

Based on Consensus Economics long-term estimates and our near-term economic outlook, we expect U.S. consumer price inflation to be approximately 2.3% during the next 30 years.

Real Returns for Asset Classes

Fixed Income		
Cash	1.9%	Over the long run, we expect the real yield on cash and money market instruments to produce a real return of 1.9% in a moderate to low-inflationary environment.
TIPS	2.2%	We expect intermediate duration Treasury Inflation-Protected Securities to produce a real return of about 2.2%.
Core Fixed Income (i.e., Market Duration)	2.6%	We expect intermediate duration Treasuries to produce a real return of about 1.9%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 0.7%, resulting in a long-term real return of 1.8%.

Aon Investments' Capital Market Assumptions

Explanation of Capital Market Assumptions—09/30/2023

Fixed Income		
Core Plus Bonds	3.0%	Modeled as 20% 5 duration gov't with real return of 1.9% and 80% 5 duration corporate bonds with real return of 3.3%.
Long Duration Bonds – Government and Credit	3.1%	We expect Treasuries with a duration of ~14 years to produce a real return of 2.6%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 0.5%, resulting in an expected real return of 3.1%.
Long Duration Bonds – Credit	3.8%	We expect Treasuries with a duration of ~12 years to produce a real return of 2.6%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 1.2%, resulting in an expected real return of 3.8%.
Long Duration Bonds – Government	2.6%	We expect Treasuries with a duration of ~16 years to produce a real return of 2.6% during the next 30 years.
High Yield Bonds	3.9%	We expect intermediate duration Treasuries to produce a real return of about 1.9%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 2.0%, resulting in an expected real return of 3.9%.
Bank Loans	4.1%	We expect LIBOR to produce a real return of about 2.5%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults) to be 1.6%, resulting in an expected real return of 4.1%.
Non-U.S. Developed Bonds: 50% Hedged	2.1%	We forecast real returns for non-US developed market bonds to be 2.1% over a 30-year period after adjusting for a 50% currency hedge. We assume a blend of one-third investment grade corporate bonds and two-thirds government bonds. We also produce assumptions for 0% hedged and 100% hedged non-US developed bonds.
Emerging Market Bonds (Sovereign; USD)	4.2%	We forecast real returns for emerging market sovereign bonds denominated in US dollars to be 4.2% over a 30-year period.
Emerging Market Bonds (Corporate; USD)	3.9%	We forecast real returns for emerging market corporate bonds denominated in US dollars to be 3.9% over a 30-year period.

Aon Investments’ Capital Market Assumptions

Explanation of Capital Market Assumptions—09/30/2023

Emerging Market Bonds (Sovereign; Local)	3.7%	We forecast real returns for emerging market sovereign bonds denominated in local currency to be 3.7% over a 30-year period.
Multi-Asset Credit (MAC)	4.1%	We assume real returns from beta exposure to high yield, bank loans and emerging market debt to add 4.1% over a 30-year period.
Private Debt-Direct Lending	5.3%	The base building block is bank loans 4.1% + spread 1.2% (net of management fees and performance incentives). There is 100% leverage included in the assumption with the nominal cost of financing at LIBOR + 2.5%.
Equities		
Large Cap US. Equity	4.6%	This assumption is based on our 30-year outlook for large cap U.S. company dividends and real earnings growth. Adjustments are made for valuations as needed.
Small Cap U.S. Equity	5.1%	Adding a 0.5% return premium for small cap U.S. equity over large cap U.S. equity results in an expected real return of 5.1%. This return premium is theoretically justified by the higher risk inherent in small cap U.S. equity versus large cap U.S. equity and is also justified by historical data.
Global Equity (Developed & Emerging Markets	5.0%	We employ a building block process similar to the U.S. equity model using the developed and emerging markets that comprise the MSCI All-Country World Index. Our roll-up model produces an expected real return of 5.0% for global equity.
International (Non-U.S.) Equity, Developed Markets	4.6%	We employ a building block process similar to the U.S. equity model using the non-U.S. developed equity markets that comprise the MSCI EAFE Index.
Emerging Market Stocks	4.9%	We employ a building block process similar to the U.S. equity model using the non-U.S. emerging equity markets that comprise the MSCI Emerging Markets Index.
Equity Risk Insurance Premium Strategies-High Beta	3.6%	We expect real returns from 50% equity + 50% cash beta plus insurance risk premium over the next 30 years.

Aon Investments' Capital Market Assumptions

Explanation of Capital Market Assumptions—09/30/2023

Alternative Asset Classes		
Low Beta (Defensive) Hedge Funds	2.8%	Encompasses defensive/low volatility hedge fund strategies with low correlations to risk assets. This assumption represents median manager performance. 1% base fee + 10% performance fee is deducted from the return expectation.
Low Beta (Defensive) Hedge Funds Buy List	3.8%	Represent top-tier defensive/low volatility hedge fund strategies with low correlations to risk assets. 1% base fee + 7% performance fee is deducted from return expectations. To use this category the funds must be buy rated or we advise on manager selection.
High Beta (Return Enhancing) Hedge Funds	3.8%	Encompasses return enhancing/higher volatility hedge fund strategies with higher correlations to risk assets. The assumption represents median manager performance. 1% base fee + 10% performance fee is deducted from the return expectations.
High Beta (Return Enhancing) Hedge Funds Buy List	5.8%	Represents top-tier return enhancing/higher volatility hedge fund strategies with higher correlations to risk assets. 1% base fee + 7% performance fee is deducted from return expectations. To use this category the funds must be buy rated or we advise on manager selection.
Broad Hedge Funds Universe	3.3%	Generic hedge fund investments which represents a portfolio of diversified strategies. We assume 50% defensive/50% return enhancing strategies. 1% base fee + 10% performance fee is deducted from the return expectations.
Broad Hedge Funds Buy List	4.8%	Generic hedge fund investments which represents a portfolio of top-tier diversified strategies. We assume 50% defensive buy list/50% return enhancing buy list strategies. To use this category the funds must be buy rated or we advise on manager selection. 1% base fee + 7% performance fee is deducted from the return expectations.
Core Real Estate	3.1%	Our real return assumption for core real estate is based a gross income of about 3.6%, management fees of roughly 1%, 25% leverage and future capital appreciation near the rate of inflation during the next 30 years. We assume a portfolio of equity real estate holdings that is diversified by property and by geographic region.
Non-Core Real Estate	4.8%	Core real estate is levered approximately 100% as the base building block for this assumption. We subtract financing costs for the leverage and 2% management costs. We also assume nominal alpha of 2% over core real estate. We assume a 50/50 mix of value-add and opportunistic investments.
U.S. REITs	4.2%	Our real return assumption for U.S. REITs is based on income of about 4.4% and future capital appreciation near the rate of inflation during the next 30 years. REITs are a sub-set of U.S. small/mid cap equity universe.

Aon Investments' Capital Market Assumptions

Explanation of Capital Market Assumptions—09/30/2023

Commodities	4.1%	Our assumption is for a diversified portfolio of commodity futures contracts. Commodity futures returns are composed of three parts: spot price appreciation, collateral return, and roll return (positive or negative change implied by the shape of the future curve). We believe that spot prices will converge with CPI over the long run (i.e., 2.3%). Collateral is assumed to be Gov't cash (1.9%). Also, we believe the roll effect will be near zero, resulting in a real return of about 4.1% for commodities.
Private Equity	7.6%	Our private equity assumption reflects a diversified fund of funds with exposure to buyouts, venture capital, distressed debt, and mezzanine debt.
Infrastructure	4.7%	Our infrastructure assumption is formulated using a cash flow-based approach that projects cash flows (on a diversified portfolio of assets) over a 30-year period. Income and capital growth as well as gearing levels, debt costs and terms, relevant tax and management expenses are all taken into consideration. Our approach produces an expected real return of 4.7% for infrastructure.
Equity Risk Insurance Premium Strategies-Low Beta	4.3%	We assume real returns from cash of 1.9% + 2.4% from alpha.
eLDI	4.0%	Combination of various long credit strategies (1/6 real estate debt, 1/3 securitized debt, 1/6 CMOs, 1/3 private placements)
Closed-end Real Assets	6.1%	Modeled as 50% Non-Core Real Estate and 50% Infrastructure

Volatility/Correlation Assumptions

Assumed volatilities are formulated with reference to implied volatilities priced into option contracts of various terms, as well as with regard to historical volatility levels. For asset classes which are not marked to market (for example real estate), we "de-smooth" historical returns before calculating volatilities. Importantly, we consider expected volatility trends in the future – in recent years we assumed the re-emergence of an economic cycle and a loss of confidence in central bankers would lead to an increase in volatility. Correlation assumptions are generally similar to actual historical results; however, we do make adjustments to reflect our forward-looking views as well as current market fundamentals.

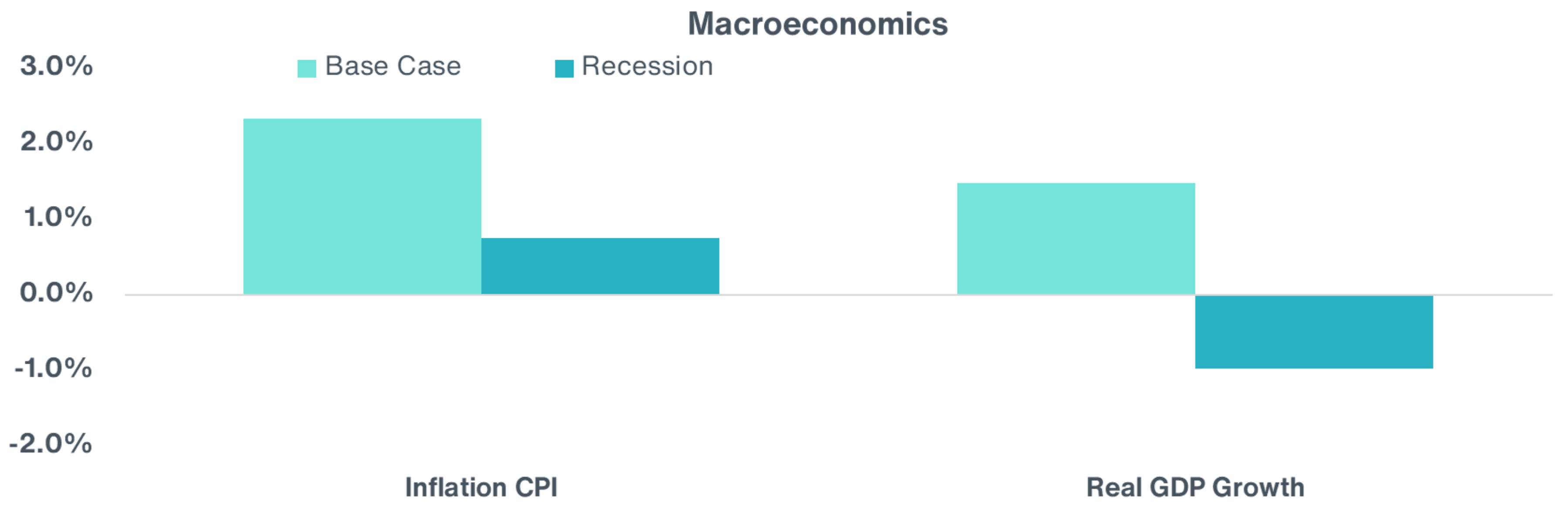
Economic Scenario Assumptions

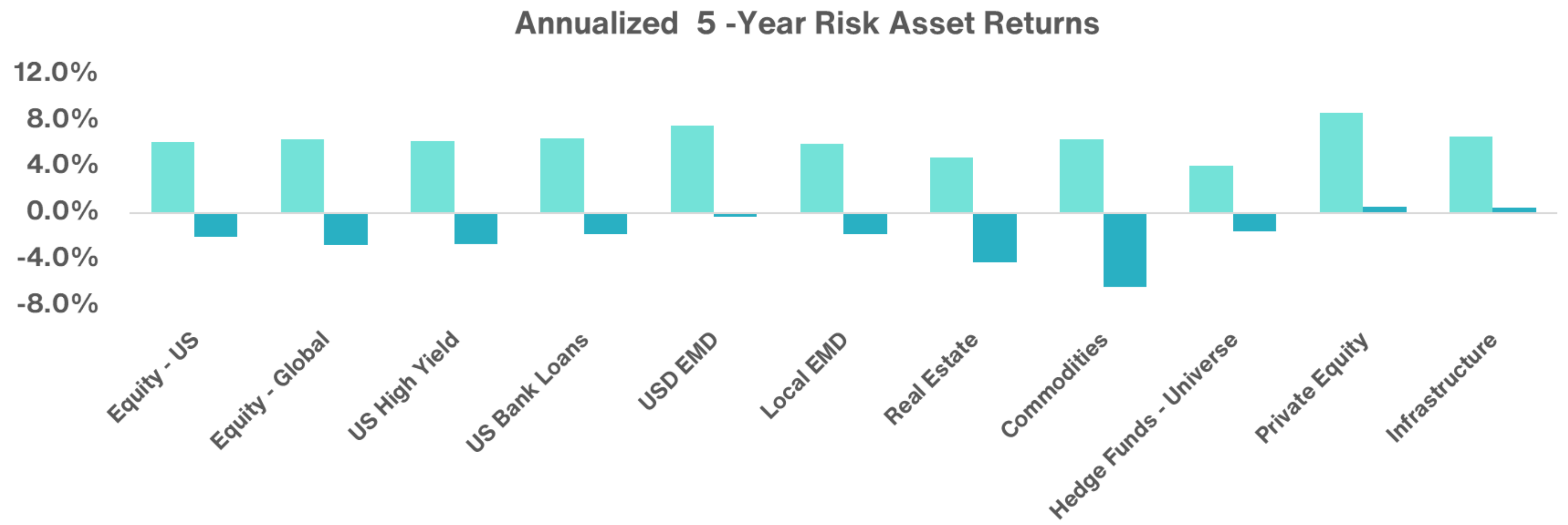
Appendix

Recession Scenario
Description

The U.S. economy slips into a deep recession in 2024

- Global growth is much weaker than the base case. Concerns that inflation will remain high for longer lead to central banks rapidly tightening monetary policies.
- Tightening financial conditions, combined with spill over effects from geopolitical volatility and reduced consumer and business spending, lead to a deep recession in the U.S. in 2024.
- The economic slowdown leads to developed economies implementing modest fiscal stimulus measures and monetary policy becomes more accommodative as central banks are forced to reverse rate hikes within the next 12 months. Policy actions are only partially effective as they are tackling the demand side of the equation.
- Inflation is lower than the base case. However, inflation starts to rise in later years as the post-recession recovery gets underway.
- Treasury yields fall while TIPS yields remain at low levels as the U.S. enters recession. Yields rise in later years as a recovery gets underway. Corporate spreads rise significantly due to the poor economic situation and increased risks of downgrades or defaults.
- Most risk assets make losses in the first two years but rebound in later years as the economy recovers.





Returns from 30 September 2023
Source: Aon
The opinions referenced are as of the date of publication and are subject to change due to changes in the market or economic conditions and may not necessarily come to pass. Information contained herein is for informational purposes only and should not be considered investment advice.

Recession Scenario

Data

Scenario RECESSION SCENARIO

Fixed Income Yields	**9/30/2023**	**9/30/2024**	**9/30/2025**	**9/30/2026**	**9/30/2027**	**9/30/2028**	**9/30/2029**	**9/30/2030**	**9/30/2031**	**9/30/2032**	**9/30/2033**
Treasury yield 5y	4.7%	1.6%	1.2%	2.1%	2.5%	3.0%	3.2%	3.4%	3.7%	3.9%	4.1%
Long Treasury yield 15y	5.0%	1.9%	1.6%	2.8%	3.1%	3.4%	3.6%	3.7%	3.8%	3.8%	3.9%
TIPS yield 5y	2.4%	0.1%	0.0%	0.6%	0.8%	1.1%	1.2%	1.3%	1.4%	1.6%	1.7%
Long TIPS yield 15y	2.4%	0.1%	0.0%	0.8%	1.0%	1.1%	1.3%	1.4%	1.5%	1.7%	1.8%
Breakeven price inflation 15y	2.6%	1.8%	1.6%	2.0%	2.2%	2.3%	2.3%	2.3%	2.3%	2.2%	2.1%
A Corporate bond yield 5y	5.9%	5.6%	6.0%	6.2%	5.9%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
A Corporate spread 5y	1.2%	4.1%	4.7%	4.1%	3.4%	3.0%	2.8%	2.6%	2.4%	2.1%	1.9%
Long A Corporate bond yield 10y	5.9%	5.1%	5.4%	6.1%	6.0%	6.1%	6.2%	6.2%	6.2%	6.2%	6.2%
Long A Corporate spread 10y	1.1%	3.4%	3.9%	3.5%	3.0%	2.8%	2.6%	2.5%	2.3%	2.2%	2.0%

Expected nominal return on assets	**Year to 9/30/2024**	**Year to 9/30/2025**	**Year to 9/30/2026**	**Year to 9/30/2027**	**Year to 9/30/2028**	**Year to 9/30/2029**	**Year to 9/30/2030**	**Year to 9/30/2031**	**Year to 9/30/2032**	**Year to 9/30/2033**
Equity – U.S.	-17.8%	-9.7%	11.0%	6.0%	6.0%	6.1%	6.2%	6.2%	6.3%	6.4%
Equity – Global	-20.2%	-11.2%	11.6%	6.2%	6.2%	6.2%	6.3%	6.4%	6.5%	6.5%
EAFE	-22.1%	-12.0%	11.8%	6.0%	6.0%	6.1%	6.2%	6.2%	6.3%	6.4%
EM Equity	-31.9%	-19.1%	13.7%	5.9%	5.9%	6.0%	6.1%	6.2%	6.3%	6.4%
Cash	5.2%	1.2%	1.1%	1.5%	1.8%	2.0%	2.3%	2.6%	2.9%	3.2%
Core Fixed Income	13.2%	3.1%	1.4%	3.9%	3.5%	4.7%	4.9%	5.0%	5.1%	5.3%
U.S. Core Real Estate	-13.6%	-8.2%	-2.8%	0.9%	5.0%	5.0%	5.1%	5.2%	5.2%	5.3%
U.S. Non-Core Real Estate	-18.9%	-11.5%	-4.0%	1.0%	6.6%	6.7%	6.8%	6.9%	7.0%	7.1%
U.S. REITs	-20.3%	-12.8%	-5.1%	0.0%	5.7%	5.8%	5.9%	6.0%	6.1%	6.2%
Private Equity Smoothed	-13.3%	-6.8%	4.5%	6.4%	7.0%	7.7%	8.3%	8.9%	8.7%	8.8%
Private Credit Smoothed	-7.6%	-8.8%	3.1%	1.7%	3.7%	4.1%	4.5%	5.0%	5.4%	5.8%
Infrastructure – U.S.	-5.5%	-1.2%	2.3%	3.1%	6.7%	6.7%	6.8%	6.8%	6.9%	6.9%
Hedge Funds - Broad Universe	-12.8%	-7.3%	9.0%	7.8%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
U.S. High Yield	-10.6%	-12.1%	5.7%	4.5%	3.0%	4.8%	5.1%	5.3%	5.7%	6.0%
Bank Loans	-9.6%	-7.9%	5.6%	3.2%	3.1%	3.4%	3.8%	4.1%	4.5%	4.9%
USD Emerging Market Debt	-11.1%	-8.1%	9.4%	6.5%	6.1%	6.8%	7.0%	7.1%	7.2%	7.4%
Local Emerging Market Debt	-12.6%	-9.6%	7.9%	5.0%	4.6%	5.3%	5.5%	5.6%	5.7%	5.9%
Assumed plan return:	-13.40%	-8.07%	7.43%	5.06%	5.71%	6.01%	6.07%	6.11%	6.16%	6.22%

Returns from 30 September 2023

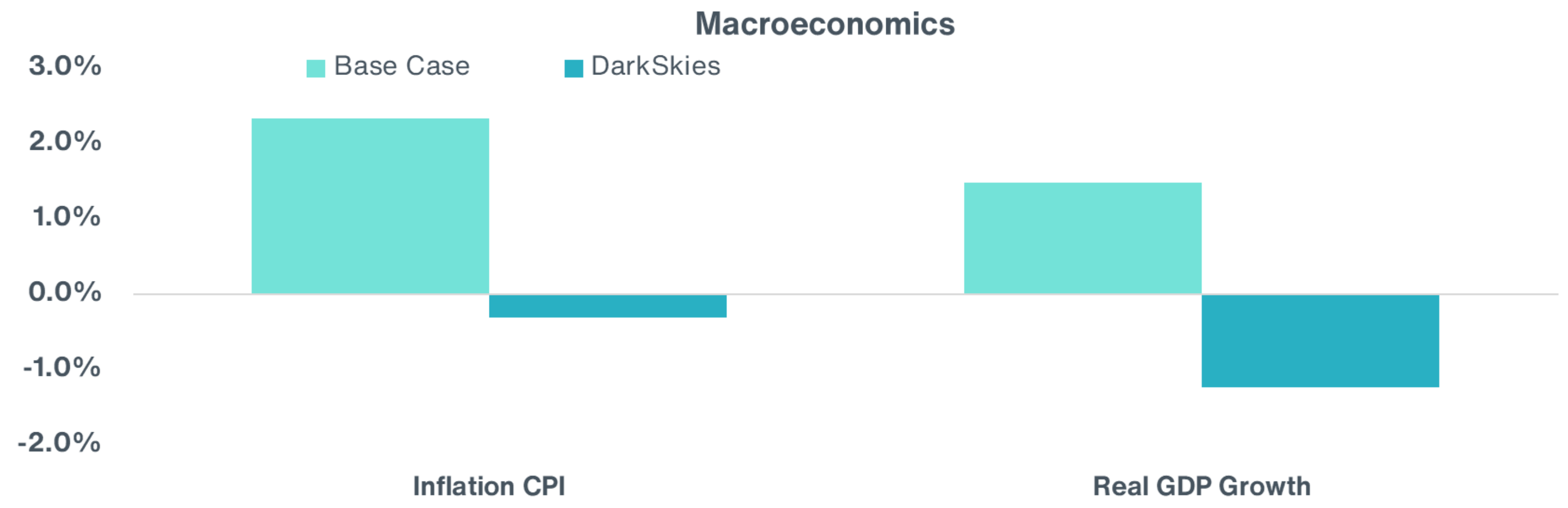
Source: Aon

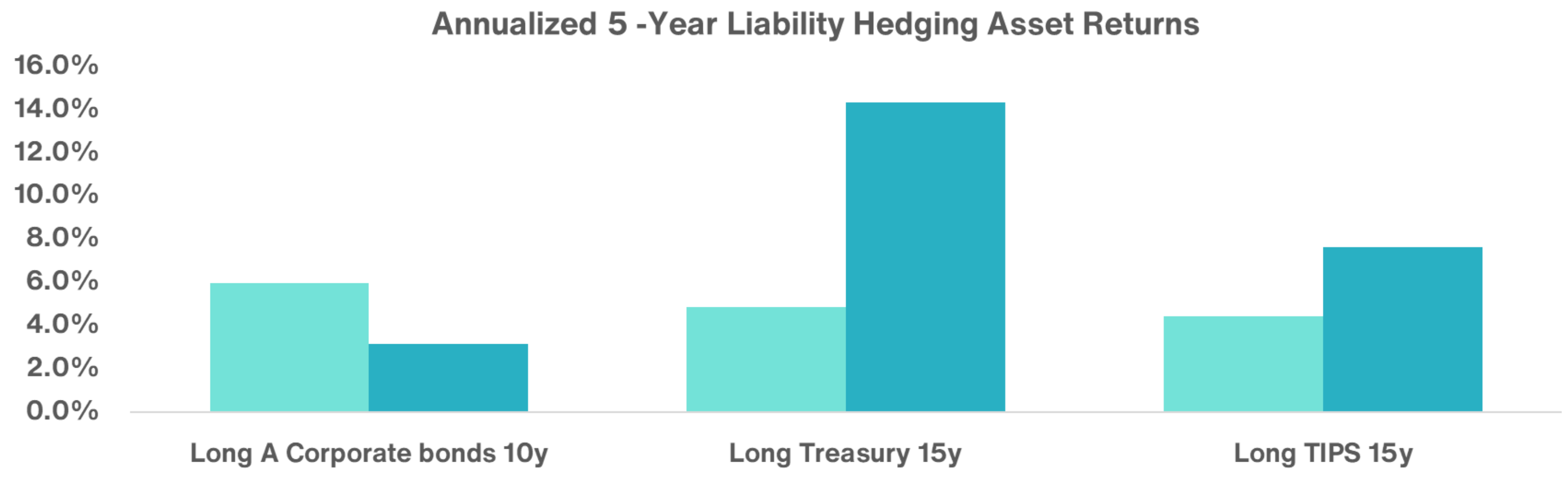
The opinions referenced are as of the date of publication and are subject to change due to changes in the market or economic conditions and may not necessarily come to pass. Information contained herein is for informational purposes only and should not be considered investment advice.

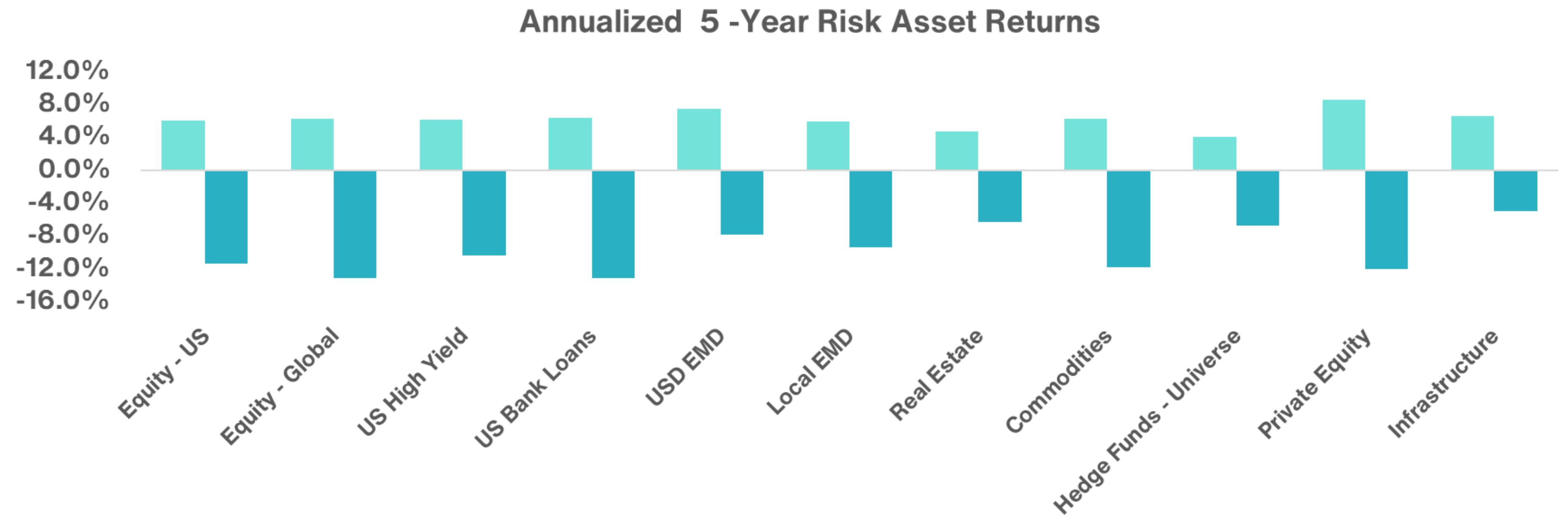
Dark Skies Scenario
Description

A deep recession followed by a longer period of stagnant growth

- A worsening Russia-Ukraine war, which expands beyond Ukraine’s borders, disrupts the global economy. Global supply chains are disrupted on a prolonged basis due to geopolitical events. Worsening geopolitical instability and central banks’ aggressive monetary tightening has a severe impact on world economic growth.
- Economic weakness in developed and emerging market economies lead to a global recession followed by stagnation. Failures of smaller banks along with widespread corporate bankruptcies lead to the collapse of some systematically important banks, triggering a new financial crisis, forcing central banks to cut rates to record low levels.
- Inflation falls sharply in 2024 and sluggish growth over the following years means that inflation stays low.
- Treasury yields fall and remain at low levels as the US enters recession. Corporate spreads rise significantly due to the poor economic situation and increased risks of downgrades or defaults.
- Risk assets make losses in the first few years. There is no pronounced bounce in growth and the economic situation remains poor for a long time, which weighs on returns in later years.







Returns from 30 September 2023
Source: Aon

Dark Skies Scenario

Data

Scenario DARK SKIES SCENARIO

Fixed Income Yields	**9/30/2023**	**9/30/2024**	**9/30/2025**	**9/30/2026**	**9/30/2027**	**9/30/2028**	**9/30/2029**	**9/30/2030**	**9/30/2031**	**9/30/2032**	**9/30/2033**
Treasury yield 5y	4.7%	0.8%	-0.3%	-0.4%	-0.3%	-0.1%	0.3%	0.7%	1.2%	1.6%	2.0%
Long Treasury yield 15y	5.0%	1.1%	0.3%	0.2%	0.2%	0.4%	0.8%	1.2%	1.5%	1.8%	2.1%
TIPS yield 5y	2.4%	0.0%	-0.9%	-1.1%	-1.0%	-0.8%	-0.6%	-0.3%	-0.1%	0.2%	0.5%
Long TIPS yield 15y	2.4%	-0.4%	-1.0%	-1.1%	-1.0%	-0.8%	-0.6%	-0.3%	0.0%	0.2%	0.5%
Breakeven price inflation 15y	2.6%	1.4%	1.3%	1.3%	1.2%	1.3%	1.4%	1.5%	1.5%	1.6%	1.6%
A Corporate bond yield 5y	5.9%	6.3%	5.8%	5.4%	4.8%	4.6%	4.6%	4.7%	4.9%	5.0%	5.1%
A Corporate spread 5y	1.2%	5.5%	6.1%	5.8%	5.1%	4.6%	4.3%	4.0%	3.7%	3.4%	3.0%
Long A Corporate bond yield 10y	5.9%	5.4%	5.1%	4.8%	4.4%	4.3%	4.5%	4.6%	4.8%	5.0%	5.1%
Long A Corporate spread 10y	1.1%	4.4%	4.9%	4.7%	4.2%	3.9%	3.7%	3.5%	3.3%	3.0%	2.8%

Expected nominal return on assets	**Year to 9/30/2024**	**Year to 9/30/2025**	**Year to 9/30/2026**	**Year to 9/30/2027**	**Year to 9/30/2028**	**Year to 9/30/2029**	**Year to 9/30/2030**	**Year to 9/30/2031**	**Year to 9/30/2032**	**Year to 9/30/2033**
Equity – U.S.	-26.8%	-19.2%	-10.3%	3.1%	3.1%	3.4%	3.8%	4.2%	4.5%	4.9%
Equity – Global	-30.0%	-21.6%	-11.7%	2.9%	2.9%	3.3%	3.7%	4.1%	4.5%	4.9%
EAFE	-31.8%	-23.0%	-12.3%	2.7%	2.7%	3.1%	3.5%	3.9%	4.3%	4.7%
EM Equity	-46.3%	-34.2%	-20.1%	1.2%	1.2%	1.8%	2.3%	2.9%	3.5%	4.0%
Cash	5.2%	0.6%	-0.1%	-0.2%	-0.2%	0.0%	0.4%	0.8%	1.2%	1.6%
Core Fixed Income	13.0%	4.7%	1.5%	1.3%	0.3%	-0.4%	0.1%	0.6%	1.1%	1.7%
U.S. Core Real Estate	-15.4%	-10.8%	-4.9%	-0.3%	2.0%	2.3%	2.7%	3.0%	3.4%	3.8%
U.S. Non-Core Real Estate	-21.3%	-15.0%	-6.9%	-0.6%	2.5%	3.0%	3.5%	4.0%	4.5%	5.0%
U.S. REITs	-22.7%	-16.4%	-8.0%	-1.7%	1.5%	2.0%	2.5%	3.0%	3.6%	4.1%
Private Equity Smoothed	-20.3%	-14.4%	-7.4%	-2.4%	-1.5%	-0.3%	0.8%	2.0%	6.6%	7.0%
Private Credit Smoothed	-18.0%	-22.8%	-21.3%	-11.9%	-2.5%	-1.9%	-0.9%	0.0%	0.9%	1.9%
Infrastructure – U.S.	-12.4%	-8.1%	-4.3%	0.7%	3.3%	3.6%	4.0%	4.4%	4.8%	5.2%
Hedge Funds - Broad Universe	-15.8%	-10.3%	-4.4%	2.9%	2.9%	3.2%	3.5%	3.8%	4.2%	4.5%
U.S. High Yield	-14.3%	-14.7%	-12.1%	-2.8%	-4.4%	-4.8%	-3.6%	-2.5%	-1.3%	-0.2%
Bank Loans	-22.7%	-20.8%	-13.5%	-1.7%	-2.0%	-1.4%	-0.7%	0.1%	0.9%	1.6%
USD Emerging Market Debt	-16.9%	-13.6%	-8.2%	2.4%	1.7%	1.7%	2.3%	2.9%	3.5%	4.1%
Local Emerging Market Debt	-18.4%	-15.2%	-9.7%	0.9%	0.2%	0.2%	0.8%	1.4%	2.0%	2.6%
Assumed plan return:	-20.68%	-15.44%	-8.36%	2.18%	2.41%	2.60%	3.02%	3.43%	3.85%	4.26%

Returns from 30 September 2023

Source: Aon

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About This Material

Appendix

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