Asset-Liability Study: Results

Michigan Public School Employees' Retirement System (MPSERS) – OPEB

January 2025

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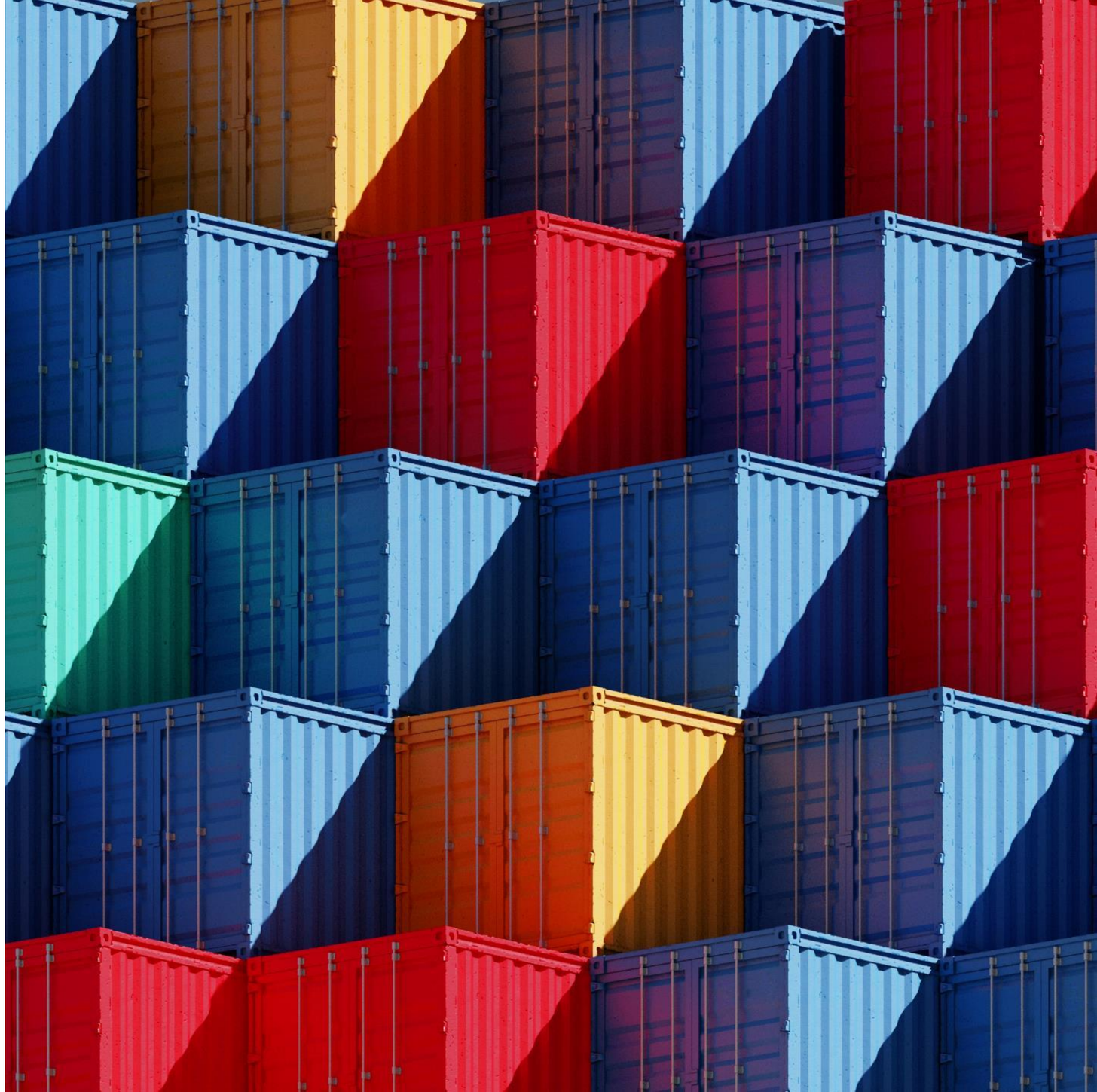


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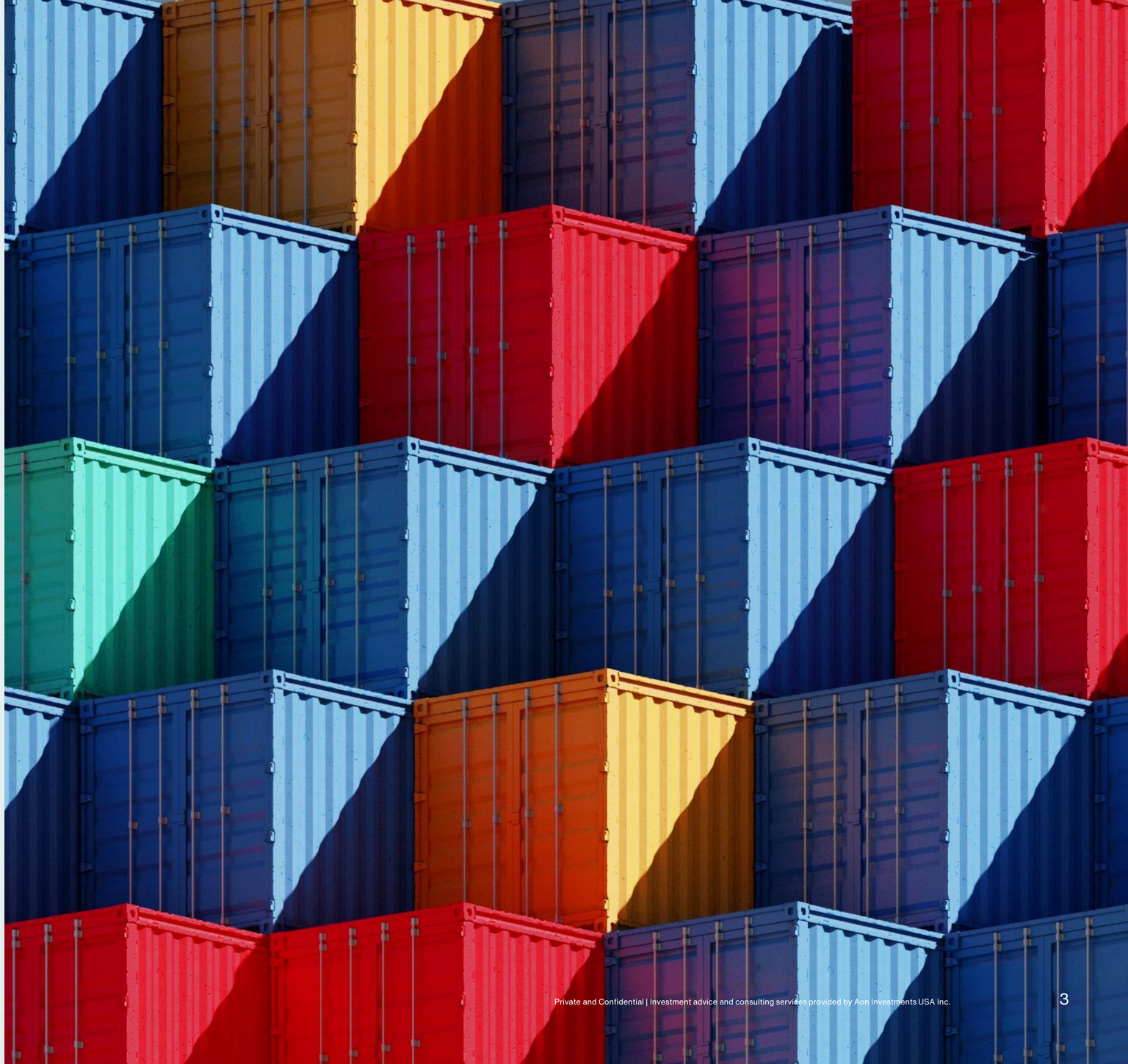
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Overview



Overview

What is an asset-liability study?

What?

A comprehensive toolkit for making decisions on a **fund's asset allocation and investment risk that align with the liabilities** those funds support

Why?

Aon believes optimal decisions regarding pension/OPEB plan management are made when they are based on a **clear understanding of the assets and liabilities** and how they interact

When?

Aon suggests conducting asset-liability studies every **3 to 5 years** depending on client specifics, or more frequently should circumstances dictate

- Michigan intends to do asset-liability studies every **2 to 3 years**

How?

Identify future trends in the financial health of the fund based on economic uncertainties that may not be evident from an actuarial valuation

Overview
Purpose

The asset-liability studies are for the use of the State Investment Board of Michigan to make asset allocation policy decisions only. Use by other parties or for other purposes may not be appropriate.

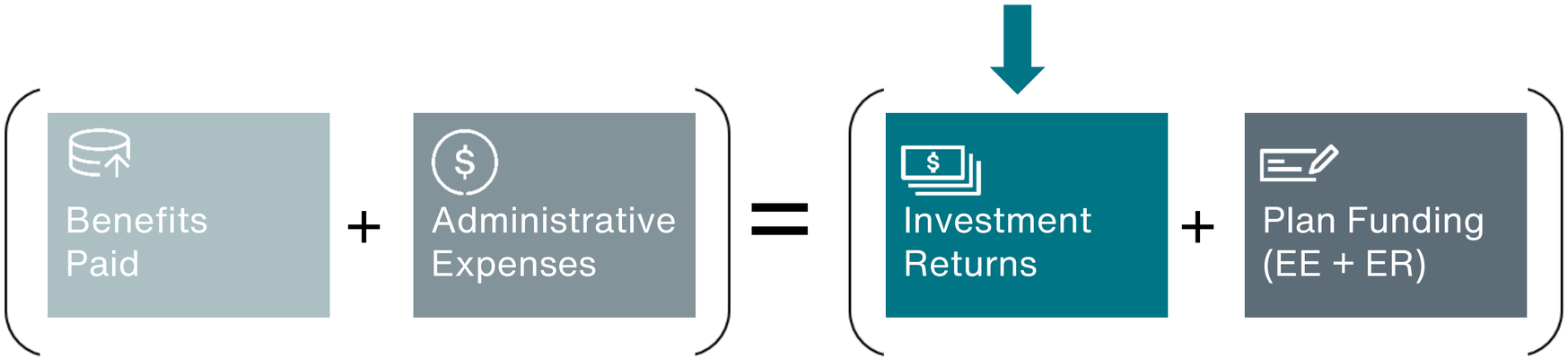
The study will examine plans with varying funded ratios, from underfunded to well-funded

- A desired outcome of this review is to develop a strategy for future asset-allocation decisions as individual plan funded ratios improve
- The State Investment Board of Michigan intends to examine the State of Michigan pension and OPEB plans on a more frequent basis with more subtle policy changes compared to standard market practice
- Strategies are evaluated based on many factors in determining the desired outcomes
  - Michigan may desire investment strategies that minimize tail risk and enhance liquidity, but could result in more contributions over time

Overview

Ultimate retirement benefit cost equation

The cost ultimately borne by the Plan will be represented by the financing equation shown below:



The asset-liability study will analyze the variability of future investment returns on the Plan financials

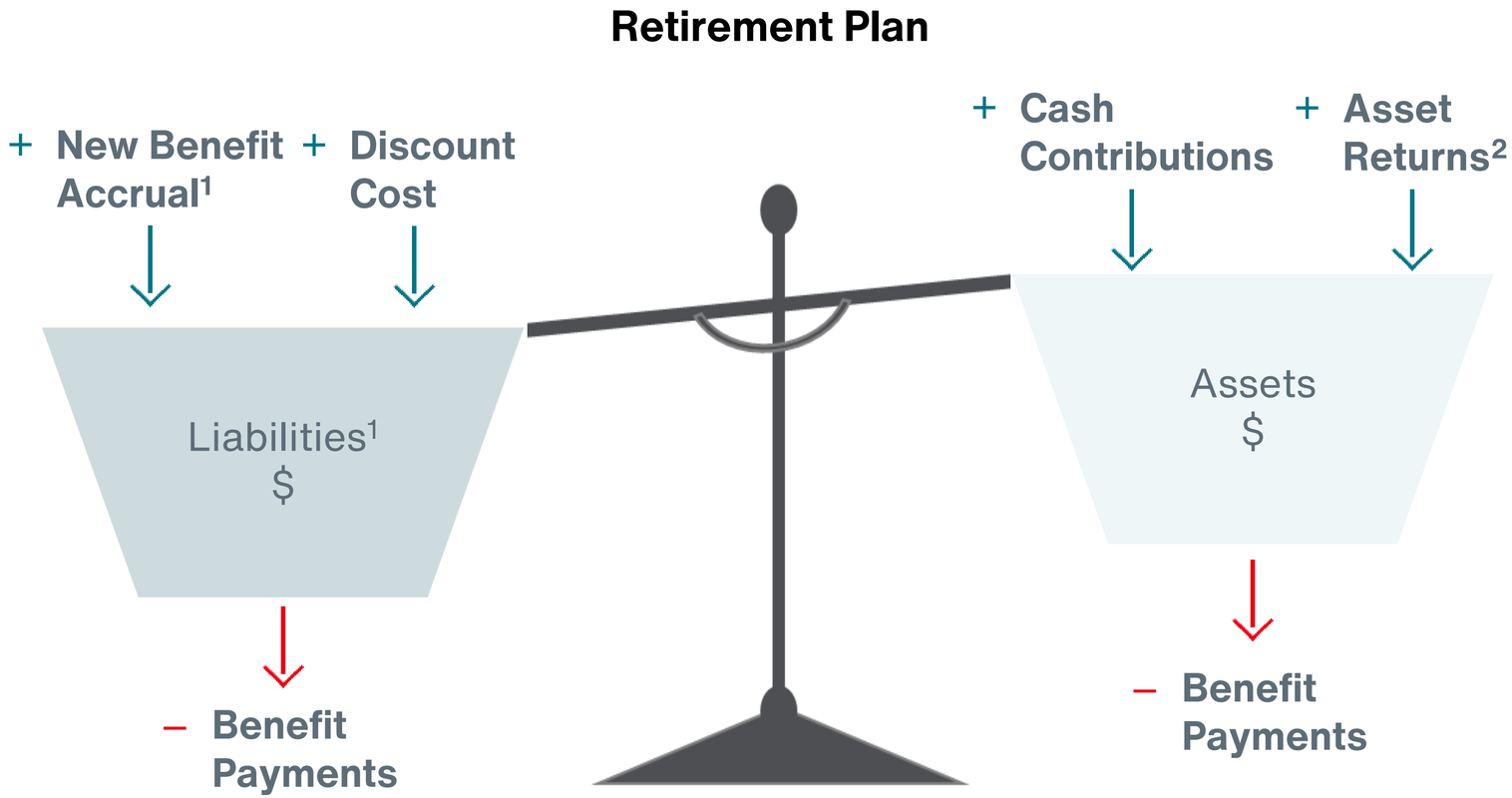
Higher than expected investment returns will result in lower future Plan funding

Lower than expected investment returns will result in higher future Plan funding

Due to Michigan's funding policy, higher risk portfolios could result in higher funding costs in tail risk scenarios

Overview

Balance of liabilities and assets



Key Takeaways

Plan Liabilities will grow in two ways:

- New benefit accruals (or Normal Cost)
- One less year of interest discounting (or Discount Cost)

Assets will grow in two ways:

- Cash Contributions to the Plan
- Asset Returns

Both liabilities and assets will be reduced by benefits paid to participants

[1]Plan liabilities and new benefit accruals reflect the estimated cost of future benefits. These figures are based on actuarial assumptions and will change to the extent future experience differs from those assumptions.
[2]Asset returns are estimates based on capital market assumptions (CMAs). CMAs contain projections about future returns on asset classes, do not represent the returns of an actual client account, and are not a guarantee of future results. See appendix for capital market assumptions disclosure pages for more information on the CMAs used in this asset-liability study.

Overview

Future projection approaches: Deterministic vs. stochastic forecasting

Deterministic Forecasting

Places certainty in the path of future outcomes

- Assumes a single future path, often with the assumption that actual experience will equal all actuarial assumptions resulting in no unexpected (gain)/loss

Stochastic Forecasting

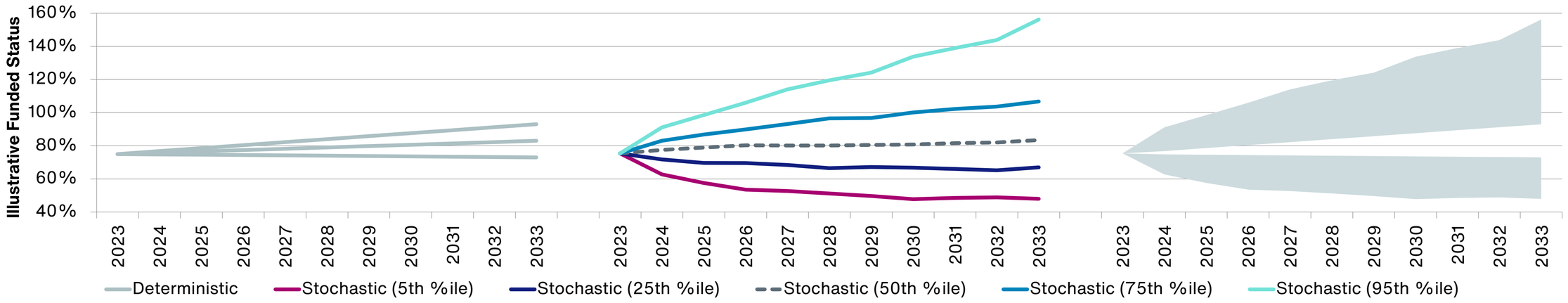
Embraces uncertainty by modeling a range of potential future outcomes

- Aon's approach utilizes up to 5,000 projection trials, representing a wide range of economic scenarios, and then ranks results of key variables into percentile distributions

Benefits of Stochastic Modeling

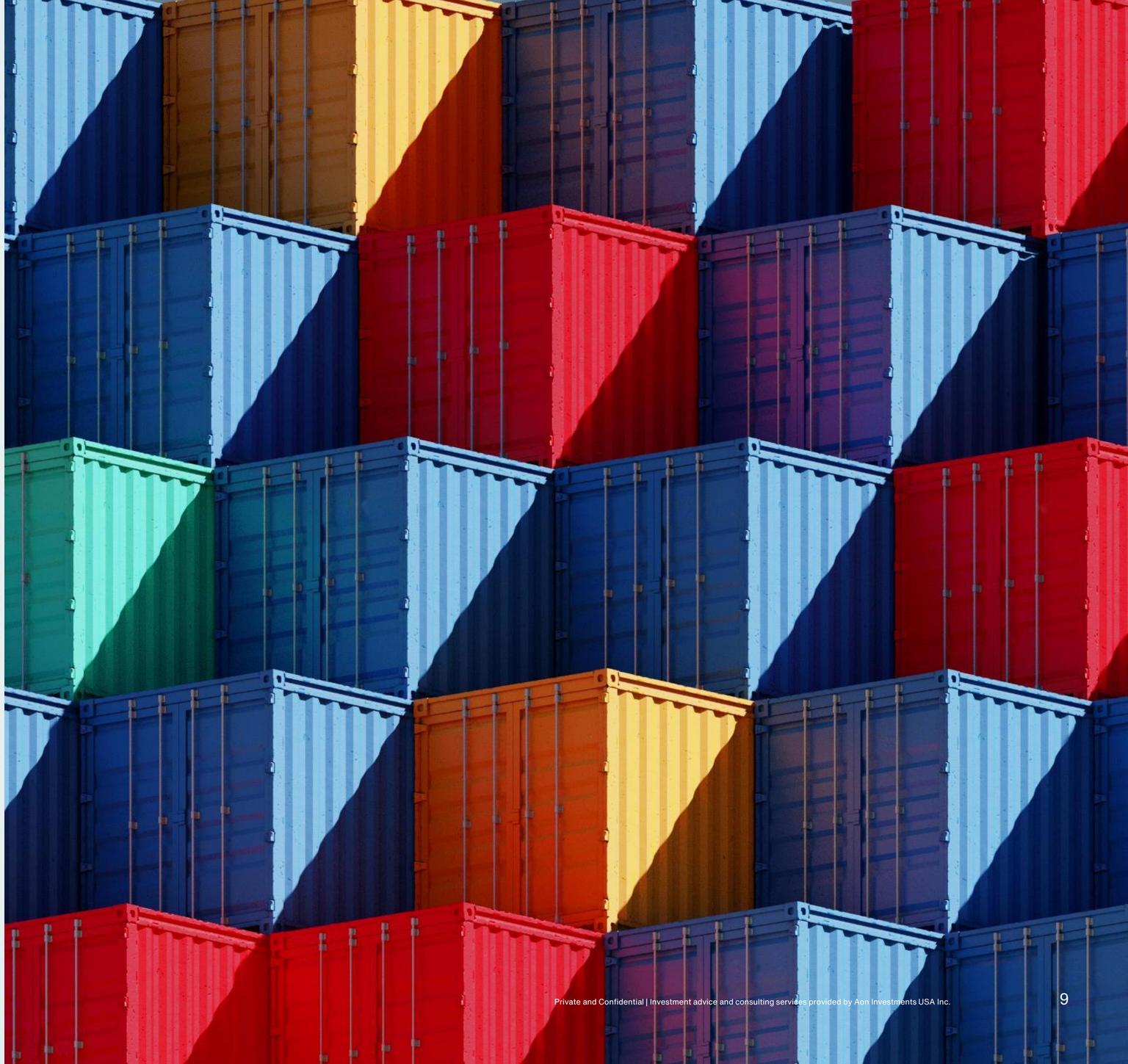
Encompasses a much broader view than deterministic forecasting alone (i.e., the shaded area below), especially in extreme cases which may potentially go unnoticed to stakeholders

- Shows impact of market expectations differing from actuarial assumptions
- Illustrates interplay of economic uncertainty with funding policies



2

Executive Summary



Executive Summary

What has changed since the 2022 asset-liability study?

Interest Rate Environment

Interest rates have risen since the last asset-liability study. This dynamic is incorporated in our fixed income capital market assumption (CMA) returns

30Y Expected Return	6/30/2022	3/31/2024	Change
Core Fixed Income	3.7%	4.6%	+0.9%

Higher fixed income returns present opportunities to potentially de-risk the plans without significantly impacting the total portfolio expected return

Funded Status

On a market value of asset basis, the funded ratio of the OPEB plan has improved from 86.8% to 122.1%

MPSERS	9/30/2021	9/30/2023	Change
OPEB	86.8%	122.1%	+35.3%

The OPEB funded ratio increase is due to the combination of asset performance, additional funding, claims experience, Centers for Medicare and Medicaid Services (CMS) revenue

Contribution Policy

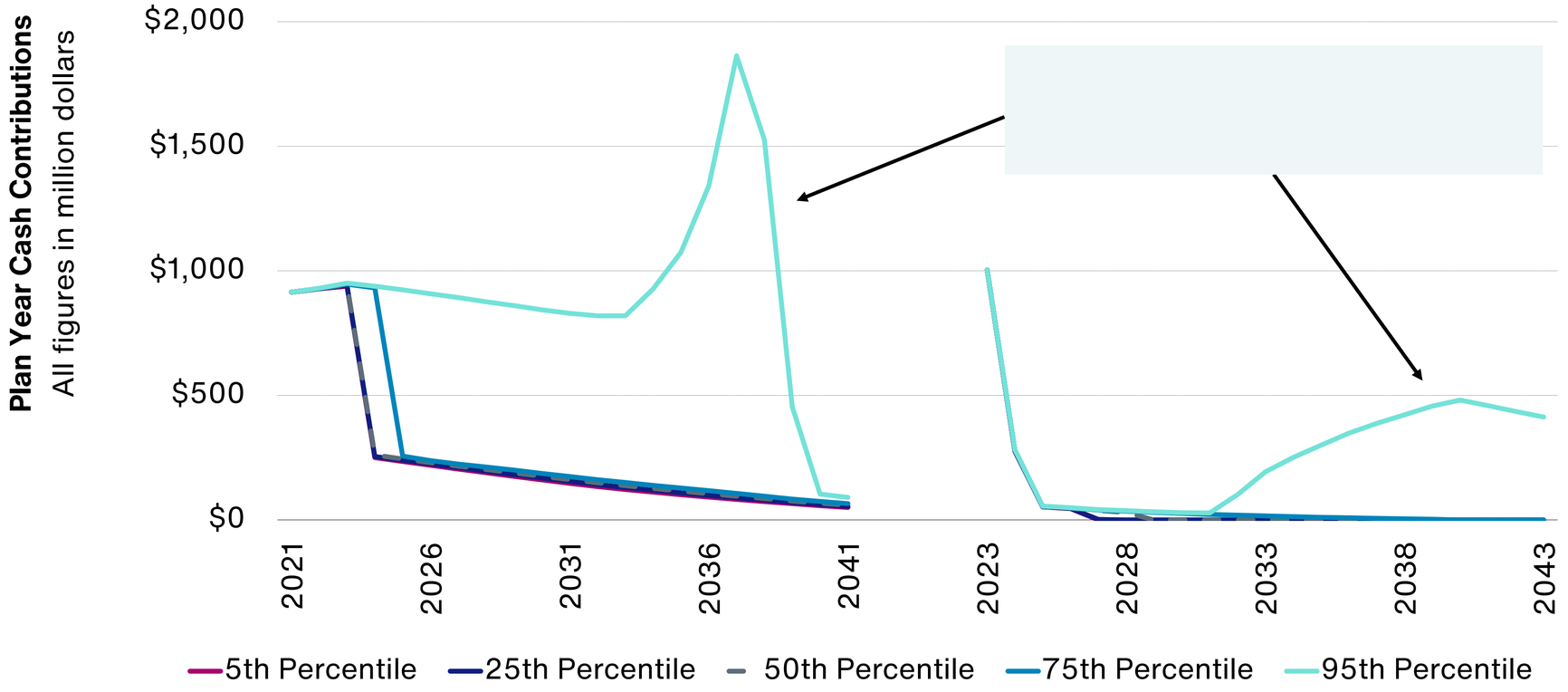
The ORS funding policy changed from the 2022 asset-liability study

Changes to the unfunded actuarial accrued liability (UAAL) resulting from experience gains/losses are amortized over **layered**, 10-year periods instead of a single declining amortization base

- Rather than tail risk showing up as elevated contribution, it will now be present in lower funded ratio risk

Executive Summary

Impact of Funding Policy Changes on Total Contributions (Employer + Employee) – MPSERS OPEB



Strategy	Current Policy (2022 Asset-Liability Study)	Current Policy (2024 Asset-Liability Study)

Projections assume a constant 6.00% discount rate for pension liabilities for all investment policies studied. Projections in this material from 2024 asset-liability study reflect actual investment returns through March 31, 2024 and include estimated expenses paid from plan assets, estimated to be $9 million for fiscal year ending 9/30/2024, projected to increased with inflation, 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.

Key Observations

- Less significant tail risk contributions scenarios due to the ORS funding policy change
- Additional adjustments to the funding policy allow for reductions in employer contributions when certain funding thresholds are achieved: 140% for OPEB
- Inclusive of Senate Bill 911 of 2024

See appendix for more details

Executive Summary

Funded status snapshot as of September 30, 2023

(In $ millions)

	Discount Rate	Market Value of Assets	Actuarial Liability	Funded Ratio
Pension				
Michigan Public Schools Employees' Retirement System	6.00%	$63,722.8	$95,804.1	66.5%
Michigan State Employees' Retirement System	6.00%	$13,344.1	$18,994.8	70.3%
Michigan State Police Retirement System	6.15%	$1,870.9	$2,754.2	67.9%
Michigan Judges' Retirement System	6.00%	$261.8	$256.6	102.0%
Military Retirement Provisions	6.00%	$63.4	$77.6	81.8%
Total Pension		**$79,263.0**	**$117,887.3**	**67.2%**
OPEB				
Michigan Public Schools Employees' Retiree Health Benefits	**6.00%**	**$12,017.3**	**$9,842.9**	**122.1%**
Michigan State Employees' Retiree Health Benefits	6.20%	$5,741.2	$7,015.0	81.8%
Michigan State Police Retiree Health Benefits	6.25%	$414.1	$751.5	55.1%
Michigan Judges' Retiree Health Benefits	6.00%	$12.5	$7.1	174.2%
Total OPEB		**$18,185.1**	**$17,616.5**	**103.2%**

Initial Observations

- In aggregate, OPEB plans have a higher funded ratio than the pension plans
- Having plans covering a wide spectrum of funded ratios lends to potentially using different investment strategies depending on specific plan funded situations

Executive Summary

Mapping of current and alternative asset allocations

	Current Target Allocation %	Michigan Proposed OPEB Target Allocation %	Capital Market Assumption Mapping
Return-Seeking			
- U.S. Equity	25.0%	16.0%	90% U.S. Large Cap / 10% U.S. Small Cap
- Private Equity	16.0%	16.0%	Private Equity
- International Equity	15.0%	11.0%	75% International Developed / 25% Emerging Markets
- Real Return / Opportunistic	10.0%	7.0%	50% Private Equity / 50% Multi-Asset Credit
- Real Estate & Infrastructure	10.0%	5.0%	60% Non-Core Real Estate / 15% Core Real Estate / 10% U.S. REITs / 15% Infrastructure
- Absolute Return (2/3)[1]	6.0%	10.0%	60% Private Debt / 40% Hedge Funds (Low Beta – Institutional Quality)
- Total	**82.0%**	**65.0%**	
Risk-Reducing			
- Cash & Short Term Fixed Income	2.0%	4.0%	Cash
- Long Term Fixed Income	13.0%	26.0%	Core Fixed Income
- Absolute Return (1/3)[1]	3.0%	5.0%	60% Private Debt / 40% Hedge Funds (Low Beta – Institutional Quality)
- Total	**18.0%**	**35.0%**	
Total	100.0%	100.0%	

[1] Absolute Return has elements of both return-seeking and risk-reducing assets. In past asset-liabilities studies, the entire allocation was reflected as return-seeking. For this year's study, absolute return has been categorized as 2/3 return-seeking and 1/3 risk-reducing based on the composition of the asset class within Michigan's portfolio

Executive Summary

Summary of results

Portfolios	Portfolio Metrics (30-year CMAs)			Financial Results				
				20-year Ending Funded Ratio (MVA / AL)		20-year Present Value of Contributions ($, billions)		Year Full Funding is Reached in Median Forecast
	Expected Nominal Return[1]	Expected Nominal Volatility	Sharpe Ratio	Expected[2]	Downside[3]	Expected[2]	Downside[4]	Expected[2]
MPSERS OPEB Plan								
60% Return-Seeking	7.01%	9.03%	0.34	297%	78%	$1.4	$2.1	Achieved
Michigan Proposed Target (65% R-S)	7.39%	9.72%	0.36	327%	81%	$1.4	$2.1	Achieved
70% Return-Seeking	7.34%	10.36%	0.33	323%	74%	$1.4	$2.4	Achieved
Current Target (82% R-S)	7.80%	12.45%	0.31	359%	70%	$1.4	$2.9	Achieved
90% Return-Seeking	7.94%	13.16%	0.31	370%	68%	$1.4	$3.1	Achieved

[1] Expected returns are using Aon's Q2 2024 30-Year Capital Market Assumptions as of 3/31/2024. 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. Analysis includes $9MM in expenses for the fiscal year ending 9/30/2024, projected to increase with inflation, assumed to be inclusive of investment consulting fees, paid from trust assets. 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] Expected = 50th percentile outcome or central expectation across all 5,000 simulations

[3] Downside = 5th percentile outcome across all 5,000 simulations

[4] Downside = 95th percentile outcome across all 5,000 simulations

Executive Summary
Summary & conclusions

This material is focused on the MPSERS OPEB plan

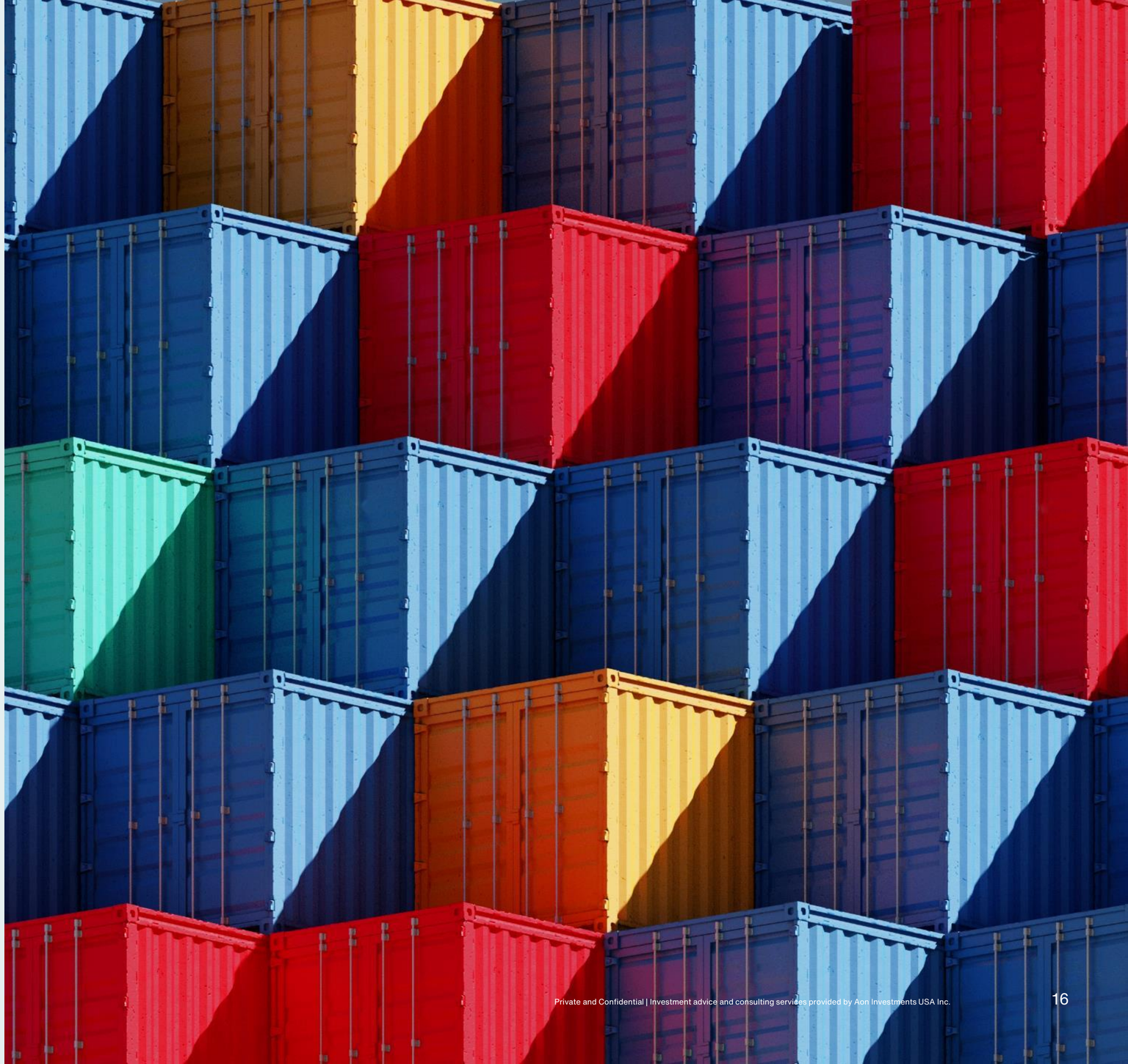
- The recommendation is to apply the Michigan proposed (65% R-S) allocation to each of Michigan's plans with funded ratios exceeding 100% to focus on risk mitigation

	Well-Funded Pool
	MPSERS - OPEB
Funded Position	122.1% Funded as of 9/30/2023
Current Investment Strategy	82% Return-Seeking
Asset-Liability Analysis	• Plan is expected to further grow funded ratio due to assets growth and a declining liability • Net outflow is projected to significantly increase in the near-term when funding contributions are not necessary
Investment Strategies to Consider	• Consider a de-risked allocation to improve projected volatility of funded ratio and contributions given the well-funded status and funded ratio trajectory • Increase liquid assets due to expected near-term rise in net outflow from lower future contributions

3

Analysis

- Asset-Liability Profile
- Portfolio Analysis
- Asset-Liability Projection Analysis
- Liquidity Analysis



Asset-Liability Profile

Section 3: Analysis

Current State Asset-Liability Profile (as of March 31, 2024)

MPSERS OPEB projects to have a hurdle rate surplus

Asset-Liability Snapshot				
	As of 9/30/2023		Est. as of 3/31/2024	
Metric ($, Millions)	**Value**	**Fund %**	**Value**	**Fund %**
Market Value of Assets	$12,017.3	122.1%	$13,401.2	134.3%
Actuarial Value of Assets	$12,495.5	126.9%		
Liability Metrics				
Actuarial Liability (AL) – Funding[1]				

Asset-Liability Growth Metrics			
Metric ($, Millions)	**Value**	**% Liability**	**% Assets**
AL Discount Cost	$598.5	6.00%	4.47%
AL Normal Cost	$236.0	2.37%	1.76%
Plan Expenses[2]	$9.0	0.09%	0.07%
Total Liability Hurdle Rate	**$843.5**	**8.46%**	**6.30%**
Expected Return on Assets[3]	$1,044.8	10.47%	7.80%
Total Contributions[4]	$640.3	6.42%	4.78%
Total Exp. Asset Growth	**$1,685.0**	**16.89%**	**12.58%**
Hurdle Rate (Shortfall)/Surplus	**$841.5**	**8.43%**	**6.28%**
Est. Benefit Payments	$578.4	5.80%	4.32%

Key Takeaways:

- OPEB plan is estimated to be **134.3%** funded on a market value of assets basis as of March 31, 2024
- Asset hurdle rate of **6.30%**, via cash funding and investment returns, needed to maintain or improve funded status
- The total expected asset growth rate (EROA plus contributions) exceeds the liability hurdle rate by **628 bps**

Target Asset Allocation as of 3/31/2024		
Metric ($, Millions)	**Value**	**Alloc %**
Return-Seeking		
- U.S. Equity	$3,350.3	25%
- Private Equity	$2,144.2	16%
- International Equity	$2,010.2	15%
- Real Return / Opportunistic	$1,340.1	10%
- Real Estate & Infrastructure	$1,340.1	10%
- Absolute Return (2/3)[5]	$804.1	6%
- Total	$10,989.0	82%
Risk-Reducing		
- Cash & Short Term Fixed Income	$268.0	2%
- Long Term Fixed Income	$1,742.2	13%
- Absolute Return (1/3)[5]	$402.0	3%
- Total	$2,412.2	18%
Total	$13,401.2	100%

[1] Based on a 6.00% discount rate consistent with the September 30, 2023 actuarial valuation results.
[2] Plan expenses for the period 4/1/2024 to 3/31/2025 are based on plan actuary provided data and assumed to be inclusive of investment management fees.
[3] Expected returns are using AIUSA Q2 2024 30-Year Capital Market Assumptions (CMAs) as of March 31, 2024, which are projections about the future returns of asset classes. For asset classes that can be implemented passively, which includes most public assets, alpha and active management fees are not included in the return expectations. For asset classes that can only be implemented actively, such as hedge funds and private assets, we assume alpha and higher active manager fees. Expected returns are geometric (long-term compounded). 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. AIUSA's advisory fees are described in Part 2A of AIUSA's Form ADV. Not a guarantee of future results. See appendix for capital market assumptions disclosure pages.
[4] Total contributions shown include half of the expected FYE 9/30/2024 contribution of $1,004 million plus one half of the expected FYE 9/30/2025 contribution of $277 million as provided by the plan actuary
[5] Absolute Return has elements of both return-seeking and risk-reducing assets. In past asset-liabilities studies, the entire allocation was reflected as return-seeking. For this year's study, absolute return has been categorized as 2/3 return-seeking and 1/3 risk-reducing based on the composition of the asset class within Michigan's portfolio
Percentages may not sum to 100% due to rounding.

Asset Hurdle Rates

What is the Asset Hurdle Rate?

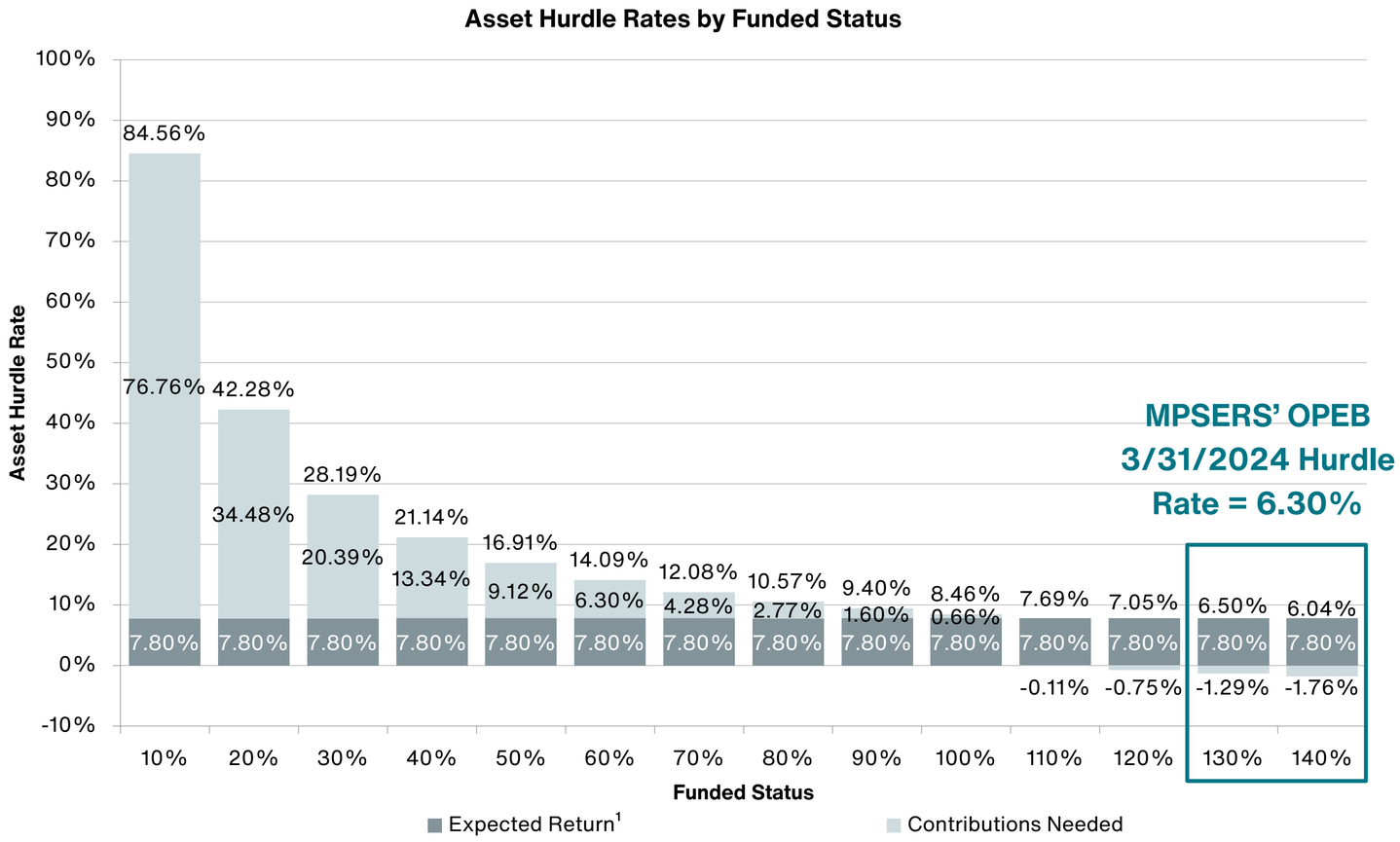
Asset Hurdle Rate is the required rate of asset growth needed to keep pace with the growth of the Plan liabilities

- Assets must grow at this rate or more in order to maintain or reduce a potential funding shortfall
- **Formula = (Normal Cost + Discount Cost + Plan Expenses) / Funded Ratio**

Assets can grow in two ways:

- Investment returns
- Funding contributions

Asset hurdle rates are expected to decline as the funded status increases



[1] Expected returns are using AIUSA Q2 2024 30-Year Capital Market Assumptions (CMAs) as of March 31, 2024, which are projections about the future returns of asset classes. For asset classes that can be implemented passively, which includes most public assets, alpha and active management fees are not included in the return expectations. For asset classes that can only be implemented actively, such as hedge funds and private assets, we assume alpha and higher active manager fees. Expected returns are geometric (long-term compounded). 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. AIUSA's advisory fees are described in Part 2A of AIUSA's Form ADV. Not a guarantee of future results. See appendix for capital market assumptions disclosure pages.
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Portfolio Analysis

Section 3: Analysis

Portfolio Analysis – Capital Market Assumptions

Mapping of Current Target Asset Allocation

The Current Target and Michigan Proposed Asset Allocation are modeled using our capital market assumptions as follows:

	Current Target Allocation %	Michigan Proposed OPEB Target Allocation %	Capital Market Assumption Mapping
Return-Seeking			
- U.S. Equity	25.0%	16.0%	90% U.S. Large Cap / 10% U.S. Small Cap
- Private Equity	16.0%	16.0%	Private Equity
- International Equity	15.0%	11.0%	75% International Developed / 25% Emerging Markets
- Real Return / Opportunistic	10.0%	7.0%	50% Private Equity / 50% Multi-Asset Credit
- Real Estate & Infrastructure	10.0%	5.0%	60% Non-Core Real Estate / 15% Core Real Estate / 10% U.S. REITs / 15% Infrastructure
- Absolute Return (2/3)	6.0%	10.0%	60% Private Debt / 40% Hedge Funds (Low Beta – Institutional Quality)
- Total	**82.0%**	**65.0%**	
Risk-Reducing			
- Cash & Short Term Fixed Income	2.0%	4.0%	Cash
- Long Term Fixed Income	13.0%	26.0%	Core Fixed Income
- Absolute Return (1/3)	3.0%	5.0%	60% Private Debt / 40% Hedge Funds (Low Beta – Institutional Quality)
- Total	**18.0%**	**35.0%**	
Total	100.0%	100.0%	

Portfolio Analysis – Spectrum of Our Model Portfolios

Reflects Our Best Ideas for a Typical Pension/OPEB Plan

Aon's Model Portfolios reflect Aon's best ideas for a typical total return defined benefit plan across a range of circumstances noted below

- Intended as a ***starting point*** for asset allocation analysis and decision-making and to be customized based on client-specific needs and circumstances

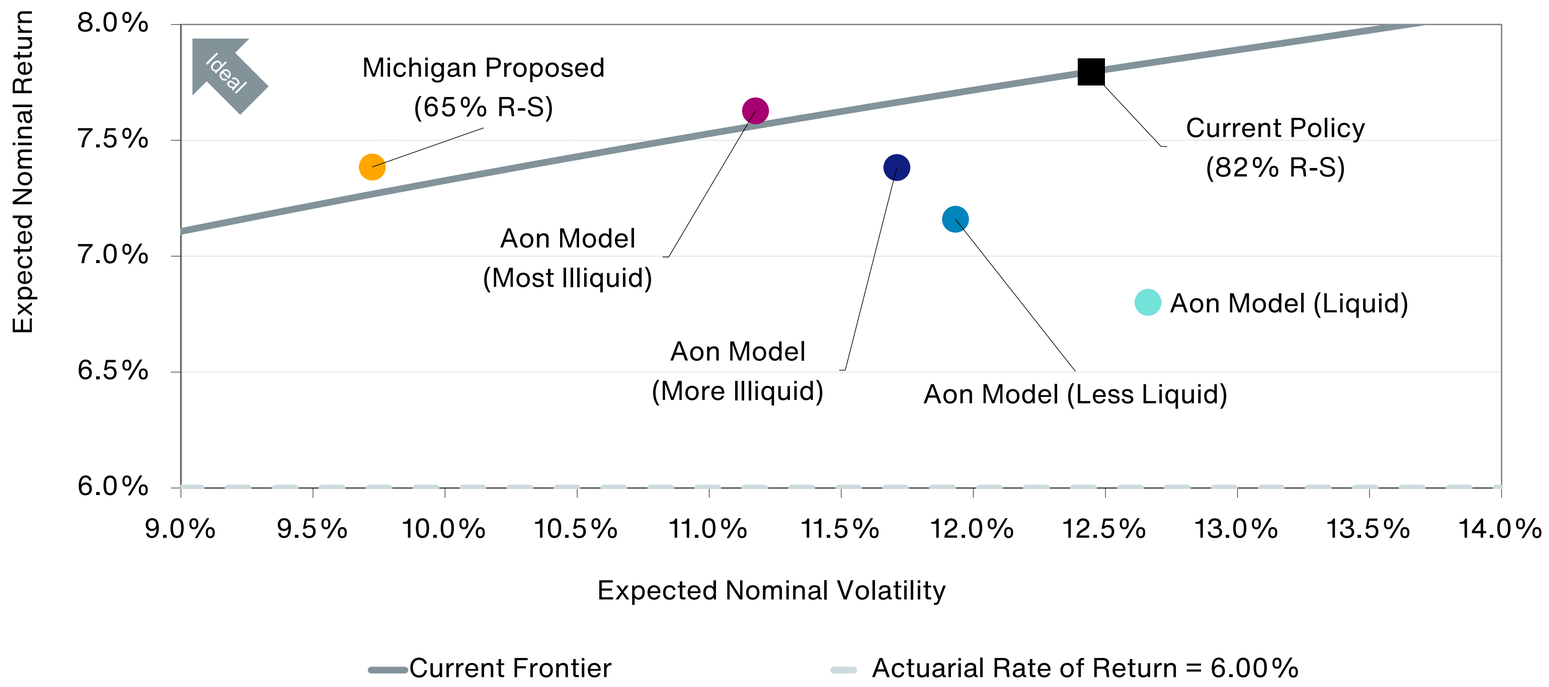
	Liquid	Less Liquid	More Illiquid	Unconstrained
Complexity	Simple			Complex
Costs	Low Cost			Higher Cost
Resources	Light Resources			Deep Resources
Governance	Modest Governance			Strong Governance
Liquidity	More Liquid			Less Liquid

- As a general statement, moving from left-to-right on the above spectrum increases both investment portfolio return potential and risk-adjusted return potential, based on our capital markets modelling
  - It also increases the reliance on "alpha" (manager skill) and reduces the emphasis on market "beta" (market risk premiums); alpha is not guaranteed

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Portfolio Analysis – Risk/Reward Spectrum

Current and alternative policies vs. “Aon Model” portfolios



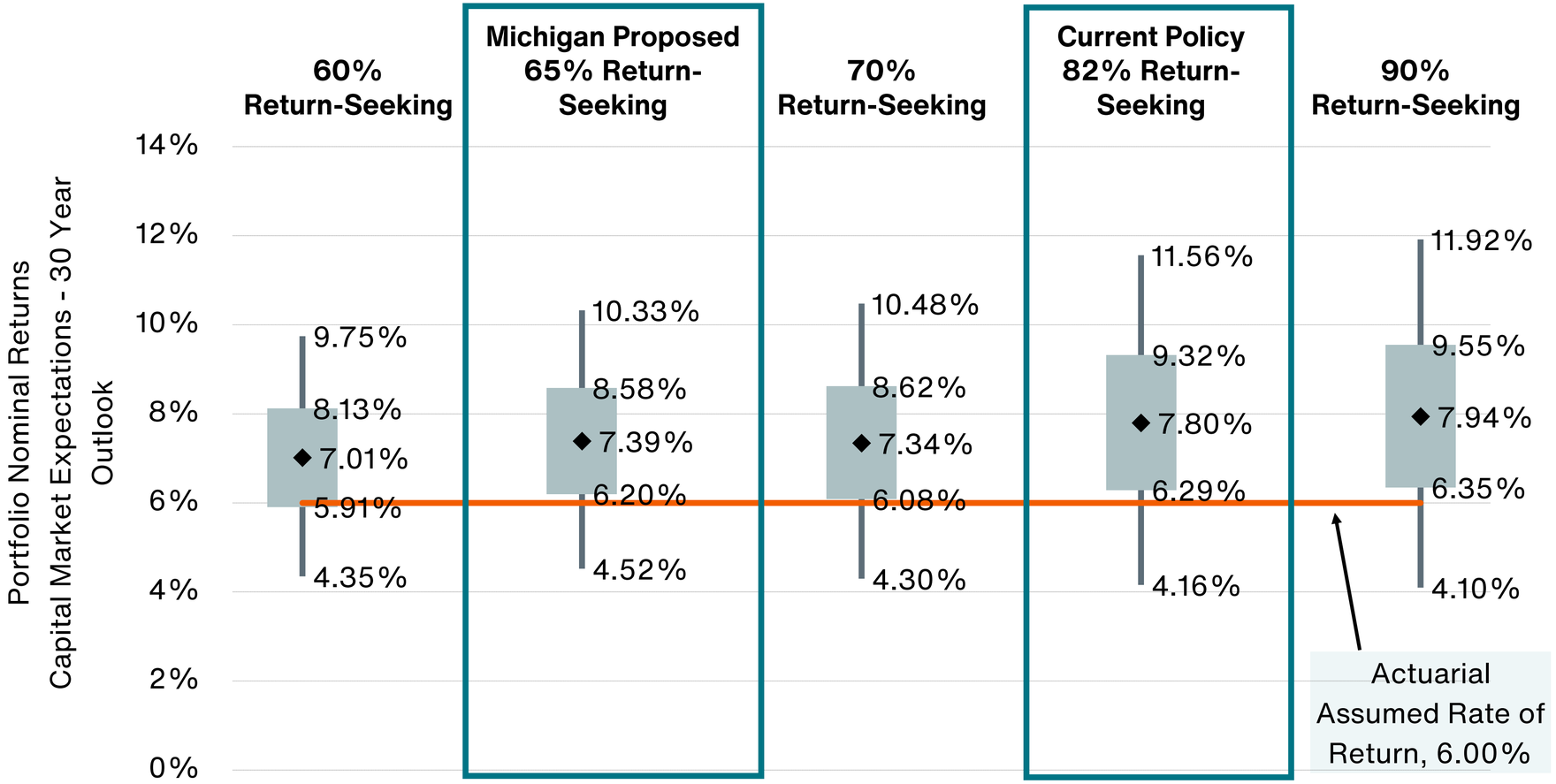
Key Takeaways

- Current Policy expected return of **7.80%** exceeds the 6.00% actuarial assumed rate of return
- Current Frontier is more efficient than three of the four Aon Model Portfolios
- Michigan Proposed (65% R-S) improves expected return/volatility beyond Current Frontier

[1] Expected returns are using AIUSA Q2 2024 30-Year Capital Market Assumptions (CMAs) as of 3/31/2024. 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] Liquid Alts modeled using Hedge Funds (Low Beta – Institutional Quality)
Percentages may not sum to 100% due to rounding.

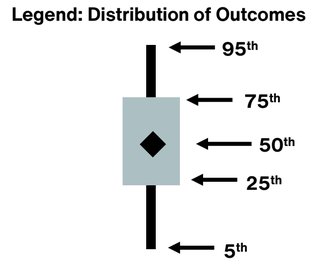
Portfolio Analysis – Range of Nominal Returns

Current target portfolio expected return[1] exceeds the actuarial rate of return



Key Takeaways

- Median expected returns for policies shown are projected to exceed the actuarial assumed rate of return (6.00%)
- The probability of meeting the actuarial rate of return by portfolio is the following:
  - 60% R-S: 73%
  - Michigan Proposed (65% R-S): 79%
  - 70% R-S: 76%
  - Current (82% R-S): 79%
  - 90% R-S: 79%



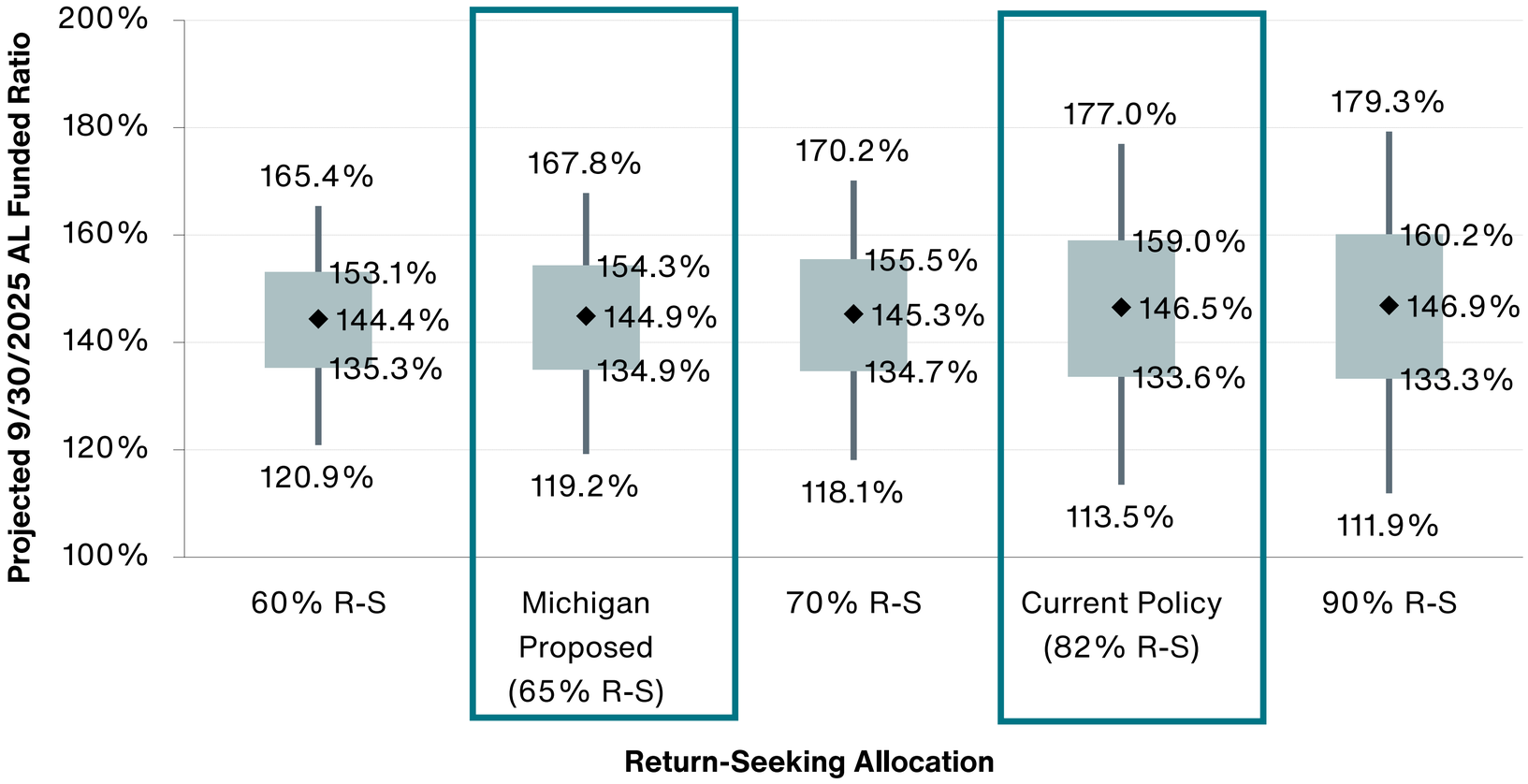
[1] Expected returns based on Aon Investments Q2 2024 30-year Capital Market Assumptions assuming the detailed portfolios found in the Appendix. All expected returns are geometric (long-term compounded; rounded to the nearest decimal) and net of investment fees. Expected returns presented are models and do not represent the returns of an actual client account. Not a guarantee of future results. See Appendix for the Capital Market Assumptions.

Asset-Liability Projection Analysis

Section 3: Analysis

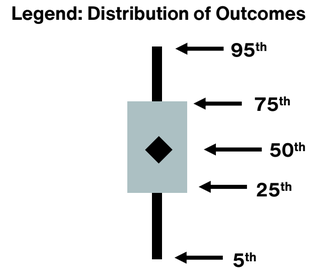
Asset-Liability Projection Analysis

Short-Term | Market Value of Assets / Actuarial Liability Funded Ratio



Key Takeaway

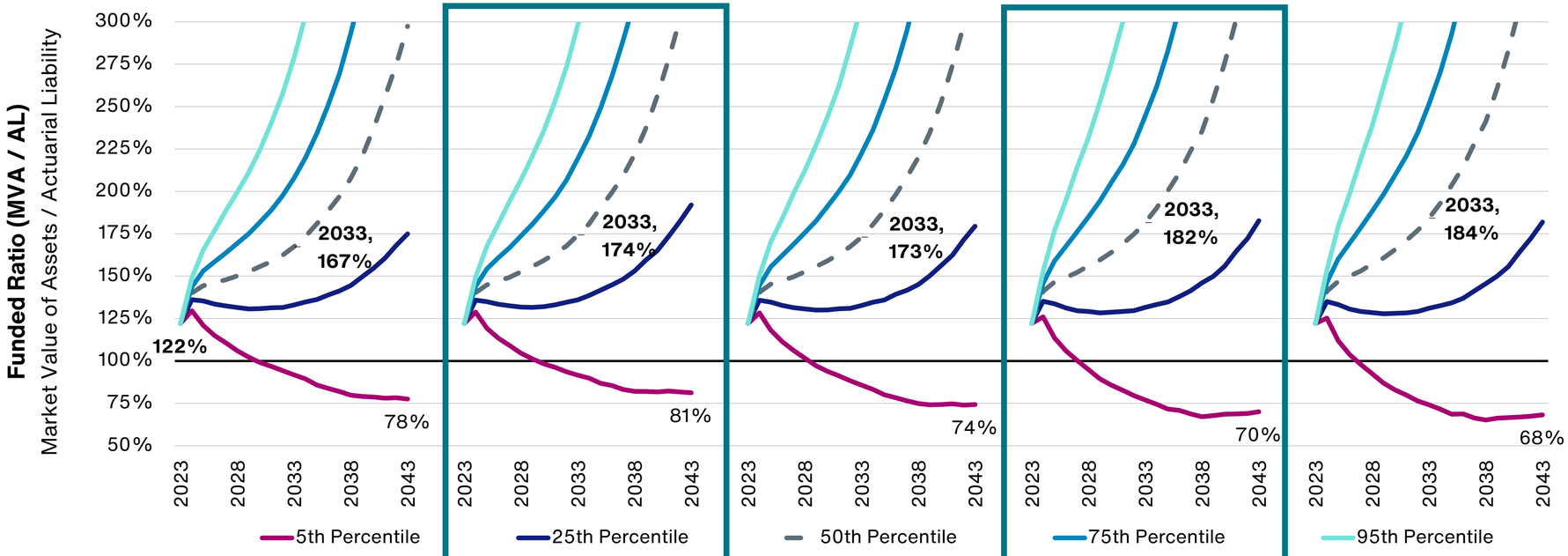
- The Michigan Proposed (65% R-S) portfolio is projected to narrow the range of potential outcomes but with a lower expected (50th percentile) outcome for 1-year AL funded ratio relative to the Current (82% R-S) portfolio



Projections assume a constant 6.00% discount rate for liabilities for all investment policies studied and reflect actual investment returns through March 31, 2024. Projections in this material include estimated expenses paid from plan assets, estimated to be $9 million for fiscal year ending 9/30/2024, projected to increase with inflation, 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.

Asset-Liability Projection Analysis

Long-Term (20 Years) | Market Value of Assets / Actuarial Liability Funded Ratio



Strategy	60% Return-Seeking			Michigan Proposed 65% Return-Seeking			70% Return-Seeking			Current Policy 82% Return-Seeking			90% Return-Seeking		
Year	**2028**	**2033**	**2043**	**2028**	**2033**	**2043**	**2028**	**2033**	**2043**	**2028**	**2033**	**2043**	**2028**	**2033**	**2043**
5th Percentile	106%	92%	78%	105%	92%	81%	102%	86%	74%	95%	77%	70%	92%	74%	68%
25th Percentile	131%	133%	175%	132%	136%	192%	131%	133%	179%	129%	132%	183%	128%	131%	182%
50th Percentile	150%	167%	297%	153%	174%	>300%	153%	173%	>300%	156%	182%	>300%	157%	184%	>300%
75th Percentile	169%	208%	>300%	174%	219%	>300%	176%	222%	>300%	185%	245%	>300%	188%	252%	>300%
95th Percentile	200%	279%	>300%	207%	298%	>300%	212%	>300%	>300%	232%	>300%	>300%	239%	>300%	>300%
Prob. > 300%	<1%	4%	50%	<1%	5%	55%	<1%	7%	54%	<1%	16%	58%	<1%	18%	59%

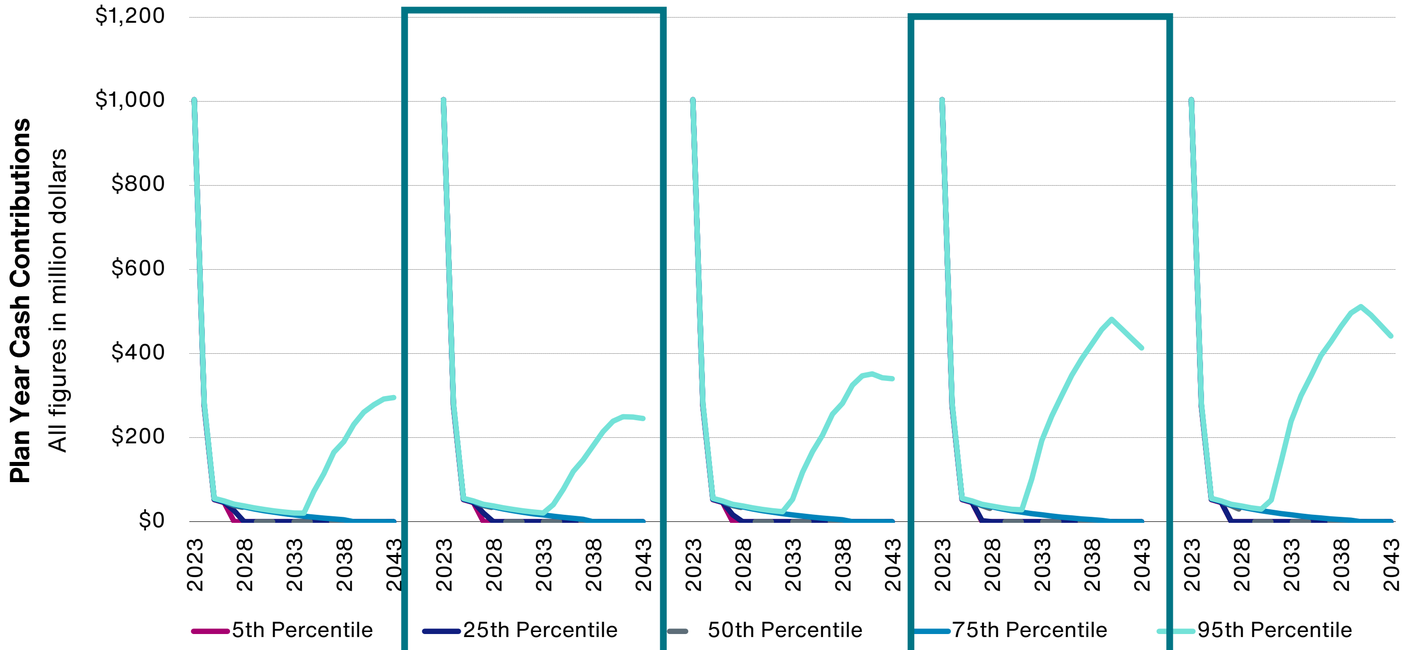
Key Observations

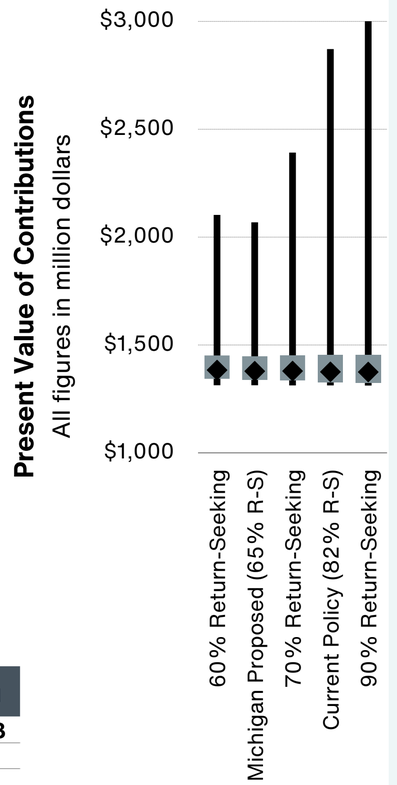
- The funded ratio is expected to grow over the projection period in the central expectation (50th percentile outcome)
- The Michigan Proposed (65% R-S) strategy improves the downside 95th percentile while still maintaining expected funded ratio growth in the central trendline

Projections assume a constant 6.00% discount rate for liabilities for all investment policies studied and reflect actual investment returns through March 31, 2024. Projections in this material include estimated expenses paid from plan assets, estimated to be $9 million for fiscal year ending 9/30/2024, projected to increase with inflation, 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.

Asset-Liability Projection Analysis

Total Contribution Amounts (Employer + Employee)





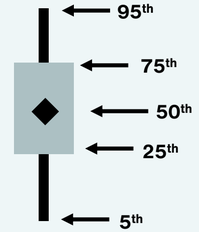
Strategy	60% Return-Seeking			Michigan Proposed 65% Return-Seeking			70% Return-Seeking			Current Policy 82% Return-Seeking			90% Return-Seeking		
Year	2028	2033	2043	2028	2033	2043	2028	2033	2043	2028	2033	2043	2028	2033	2043
5th Percentile	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
25th Percentile	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
50th Percentile	$33	$0	$0	$33	$0	$0	$33	$0	$0	$30	$0	$0	$27	$0	$0
75th Percentile	$35	$16	$0	$35	$16	$0	$35	$16	$0	$35	$16	$0	$35	$16	$0
95th Percentile	$37	$20	$295	$37	$21	$245	$37	$53	$340	$37	$193	$413	$37	$238	$442

Projections assume a constant 6.00% discount rate for liabilities for all investment policies studied and reflect actual investment returns through March 31, 2024. Projections in this material include estimated expenses paid from plan assets, estimated to be $9 million for fiscal year ending 9/30/2024, projected to increase with inflation, 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.
Present value measured at 6.00% discount rate.

Key Observations

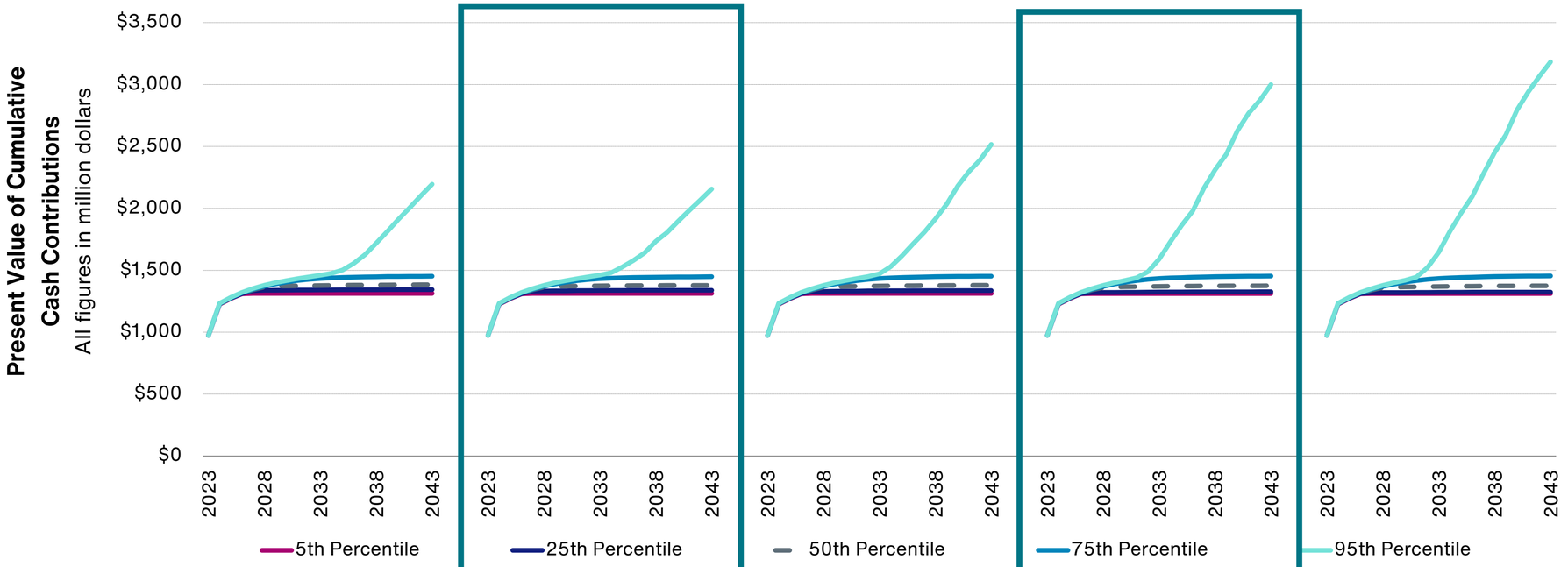
- Plan contributions are expected to decrease for fiscal year end 2025 as the plan's well-funded status is recognized through the funding policy
- The Michigan Proposed (65% R-S) portfolio improves the downside 95th percentile of results relative to the Current Policy (82% R-S)

Legend: Distribution of Outcomes



Asset-Liability Projection Analysis

Present Value of Cumulative Total Contribution Amounts (Employer + Employee)



Strategy	60% Return-Seeking			Michigan Proposed 65% Return-Seeking			70% Return-Seeking			Current Policy 82% Return-Seeking			90% Return-Seeking		
Year	**2028**	**2033**	**2043**	**2028**	**2033**	**2043**	**2028**	**2033**	**2043**	**2028**	**2033**	**2043**	**2028**	**2033**	**2043**
5th Percentile	$1,313	$1,314	$1,314	$1,313	$1,313	$1,313	$1,313	$1,313	$1,313	$1,312	$1,312	$1,313	$1,312	$1,312	$1,312
25th Percentile	$1,338	$1,342	$1,344	$1,333	$1,337	$1,338	$1,329	$1,334	$1,336	$1,321	$1,324	$1,327	$1,320	$1,322	$1,324
50th Percentile	$1,365	$1,377	$1,384	$1,364	$1,375	$1,379	$1,364	$1,374	$1,380	$1,362	$1,370	$1,376	$1,361	$1,369	$1,375
75th Percentile	$1,372	$1,434	$1,452	$1,371	$1,433	$1,448	$1,371	$1,434	$1,452	$1,370	$1,434	$1,454	$1,370	$1,434	$1,454
95th Percentile	$1,379	$1,460	$2,195	$1,379	$1,462	$2,156	$1,379	$1,472	$2,517	$1,378	$1,591	$2,999	$1,378	$1,646	$3,183

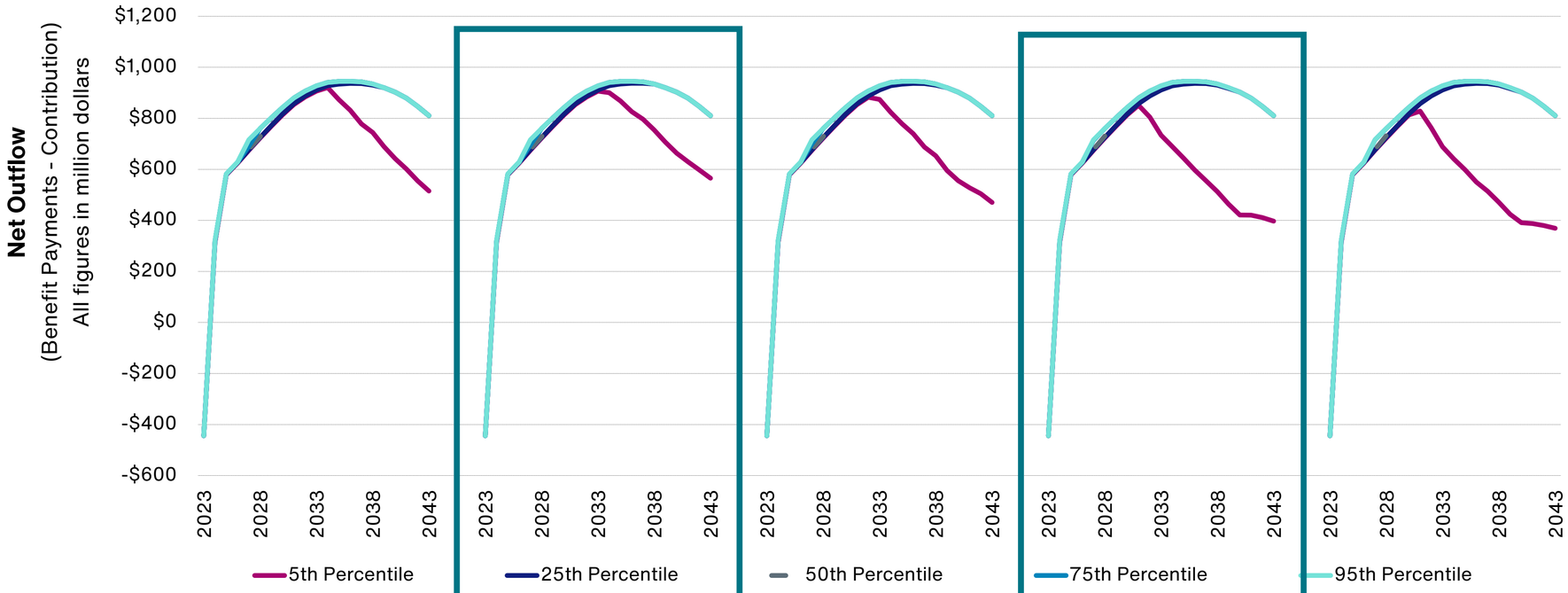
Key Observations

- The growth in cumulative plan contributions is expected to decrease over time as the plan's well-funded status is recognized through the funding policy
- The Michigan Proposed (65% R-S) strategy improves the downside 95th percentile of results

Projections assume a constant 6.00% discount rate for liabilities for all investment policies studied and reflect actual investment returns through March 31, 2024. Projections in this material include estimated expenses paid from plan assets, estimated to be $9 million for fiscal year ending 9/30/2024, projected to increase with inflation, 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.

Asset-Liability Projection Analysis

Net Outflow Analysis: (Benefit Payments less Contributions)



Strategy	60% Return-Seeking			Michigan Proposed 65% Return-Seeking			70% Return-Seeking			Current Policy 82% Return-Seeking			90% Return-Seeking		
Year	**2028**	**2033**	**2043**	**2028**	**2033**	**2043**	**2028**	**2033**	**2043**	**2028**	**2033**	**2043**	**2028**	**2033**	**2043**
5th Percentile	$723	$907	$515	$723	$906	$565	$723	$874	$471	$723	$734	$397	$723	$689	$369
25th Percentile	$725	$911	$810	$725	$911	$810	$725	$911	$810	$725	$911	$810	$725	$911	$810
50th Percentile	$727	$927	$810	$727	$927	$810	$727	$927	$810	$730	$927	$810	$733	$927	$810
75th Percentile	$760	$927	$810	$760	$927	$810	$760	$927	$810	$760	$927	$810	$760	$927	$810
95th Percentile	$760	$927	$810	$760	$927	$810	$760	$927	$810	$760	$927	$810	$760	$927	$810

Key Observations

- The Plan is assumed to have net outflows increase over the projection period
- The amount of plan contributions directly impact the net outflow
- Net outflows are expected to increase over time as contributions to the plan are projected to decrease

Projections assume a constant 6.00% discount rate for liabilities for all investment policies studied and reflect actual investment returns through March 31, 2024. Projections in this material include estimated expenses paid from plan assets, estimated to be $9 million for fiscal year ending 9/30/2024, projected to increase with inflation, 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.

Liquidity Analysis

Section 3: Analysis

Liquidity Analysis
Background

Michigan Public School Employees' Retirement System (MPSERS) liquidity analysis is performed under its Current Policy (82% R-S) and Michigan Proposed (65% R-S) portfolios

Intended as a stress-testing model, incorporating the profile of the liabilities as well as expected future contributions

Uses different scenarios for economic environments and other relevant events

Shows how the portfolio's liquidity profile could evolve with a given investment strategy

We categorized investments by liquidity into five buckets

Liquid (Risk-Reducing Assets): Less than 3 months needed for return of capital (e.g., publicly traded securities)

Liquid (Return-Seeking Assets): Less than 3 months needed for return of capital (e.g., publicly traded securities)

Quasi-Liquid: Typical lock-up of 3–12 months; Conservatively, we assumed a 1-year lock-up in most economic environments, 2 years in a Recession scenario, and 3 years in a Dark Skies scenario (e.g., many hedge funds, open-end real assets)

Illiquid: Potential lock-up of 5–10 years, depending on economic environment (e.g., closed-end real assets)

Illiquid: Potential lock-up of 10+ years (e.g., typical private equity)

This is intended to be a conservative approximation of the actual liquidity properties of the assets

Liquidity Analysis

Asset allocation, liquidity category, and economic scenarios

Liquidity Category	Asset Class	Current Policy (82% R-S)	Michigan Proposed (65% R-S)
Liquid (Risk-Reducing Assets)	Long Term Fixed Income	13.00%	26.00%
	Cash and Short Term Fixed Income	2.00%	4.00%
	Subtotal	**15.00%**	**30.00%**
Liquid (Return-Seeking Assets)	Public Equity	40.00%	27.00%
	Real Return (Multi-Asset Credit)	5.00%	3.50%
	Real Estate (REITs)	1.00%	0.50%
	Subtotal	**46.00%**	**31.00%**
Quasi-Liquid Assets	Real Estate (Core Real Estate)	1.50%	0.75%
	Absolute Return (Hedge Funds) [1]	3.60%	6.00%
	Subtotal	**5.10%**	**6.75%**
Illiquid 5-10 Years	Real Estate (Non-Core Real Estate)	6.00%	3.00%
	Absolute Return (Private Debt) [1]	5.40%	9.00%
	Subtotal	**11.40%**	**12.00%**
Illiquid 10+ Years	Private Equity	16.00%	16.00%
	Real Return (Private Equity)	5.00%	3.50%
	Real Estate (Infrastructure)	1.50%	0.75%
	Subtotal	**22.50%**	**20.25%**
Totals	Asset Allocation	100.00%	100.00%
	Quasi + Illiquid Assets	**39.00%**	**39.00%**

Base Case Scenario

- Markets perform consistent with Aon's Capital Market Assumptions (~50th percentile)

Recession Scenario

- Somewhat pessimistic outlook for the markets
- Return-seeking assets decline in the first two years with a modest rebound in later years

Dark Skies Scenario

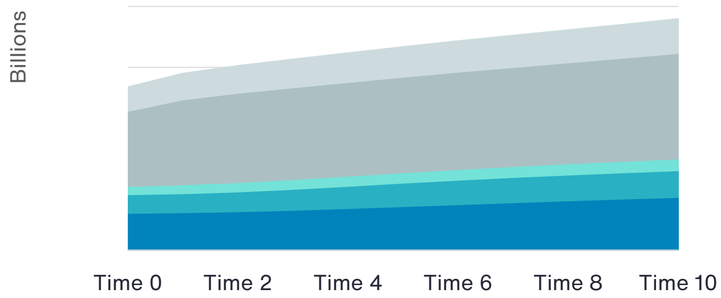
- Very pessimistic outlook for markets
- Return-seeking assets decline significantly
- The value of public equities declines approximately 50% over three years, without an immediate rebound

[1] Absolute Return has elements of both return-seeking and risk-reducing assets. In past asset-liabilities studies, the entire allocation was reflected as return-seeking. For this year's study, absolute return has been categorized as 2/3 return-seeking and 1/3 risk-reducing based on the composition of the asset class within Michigan's portfolio. The full allocation is reflected in the corresponding liquidity category for purposes of the liquidity analysis.

Liquidity Analysis – Results

Current Policy (82% R-S)

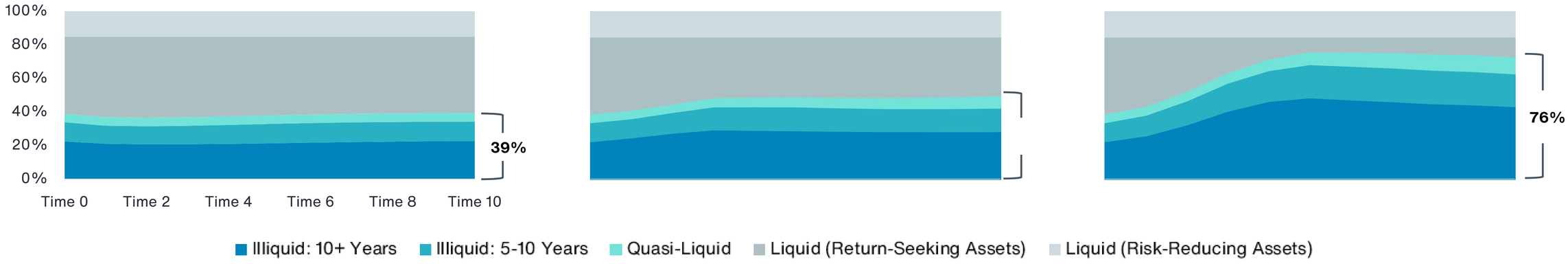
Base Case



Recession

Dark Skies

Base Case - NAV (%)

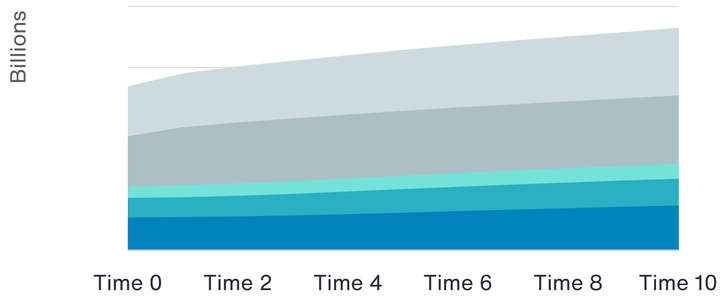


Note: Time 0 represents a starting point of March 31, 2024

Liquidity Analysis – Results

Michigan Proposed Portfolio (65% R-S)

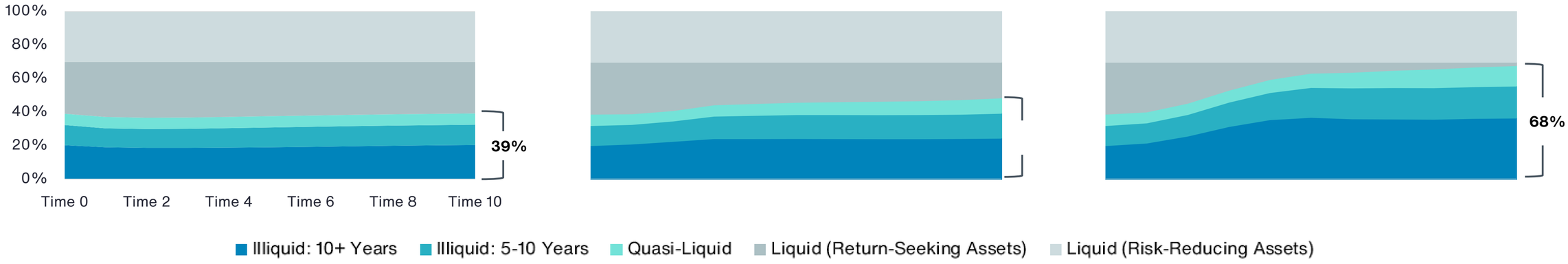
Base Case



Recession

Dark Skies

Base Case - NAV (%)



Note: Time 0 represents a starting point of March 31, 2024

Liquidity Analysis – Summary of Results

Sufficient liquidity in base case, recession, and dark skies scenario; protracted downturn increases stress

	Current Portfolio (82% R-S)		Michigan Proposed Portfolio (65% R-S)	
	Max Illiquid Allocation	Ratio of Max Illiquids to Base Case	Max Illiquid Allocation	Ratio of Max Illiquids to Base Case
Base Case	39%	1.00	39%	1.00
Recession	50%	1.28	49%	1.26
Dark Skies	76%	1.95	68%	1.74

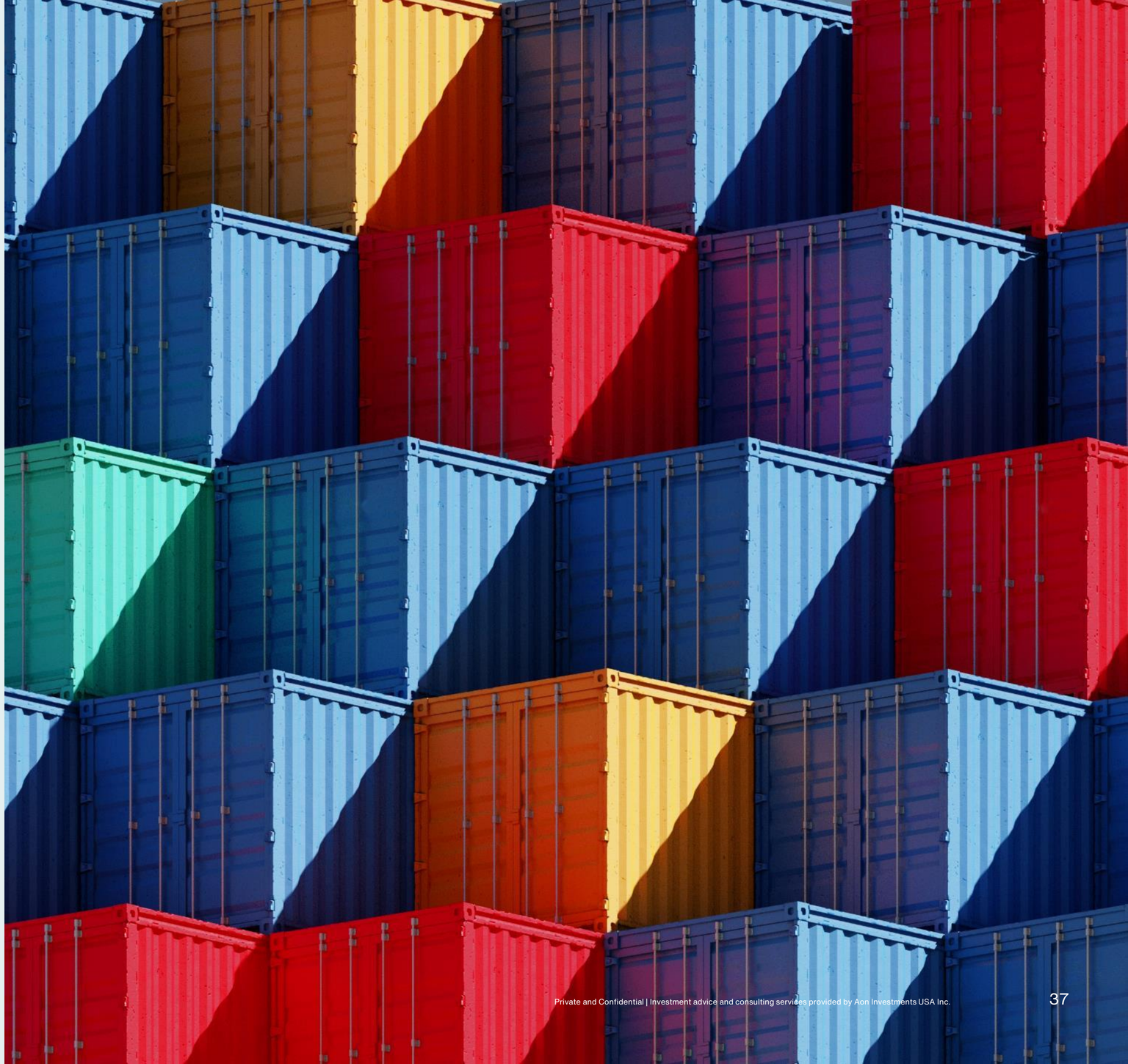
Note: This analysis is highly sensitive to the assumed contributions. If MPSERS receives less contributions than assumed, especially in a Dark Skies environment, then illiquid and quasi-liquid investments would drift even further from target and the potential for liquidity issues increases

Key Takeaways

- MPSERS has sufficient liquidity in the modeled Base Case, Recession, and Dark Skies economic scenarios for both the Current and Proposed asset allocations
  - The modeled scenarios show no problems paying benefits to participants
- In a Dark Skies economic scenario, assets are projected to decline increasing the proportion of illiquid assets
  - Potential remedies if the Dark Skies scenario occurs include:
    - Accepting this risk
    - Paring back commitments more than assumed in this analysis and/or selling on the secondary market
    - Adjusting the funding policy

4

Summary & Conclusions



Summary & Conclusions

This material is focused on the MPSERS OPEB plan

- The recommendation is to apply the Michigan proposed (65% R-S) allocation to each of Michigan's plans with funded ratios exceeding 100% to focus on risk mitigation

	Well-Funded Pool
	MPSERS - OPEB
Funded Position	122.1% Funded as of 9/30/2023
Current Investment Strategy	82% Return-Seeking
Asset-Liability Analysis	• Plan is expected to further grow funded ratio due to assets growth and a declining liability • Net outflow is projected to significantly increase in the near-term when funding contributions are not necessary
Investment Strategies to Consider	• Consider a de-risked allocation to improve projected volatility of funded ratio and contributions given the well-funded status and funded ratio trajectory • Increase liquid assets due to expected near-term rise in net outflow from lower future contributions

Summary of Results

Portfolios	Portfolio Metrics (30-year CMAs)			Financial Results				
				20-year Ending Funded Ratio (MVA / AL)		20-year Present Value of Contributions ($, billions)		Year Full Funding is Reached in Median Forecast
	Expected Nominal Return[1]	Expected Nominal Volatility	Sharpe Ratio	Expected[2]	Downside[3]	Expected[2]	Downside[4]	Expected[2]
MPSERS OPEB Plan								
60% Return-Seeking	7.01%	9.03%	0.34	297%	78%	$1.4	$2.1	Achieved
Michigan Proposed Target (65% R-S)	7.39%	9.72%	0.36	327%	81%	$1.4	$2.1	Achieved
70% Return-Seeking	7.34%	10.36%	0.33	323%	74%	$1.4	$2.4	Achieved
Current Target (82% R-S)	7.80%	12.45%	0.31	359%	70%	$1.4	$2.9	Achieved
90% Return-Seeking	7.94%	13.16%	0.31	370%	68%	$1.4	$3.1	Achieved

[1] Expected returns are using Aon's Q2 2024 30-Year Capital Market Assumptions as of 3/31/2024. 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. Analysis includes $9MM in expenses for the fiscal year ending 9/30/2024, projected to increase with inflation, assumed to be inclusive of investment consulting fees, paid from trust assets. 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] Expected = 50th percentile outcome or central expectation across all 5,000 simulations
[3] Downside = 5th percentile outcome across all 5,000 simulations
[4] Downside = 95th percentile outcome across all 5,000 simulations

Summary & Conclusions

Recommended portfolios

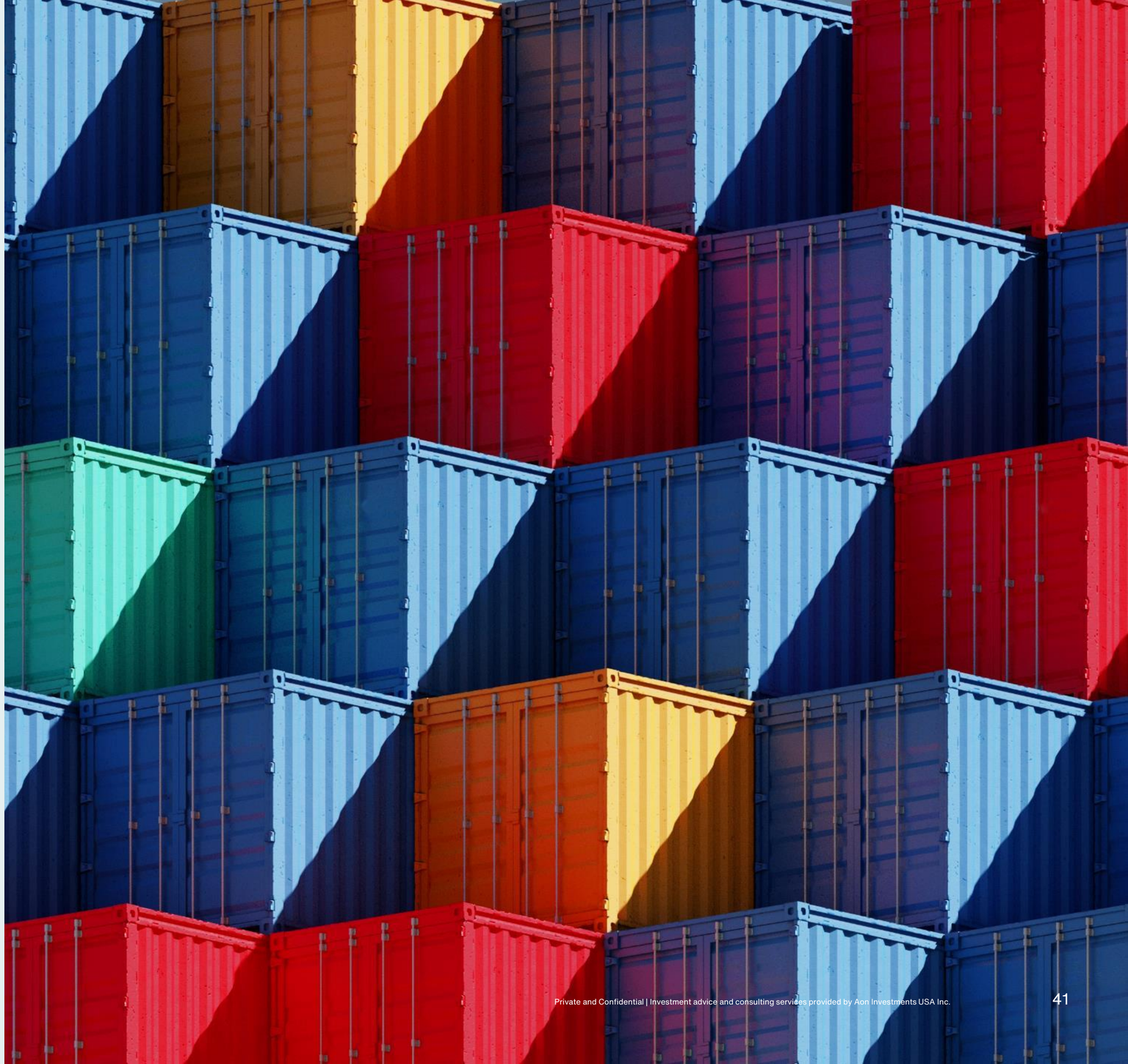
	Current Target Allocation %	Michigan Proposed OPEB Target Allocation %	Capital Market Assumption Mapping
Return-Seeking			
- U.S. Equity	25.0%	16.0%	90% U.S. Large Cap / 10% U.S. Small Cap
- Private Equity	16.0%	16.0%	Private Equity
- International Equity	15.0%	11.0%	75% International Developed / 25% Emerging Markets
- Real Return / Opportunistic	10.0%	7.0%	50% Private Equity / 50% Multi-Asset Credit
- Real Estate & Infrastructure	10.0%	5.0%	60% Non-Core Real Estate / 15% Core Real Estate / 10% U.S. REITs / 15% Infrastructure
- Absolute Return (2/3)[1]	6.0%	10.0%	60% Private Debt / 40% Hedge Funds (Low Beta – Institutional Quality)
- Total	**82.0%**	**65.0%**	
Risk-Reducing			
- Cash & Short Term Fixed Income	2.0%	4.0%	Cash
- Long Term Fixed Income	13.0%	26.0%	Core Fixed Income
- Absolute Return (1/3)[1]	3.0%	5.0%	60% Private Debt / 40% Hedge Funds (Low Beta – Institutional Quality)
- Total	**18.0%**	**35.0%**	
Total	100.0%	100.0%	

[1] Absolute Return has elements of both return-seeking and risk-reducing assets. In past asset-liabilities studies, the entire allocation was reflected as return-seeking. For this year's study, absolute return has been categorized as 2/3 return-seeking and 1/3 risk-reducing based on the composition of the asset class within Michigan's portfolio

5

Appendix

- Assumptions and Methods
- Liquidity Analysis Detail
- 2024 Horizon Survey
- Additional Asset-Liability Analysis
- About This Material



Assumptions and Methods

Section 5: Appendix

Actuarial Assumptions and Methods

Data

- Actuarial projections provided by the plan actuary (GRS Consulting) as of September 30, 2023 on an open group basis

Actuarial assumptions:

- Valuation Rate of Interest = 6.00% as of September 30, 2023 (MPSERS)
- Inflation = 2.35%
- Payroll Growth = 2.75%
- Actuarial Value of Assets: determined by recognizing differences between actual and expected investment income over a closed five-year period with a 30% corridor
- All other assumptions as documented in the Actuarial Valuation Report as of September 30, 2023, unless noted otherwise

Projection Assumptions

- Actual asset experience through March 31, 2024 was factored in using monthly asset returns from October 2023 through March 2024 as provided by the State of Michigan Retirement System in the Quarterly Investment Review reports

Actuarial Assumptions and Methods

Contribution Policy

- Normal Cost plus a level percent amortization of the unfunded liability
  - The employer normal cost contribution is not less than the actuarially determined employer normal cost until the plan is at or above 140% for the OPEB plan
  - Once the plan is above the 140% funding target, the employer normal cost contribution for any fiscal year is assumed to reduce by the negative UAAL in excess of the funding target but not less than 0% of payroll
- For purposes of amortizing the UAAL, a level amortization is assumed beginning with the September 30, 2023 valuation

- Amortization of Unfunded Actuarial Liability as of 9/30/2023 uses a closed, 13-year amortization period to be amortized by the end of the period

- Future changes in the UAAL due to actuarial gains or losses are assumed to be amortized over a layered 10-year period, subject to employer UAAL contribution being at least equal to the prior year employer UAAL contribution while 9/30/2023 UAAL is being amortized

- If plan is more than 100% funded, all UAAL layers are eliminated and an open 20-year amortization period is used

Actuarial Assumptions and Methods

Senate Bill 911

The analysis includes the following provisions reflecting State of Michigan Senate Bill 911:

- Beginning in fiscal year 2025-2026, normal cost for retiree health care benefits is exempt from the requirement that they not be less than the normal costs for benefits in the immediately preceding fiscal year. This removes the normal cost contribution floor provision previously reflected in asset-liability studies.
- Beginning in fiscal year 2024-2025, the unfunded actuarial accrued liability (UAAL) contribution due and payable is equal to the actuarially determined contribution. This resets the UAAL contribution floor provision previously reflected in asset-liability studies.
- Beginning in fiscal year 2025-2026, remove requirement that members who became members before September 4, 2021 contribute 3% of their compensation toward the normal costs of retiree health care benefits.

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



Summary of Capital Market Assumptions

As of March 31, 2024

		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%	6.6%	18.0%	0.97	4.3%	6.7%	18.4%	0.96
2	Small Cap U.S. Equity	4.5%	6.8%	24.0%	1.23	4.8%	7.2%	24.7%	1.23
3	International Equity (Developed)	4.3%	6.6%	19.1%	0.93	4.3%	6.7%	19.7%	0.93
4	Emerging Markets Equity	4.6%	6.9%	22.0%	0.98	4.5%	6.9%	22.5%	0.98
	Fixed Income								
5	Cash (Gov't)	1.9%	4.1%	1.4%	0.01	1.6%	3.9%	2.1%	0.01
6	Core Fixed Income	2.4%	4.7%	5.0%	0.00	2.2%	4.6%	5.4%	0.00
7	Multi-Asset Credit[2]	4.6%	6.9%	8.9%	0.30	4.6%	7.0%	9.3%	0.31
	Alternatives								
8	Direct Hedge Funds[2, 3]	4.8%	7.1%	5.2%	0.21	4.5%	6.9%	5.7%	0.23
9	Hedge Funds - Low Beta[2]	3.8%	6.1%	4.0%	0.09	3.5%	5.9%	4.3%	0.09
10	US REITs	4.2%	6.5%	18.5%	0.69	4.1%	6.5%	19.0%	0.69
11	Core Real Estate	3.6%	5.9%	15.0%	0.30	3.4%	5.8%	15.3%	0.30
12	Non-Core Real Estate	5.5%	7.8%	25.0%	0.65	5.2%	7.6%	25.4%	0.65
13	Private Equity	6.8%	9.2%	20.0%	0.69	7.1%	9.6%	20.5%	0.69
14	Infrastructure	5.0%	7.3%	14.5%	0.28	4.9%	7.3%	15.0%	0.28
15	Closed-End Real Assets	5.9%	8.2%	15.7%	0.47	5.9%	8.3%	16.1%	0.46
16	Private Debt	5.8%	8.1%	16.6%	0.33	5.4%	7.8%	17.4%	0.34
	Inflation								
17	Inflation	0.0%	2.3%	1.7%		0.0%	2.3%	1.7%	

[1] Expected returns are using Aon's 10/30-Year Capital Market Assumptions as of 3/31/2024. 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 March 31, 2024

	Nominal Correlations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Large Cap U.S. Equity	**1.00**	0.93	0.79	0.73	0.10	0.00	0.58	0.74	0.40	0.69	0.35	0.46	0.62	0.35	0.52	0.34	0.09
2	Small Cap U.S. Equity	0.93	**1.00**	0.74	0.69	0.08	-0.01	0.54	0.69	0.37	0.64	0.33	0.44	0.60	0.34	0.50	0.33	0.08
3	International Equity (Developed)	0.79	0.74	**1.00**	0.75	0.05	-0.02	0.58	0.63	0.35	0.56	0.34	0.44	0.55	0.31	0.49	0.34	0.11
4	Emerging Markets Equity	0.73	0.69	0.75	**1.00**	0.07	0.00	0.60	0.58	0.34	0.52	0.33	0.41	0.53	0.30	0.46	0.36	0.09
5	Cash (Gov't)	0.10	0.08	0.05	0.07	**1.00**	0.43	0.05	0.24	0.19	0.10	0.17	0.15	0.10	0.14	0.19	-0.23	0.42
6	Core Fixed Income	0.00	-0.01	-0.02	0.00	0.43	**1.00**	0.20	0.15	0.12	0.01	0.05	0.04	0.01	0.04	0.05	-0.03	0.00
7	Multi-Asset Credit	0.58	0.54	0.58	0.60	0.05	0.20	**1.00**	0.63	0.44	0.39	0.21	0.28	0.38	0.21	0.32	0.69	0.10
8	Direct Hedge Funds	0.74	0.69	0.63	0.58	0.24	0.15	0.63	**1.00**	0.76	0.53	0.32	0.39	0.52	0.31	0.45	0.41	0.14
9	Hedge Funds - Low Beta	0.40	0.37	0.35	0.34	0.19	0.12	0.44	0.76	**1.00**	0.28	0.18	0.22	0.29	0.18	0.26	0.30	0.12
10	US REITs	0.69	0.64	0.56	0.52	0.10	0.01	0.39	0.53	0.28	**1.00**	0.45	0.49	0.46	0.25	0.50	0.23	0.08
11	Core Real Estate	0.35	0.33	0.34	0.33	0.17	0.05	0.21	0.32	0.18	0.45	**1.00**	0.96	0.32	0.19	0.85	0.12	0.10
12	Non-Core Real Estate	0.46	0.44	0.44	0.41	0.15	0.04	0.28	0.39	0.22	0.49	0.96	**1.00**	0.38	0.22	0.89	0.16	0.10
13	Private Equity	0.62	0.60	0.55	0.53	0.10	0.01	0.38	0.52	0.29	0.46	0.32	0.38	**1.00**	0.33	0.45	0.26	0.08
14	Infrastructure	0.35	0.34	0.31	0.30	0.14	0.04	0.21	0.31	0.18	0.25	0.19	0.22	0.33	**1.00**	0.64	0.12	0.09
15	Closed-End Real Assets	0.52	0.50	0.49	0.46	0.19	0.05	0.32	0.45	0.26	0.50	0.85	0.89	0.45	0.64	**1.00**	0.18	0.12
16	Private Debt	0.34	0.33	0.34	0.36	-0.23	-0.03	0.69	0.41	0.30	0.23	0.12	0.16	0.26	0.12	0.18	**1.00**	0.00
17	Inflation	0.09	0.08	0.11	0.09	0.42	0.00	0.10	0.14	0.12	0.08	0.10	0.10	0.08	0.09	0.12	0.00	**1.00**

Aon Investments' Capital Market Assumptions

Explanation of Capital Market Assumptions—03/31/2024

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 first quarter of 2024. 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 forecast and market data sources including, but not limited to MSCI, Factset and Bloomberg. 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 03/31/2024. 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.

Fixed Income		
Cash	1.6%	Over the long run, we expect the real yield on cash and money market instruments to produce a real return of 1.6% in a moderate to low-inflationary environment.
TIPS	2.0%	We expect intermediate duration Treasury Inflation-Protected Securities to produce a real return of about 2.0%.
Core Fixed Income (i.e., Market Duration)	2.2%	We expect intermediate duration Treasuries to produce a real return of about 1.6%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 0.6%, resulting in a long-term real return of 2.2%.

Aon Investments' Capital Market Assumptions

Explanation of Capital Market Assumptions—03/31/2024

Fixed Income		
Core Plus Bonds	2.6%	Modeled as 20% 5 duration gov't with real return of 1.6% and 80% 5 duration corporate bonds with real return of 2.9%.
Long Duration Bonds – Government and Credit	2.8%	We expect Treasuries with a duration of ~14 years to produce a real return of 2.3%. 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 2.8%.
Long Duration Bonds – Credit	3.4%	We expect Treasuries with a duration of ~12 years to produce a real return of 2.3%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults and downgrades) to be 1.1%, resulting in an expected real return of 3.4%.
Long Duration Bonds – Government	2.3%	We expect Treasuries with a duration of ~16 years to produce a real return of 2.3% during the next 30 years.
High Yield Bonds	3.6%	We expect intermediate duration Treasuries to produce a real return of about 1.6%. 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 3.6%.
Bank Loans	4.0%	We expect LIBOR to produce a real return of about 2.2%. We estimate the fair value credit spread (credit risk premium - expected losses from defaults) to be 1.8%, resulting in an expected real return of 4.0%.
Non-U.S. Developed Bonds: 50% Hedged	1.7%	We forecast real returns for non-US developed market bonds to be 1.7% 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)	3.7%	We forecast real returns for emerging market sovereign bonds denominated in US dollars to be 3.7% over a 30-year period.
Emerging Market Bonds (Corporate; USD)	3.5%	We forecast real returns for emerging market corporate bonds denominated in US dollars to be 3.5% over a 30-year period.

Aon Investments' Capital Market Assumptions

Explanation of Capital Market Assumptions—03/31/2024

Emerging Market Bonds (Sovereign; Local)	3.3%	We forecast real returns for emerging market sovereign bonds denominated in local currency to be 3.3% over a 30-year period.
Liquid Return-Seeking Fixed Income Institutional Quality	4.6%	We assume real returns from beta exposure to high yield, bank loans and emerging market debt to add 3.9% plus 0.7% from alpha for institutional quality managers, over a 30-year period.
Liquid Return-Seeking Fixed Income Universe	3.9%	We assume real returns from beta exposure to high yield, bank loans and emerging market debt to add 3.9%. We assume no alpha from universe funds, over a 30-year period.
Private Debt-Direct Lending	5.4%	The base building block is bank loans 4.0% + spread 1.4% (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	4.3%	This assumption is based on 1.03 beta to global equities plus inflation and real cash return
Small Cap U.S. Equity	4.8%	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 4.8%. 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	4.6%	We employ a building block process to develop discounted cash flows using the developed and emerging markets that comprise the MSCI All-Country World Index. Our roll-up model produces an expected real return of 4.6% for global equity.
International (Non-U.S.) Equity, Developed Markets	4.3%	This assumption is based on 0.85 beta to global equities plus inflation and real cash return
Emerging Market Stocks	4.5%	This assumption is based on 1.14 beta to global equities plus inflation and real cash return

Aon Investments' Capital Market Assumptions

Explanation of Capital Market Assumptions—03/31/2024

Alternative Asset Classes		
Low Beta (Defensive) Hedge Funds	2.5%	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 Institutional Quality	3.5%	Represent 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 institutional quality.
High Beta (Return Enhancing) Hedge Funds	3.5%	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 Institutional Quality	5.5%	Represents 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 institutional quality.
Direct Hedge Funds Universe	3.0%	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.
Direct Hedge Funds Institutional Quality	4.5%	Generic hedge fund investments which represents a portfolio of top-tier diversified strategies. We assume 50% defensive institutional quality/50% return enhancing institutional quality strategies. To use this category the funds must be institutional quality. 1% base fee + 7% performance fee is deducted from the return expectations.
Core Real Estate	3.4%	Our real return assumption for core real estate is based a gross income of about 3.8%, 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	5.2%	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	4.1%	Our real return assumption for U.S. REITs is based on income of about 4.1% 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—03/31/2024

Commodities	2.7%	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 (1.6%). Also, we believe the roll effect will be -1.0%, resulting in a real return of about 2.7% for commodities.
Private Equity	7.1%	Our private equity assumption reflects a diversified fund of funds with exposure to buyouts, venture capital, distressed debt, and mezzanine debt.
Infrastructure	4.9%	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 4.8% for infrastructure.
eLDI	3.7%	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	5.9%	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.

Liquidity Analysis Detail

Section 5: Appendix

Liquidity Analysis
Assumptions

Assumptions

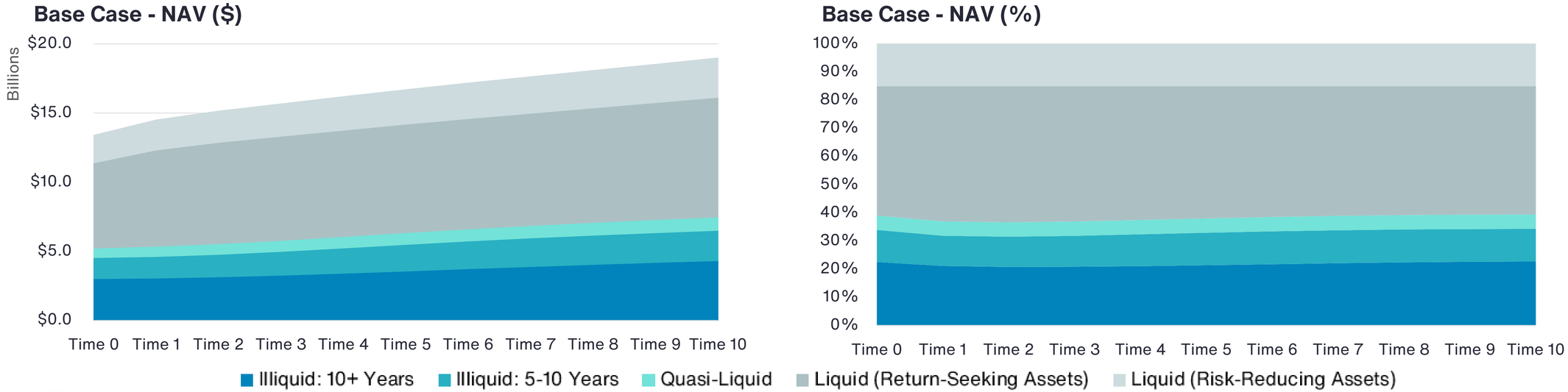
- Starting assets based on the reported March 31, 2024 market value of assets ($13.4 billion)
- The plan's contribution policy is actuarially-based, leveraging the 2024 asset-liability study for projection analysis
- Assumes the portfolio starts at the target asset allocation levels for illiquid assets, maintaining close to the Current Policy portfolio targets over the next 10 years

Liquidity Analysis – Current Policy (82% R-S)

Base Case Economic Scenario

The exhibit below shows the projected liquidity lock-up of the Current Policy (82% R-S) allocation in the Base Case economic scenario, assuming commitments are continued subject to the conditions below:

- Should actual allocations exceed targets by 10%, future commitments are trimmed 15%
- Should actual allocations exceed targets by 20%, future commitments are trimmed 30%



Key Takeaway

- Total illiquid and quasi-liquid assets are projected to stay near 39% of the Plan and can be maintained near the target with no cash flow problems

Note: Time 0 represents a starting point of March 31, 2024

Liquidity Analysis – Current Policy (82% R-S)

Base Case Economic Scenario

The exhibit below shows the projected liquidity lock-up of the Current Policy (82% R-S) allocation in the Base Case economic scenario, assuming commitments are continued subject to the conditions below:

- Should actual allocations exceed targets by 10%, future commitments are trimmed 15%
- Should actual allocations exceed targets by 20%, future commitments are trimmed 30%

Asset Allocation	Time 0	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7	Time 8	Time 9	Time 10
Risk-Reducing Assets	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Liquid Return-Seeking	46%	48%	48%	48%	48%	47%	46%	46%	46%	46%	46%
Total Liquid	**61%**	**63%**	**63%**	**63%**	**63%**	**62%**	**61%**	**61%**	**61%**	**61%**	**61%**
Quasi-Liquid	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Illiquid: 5-10 Year Lock-up	11%	11%	11%	11%	11%	12%	12%	12%	12%	12%	12%
Illiquid: 10+ Year Lock-up	23%	21%	21%	21%	21%	21%	22%	22%	22%	23%	23%
Total Quasi + Illiquid	**39%**	**37%**	**37%**	**37%**	**37%**	**38%**	**39%**	**39%**	**39%**	**39%**	**39%**

Other Metrics	Time 0	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7	Time 8	Time 9	Time 10
Funded Ratio	134%	142%	145%	148%	151%	155%	159%	164%	170%	177%	184%
Benefit Payments ($M)	$588	$626	$664	$705	$748	$792	$833	$872	$904	$928	$946
Contributions ($M)	$641	$166	$50	$43	$37	$18	$0	$0	$0	$0	$0

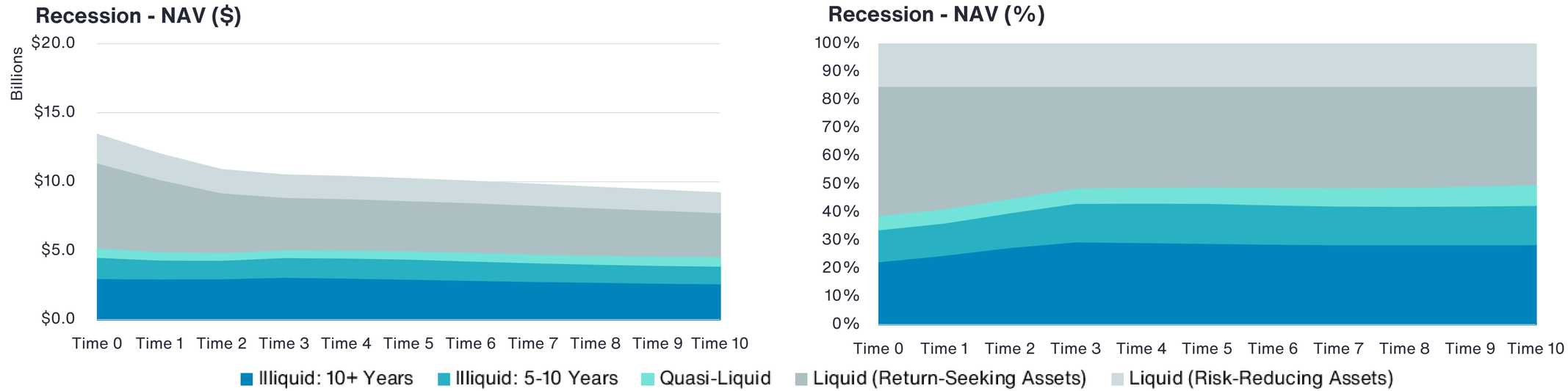
Note: Time 0 represents a starting point of March 31, 2024; percentages may not sum to 100% due to rounding

Liquidity Analysis – Current Policy (82% R-S)

Recession Economic Scenario

The exhibit below shows the projected liquidity lock-up of the Current Policy (82% R-S) allocation in the Recession economic scenario, assuming commitments are continued subject to the conditions below:

- Should actual allocations exceed targets by 10%, future commitments are trimmed 15%
- Should actual allocations exceed targets by 20%, future commitments are trimmed 30%



Key Takeaways:

- Commitments to illiquid alternatives are maintained at the steady state level, but recessionary markets cause the total portfolio to shrink
- Total illiquid and quasi-liquid assets are projected to reach as high as 50% of the Plan due to shrinking market value of the total Plan in this scenario; there would not be a concern with the ability to pay benefits

Note: Time 0 represents a starting point of March 31, 2024

Liquidity Analysis – Current Policy (82% R-S)

Recession Economic Scenario

The exhibit below shows the projected liquidity lock-up of the Current Policy (82% R-S) allocation in the Recession economic scenario, assuming commitments are continued subject to the conditions below:

- Should actual allocations exceed targets by 10%, future commitments are trimmed 15%
- Should actual allocations exceed targets by 20%, future commitments are trimmed 30%

Asset Allocation	Time 0	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7	Time 8	Time 9	Time 10
Risk-Reducing Assets	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Liquid Return-Seeking	46%	44%	40%	36%	36%	36%	36%	36%	36%	36%	35%
Total Liquid	**61%**	**59%**	**55%**	**51%**	**51%**	**51%**	**51%**	**51%**	**51%**	**51%**	**50%**
Quasi-Liquid	5%	5%	5%	5%	6%	6%	6%	6%	7%	7%	7%
Illiquid: 5-10 Year Lock-up	11%	11%	12%	14%	14%	14%	14%	14%	14%	14%	14%
Illiquid: 10+ Year Lock-up	23%	25%	28%	30%	29%	29%	29%	29%	29%	29%	29%
Total Quasi + Illiquid	**39%**	**41%**	**45%**	**49%**	**49%**	**49%**	**49%**	**49%**	**49%**	**49%**	**50%**

Other Metrics	Time 0	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7	Time 8	Time 9	Time 10
Funded Ratio	135%	118%	105%	99%	97%	95%	93%	92%	90%	90%	89%
Benefit Payments ($M)	$588	$625	$664	$704	$748	$791	$832	$871	$903	$927	$944
Contributions ($M)	$640	$164	$49	$41	$35	$31	$27	$54	$107	$142	$163

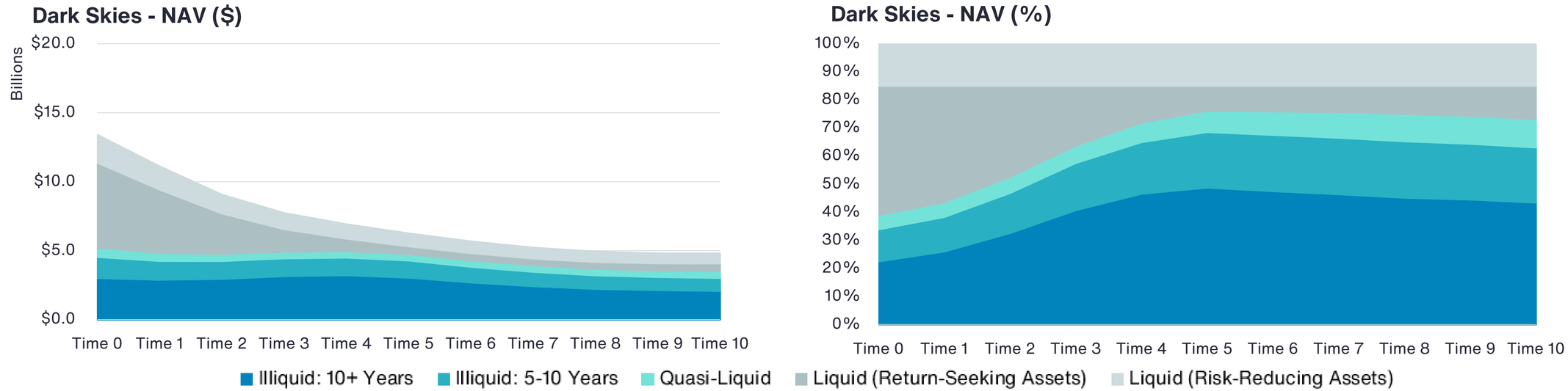
Note: Time 0 represents a starting point of March 31, 2024; percentages may not sum to 100% due to rounding

Liquidity Analysis – Current Policy (82% R-S)

Dark Skies Economic Scenario

The exhibit below shows the projected liquidity lock-up of the Current Policy (82% R-S) allocation in the Dark Skies economic scenario, assuming commitments are continued subject to the conditions below:

- Should actual allocations exceed targets by 10%, future commitments are trimmed 15%
- Should actual allocations exceed targets by 20%, future commitments are trimmed 30%



Key Takeaways:

- Commitments to illiquid alternatives are maintained at the steady state level, but subpar markets cause the total portfolio to shrink
- Total illiquid and quasi-liquid assets are projected to reach as high as 76% of the Plan due to shrinking market value of the total Plan in this scenario

Note: Time 0 represents a starting point of March 31, 2024

Liquidity Analysis – Current Policy (82% R-S)

Dark Skies Economic Scenario

The exhibit below shows the projected liquidity lock-up of the Current Policy (82% R-S) allocation in the Dark Skies economic scenario, assuming commitments are continued subject to the conditions below:

- Should actual allocations exceed targets by 10%, future commitments are trimmed 15%
- Should actual allocations exceed targets by 20%, future commitments are trimmed 30%

Asset Allocation	Time 0	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7	Time 8	Time 9	Time 10
Risk-Reducing Assets	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Liquid Return-Seeking	46%	41%	32%	21%	13%	9%	9%	9%	10%	11%	12%
Total Liquid	**61%**	**56%**	**47%**	**36%**	**28%**	**24%**	**24%**	**24%**	**25%**	**26%**	**27%**
Quasi-Liquid	5%	5%	6%	6%	7%	8%	8%	9%	10%	10%	10%
Illiquid: 5-10 Year Lock-up	11%	12%	14%	17%	18%	20%	20%	20%	20%	20%	20%
Illiquid: 10+ Year Lock-up	23%	26%	33%	41%	47%	49%	48%	46%	45%	45%	43%
Total Quasi + Illiquid	**39%**	**44%**	**53%**	**64%**	**72%**	**76%**	**76%**	**76%**	**75%**	**74%**	**73%**

Other Metrics	Time 0	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7	Time 8	Time 9	Time 10
Funded Ratio	135%	110%	88%	73%	65%	58%	53%	49%	46%	46%	47%
Benefit Payments ($M)	$588	$625	$663	$704	$747	$790	$832	$870	$902	$926	$944
Contributions ($M)	$639	$163	$48	$40	$34	$118	$267	$435	$607	$715	$787

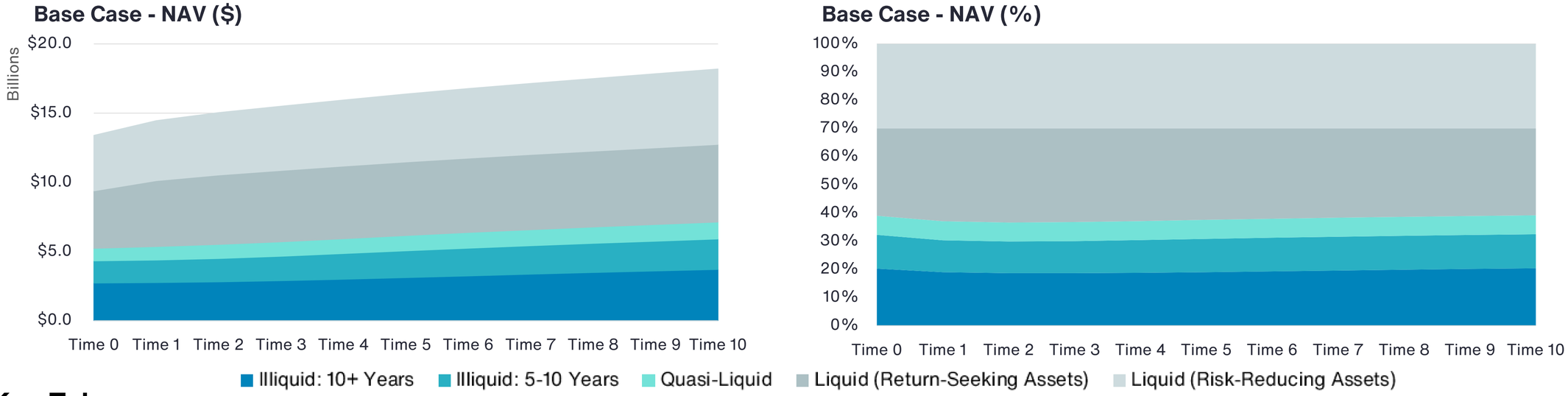
Note: Time 0 represents a starting point of March 31, 2024; percentages may not sum to 100% due to rounding

Liquidity Analysis – Michigan Proposed (65% R-S)

Base Case Economic Scenario

The exhibit below shows the projected liquidity lock-up of the Michigan Proposed (65% R-S) allocation in the Base Case economic scenario, assuming commitments are continued subject to the conditions below:

- Should actual allocations exceed targets by 10%, future commitments are trimmed 15%
- Should actual allocations exceed targets by 20%, future commitments are trimmed 30%



Key Takeaway

- Total illiquid and quasi-liquid assets are projected to stay near 39% of the Plan and can be maintained near the target with no cash flow problems

Note: Time 0 represents a starting point of March 31, 2024

Liquidity Analysis – Michigan Proposed (65% R-S)

Base Case Economic Scenario

The exhibit below shows the projected liquidity lock-up of the Michigan Proposed (65% R-S) allocation in the Base Case economic scenario, assuming commitments are continued subject to the conditions below:

- Should actual allocations exceed targets by 10%, future commitments are trimmed 15%
- Should actual allocations exceed targets by 20%, future commitments are trimmed 30%

Asset Allocation	Time 0	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7	Time 8	Time 9	Time 10
Risk-Reducing Assets	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Liquid Return-Seeking	31%	33%	33%	33%	33%	32%	32%	32%	31%	31%	31%
Total Liquid	**61%**	**63%**	**63%**	**63%**	**63%**	**62%**	**62%**	**62%**	**61%**	**61%**	**61%**
Quasi-Liquid	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Illiquid: 5-10 Year Lock-up	12%	11%	11%	11%	12%	12%	12%	12%	12%	12%	12%
Illiquid: 10+ Year Lock-up	20%	19%	19%	19%	19%	19%	19%	20%	20%	20%	20%
Total Quasi + Illiquid	**39%**	**37%**	**37%**	**37%**	**37%**	**38%**	**38%**	**38%**	**39%**	**39%**	**39%**

Other Metrics	Time 0	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7	Time 8	Time 9	Time 10
Funded Ratio	134%	142%	144%	146%	149%	152%	156%	160%	164%	170%	177%
Benefit Payments ($M)	$588	$626	$664	$705	$748	$792	$833	$872	$904	$928	$946
Contributions ($M)	$641	$166	$50	$43	$37	$20	$3	$0	$0	$0	$0

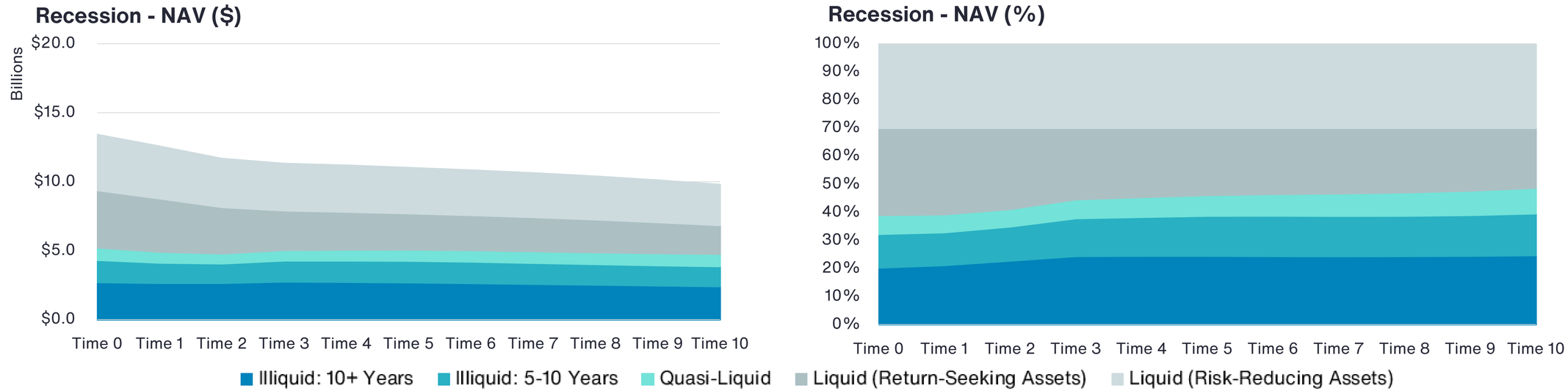
Note: Time 0 represents a starting point of March 31, 2024; percentages may not sum to 100% due to rounding

Liquidity Analysis – Michigan Proposed (65% R-S)

Recession Economic Scenario

The exhibit below shows the projected liquidity lock-up of the Michigan Proposed (65% R-S) allocation in the Recession economic scenario, assuming commitments are continued subject to the conditions below:

- Should actual allocations exceed targets by 10%, future commitments are trimmed 15%
- Should actual allocations exceed targets by 20%, future commitments are trimmed 30%



Key Takeaways:

- Commitments to illiquid alternatives are maintained at the steady state level, but recessionary markets cause the total portfolio to shrink
- Total illiquid and quasi-liquid assets are projected to reach as high as 49% of the Plan due to shrinking market value of the total Plan in this scenario; there would not be a concern with the ability to pay benefits

Note: Time 0 represents a starting point of March 31, 2024

Liquidity Analysis – Michigan Proposed (65% R-S)

Recession Economic Scenario

The exhibit below shows the projected liquidity lock-up of the Michigan Proposed (65% R-S) allocation in the Recession economic scenario, assuming commitments are continued subject to the conditions below:

- Should actual allocations exceed targets by 10%, future commitments are trimmed 15%
- Should actual allocations exceed targets by 20%, future commitments are trimmed 30%

Asset Allocation	Time 0	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7	Time 8	Time 9	Time 10
Risk-Reducing Assets	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Liquid Return-Seeking	31%	31%	29%	25%	25%	24%	24%	23%	23%	22%	21%
Total Liquid	**61%**	**61%**	**59%**	**55%**	**55%**	**54%**	**54%**	**53%**	**53%**	**52%**	**51%**
Quasi-Liquid	7%	6%	6%	7%	7%	7%	8%	8%	8%	9%	9%
Illiquid: 5-10 Year Lock-up	12%	12%	12%	13%	14%	14%	14%	14%	14%	15%	15%
Illiquid: 10+ Year Lock-up	20%	21%	23%	24%	24%	24%	24%	24%	24%	24%	25%
Total Quasi + Illiquid	**39%**	**39%**	**41%**	**45%**	**45%**	**46%**	**46%**	**47%**	**47%**	**48%**	**49%**

Other Metrics	Time 0	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7	Time 8	Time 9	Time 10
Funded Ratio	135%	124%	113%	107%	105%	103%	101%	99%	98%	97%	95%
Benefit Payments ($M)	$588	$625	$664	$704	$748	$791	$832	$871	$903	$927	$944
Contributions ($M)	$640	$164	$49	$41	$35	$31	$27	$23	$20	$22	$39

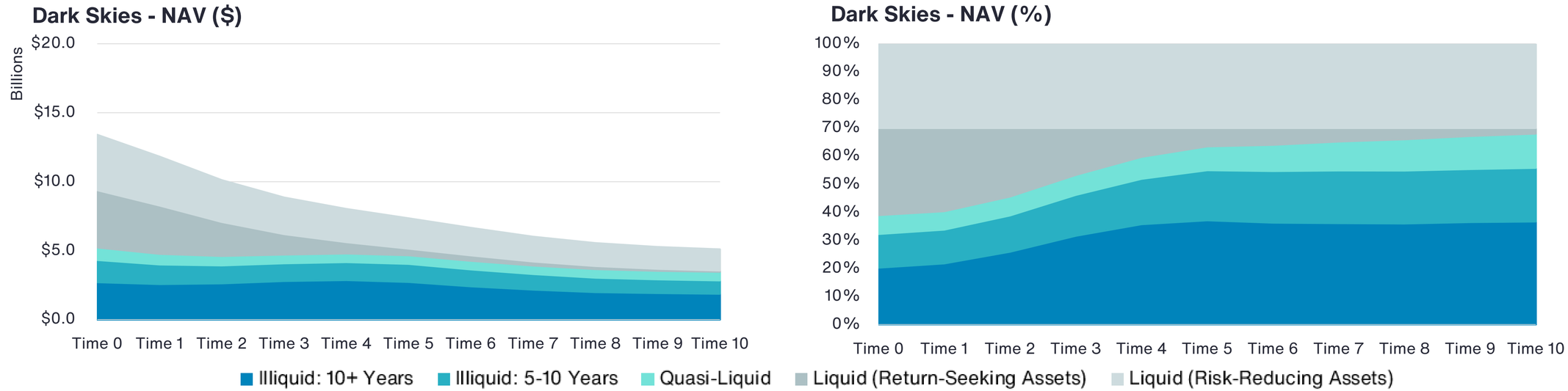
Note: Time 0 represents a starting point of March 31, 2024; percentages may not sum to 100% due to rounding

Liquidity Analysis – Michigan Proposed (65% R-S)

Dark Skies Economic Scenario

The exhibit below shows the projected liquidity lock-up of the Michigan Proposed (65% R-S) allocation in the Dark Skies economic scenario, assuming commitments are continued subject to the conditions below:

- Should actual allocations exceed targets by 10%, future commitments are trimmed 15%
- Should actual allocations exceed targets by 20%, future commitments are trimmed 30%



Key Takeaways:

- Commitments to illiquid alternatives are maintained at the steady state level, but subpar markets cause the total portfolio to shrink
- Total illiquid and quasi-liquid assets are projected to reach as high as 68% of the Plan due to shrinking market value of the total Plan in this scenario

Note: Time 0 represents a starting point of March 31, 2024

Liquidity Analysis – Michigan Proposed (65% R-S)

Dark Skies Economic Scenario

The exhibit below shows the projected liquidity lock-up of the Michigan Proposed (65% R-S) allocation in the Dark Skies economic scenario, assuming commitments are continued subject to the conditions below:

- Should actual allocations exceed targets by 10%, future commitments are trimmed 15%
- Should actual allocations exceed targets by 20%, future commitments are trimmed 30%

Asset Allocation	Time 0	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7	Time 8	Time 9	Time 10
Risk-Reducing Assets	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Liquid Return-Seeking	31%	30%	24%	17%	10%	7%	6%	5%	4%	3%	2%
Total Liquid	**61%**	**60%**	**54%**	**47%**	**40%**	**37%**	**36%**	**35%**	**34%**	**33%**	**32%**
Quasi-Liquid	7%	7%	7%	7%	8%	8%	9%	10%	11%	12%	12%
Illiquid: 5-10 Year Lock-up	12%	12%	13%	15%	16%	18%	18%	19%	19%	19%	19%
Illiquid: 10+ Year Lock-up	20%	22%	26%	32%	36%	37%	36%	36%	36%	37%	37%
Total Quasi + Illiquid	**39%**	**40%**	**46%**	**53%**	**60%**	**63%**	**64%**	**65%**	**66%**	**67%**	**68%**

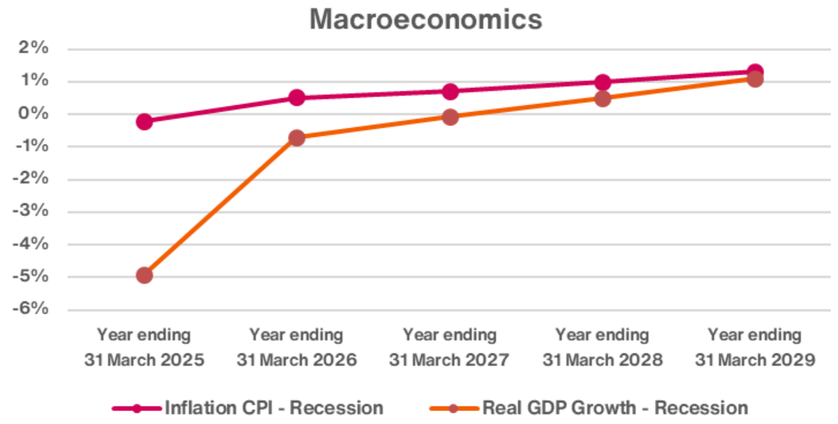
Other Metrics	Time 0	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7	Time 8	Time 9	Time 10
Funded Ratio	135%	117%	98%	84%	75%	69%	62%	56%	52%	50%	50%
Benefit Payments ($M)	$588	$625	$663	$704	$747	$790	$832	$870	$902	$926	$944
Contributions ($M)	$639	$163	$48	$40	$34	$30	$100	$276	$449	$568	$652

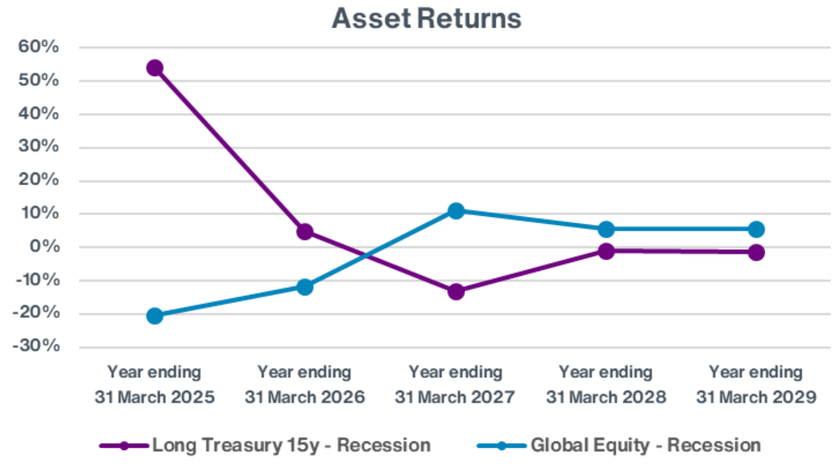
Note: Time 0 represents a starting point of March 31, 2024; percentages may not sum to 100% due to rounding

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 spillover effects from geopolitical volatility and reduced consumer and business spending, as real incomes are squeezed by high inflation, 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 become 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.





Source: Aon, as of March 31, 2024. Annual projection starts from March 31, 2024. Projections of general asset class returns and economic conditions are forward-looking expectations by Aon based on informed historical results and internal analysis. Forecasts, estimates and other information contained herein are based upon proprietary research and our framework of analyzing fundamental, valuation and long-term drivers of capital markets. This information is not intended as a recommendation to invest in any particular asset class or strategy or as a promise - or even estimate - of future performance. Such information is hypothetical in nature, does not reflect actual results, and is not a guarantee of future results. Economic factors and return assumptions depend on current market conditions and, as such, may change over time. Our economic scenario analysis is designed to reflect the typical cost of implementing an investment program. Asset return projections do not include the deduction of management fees and other expenses that may be incurred in managing an investment account.

Recession Scenario

Data

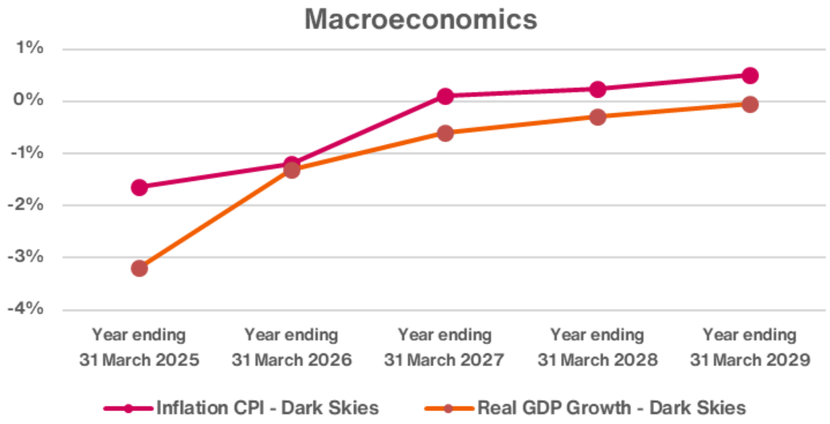
Recession Scenario		Time 0	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7	Time 8	Time 9	Time 10
Fixed Income Yields	Treasury yield 5y	4.3%	1.3%	1.0%	1.8%	2.2%	2.6%	2.8%	3.0%	3.1%	3.3%	3.5%
	Long Treasury yield 15y	4.5%	1.6%	1.4%	2.5%	2.8%	3.1%	3.2%	3.3%	3.4%	3.5%	3.5%
	TIPS yield 5y	1.9%	-0.2%	-0.3%	0.3%	0.5%	0.7%	0.9%	1.0%	1.1%	1.3%	1.4%
	Long TIPS yield 15y	2.1%	-0.1%	-0.2%	0.6%	0.7%	0.9%	1.1%	1.2%	1.3%	1.4%	1.6%
	Breakeven price inflation 15y	2.4%	1.7%	1.6%	1.9%	2.0%	2.1%	2.1%	2.1%	2.1%	2.0%	2.0%
	A Corporate bond yield 5y	5.1%	5.3%	5.7%	5.8%	5.5%	5.6%	5.6%	5.5%	5.5%	5.5%	5.4%
	A Corporate spread 5y	0.8%	3.9%	4.6%	4.0%	3.4%	3.0%	2.8%	2.6%	2.3%	2.1%	1.9%
	Long A Corporate bond yield 10y	5.2%	4.8%	5.1%	5.7%	5.5%	5.6%	5.7%	5.7%	5.7%	5.7%	5.7%
	Long A Corporate spread 10y	0.9%	3.3%	3.8%	3.4%	3.0%	2.8%	2.6%	2.5%	2.3%	2.2%	2.0%
Expected Nominal Returns	Equity – U.S.		-17.8%	-9.8%	10.9%	6.0%	6.0%	6.1%	6.1%	6.2%	6.2%	6.3%
	Equity – Global		-20.1%	-11.1%	11.5%	6.1%	6.1%	6.2%	6.3%	6.3%	6.4%	6.5%
	EAFE		-22.2%	-12.1%	11.7%	5.9%	5.9%	6.0%	6.1%	6.1%	6.2%	6.3%
	EM Equity		-31.9%	-19.1%	13.7%	5.9%	5.9%	6.0%	6.1%	6.2%	6.3%	6.4%
	Cash		4.8%	1.0%	0.9%	1.3%	1.6%	1.7%	2.0%	2.2%	2.4%	2.7%
	Core Fixed Income		11.3%	2.7%	1.5%	3.8%	3.3%	4.5%	4.6%	4.6%	4.7%	4.8%
	U.S. Core Real Estate		-14.2%	-8.5%	-2.8%	1.0%	5.2%	5.3%	5.4%	5.4%	5.5%	5.6%
	U.S. Non-Core Real Estate		-19.3%	-11.7%	-4.0%	1.1%	6.9%	7.0%	7.1%	7.2%	7.3%	7.4%
	U.S. REITs		-20.4%	-12.9%	-5.2%	-0.1%	5.6%	5.7%	5.8%	5.9%	6.0%	6.0%
	Private Equity Smoothed		-13.1%	-6.7%	4.7%	6.5%	7.1%	7.8%	8.4%	9.1%	8.8%	8.9%
	Private Credit Smoothed		-7.8%	-8.8%	3.0%	1.7%	3.7%	4.1%	4.5%	4.9%	5.3%	5.7%
	Infrastructure – U.S.		-5.4%	-1.1%	2.4%	3.2%	6.8%	6.9%	6.9%	7.0%	7.0%	7.0%
	Hedge Funds - Broad		-13.2%	-7.7%	8.6%	7.4%	5.5%	5.5%	5.5%	5.5%	5.5%	5.6%
	U.S. High Yield		-12.3%	-12.1%	6.2%	4.8%	3.2%	4.8%	5.1%	5.2%	5.5%	5.8%
	Bank Loans		-9.9%	-7.9%	5.7%	3.2%	3.1%	3.4%	3.8%	4.1%	4.4%	4.8%
	USD Emerging Market Debt		-12.7%	-9.1%	8.6%	5.7%	5.2%	5.9%	6.0%	6.1%	6.2%	6.3%
	Local Emerging Market Debt		-13.6%	-10.0%	7.8%	4.8%	4.4%	5.0%	5.1%	5.2%	5.4%	5.5%

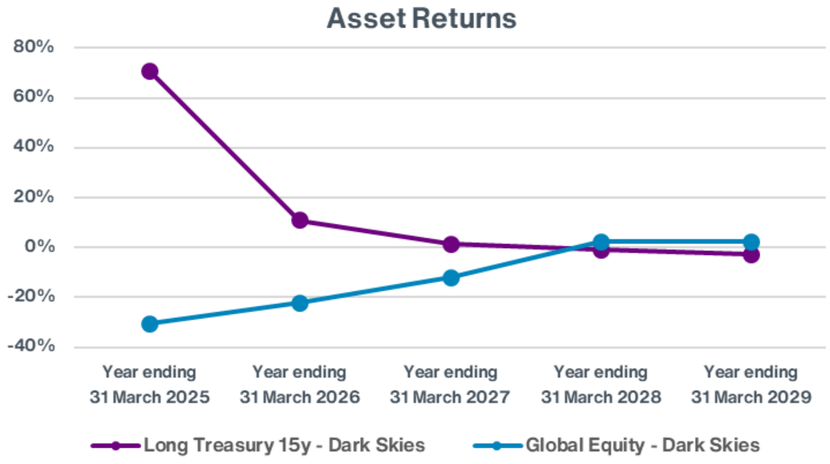
Source: Aon, as of March 31, 2024. Annual projection starts from March 31, 2024. Projections of general asset class returns and economic conditions are forward-looking expectations by Aon based on informed historical results and internal analysis. Forecasts, estimates and other information contained herein are based upon proprietary research and our framework of analyzing fundamental, valuation and long-term drivers of capital markets. This information is not intended as a recommendation to invest in any particular asset class or strategy or as a promise - or even estimate - of future performance. Such information is hypothetical in nature, does not reflect actual results, and is not a guarantee of future results. Economic factors and return assumptions depend on current market conditions and, as such, may change over time. Our economic scenario analysis is designed to reflect the typical cost of implementing an investment program. Asset return projections do not include the deduction of management fees and other expenses that may be incurred in managing an investment account.

Dark Skies Scenario
Description

A deep recession followed by a longer period of stagnant growth

- Worsening geopolitical instability and central banks' aggressive monetary tightening has a severe impact on world economic growth leading to an economic depression.
- Global supply chains are disrupted on a prolonged basis due to geopolitical events. China experiences a sharp deterioration in economic growth following an abrupt decoupling from western economies.
- 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.
- Fiscal pressures force governments to unwind stimulus measures before the economy fully recovers.
- Inflation falls sharply in 2024 and sluggish growth over the following years means that inflation stays low. Gilt yields fall and remain at historically low levels over five years.
- 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 suffer losses as the economic situation remains poor for a long time, weighing on returns in later years.





Source: Aon, as of March 31, 2024. Annual projection starts from March 31, 2024. Projections of general asset class returns and economic conditions are forward-looking expectations by Aon based on informed historical results and internal analysis. Forecasts, estimates and other information contained herein are based upon proprietary research and our framework of analyzing fundamental, valuation and long-term drivers of capital markets. This information is not intended as a recommendation to invest in any particular asset class or strategy or as a promise - or even estimate - of future performance. Such information is hypothetical in nature, does not reflect actual results, and is not a guarantee of future results. Economic factors and return assumptions depend on current market conditions and, as such, may change over time. Our economic scenario analysis is designed to reflect the typical cost of implementing an investment program. Asset return projections do not include the deduction of management fees and other expenses that may be incurred in managing an investment account.

Dark Skies Scenario

Data

Recession Scenario		Time 0	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7	Time 8	Time 9	Time 10
Fixed Income Yields	Treasury yield 5y	4.3%	0.7%	-0.4%	-0.5%	-0.4%	-0.2%	0.1%	0.5%	0.9%	1.3%	1.7%
	Long Treasury yield 15y	4.5%	0.9%	0.2%	0.1%	0.1%	0.3%	0.6%	1.0%	1.3%	1.6%	1.9%
	TIPS yield 5y	1.9%	-0.3%	-1.1%	-1.3%	-1.2%	-1.1%	-0.8%	-0.6%	-0.3%	0.0%	0.3%
	Long TIPS yield 15y	2.1%	-0.6%	-1.1%	-1.2%	-1.1%	-1.0%	-0.7%	-0.4%	-0.2%	0.1%	0.4%
	Breakeven price inflation 15y	2.4%	1.4%	1.3%	1.2%	1.2%	1.3%	1.3%	1.4%	1.5%	1.5%	1.5%
	A Corporate bond yield 5y	5.1%	6.1%	5.7%	5.2%	4.6%	4.4%	4.4%	4.5%	4.6%	4.6%	4.7%
	A Corporate spread 5y	0.8%	5.4%	6.1%	5.7%	5.1%	4.6%	4.3%	4.0%	3.7%	3.4%	3.0%
	Long A Corporate bond yield 10y	5.2%	5.1%	4.9%	4.6%	4.2%	4.1%	4.3%	4.4%	4.5%	4.7%	4.8%
	Long A Corporate spread 10y	0.9%	4.4%	4.9%	4.7%	4.2%	3.9%	3.7%	3.5%	3.2%	3.0%	2.8%
Expected Nominal Returns	Equity – U.S.		-26.8%	-19.2%	-10.4%	3.0%	3.0%	3.4%	3.8%	4.1%	4.5%	4.8%
	Equity – Global		-29.8%	-21.5%	-11.6%	2.9%	2.9%	3.3%	3.7%	4.1%	4.5%	4.9%
	EAFE		-31.8%	-23.0%	-12.3%	2.6%	2.6%	3.0%	3.4%	3.8%	4.2%	4.6%
	EM Equity		-46.3%	-34.2%	-20.1%	1.2%	1.2%	1.8%	2.3%	2.9%	3.5%	4.0%
	Cash		4.8%	0.4%	-0.2%	-0.3%	-0.4%	-0.1%	0.2%	0.6%	0.9%	1.3%
	Core Fixed Income		11.0%	4.2%	1.4%	1.3%	0.3%	-0.3%	0.2%	0.6%	1.1%	1.6%
	U.S. Core Real Estate		-16.0%	-11.2%	-5.0%	-0.3%	2.1%	2.5%	2.9%	3.2%	3.6%	4.0%
	U.S. Non-Core Real Estate		-21.8%	-15.3%	-7.0%	-0.5%	2.7%	3.2%	3.7%	4.2%	4.7%	5.2%
	U.S. REITs		-22.9%	-16.5%	-8.2%	-1.8%	1.4%	1.9%	2.4%	2.9%	3.4%	3.9%
	Private Equity Smoothed		-20.1%	-14.1%	-7.3%	-2.2%	-1.3%	-0.2%	1.0%	2.2%	6.7%	7.1%
	Private Credit Smoothed		-18.2%	-22.7%	-21.1%	-11.7%	-2.3%	-1.6%	-0.7%	0.2%	1.1%	2.0%
	Infrastructure – U.S.		-12.3%	-8.0%	-4.2%	0.8%	3.4%	3.8%	4.2%	4.5%	4.9%	5.3%
	Hedge Funds - Broad		-16.2%	-10.8%	-4.9%	2.4%	2.4%	2.7%	3.1%	3.4%	3.7%	4.0%
	U.S. High Yield		-16.2%	-14.9%	-11.8%	-2.4%	-3.9%	-4.3%	-3.2%	-2.1%	-1.0%	0.0%
	Bank Loans		-23.1%	-20.8%	-13.4%	-1.6%	-1.8%	-1.3%	-0.5%	0.2%	1.0%	1.7%
	USD Emerging Market Debt		-18.7%	-14.7%	-9.0%	1.6%	1.0%	0.9%	1.5%	2.1%	2.7%	3.3%
	Local Emerging Market Debt		-19.6%	-15.6%	-9.9%	0.8%	0.1%	0.1%	0.7%	1.2%	1.8%	2.4%

Source: Aon, as of March 31, 2024. Annual projection starts from March 31, 2024. Projections of general asset class returns and economic conditions are forward-looking expectations by Aon based on informed historical results and internal analysis. Forecasts, estimates and other information contained herein are based upon proprietary research and our framework of analyzing fundamental, valuation and long-term drivers of capital markets. This information is not intended as a recommendation to invest in any particular asset class or strategy or as a promise - or even estimate - of future performance. Such information is hypothetical in nature, does not reflect actual results, and is not a guarantee of future results. Economic factors and return assumptions depend on current market conditions and, as such, may change over time. Our economic scenario analysis is designed to reflect the typical cost of implementing an investment program. Asset return projections do not include the deduction of management fees and other expenses that may be incurred in managing an investment account.

2024 Horizon Survey

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2024 Horizon Survey Results

What is the Horizon Survey?

Since 2010, Horizon Actuarial Services, LLC has conducted a capital market assumption survey of investment firms to aid in determining reasonable assumptions for a pension plan's expected return on assets

- While Aon does not seek to change our approach based on how we stack up to peers, it is a helpful double-check to make sure we are not too far off from others in the industry

For the 2024 survey, 41 investment advisors participated.

How does Aon compare to the 2024 survey results?

Aon Investments' 2024 10-year assumptions for expected returns (as of March 31, 2024)

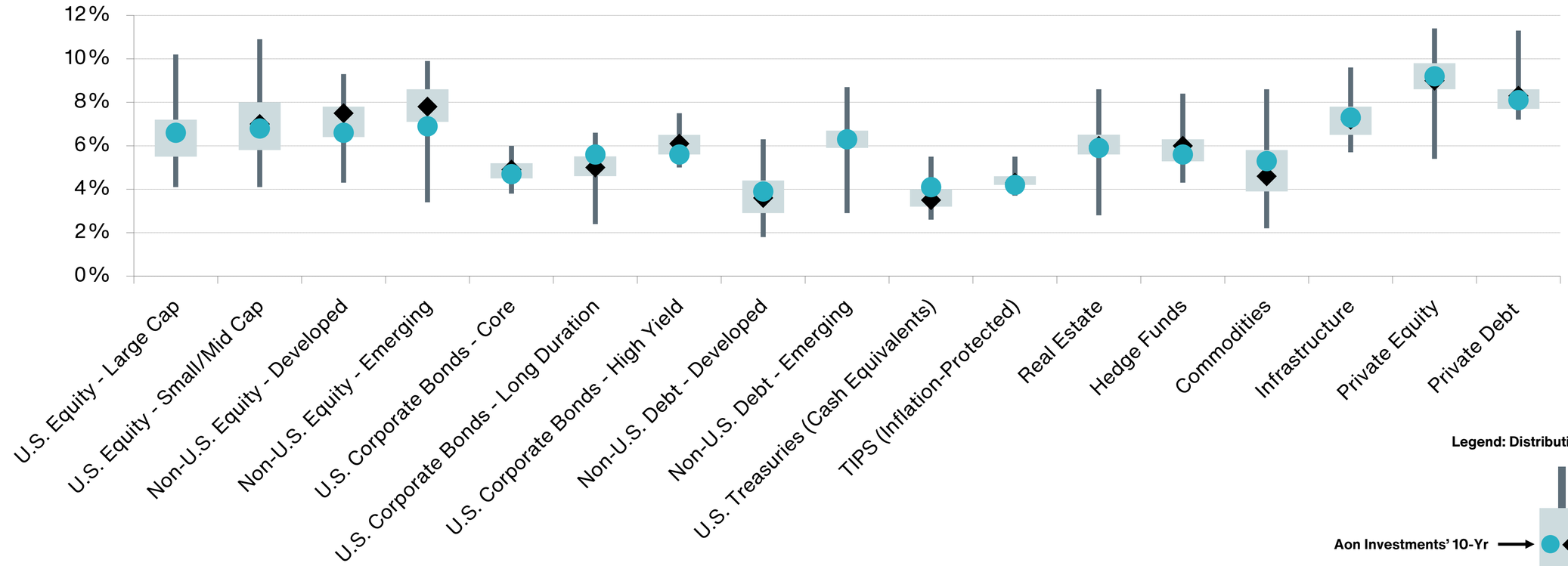
- ***Equities:*** approximately middle of the pack for U.S. Equities; lower for Non-U.S. Equities
- ***Fixed Income:*** approximately middle of the pack relative to the survey's median level; lower for U.S. High Yield; higher for Cash and Long Duration Credit
- ***Alternatives:*** approximately middle of the pack relative to the survey's median level; higher for Commodities

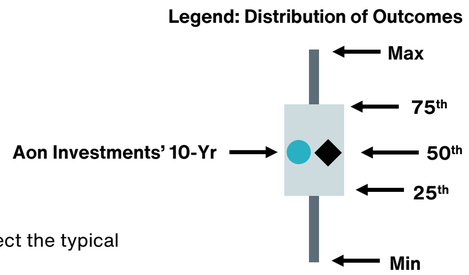
Source: Horizon Actuarial Solutions, LLC survey of 2024 capital market assumptions from 41 independent investment advisors

Aon Investments' Capital Market Assumptions vs. Horizon Survey

10-Year Assumptions

Expected Geometric Returns of 41 Investment Advisors
(10-Year Forecast)





Source: Horizon Actuarial Solutions, LLC survey of 2024 capital market assumptions from 41 independent investment advisors
Aon Investments' expected returns are annualized over 10-years as of 2Q 2024 (3/31/2024). 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.

Aon Investments vs. Peers (2024 Horizon Survey)

10-Year Assumptions

	Horizon Survey[1]		Aon Investments[2]		Difference	
	10-Year Assumptions		10-Year Assumptions		Aon Investments – Horizon Survey	
Asset Class	**Expected Return**	**Expected Risk**	**Expected Return**	**Expected Risk**	**Expected Return**	**Expected Risk**
U.S. Equity - Large Cap	6.6%	16.5%	6.6%	18.0%	0.0%	1.5%
U.S. Equity - Small/Mid Cap	7.0%	20.6%	6.8%	24.0%	-0.2%	3.4%
Non-U.S. Equity – Developed	7.5%	18.1%	6.6%	19.1%	-0.9%	1.0%
Non-U.S. Equity – Emerging	7.8%	23.6%	6.9%	22.0%	-0.9%	-1.6%
U.S. Fixed Income – Core	4.9%	5.9%	4.7%	5.0%	-0.2%	-0.9%
U.S. Fixed Income - Long Duration Corp	5.0%	11.0%	5.6%	9.9%	0.6%	-1.1%
U.S. Fixed Income - High Yield	6.1%	9.9%	5.6%	10.5%	-0.5%	0.6%
Non-U.S. Fixed Income – Developed	3.6%	7.3%	3.9%	6.1%	0.3%	-1.2%
Non-U.S. Fixed Income – Emerging	6.3%	10.8%	6.3%	11.0%	0.0%	0.2%
Treasuries (Cash Equivalents)	3.5%	1.1%	4.1%	1.4%	0.6%	0.3%
TIPS (Inflation-Protected)	4.3%	6.1%	4.2%	4.3%	-0.1%	-1.8%
Real Estate	6.0%	16.6%	5.9%	15.0%	-0.1%	-1.6%
Hedge Funds	6.0%	8.0%	5.6%	5.2%	-0.4%	-2.8%
Commodities	4.6%	17.8%	5.3%	17.0%	0.7%	-0.8%
Infrastructure	7.2%	16.0%	7.3%	14.5%	0.1%	-1.5%
Private Equity	9.0%	22.6%	9.2%	20.0%	0.2%	-2.6%
Private Debt	8.3%	12.0%	8.1%	16.6%	-0.2%	4.6%
Inflation	2.4%	1.9%	2.2%	1.7%	-0.2%	-0.2%

[1] Notes (Horizon Survey):
Source: Horizon Actuarial survey of 2024 capital market assumptions from 41 independent investment advisors. The survey was conducted by Horizon Actuarial Services, LLC, an independent consulting firm specializing in providing actuarial and consulting services to multiemployer benefit plans. Aon does not guarantee the accuracy or completeness of this information and cannot be held accountable for inaccurate data provided by third parties. Reliance upon information in this material is at the sole discretion of the reader.

Expected returns are median annualized (geometric). Please see following slide for additional information on this survey methodology.

[2] Notes (Aon Investments' Assumptions):
Aon Investments' assumptions are for 3/31/2024

- U.S. Equity - Small/Mid Cap assumptions represents Aon's assumption for U.S. Small Cap
- U.S. Fixed Income - Long Duration assumptions represents Aon's assumption for Long Duration Credit
- Non-U.S. Fixed Income - Developed assumptions represents Aon's assumption for Non-U.S. Fixed Income - Developed (50% Hedged)
- Non-U.S. Fixed Income - Emerging assumptions represents Aon's assumption for Emerging Market Bonds - Sovereign USD
- Real Estate assumptions represents Aon's assumption for Core Real Estate
- Hedge Fund assumptions represents Aon's assumption for Direct Hedge Funds (Universe)

Expected returns are using Aon's Q2 2024 10-Year Capital Market Assumptions as of 3/31/2024. 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 geometric (long-term compounded; rounded to the nearest decimal). 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. Additional information regarding our capital market assumptions can be made available upon request.

Survey Methodology

A description of the methodology used by Horizon Actuarial Services, LLC in conducting their survey is outlined in the 2024 version of the report found online at the link below:

- https://www.horizonactuarial.com/survey-of-capital-market-assumptions

The survey was conducted by Horizon Actuarial Services, LLC, an independent consulting firm specializing in providing actuarial and consulting services to multiemployer benefit plans. Aon Investments USA Inc. ("AIUSA") is not affiliated with Horizon Actuarial Services, LLC. AIUSA did not pay to participate in the survey and no direct or indirect compensation has been provided by AIUSA for participation. Please refer to the more thorough disclosure and additional information about the methodology used in compiling the survey results via the website of the publication. Clicking the above link will bring you to a site that contains information that has been created, published, maintained, or otherwise posted by an organization independent of AIUSA. AIUSA does not endorse, approve, certify, or control this website and does not assume responsibility for the accuracy, completeness, or timeliness of the information located there.

Additional Asset-Liability Analysis

Section 5: Appendix

Additional Asset-Liability Analysis

Hurdle rate analysis: How are assets and liability expected to move in the coming year?

What is the Asset Hurdle Rate?

Asset Hurdle Rate is the asset growth rate needed to match expected Plan liability growth

- Expected liability growth is composed of (1) new benefit accruals, (2) discount cost, and (3) plan expenses
- This is adjusted by the size of the plan assets in relation to plan liabilities to determine the asset hurdle rate
- Asset growth matching or exceeding the asset hurdle rate is expected to maintain or increase the funded status

Assets grow in two ways:

- Investment returns
- Funding contributions

Sample Calculation

(1) Assets (in $B)	$90
(2) Liabilities (in $B)	$100
(3) Funded Ratio (= 1 / 2)	90%
(4) Liability Growth Rate	9%
(5) Asset Hurdle Rate (= 4 / 3)	10%

How Does the Asset Hurdle Rate Inform Future Projections?

Short-term funded ratio progress can be estimated from the asset hurdle rate analysis

- If investment returns + contributions exceed the asset hurdle rate, funded ratio is expected to grow
- If investment return + contributions fall short of the asset hurdle rate, funded ratio is expected to shrink

Additional Asset-Liability Analysis

Estimated asset hurdle rates as of September 30, 2023

	A	B	C = B / A	D	E = D - C
	Funded Ratio	Liability Growth Rate[1]	Asset Hurdle Rate[2]	Expected Asset Growth[3]	Projected Surplus / (Shortfall)[4]
Pension					
Michigan Public Schools Employees' Retirement System	66.5%	7.33%	11.02%	14.80%	3.78%
Michigan State Employees' Retirement System	70.3%	6.31%	8.98%	12.94%	3.95%
Michigan State Police Retirement System	67.9%	7.29%	10.73%	13.18%	2.45%
Michigan Judges' Retirement System	102.0%	6.76%	6.63%	8.59%	1.96%
Military Retirement Provisions	81.8%	7.77%	9.50%	10.31%	0.81%
Total Pension	**67.2%**	**7.16%**	**10.66%**	**14.42%**	**3.77%**
OPEB					
Michigan Public Schools Employees' Retiree Health Benefits	**122.1%**	**8.57%**	**7.02%**	**16.35%**	**9.33%**
Michigan State Employees' Retiree Health Benefits	81.8%	7.37%	9.01%	15.10%	6.10%
Michigan State Police Retiree Health Benefits	55.1%	7.69%	13.96%	18.87%	4.91%
Michigan Judges' Retiree Health Benefits	174.2%	11.12%	6.38%	8.95%	2.57%
Total OPEB	**103.2%**	**8.06%**	**7.80%**	**16.01%**	**8.21%**

[1] Liability growth rate equals the sum of interest cost, normal cost, and plan expenses as a percent of the liability

[2] Asset hurdle rate is the rate at which the assets need to grow to keep pace with the liability growth rate

[3] Expected asset growth equals the sum of expected return on assets and member & employer contributions for FYE 2024 as a percent of the market value of assets

[4] Projected surplus/(shortfall) indicates whether asset growth is expected to over/underperform relative to the liability over the coming year

Preliminary figures are based on Annual Actuarial Valuation Reports as of September 30, 2023 and available plan projection data. See appendix for more information.

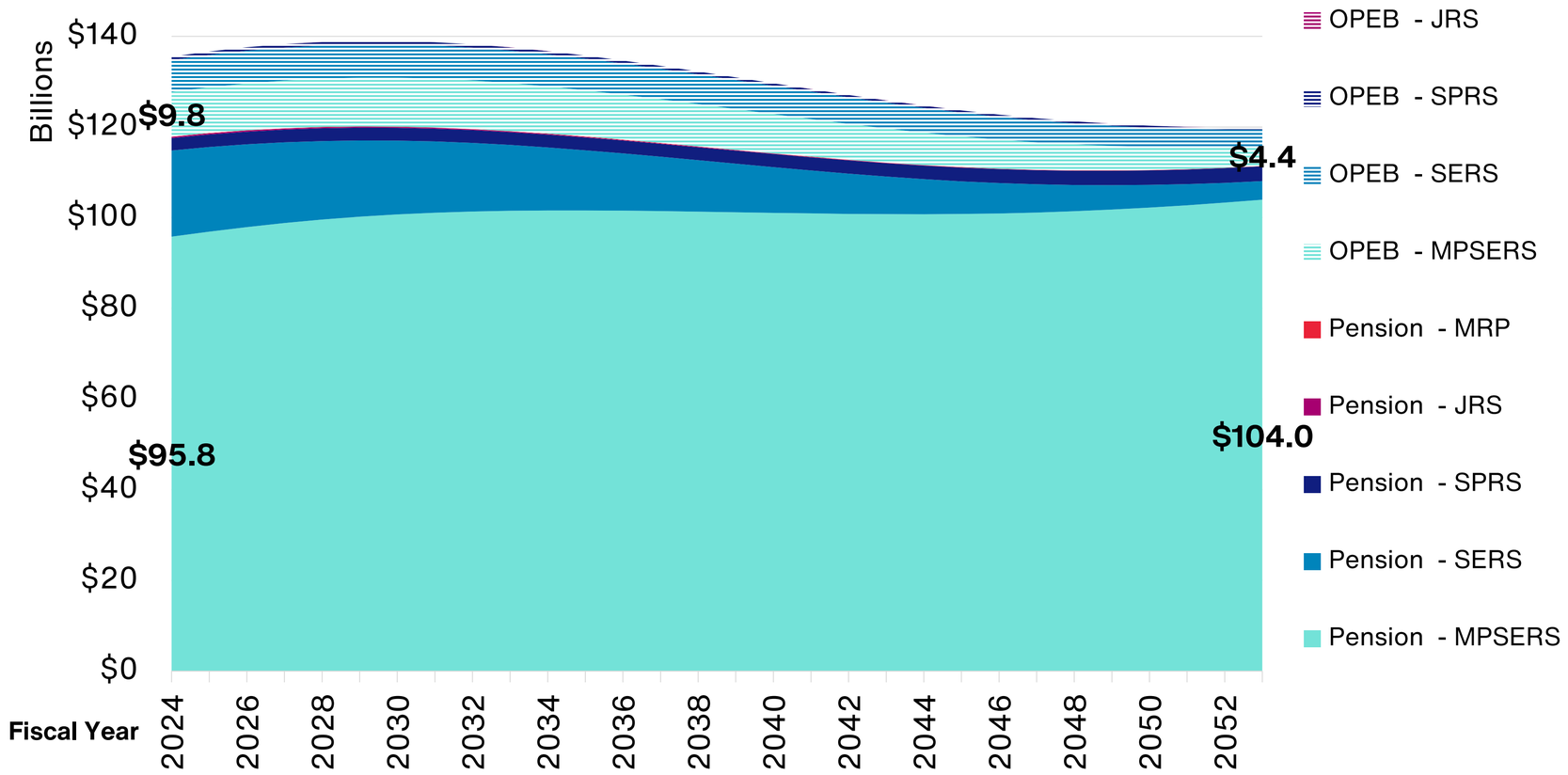
Initial Observations

- Both pension and OPEB plans are assumed to have hurdle rate surpluses – i.e., asset growth exceeding liability growth
- The level of surplus over the coming year is expected to be greater for the OPEB plans compared to the pension plans

Aggregate Liability Analysis

Based on GRS' Baseline Projections

Total Actuarial Accrued Liabilities (BOY)



Projections provided by the plan actuary (GRS) as of September 30, 2023

Key Observations

- Individual systems are color-coded; pension plans are shown in solid colors with OPEB plans in stripes
- MPSERS' pension liability is expected to gradually increase over the projection period
- MPSERS' OPEB liability is expected to decrease over the period, due to the closed nature of the plan

About This Material

Section 5: Appendix

About This Material

This material includes a summary of calculations and consulting related to the finances of the **Michigan Public School Employees' Retiree Health Benefits (MPSERS OPEB)**. The following variables have been addressed:

- Contributions, Funded Ratio, Liquidity, Net Outflow, Hurdle Rate

This analysis is intended to assist the Investment Committee with a review of the associated issues and options, and its use may not be appropriate for other purposes. This analysis has been prepared solely for the benefit of the Investment Committee. Any further dissemination of this report is not allowed without the written consent of Aon Investments USA Inc.

Our calculations were generally based on the methodologies identified in the actuary's valuation report for MPSERS OPEB. We believe the methodology used in these calculations conforms to the applicable standards identified in the report.

Models are used to develop alternative scenarios based on the underlying valuation model and project financial results under those scenarios. The models were developed by experts outside and within Aon. Where outside models were used, the models were reviewed by experts within Aon. The models were selected as appropriate for these projections by the undersigned.

Experience different than anticipated could have a material impact on the ultimate costs of the benefits. In addition, changes in plan provisions or applicable laws could have a significant impact on cost. Actual experience may differ from our modeling assumptions.

Our calculations were based on data provided by the plan actuary. The actuarial assumptions and methods and plan provisions reflected in these projections are the same as those used for the 2023/2024 fiscal year actuarial valuation for MPSERS OPEB as noted in the actuarial reports, except where noted in this report. Unless specifically noted, our calculations do not reflect any other changes or events after September 30, 2023. Reflecting events after September 30, 2023 would impact the results of the projection.

In conducting these projections, we have relied on plan design, demographic and financial information provided by other parties, including the plan's actuary and plan sponsor. While we cannot verify the accuracy of all of the information, the supplied information was reviewed for consistency and reasonableness. As a result of this review, we have no reason to doubt the substantial accuracy or completeness of the information and believe that it has produced appropriate results.

These projections have been conducted in accordance with generally accepted actuarial principles and practices, including applicable Actuarial Standards of Practice as issued by the Actuarial Standards Board. The undersigned actuary is familiar with the near-term and long-term aspects of pension valuations and meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All sections of this report are considered an integral part of the actuarial opinions.

To our knowledge, no colleague of Aon Investments USA Inc. providing services to MPSERS OPEB has any direct financial interest or indirect material interest in MPSERS OPEB. Thus, we believe there is no relationship existing that might affect our capacity to prepare and certify this report for MPSERS OPEB.

Aon Investments USA Inc.

Phil Kivarkis FSA, CFA

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