Securing the Future: Strategies for Managing Pension Risk

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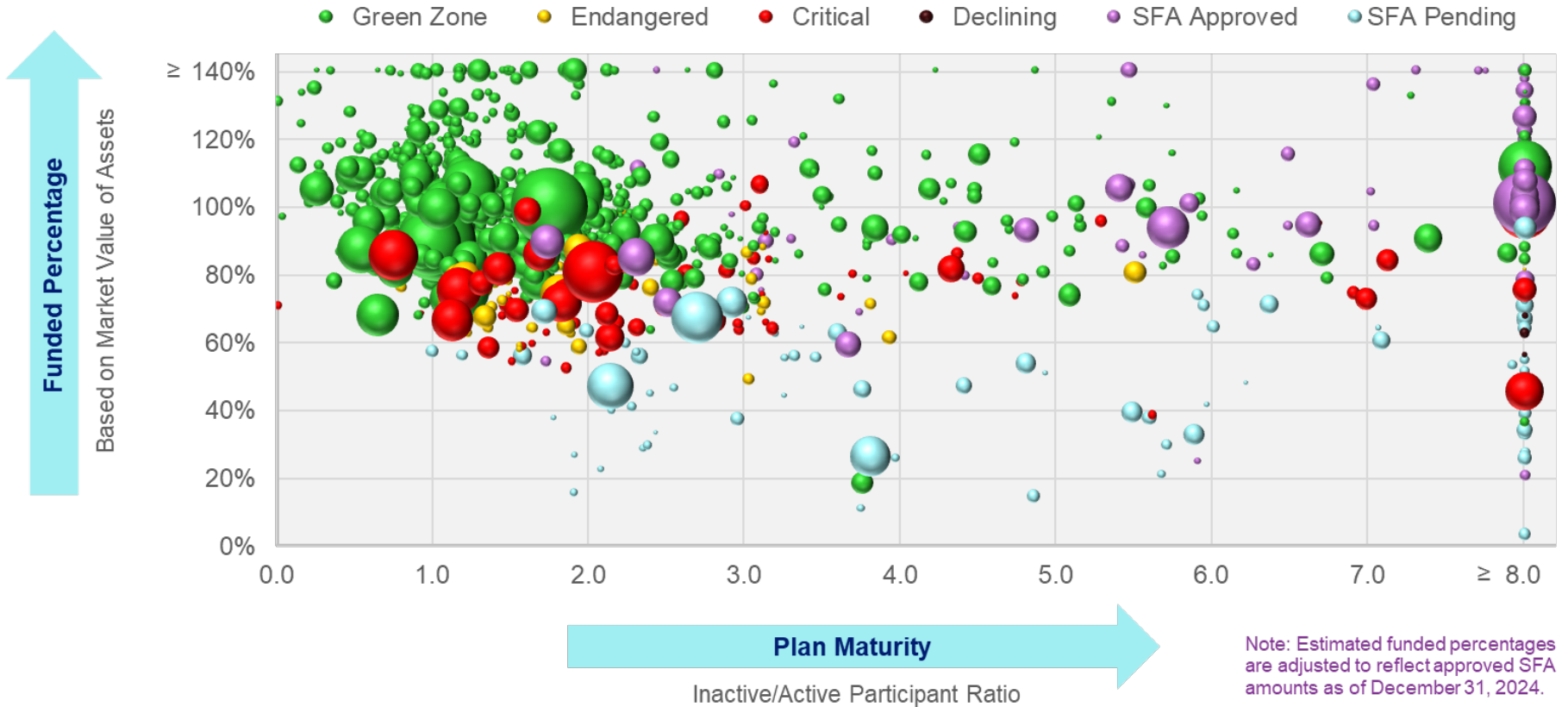
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Verus⁷⁷®

Proskauer»

Segal

Current State

A Brief Retrospective

1990s	2000s	2010s	2020s
o Strong stock market performance o Higher interest rates o Low tax-deductibility limits (based on 100% funding) o Plan demographic maturity is low o Overfunded plans improved benefits	o Dot Com Bubble, Great Recession o Increased tax-deductibility limits o Plan funding declines o Interest rates also begin to decline o PPA rules first effective in 2008	o Volatility continues, improved returns o Interest rates continue to decline o Multiemployer solvency crisis identified o NCCMP Solutions Not Bailouts o Congressional Joint Select Committee	o American Rescue Plan Act of 2021, Special Financial Assistance Program o No funding reform o Interest rates rise sharply in late 2022 o Plans are generally better funded, but more mature

Segal

Multiemployer Universe in 2024

Multiemployer Pension Universe

Legend: ● Green Zone   ● Endangered   ● Critical   ● Declining   ● SFA Approved   ○ SFA Pending

Funded Percentage (Based on Market Value of Assets) — vertical axis: 0% to ≥ 140%

Plan Maturity (Inactive/Active Participant Ratio) — horizontal axis: 0.0 to ≥ 8.0

Note: Estimated funded percentages are adjusted to reflect approved SFA amounts as of December 31, 2024.

Plan Count: 1,199 | Total Participants: 11.1 Million

Source: Segal analysis of Form 5500 data for plan years ending in 2023. Zone status applies to plan years ending in 2024.
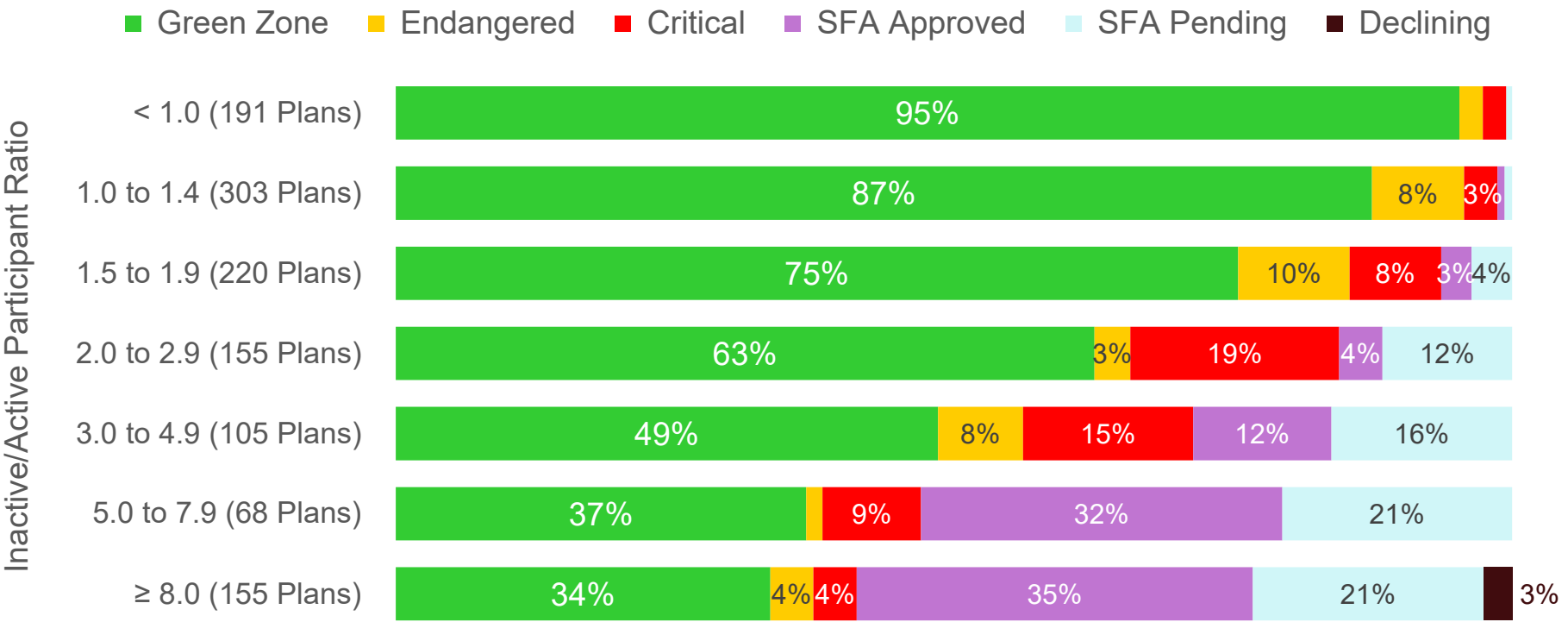
**Technical Notes:** Each "bubble" represents an individual plan in the Multiemployer Universe, with the size based on the number of total covered participants and the color representing zone status. Insolvent and terminated plans are excluded. Plans that were established after 2006 that do not comply with zone status dules area considered to be in the "green zone." Plans that have received special financial assistance (SFA) are shown separately; these plans are deemed to be in critical status through 2051.

Commentary

- Zone status reflects special financial assistance (SFA) applications as of December 31, 2024

- Funded percentages are adjusted to reflect approved SFA amounts as of December 31, 2024

- Only a few small plans in **critical and declining status** are not on the SFA waiting list

- SFA significantly improves funded status, but it does not affect plan maturity

Plan Maturity and Zone Status

Plan Maturity vs. Zone Status

Legend: ■ Green Zone ■ Endangered ■ Critical ■ SFA Approved ■ SFA Pending ■ Declining

Inactive/Active Participant Ratio

Ratio	Green Zone	Endangered	Critical	SFA Approved	SFA Pending	Declining
< 1.0 (191 Plans)	95%					
1.0 to 1.4 (303 Plans)	87%	8%	3%			
1.5 to 1.9 (220 Plans)	75%	10%	8%	3%	4%	
2.0 to 2.9 (155 Plans)	63%	3%	19%	4%	12%	
3.0 to 4.9 (105 Plans)	49%	8%	15%	12%	16%	
5.0 to 7.9 (68 Plans)	37%		9%	32%	21%	
≥ 8.0 (155 Plans)	34%	4%	4%	35%	21%	3%

Source: Segal analysis of Form 5500 data for plan years ending in 2023. Zone status applies to plan years ending in 2024.

Commentary

- Overall, 70% of plans covering 66% of participants are in the "green zone"

- The distribution of covered participants by zone status may differ significantly from the distribution of plans

- Only a few small plans in **critical and declining status** are not on the SFA waiting list

Funding and Zone Status

Historical Funded Percentages

2021 Zone Status
- Green Zone
- Endangered
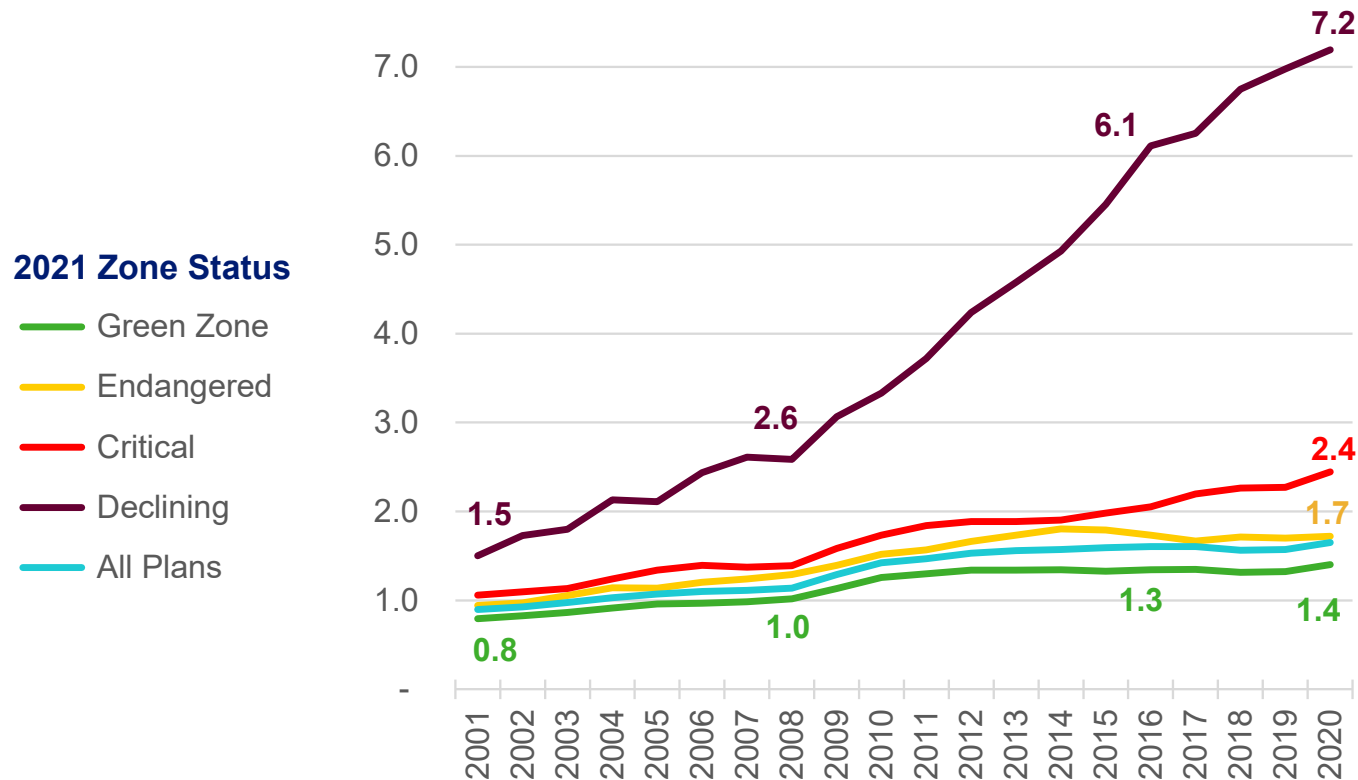- Critical
- Declining
- All Plans
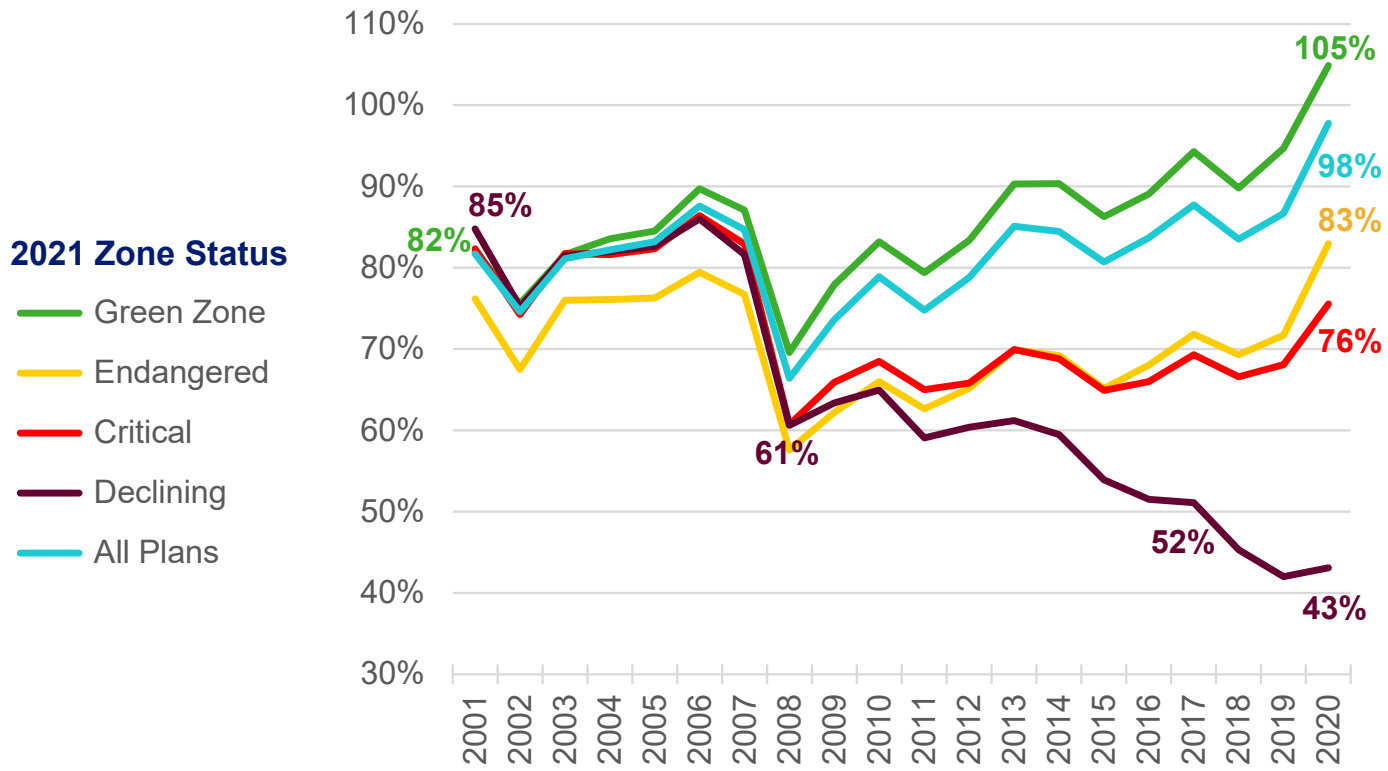
Study of Form 5500 data by Segal. Graph shows median funded percentages based on market value of assets at plan year end. Plans are grouped by 2021 zone status.

Observations

- In 2001, not much dispersion in median funded percentages

- Over last 20 years, funding for plans in **critical and declining** status deteriorated rapidly

- In 2001, plans currently in **critical and declining** status had a slightly *higher* median funded percentage than plans currently in the **green zone**

Plan Maturity and Zone Status

Historical Demographic Maturity Ratio

2021 Zone Status
- Green Zone
- Endangered
- Critical
- Declining
- All Plans

Chart values: Declining: 1.5 (2001), 2.6 (2008), 6.1 (2016), 7.2 (2020). Critical: 2.4 (2020). Endangered: 1.7 (2020). Green Zone: 0.8 (2001), 1.0 (2008), 1.3 (2016), 1.4 (2020).

Study of Form 5500 data by Segal. Graph shows median ratios of non-active participants to active participants at plan year end. Plans are grouped by 2021 zone status.

Observations

- Here, maturity is expressed as ratio of non-active participants to active participants

- Plans currently in **critical and declining status** were more mature than average in 2001 and highly mature now

- Note higher maturity levels in 2020 for non-declining plans, compared with 2001

Why Does Plan Maturity Matter?

With increasing maturity…

- Fewer active participants to support non-active participants
- Changes in accrual rates and contribution rates have less impact
- Benefit payments grow, contribution income shrinks
- Annual cash flows become increasingly negative
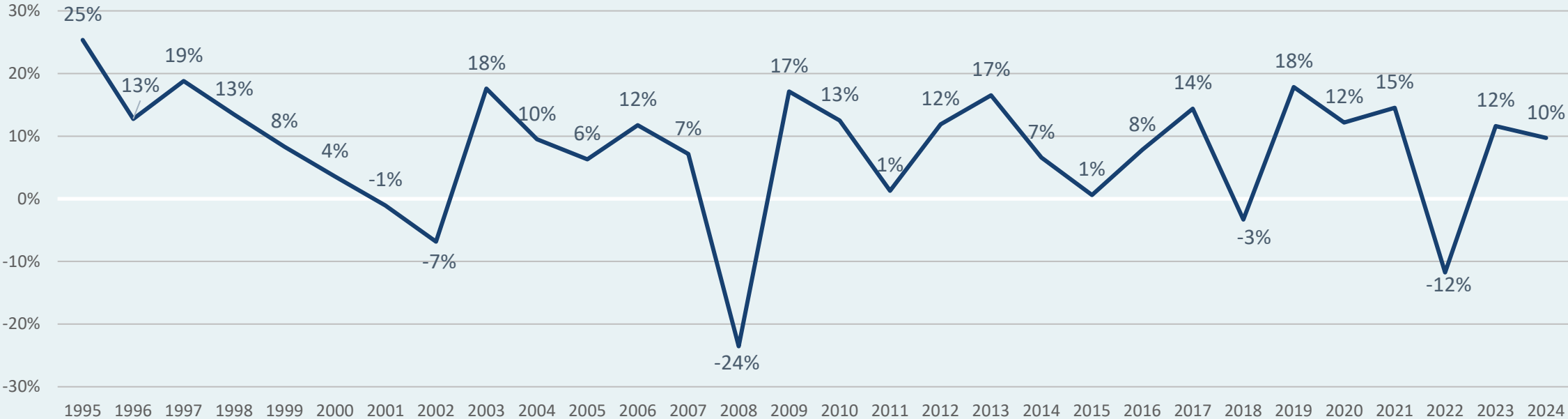
With negative cash flows…

- Plan must liquidate assets to pay benefits
- Greater risk of investment volatility
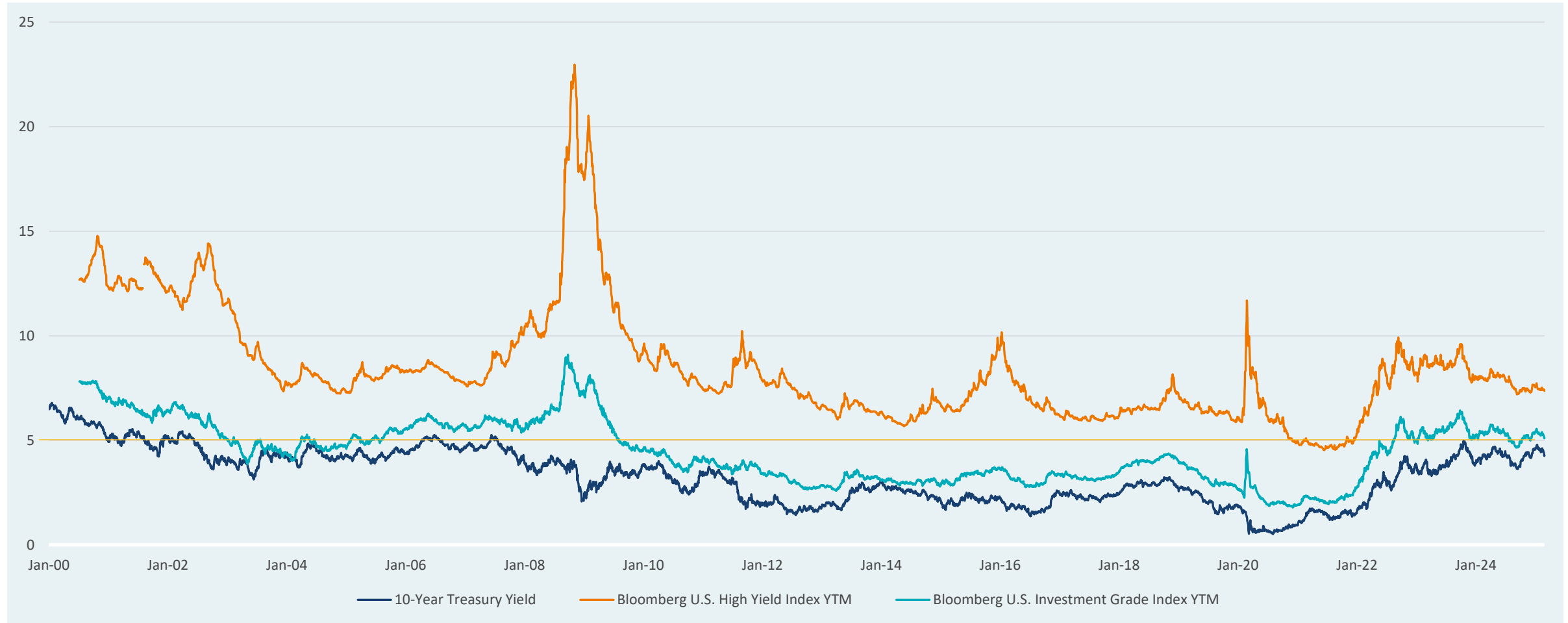
Investment Environment

Verus

Historical investment returns

MEDIAN INVESTMENT RETURNS FOR MULTIEMPLOYER PENSION PLANS

Interest rate environment

Legend: 10-Year Treasury Yield — Bloomberg U.S. High Yield Index YTM — Bloomberg U.S. Investment Grade Index YTM

Source: Bloomberg, as of 2/27/25

Derisking in a higher rate environment

— De-risking typically involves substituting growth allocations with fixed income.

— The current environment has created a lower opportunity cost of fixed income relative to actuarial requirements and expected returns of riskier asset classes

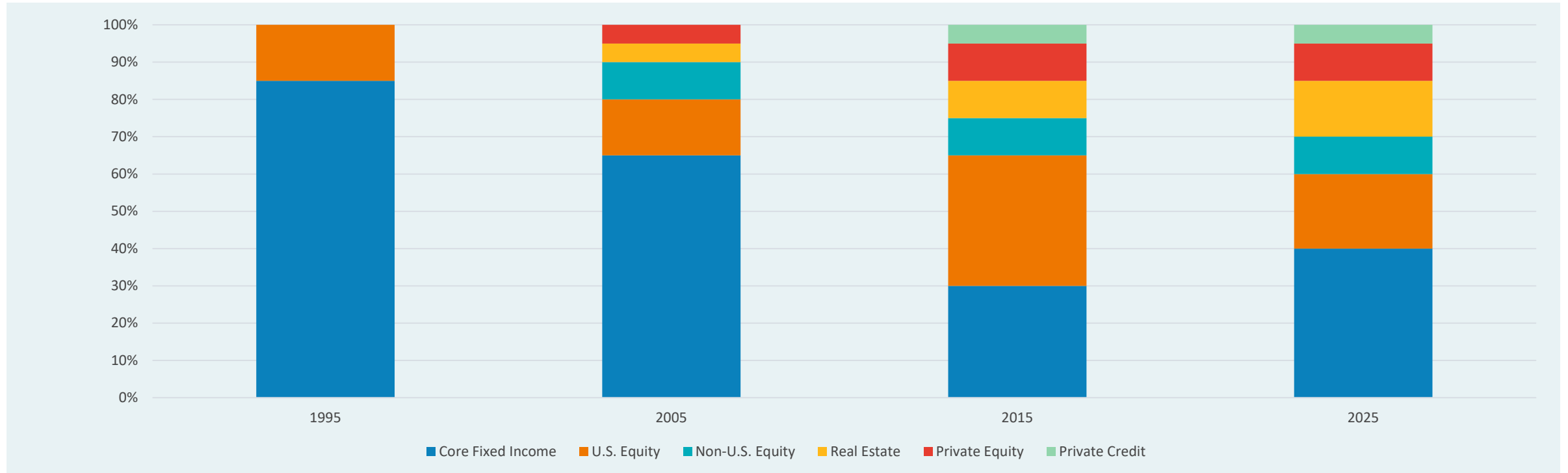**AVG RETURN ASSUMPTION VS LONG DURATION IG CREDIT**
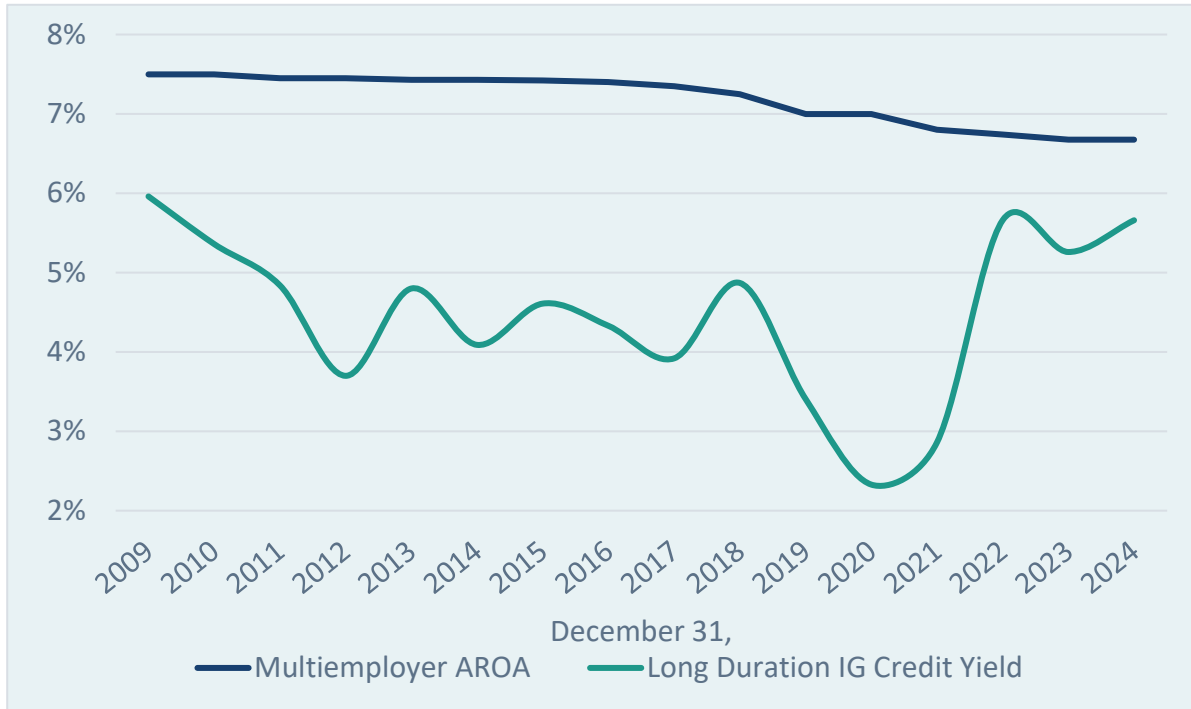
2021 VS. 2024 VERUS CAPITAL MARKET ASSUMPTIONS
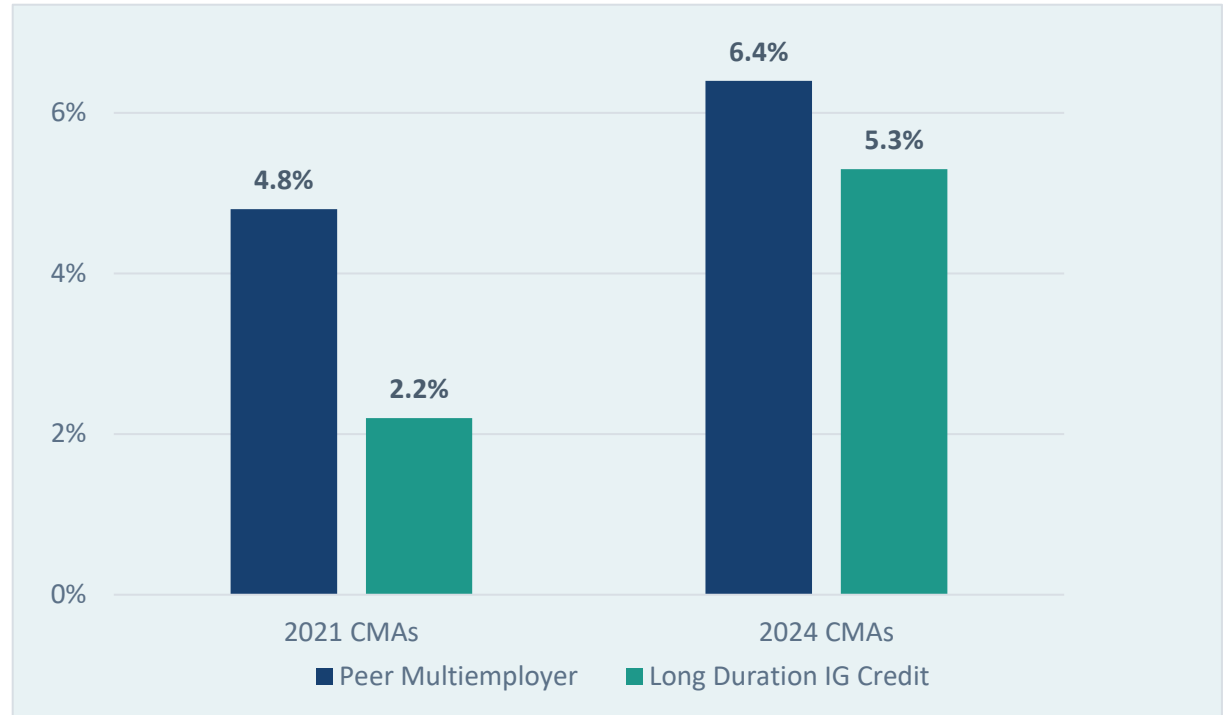
Forecasted return analysis is based on Verus' 2021 CMAs and 2025 CMAs. The 2025 CMAs are adjusted to reflect the capital market environment as of 12/31/2024. The return forecasts reflect a peer portfolio for multiemployer plans. Long duration IG credit yields are based on the Bank of America 10-15 Year US Corporate Index effective yield. Multiemployer average return assumption reflect Milliman survey data. The 12/2024 average return assumption was not available, but assumed to be unchanged from prior year.
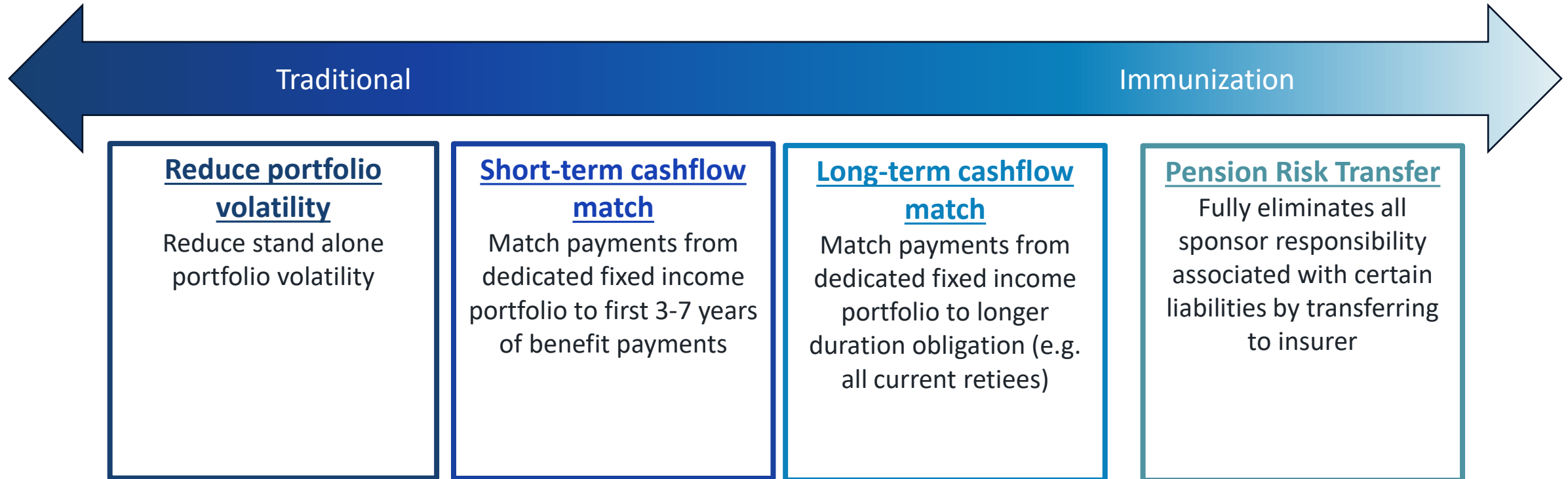
Verus

Capital market expectations

HYPOTHETICAL PORTFOLIOS THROUGH TIME TO MEET 7% RETURN TARGET

Legend: ■ Core Fixed Income ■ U.S. Equity ■ Non-U.S. Equity ■ Real Estate ■ Private Equity ■ Private Credit

	1995	2005	2015	2025
10-Year Treasury Yield	7.8%	4.2%	2.2%	4.6%
S&P 500 P/E Ratio	15	18	18	27

For illustrative purposes only.

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Spectrum of de-risking

Traditional ← → **Immunization**

Reduce portfolio volatility	**Short-term cashflow match**	**Long-term cashflow match**	**Pension Risk Transfer**
Reduce stand alone portfolio volatility	Match payments from dedicated fixed income portfolio to first 3-7 years of benefit payments	Match payments from dedicated fixed income portfolio to longer duration obligation (e.g. all current retiees)	Fully eliminates all sponsor responsibility associated with certain liabilities by transferring to insurer

— Trustees should consider plan specific circumstances when analyzing de-risking alternatives.

— The incentive to move to right of this spectrum increases as plans mature, funding levels improve, benefits are frozen or reduced, or as cashflow profiles grow increasingly negative.

Verus

Cashflow matching

— Cashflow matching is a strategy that matches future benefit payment cashflows of the plan with cashflows from an investor's fixed income portfolio

— We can broadly group LDI strategies between those with a short-term (3-7 year) or long-term (life of the pension plan) focus

SHORT-TERM CASHFLOW MATCHING

Cashflow Matched Liability   Non-Cashflow Matched Liability

LONG-TERM CASHFLOW MATCHING

Cashflow Matched Liability   Non-Cashflow Matched Liability
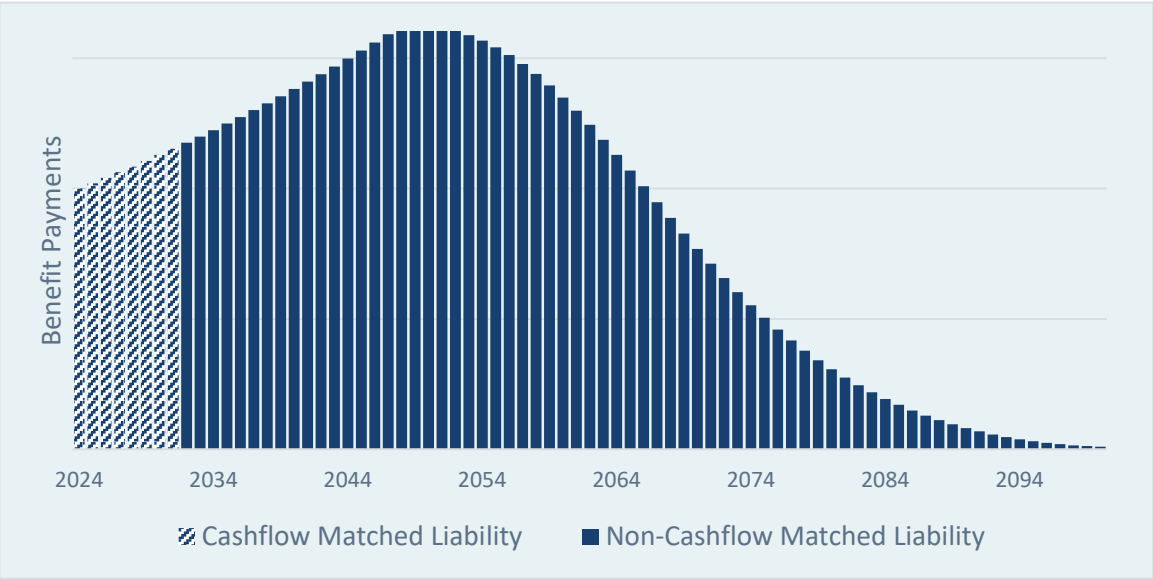
A **short-term LDI** strategy help a plan manage liquidity and drawdown risk while maintaining meaningful allocations to riskier asset classes
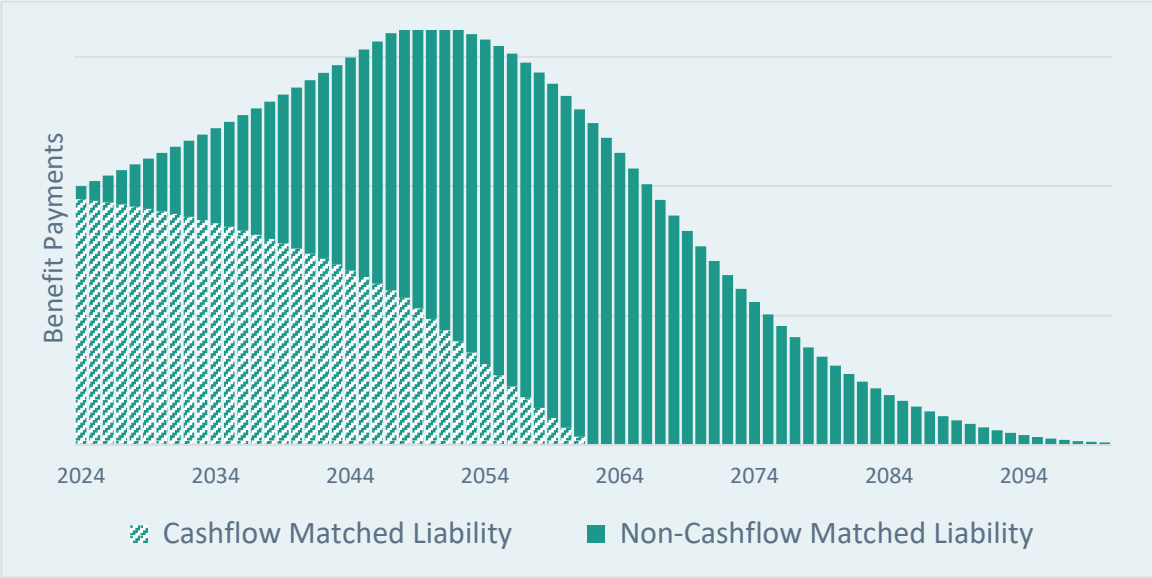
A **long-term LDI** strategy additionally helps plan sponsors manage longer term downside risk and interest rate risk by aligning long-term liabilities with portfolio cashflows
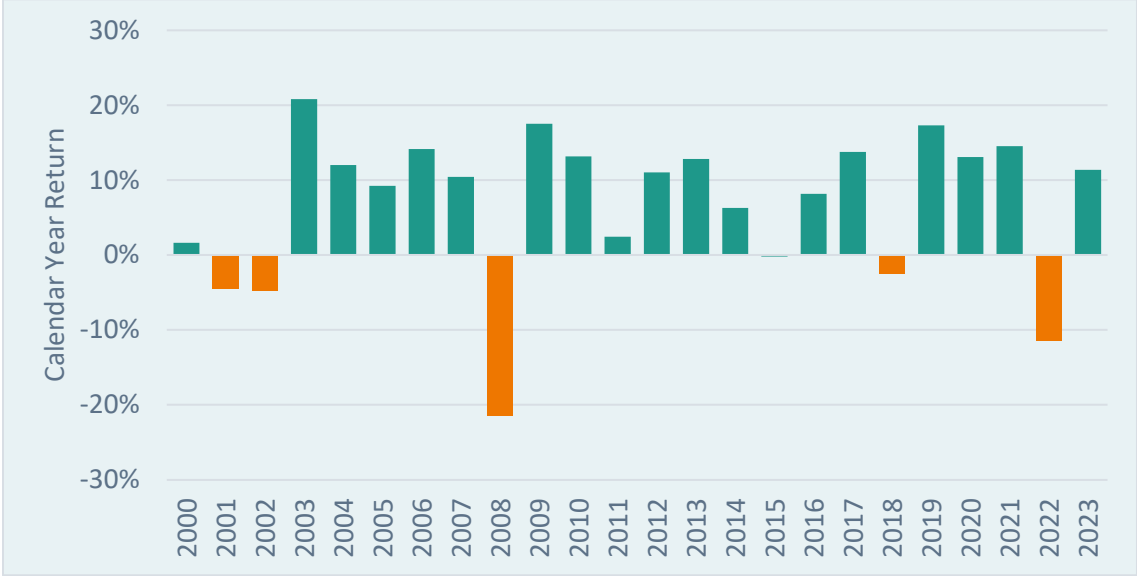
Verus

Short-term cashflow matching

— Traditional DB allocations have significant short-term volatility.

— Plans with negative cashflow profiles have greater exposure to short-term volatility, because assets must be sold to meet cashflow needs

— Short-term cashflow matches help sponsors manage drawdown & liquidity risk by extending the time horizons that riskier asset classes have to grow unencumbered

ANNUALIZED RETURNS BY TIME HORIZON
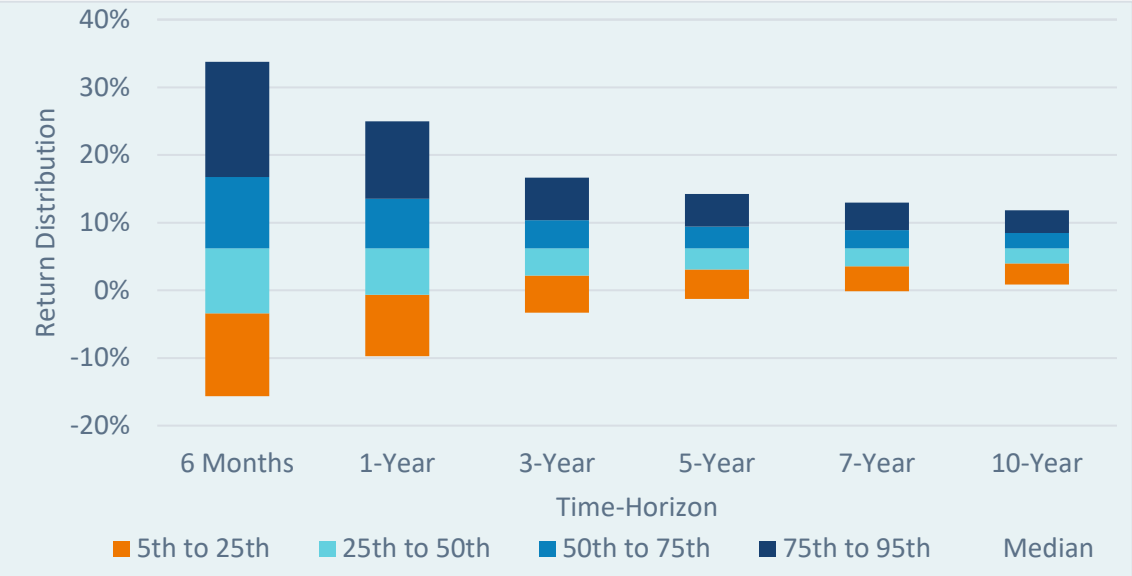
HISTORICAL ANNUAL RETURNS

Annualized return forecasts based on multiemployer peer portfolio and Verus 2025 CMAs. Historical returns assumes current peer portfolio was held during entire period.
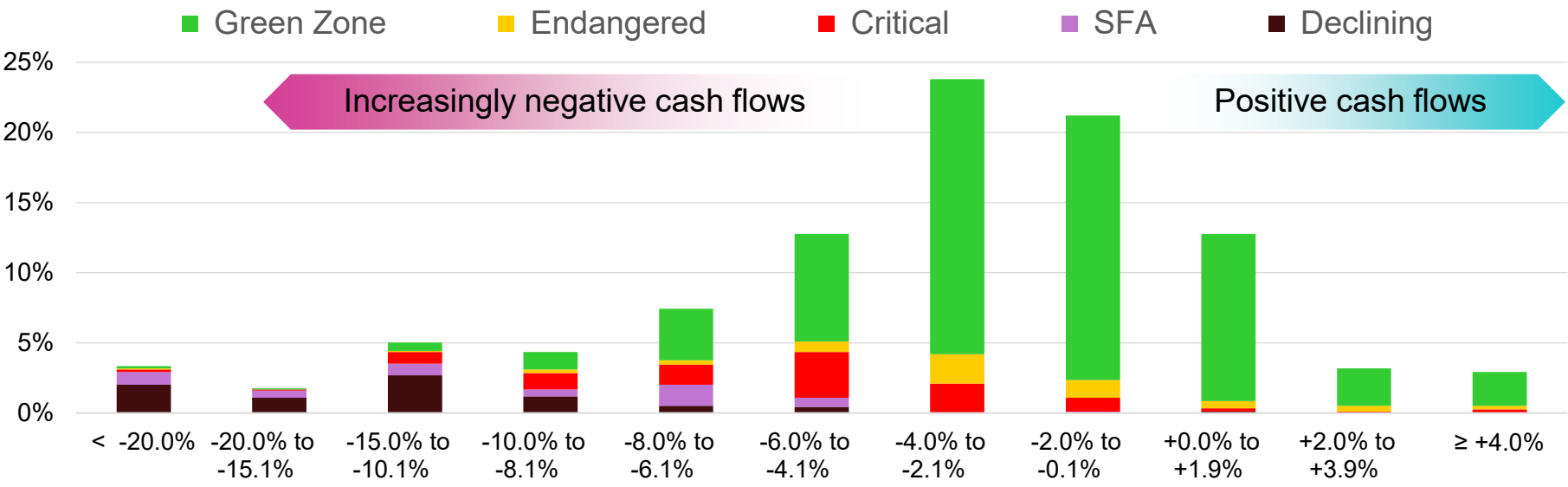
Importance of Negative Cash Flows

Multiemployer Universe: Cash Flows

Net cash flow as a percentage of plan assets

Net Cash Flow as % of Assets ("Burn Rate")

Legend: ■ Green Zone ■ Endangered ■ Critical ■ SFA ■ Declining

← Increasingly negative cash flows | Positive cash flows →

X-axis categories: < -20.0% | -20.0% to -15.1% | -15.0% to -10.1% | -10.0% to -8.1% | -8.0% to -6.1% | -6.0% to -4.1% | -4.0% to -2.1% | -2.0% to -0.1% | +0.0% to +1.9% | +2.0% to +3.9% | ≥ +4.0%

Y-axis: 0% to 25%

Multiemployer Universe: 1,198 Plans

Median Result for Multiemployer Universe = -2.7%

Source: Segal analysis of Form 5500 data for plan years ending in 2023. Zone status applies to plan years ending in 2024.

Commentary

- Analysis is based on Form 5500 data for plan years ending in 2023

- Zone status is for plan years ending in 2024

- Results do <u>not</u> reflect SFA awards approved after 2023

Cash Flow Neutral vs. Cash Flow Negative

Simplified example

- Plan A is **cash flow neutral** (contributions cover benefits and expenses)
- Plan B has **highly negative cash flows**, about 8% of assets annually
- Following an investment loss, Plan B needs a much higher return to bounce back
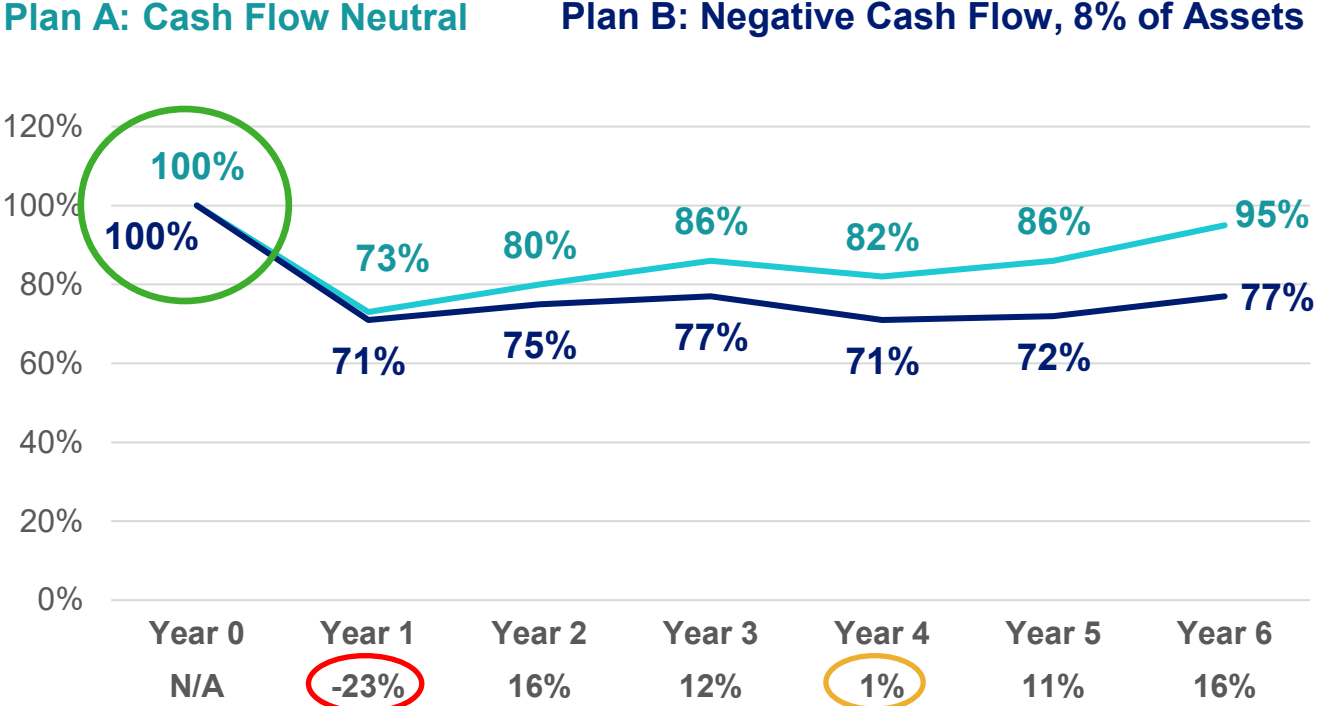
Plan Year	Plan A: Cash Flow Neutral		Plan B: Cash Flow Negative	
	Year 1	Year 2	Year 1	Year 2
Investment Return	-5.0%	+5.3%	-5.0%	+25.0%
Beginning Assets	1,000	950	1,000	872
Net Cash Flow	0	0	(80)	(80)
Investment Return	(50)	50	(48)	208
Ending Assets	950	1,000	872	1,000

Investment Volatility: 100% Funded

Notes

- Assume median investment returns from 2008 through 2013 (4.5% annualized)

- **Plan A** is cash flow neutral, while **Plan B** is highly cash flow negative

- Assume starting funded percentage of 100% (no cushion)
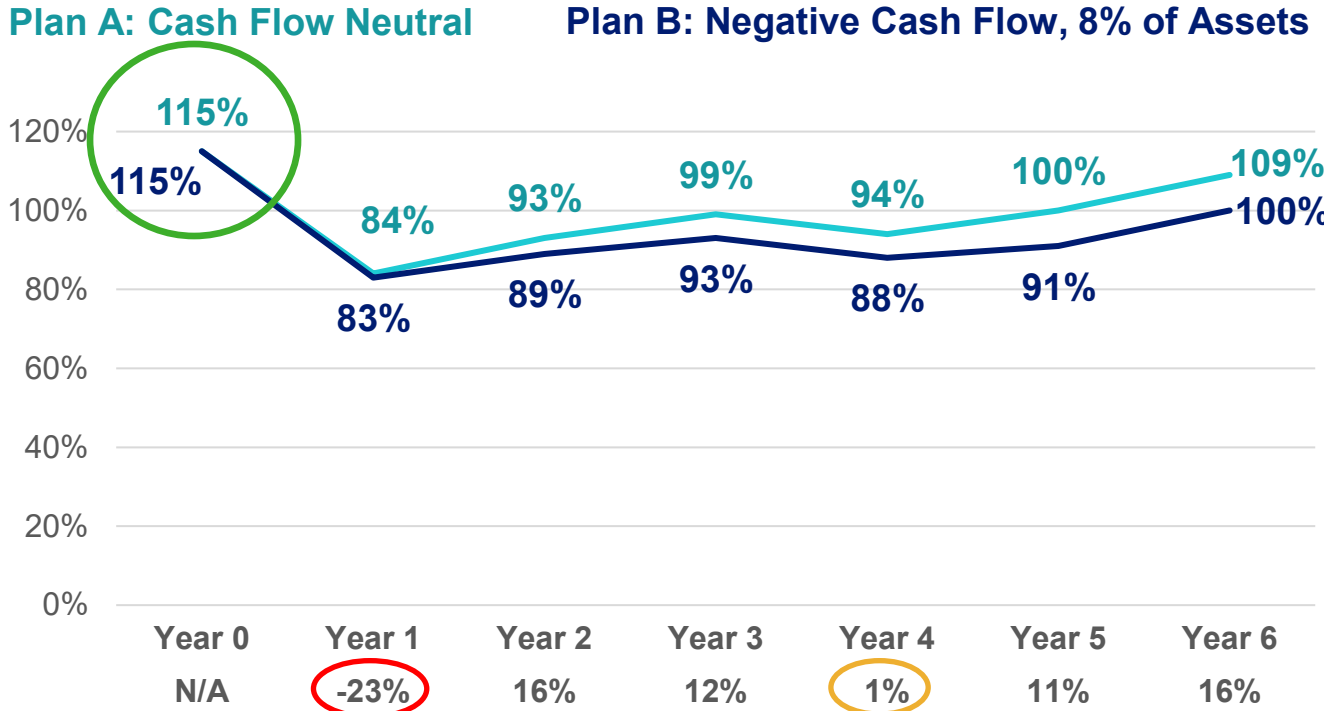
Projected Funded Percentages

Plan A: Cash Flow Neutral   **Plan B: Negative Cash Flow, 8% of Assets**

Plan A values: 100%, 73%, 80%, 86%, 82%, 86%, 95%

Plan B values: 100%, 71%, 75%, 77%, 71%, 72%, 77%

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	N/A	-23%	16%	12%	1%	11%	16%

Projections assume no changes to benefits or contribution rates for either plan

Investment Volatility: 115% Funded

Notes

- Assume median investment returns from 2008 through 2013 (4.5% annualized)

- **Plan A** is cash flow neutral, while **Plan B** is highly cash flow negative

- Assume starting funded percentage of 115% (significant cushion)
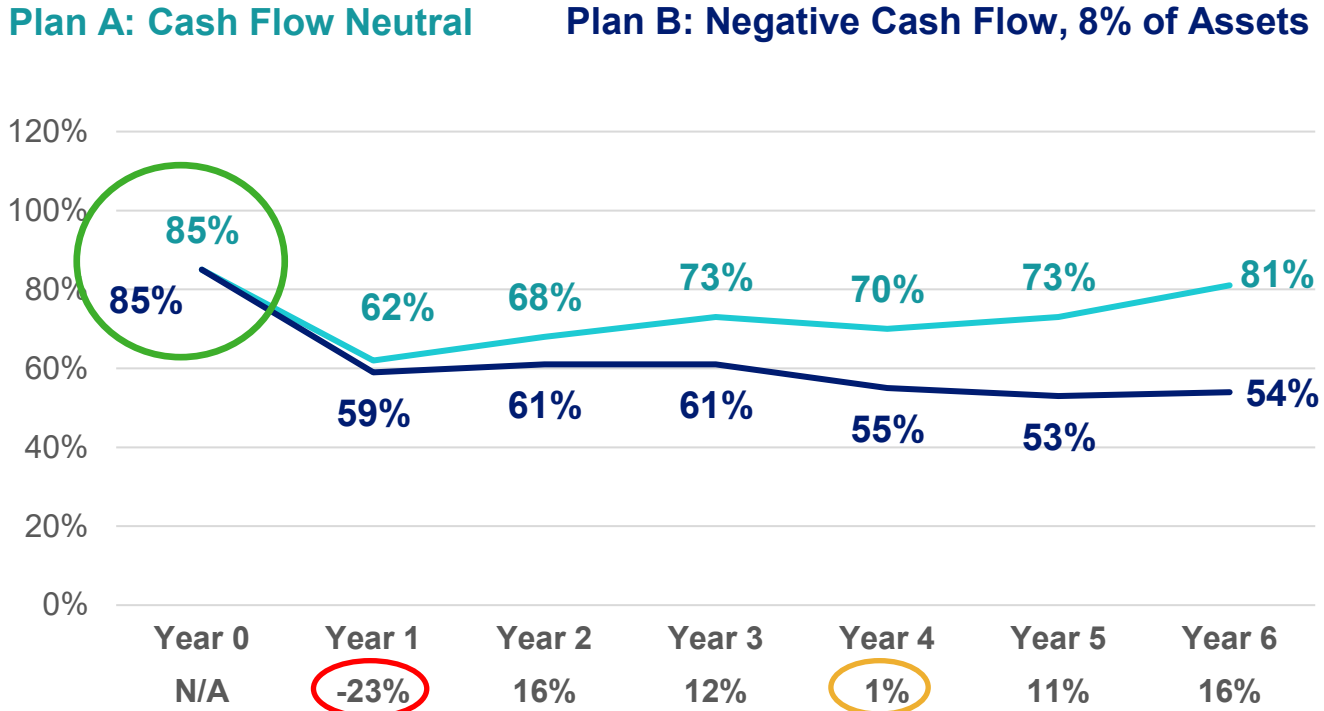
Projected Funded Percentages

Plan A: Cash Flow Neutral　　　**Plan B: Negative Cash Flow, 8% of Assets**

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	N/A	-23%	16%	12%	1%	11%	16%

Plan A: 115%, 84%, 93%, 99%, 94%, 100%, 109%

Plan B: 115%, 83%, 89%, 93%, 88%, 91%, 100%

Projections assume no changes to benefits or contribution rates for either plan

Segal   21

Investment Volatility: 85% Funded

Notes

- Assume median investment returns from 2008 through 2013 (4.5% annualized)

- **Plan A** is cash flow neutral, while **Plan B** is highly cash flow negative

- Assume starting funded percentage of 85% (underfunded)

Projected Funded Percentages

Plan A: Cash Flow Neutral   **Plan B: Negative Cash Flow, 8% of Assets**

Plan A values: 85%, 62%, 68%, 73%, 70%, 73%, 81%

Plan B values: 85%, 59%, 61%, 61%, 55%, 53%, 54%

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	N/A	-23%	16%	12%	1%	11%	16%

Projections assume no changes to benefits or contribution rates for either plan

Managing Investment Risk

Verus
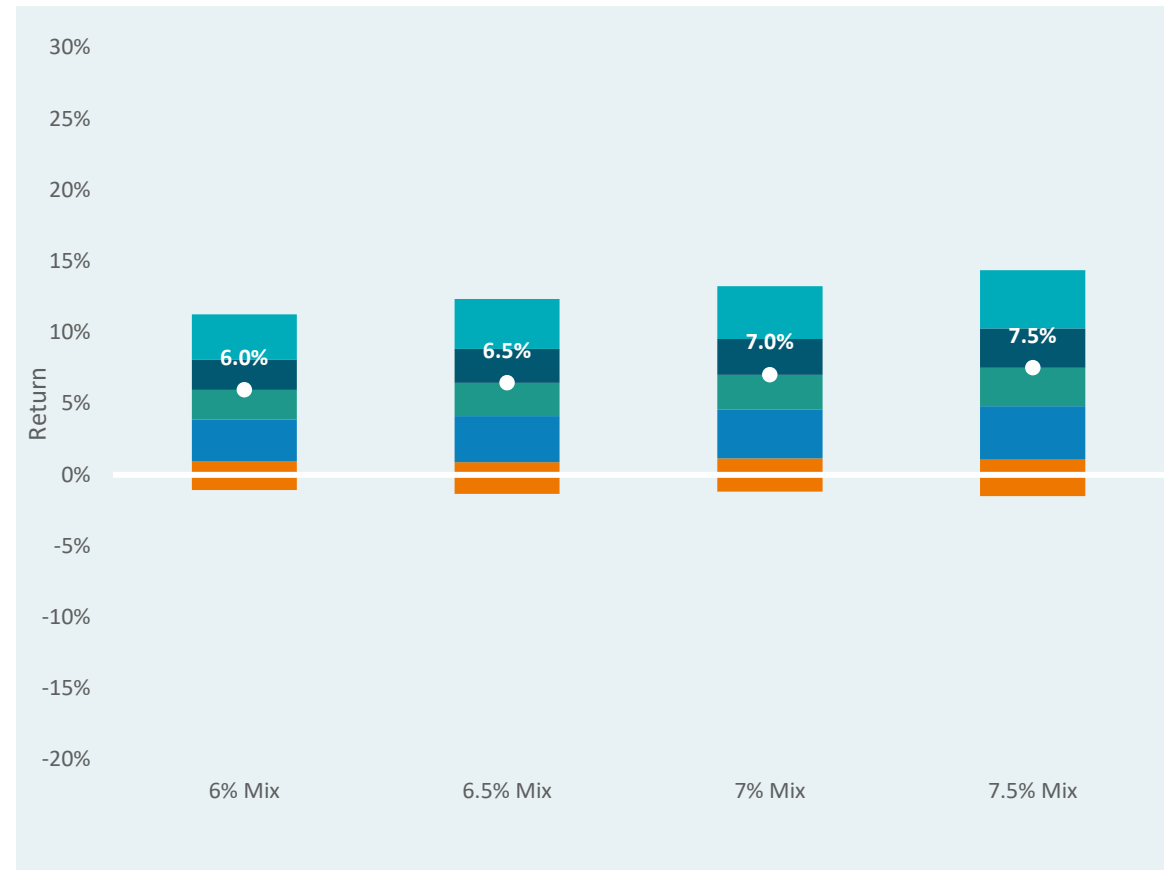
Pension Plan Risk Factors
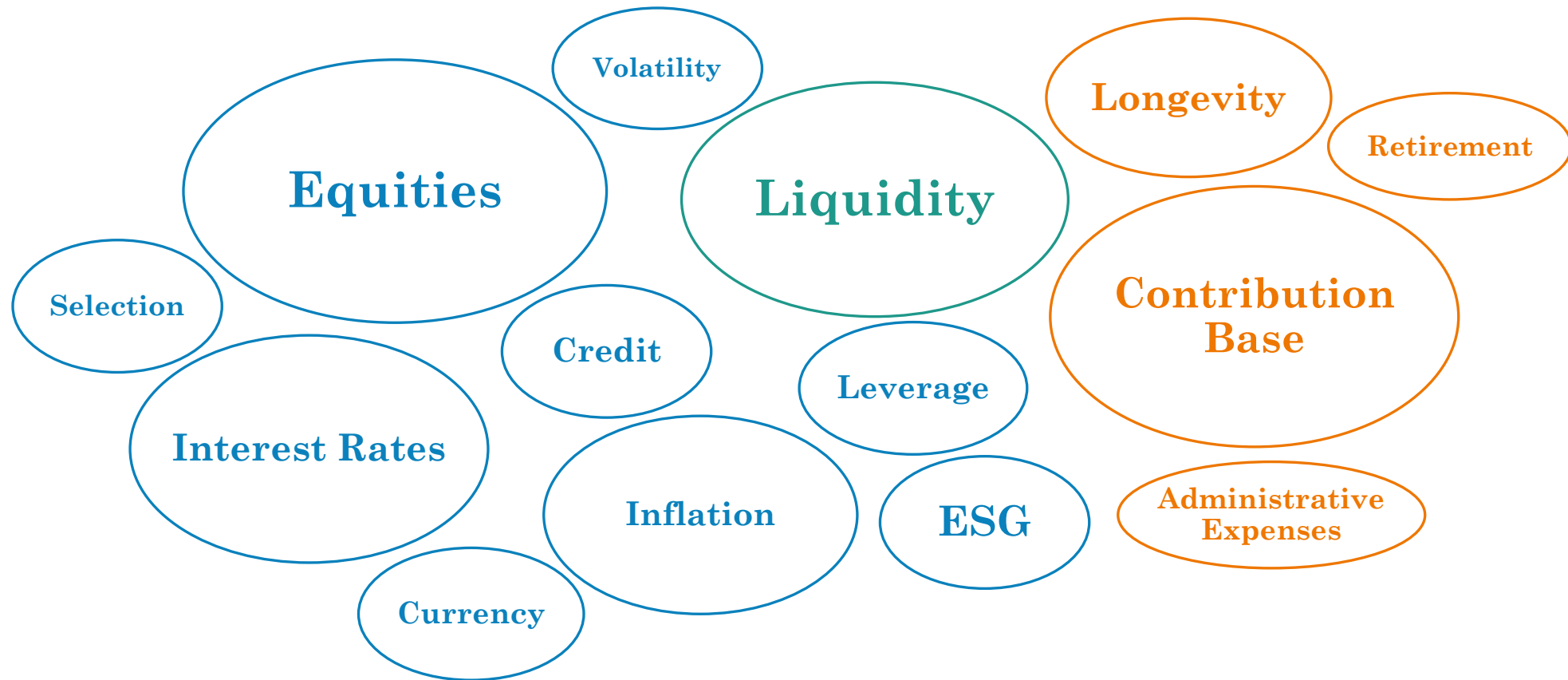
Range of returns

1-Year Range of Outcomes
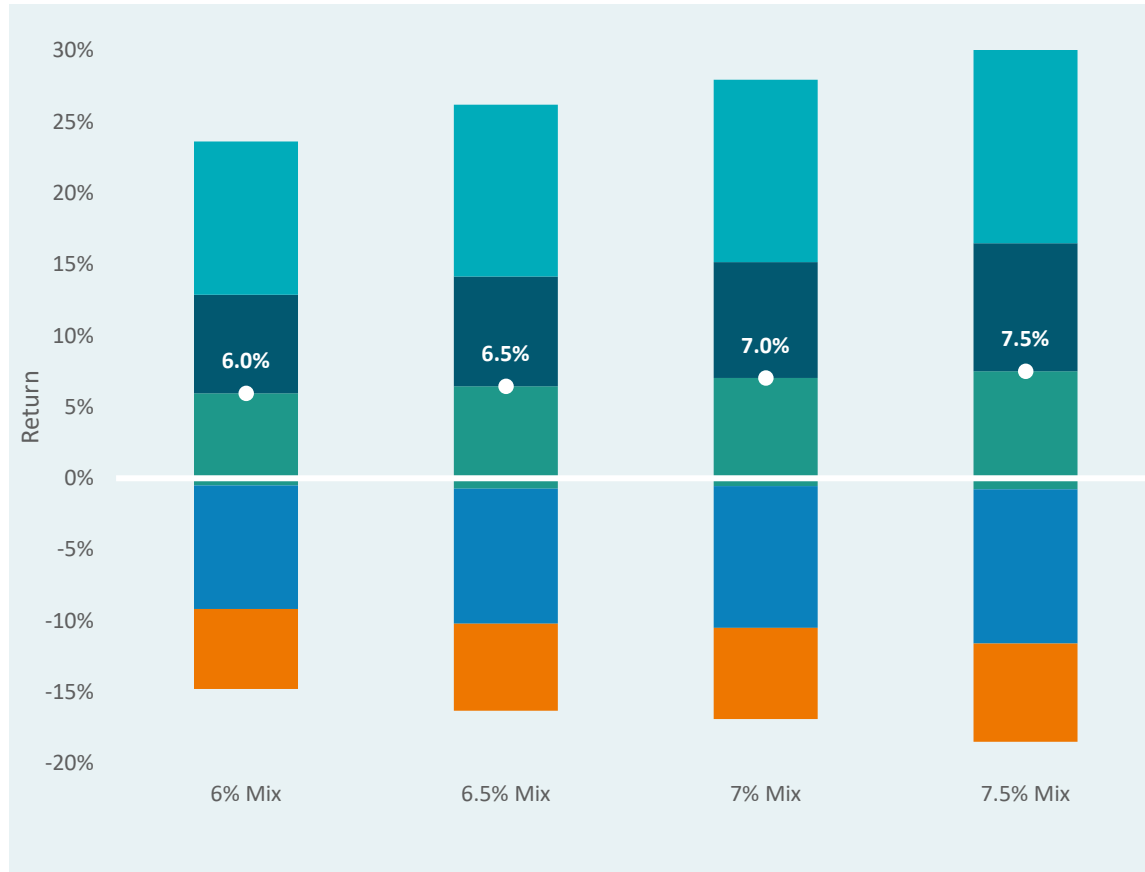
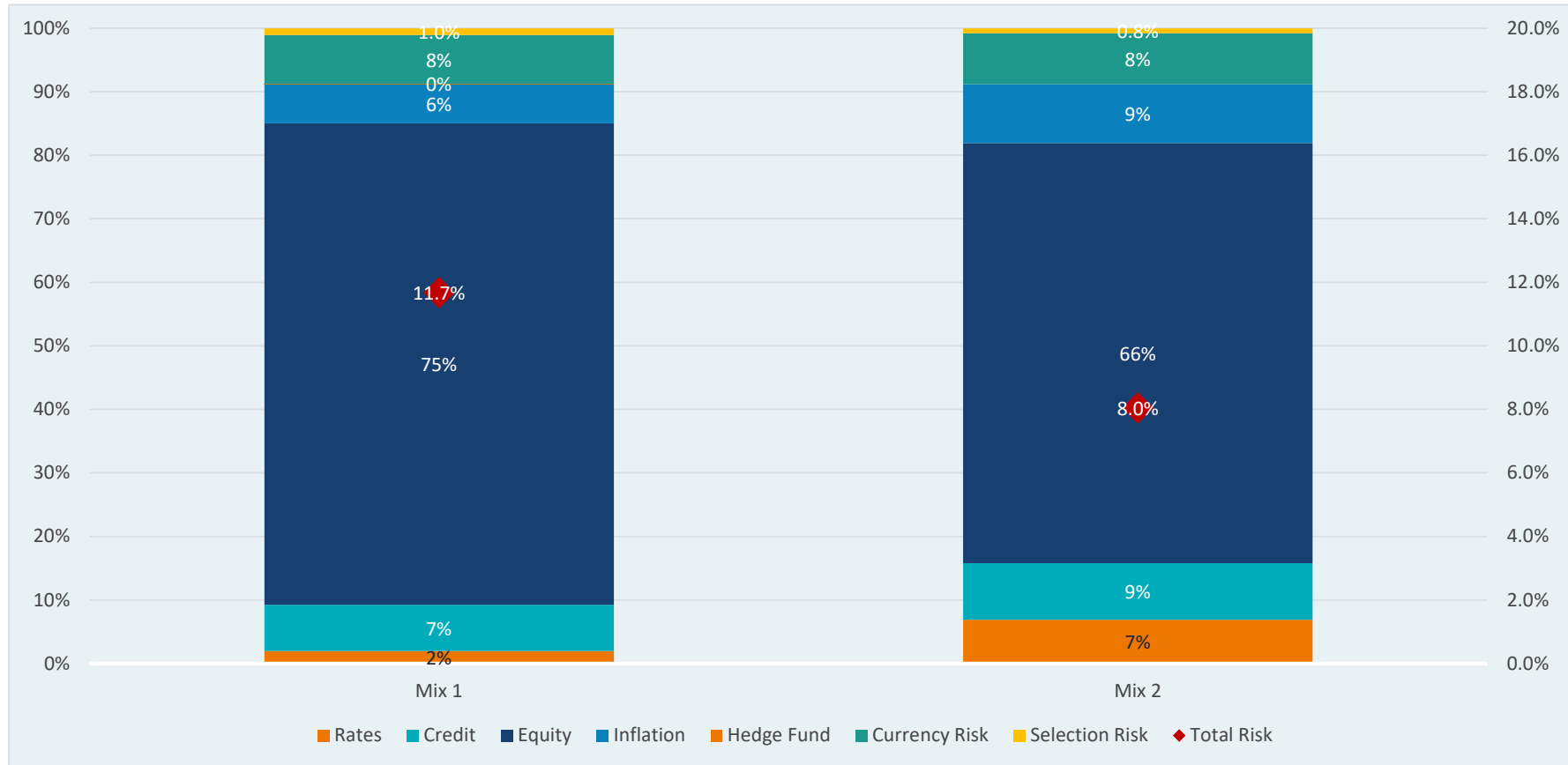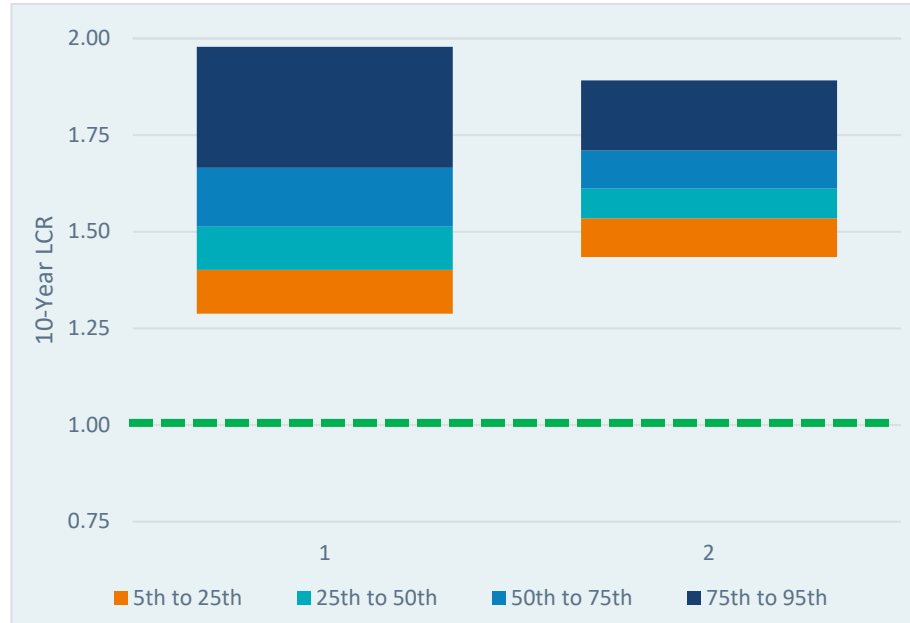## 10-Year Range of Outcomes

Source: MSCI BarraOne, MPI
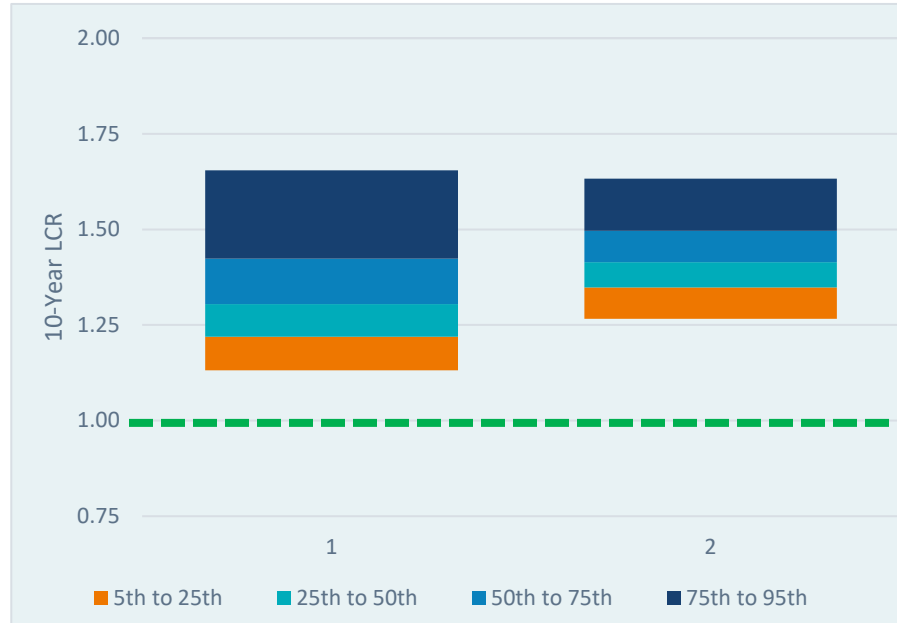
Risk decomposition

Source: MSCI BarraOne

Liquidity assessment

HIGHER CONTRIBUTIONS

10-Year LCR	Mix 1	Mix 2
Results		
Median	1.51	1.61
1-in-20 Worst Case	1.29	1.43
Probability		
Liquidity Issue	0%	0%

LOWER CONTRIBUTIONS

10-Year LCR	Mix 1	Mix 2
Results		
Median	1.30	1.41
1-in-20 Worst Case	1.13	1.27
Probability		
Liquidity Issue	0%	0%

In both examples, the plan is expected to have sufficient liquidity to meet plan obligations (benefit payments, expenses, and capital calls). This includes pessimistic asset return and contribution scenarios.

Verus

Cash flow matching benefits

— There have been 18 occurrences of negative S&P 500 calendar year returns since 1940.

   ▪ In only 3 instances has it taken more than 3 years to recover.

— Despite having identical investment performance, the scenario with volatile asset returns results in ~$600M less assets at the end of a 12-year projection (~8% in funded ratio).

   ▪ This is driven by the plan's negative cashflow profile.

— Short-term cashflow matching can help to mitigate these effects.
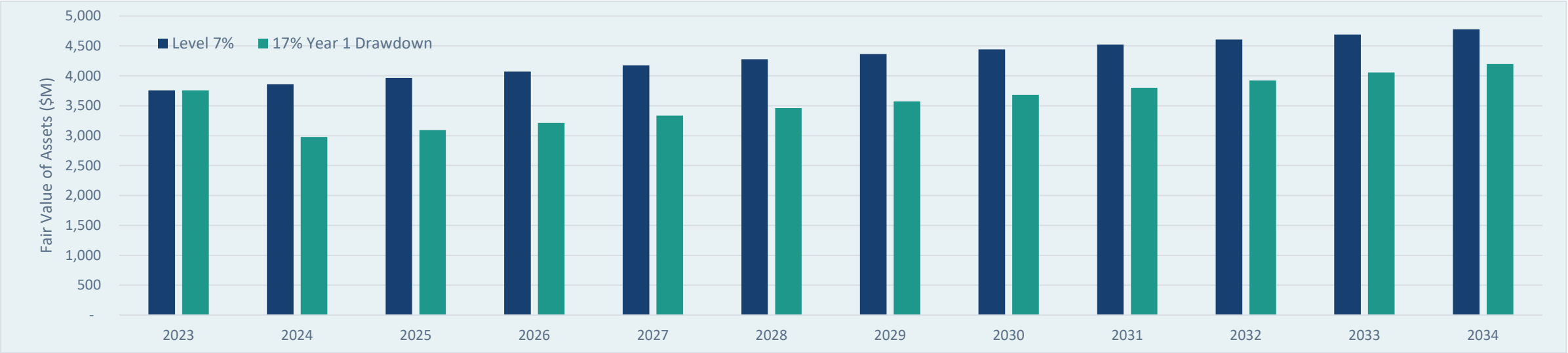
Case Studies

Modeling Pension Risk

Plan specifics

- Current funded percentage
- Demographic maturity
- Net cash flows
- Cost of accruals versus contributions
- Contributions vs. investment returns

Are these plan-specific factors projected to change over time?

Modeling considerations

- Investment volatility
- Contribution income
- Capital market assumptions
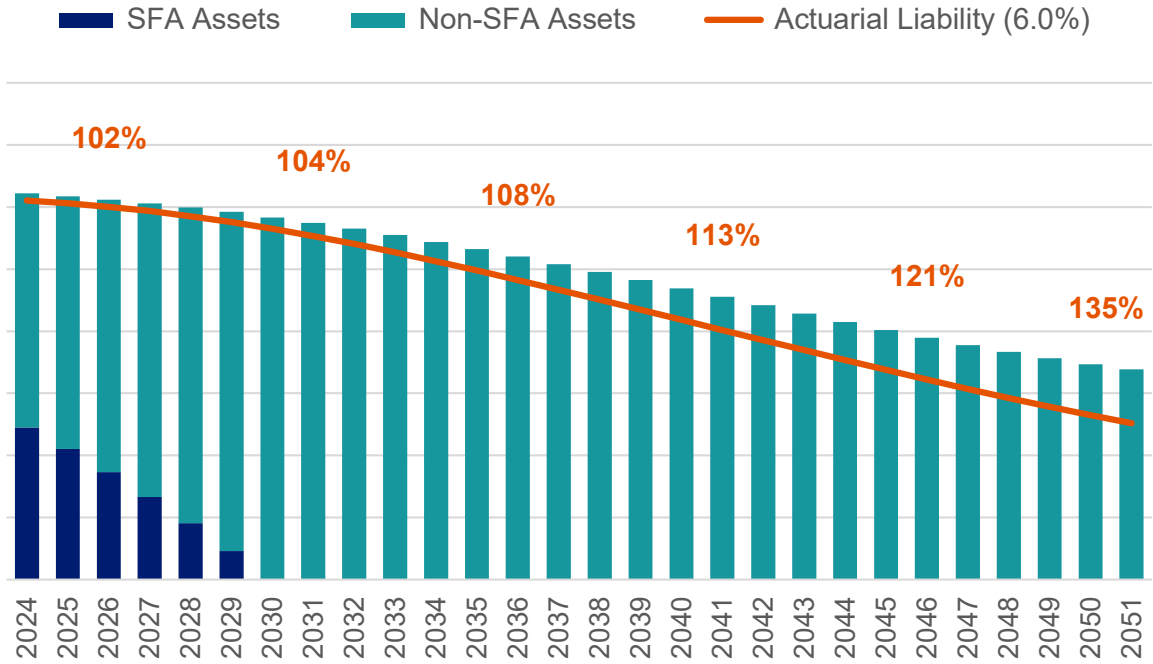- Other risk factors

Actuarial projections

- Deterministic
  – Investment return scenarios
  – Stress testing (what can we withstand?)
- Stochastic (range of results)

Case Study 1: SFA Plan

Background

- Plan was in **critical and declining** status before receiving SFA

- No priority status; received SFA in 2024

- SFA assets ~ 40% of total plan assets

- Annual return needed to remain solvent indefinitely ~ 6.0%

- Demographic maturity ratio: 8:1

- Negative net cash flows > 6% of plan assets, relatively stable

- Projected exhaustion of SFA assets around 2030

Solvency Projection

Legend: SFA Assets | Non-SFA Assets | Actuarial Liability (6.0%)

Data labels: 102%, 104%, 108%, 113%, 121%, 135%

Years: 2024–2051

Case study 1: Investment strategy

— SFA Assets

  ▪ Cash flow matched

— Legacy (non-SFA) Assets

  ▪ Diversified portfolio of equities, fixed income and alternatives

  ▪ Benefits-driven investing (BDI) strategy: increase allocation to duration-matched bond portfolio based on total plan funded percentage

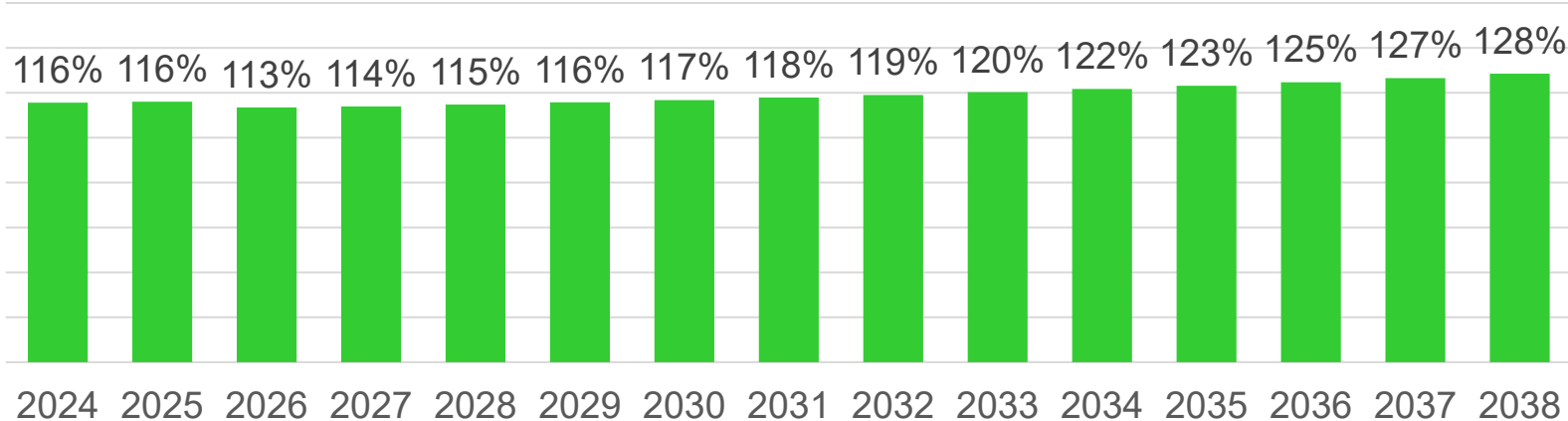 ▪ As SFA assets are exhausted, illiquid assets will need to be reduced
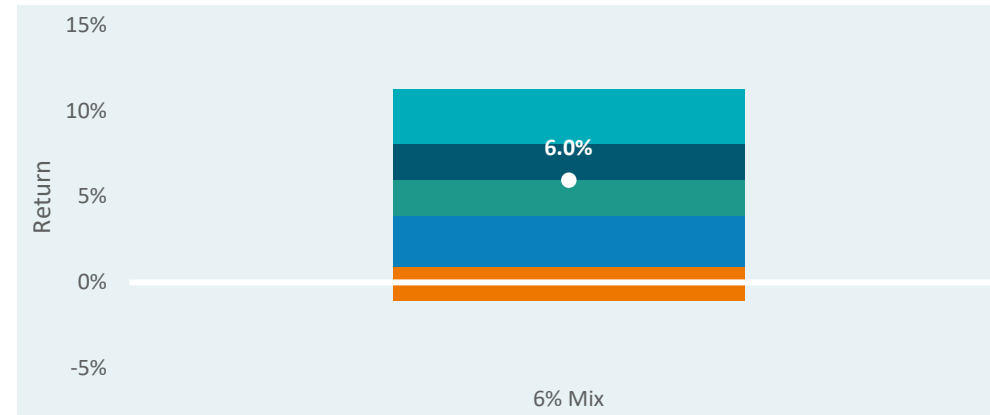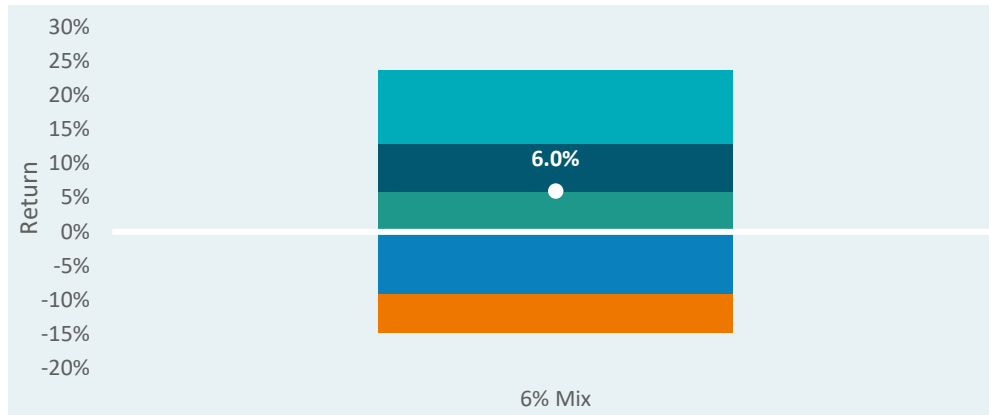
Case Study 2: Mature Green Plan
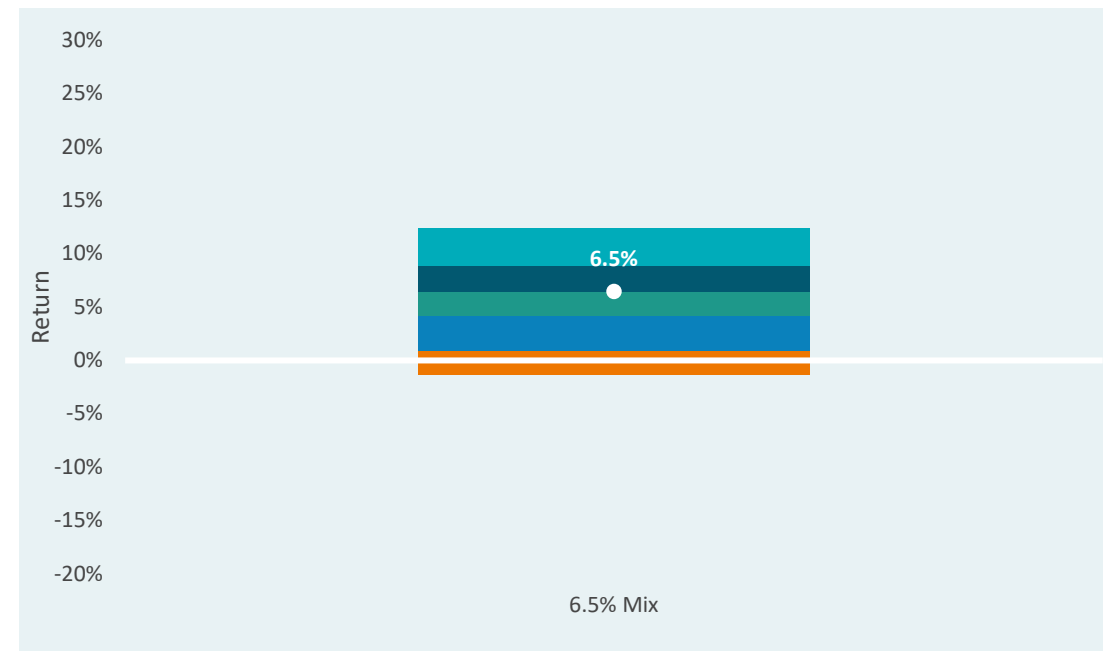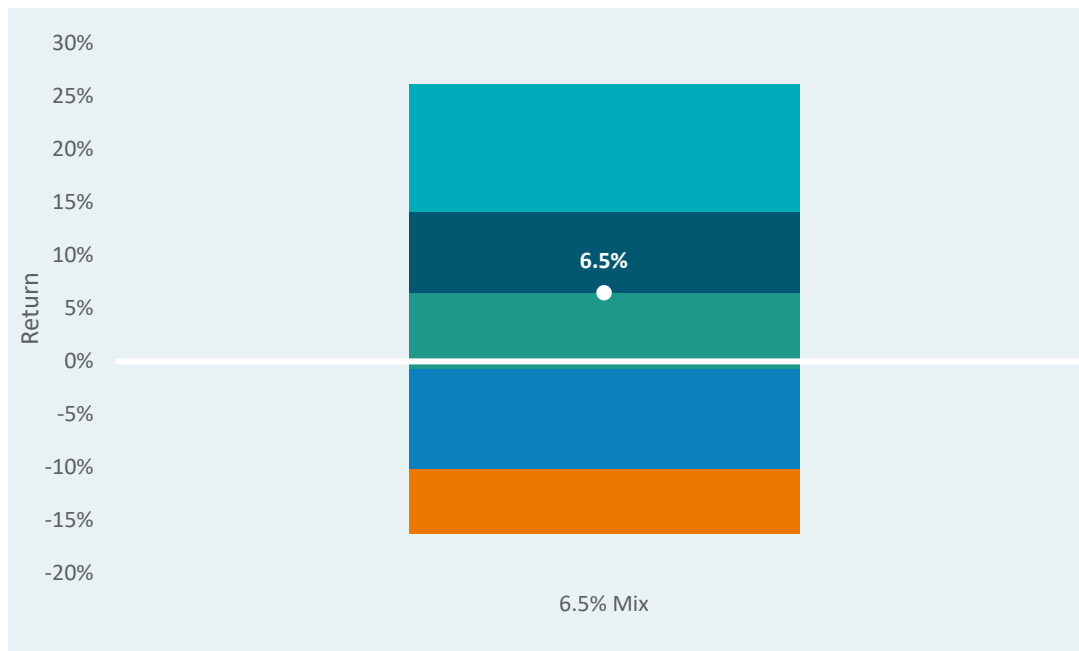
Background

- Plan has always been in **green zone**

- Over 110% funded based on 6.5% interest rate

- Need annual returns of about 6.0% to stay in green zone

- Demographic maturity ratio: 5:1

- Negative net cash flows > 6% of plan assets, relatively stable

Projection Assuming
6.5% Annual Returns

2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
116%	116%	113%	114%	115%	116%	117%	118%	119%	120%	122%	123%	125%	127%	128%

Case study 2: Investment strategy

— ALM studies show one bad year could be crippling for this plan due to its highly negative cash flows

— Short-term cash flow match

   ▪ Periodically review extending cash flow match following investment gains

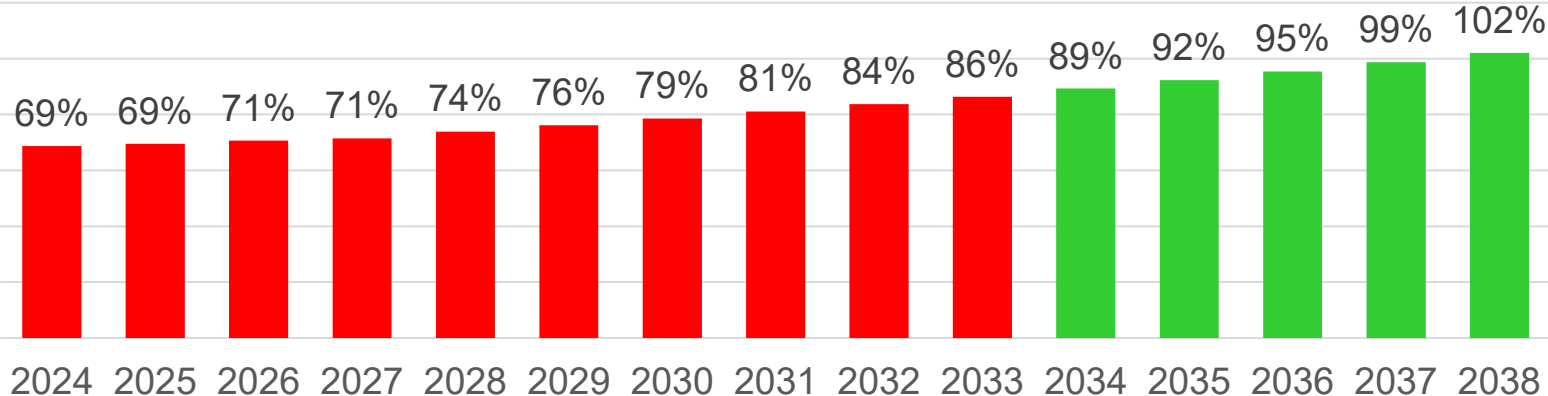— Diversified investment mix with focus on limiting downside

Case Study 3: Red Zone Plan

Background

- Plan recently entered **red zone**

- Below 70% funded based on 7.0% interest rate

- Rehabilitation Plan targets emergence from red zone in 10 years

- Demographic maturity ratio: 2:1

- Negative net cash flows ~ 2% of plan assets, relatively stable

Contribution income is strong, but uncertain.

Projection Assuming 7.0% Annual Returns

2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
69%	69%	71%	71%	74%	76%	79%	81%	84%	86%	89%	92%	95%	99%	102%

Case Study 3: Asset-Liability Modeling

Asset Mix Expectations	Baseline Contributions			Lower Contributions		
	Current Mix	**Lower Risk**	**Higher Risk**	**Current Mix**	**Lower Risk**	**Higher Risk**
Expected Return	7.5%	6.6%	7.8%	7.5%	6.6%	7.8%
Annual Volatility	11.8%	7.9%	13.3%	11.8%	7.9%	13.3%

Zone Status in 10 Years	Current Mix	Lower Risk	Higher Risk	Current Mix	Lower Risk	Higher Risk
Green Zone	68%	64%	68%	58%	47%	59%
Red Zone	32%	36%	32%	42%	53%	40%
Critical and Declining	0%	0%	0%	0%	0%	**1%**

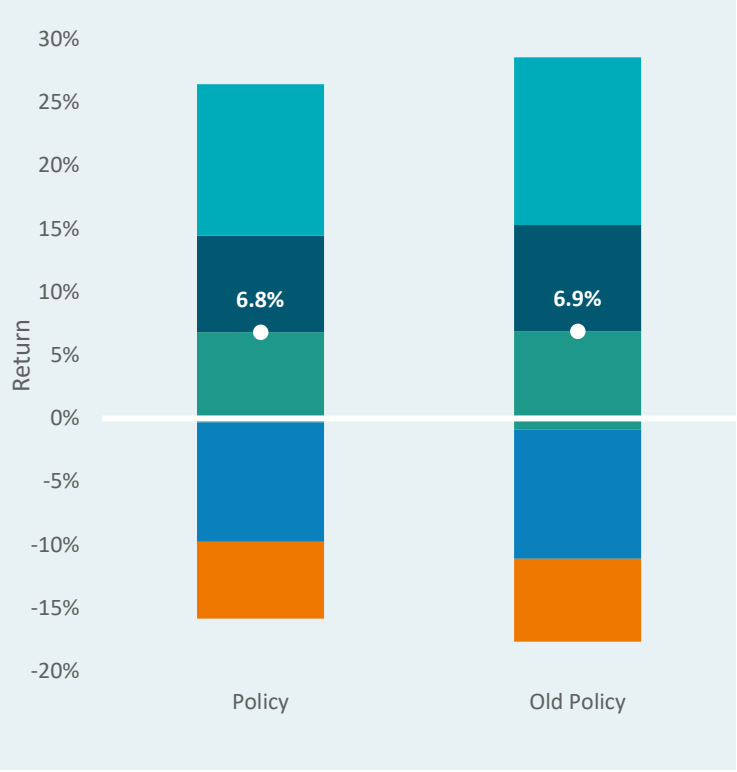Green Zone in 10 years means meeting Rehabilitation Plan objectives
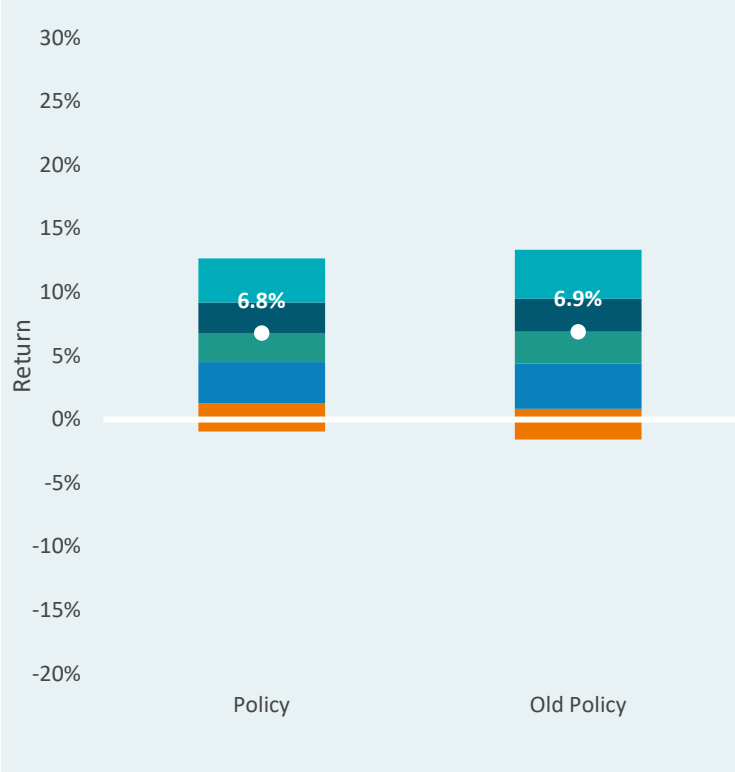
Case study 3: Investment strategy

Risk Decomposition

US Equity | Global ex US Equity | EM Sovereign Bonds | US Credit Bonds | US Bonds

Policy

28.4 | 13.5 | 5.6 | 23.7 | 28.8

Old Policy

20.9 | 9.0 | 5.8 | 29.8 | 34.5

USD, 36-month centered window; exp. weighted

1-Year Range of Outcomes

Policy: 6.8%
Old Policy: 6.9%

10-Year Range of Outcomes
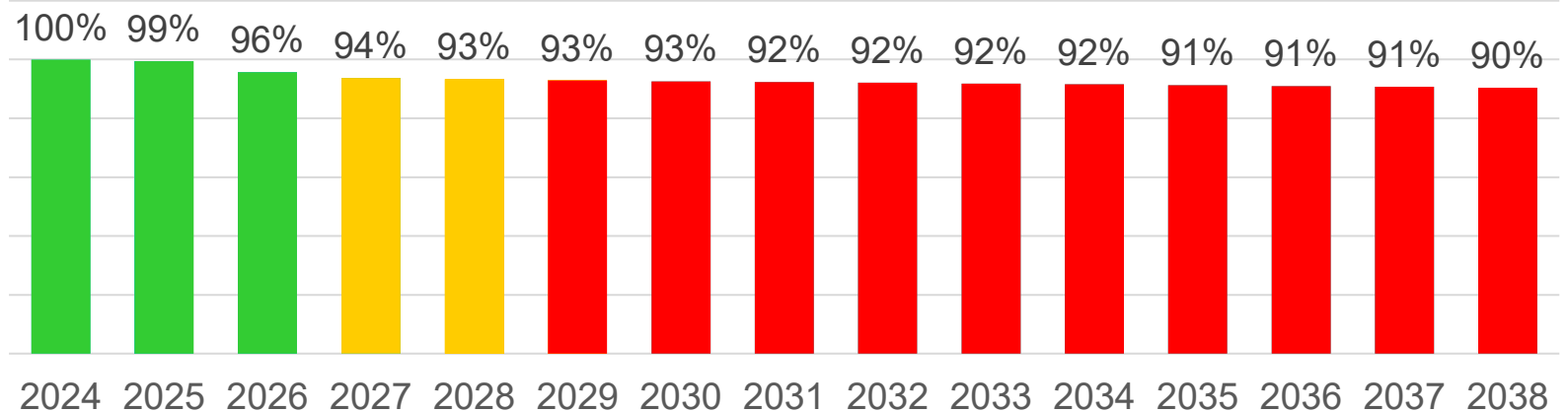

Policy: 6.8%
Old Policy: 6.9%

Case Study 4: Barely Green Plan

Background

- Plan has always been in **green zone** (but barely)
- About 100% funded based on 7.0% interest rate
- Needs annual returns around 7.5% to stay in green zone
- Demographic maturity ratio: 9:1
- Negative net cash flows ~ 2% of plan assets, increasing

The "sideways" trajectory is because contributions barely cover the cost of benefit accruals

Projection Assuming
7.0% Annual Returns

2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
100%	99%	96%	94%	93%	93%	93%	92%	92%	92%	92%	91%	91%	91%	90%

Case Study 4: Asset-Liability Modeling

Asset Mix Expectations	Current	Lower Risk	Higher Risk
Expected Return	7.7%	7.5%	7.9%
Annual Volatility	12.1%	10.8%	13.0%

Zone Status in 10 Years	Current	Lower Risk	Higher Risk
Super Green*	33%	30%	36%
Green Zone	20%	22%	18%
Stay in Green Zone	**53%**	**52%**	**54%**
Yellow Zone	2%	3%	2%
Red Zone	36%	38%	34%
Critical and Declining	9%	7%	10%
PPA Action Required	**47%**	**48%**	**46%**

*Super Green is green zone and at least 120% funded
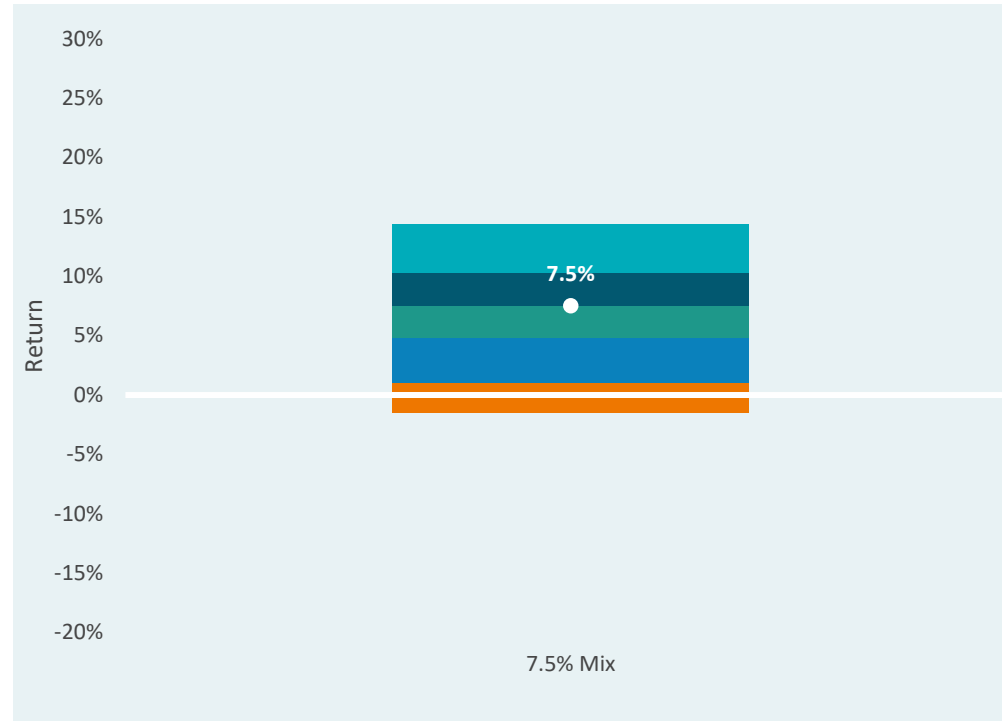
Segal

Case study 4: Investment strategy

— Diversified mix of traditional and alternative investments

— Heavier weight to illiquid investments

1-Year Range of Outcomes
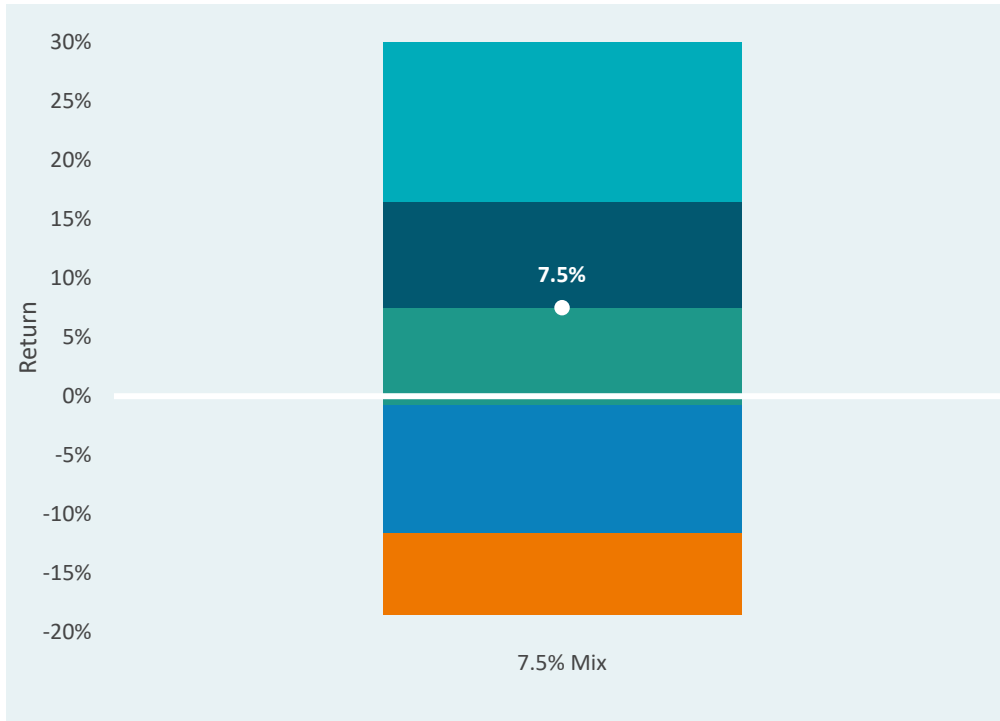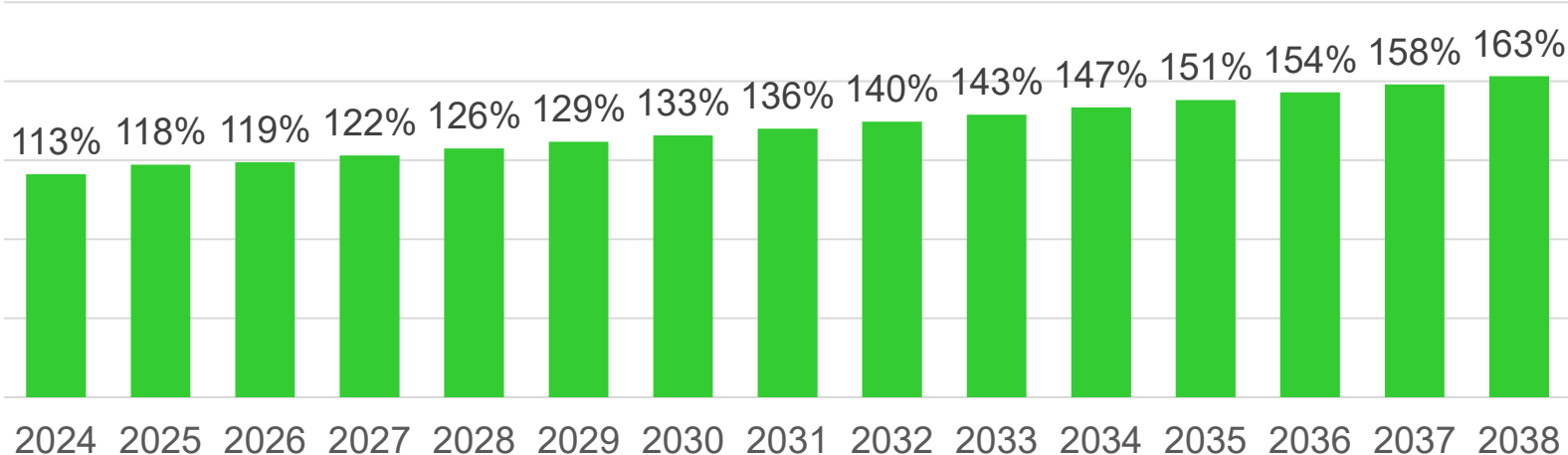

10-Year Range of Outcomes

Case Study 5: Solid Green Plan

Background

- Plan has always been in **green zone**

- Over 110% funded based on 7.0% interest rate

- Funding projected to improve over time

- Demographic maturity ratio: 1:1

- Projected *positive* net cash flows for next few years

Projection Assuming
7.0% Annual Returns

Year	%
2024	113%
2025	118%
2026	119%
2027	122%
2028	126%
2029	129%
2030	133%
2031	136%
2032	140%
2033	143%
2034	147%
2035	151%
2036	154%
2037	158%
2038	163%

Case Study 5: Asset-Liability Modeling

Asset Mix Expectations	Current	Alt A	Alt B	Alt C
Expected Return	7.9%	7.5%	7.0%	6.5%
Annual Volatility	13.3%	10.8%	10.0%	8.4%

| Zone Status in 10 Years	Current	Alt A	Alt B	Alt C
Super Green*	74%	74%	73%	58%
Green Zone	18%	21%	23%	32%
Stay in Green Zone	**92%**	**95%**	**96%**	**90%**
Yellow Zone	2%	1%	1%	3%
Red Zone	6%	4%	3%	7%
Critical and Declining	0%	0%	0%	0%
PPA Action Required	**8%**	**5%**	**4%**	**10%**

*Super Green is green zone and at least 120% funded

With "Alt C" portfolio, actuarial interest rate would be reduced from 7.0% to 6.5%
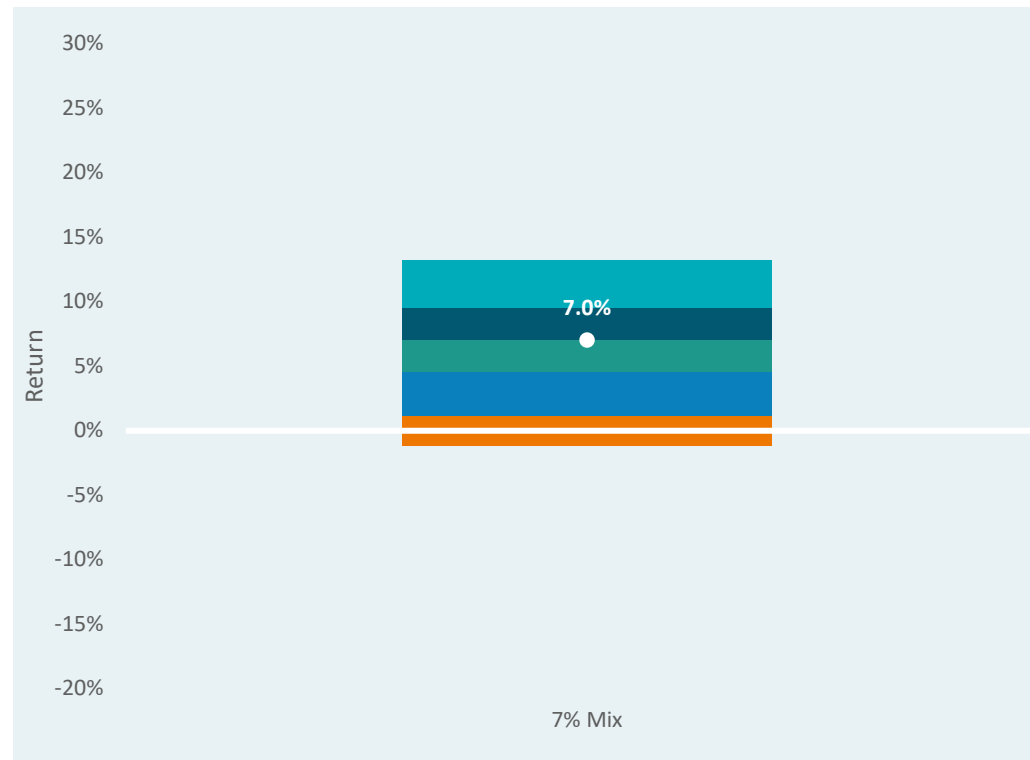
Case study 5: Investment strategy

— Diversified mix of traditional and alternative investments

— Use of illiquid investments to achieve higher return, but limit downside

1-Year Range of Outcomes
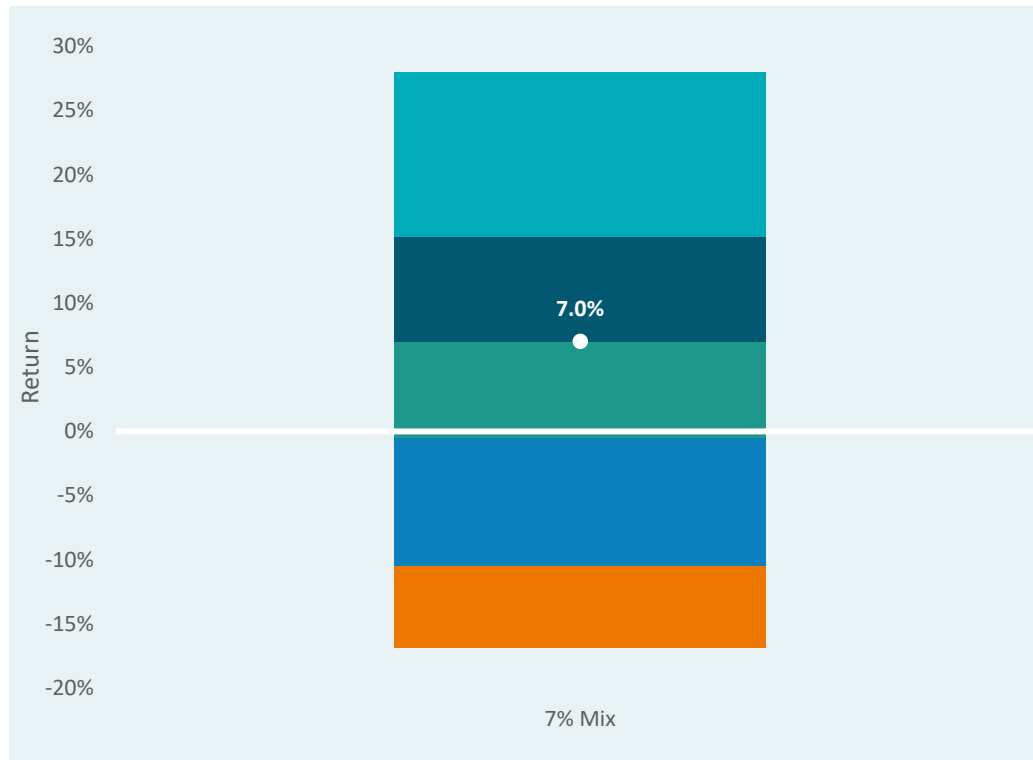
10-Year Range of Outcomes

Thank You

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