95 is the new 105:
Why Plan Sponsors Should Accelerate Their Glidepath

July 21, 2021

All data presented are as of March 31, 2021, unless otherwise noted.
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Why Plans Should Consider Accelerating Their Glidepath

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David chairs NISA's Investment Committee and is a member of NISA's Management Committee. As CEO and Head of Investment Strategies, his responsibilities include overseeing new product development and growth initiatives and day-to-day oversight of our Investment Strategies group, which develops custom strategies designed to meet client objectives. Prior to joining NISA in 1999, he was with JP Morgan Investment Management for three years. David holds a BSBA from Washington University in St. Louis, with majors in Finance and Mathematics.

Cheryl L. Hanson, CPA – *Managing Director, Client Services*

Cheryl is a member of NISA's Management Committee. As Managing Director, her responsibilities include client and consultant interactions; assisting in the development and implementation of customized investment strategies; and overseeing the request for proposal process, client reporting and new engagements' onboarding functions. Prior to joining NISA in 2003, Cheryl spent ten years working in various capacities within the financial services sector. She holds a BA in Accounting from Lindenwood University.

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As a Director in our Investment Strategies group, Rick's responsibilities include developing custom strategies designed to meet client objectives; developing and implementing proprietary financial modeling and engineering tools; day-to-day oversight of our Strategic Portfolio Management Team; and assisting with product development and growth initiatives. He joined NISA in 2005 through the internship program. Rick holds a BS in Computer Science and Economics and an MS in Computer Science from Washington University in St. Louis.

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Agenda

- Current State of Plans
- What Changed?
- Impact of a Changing End-state Portfolio

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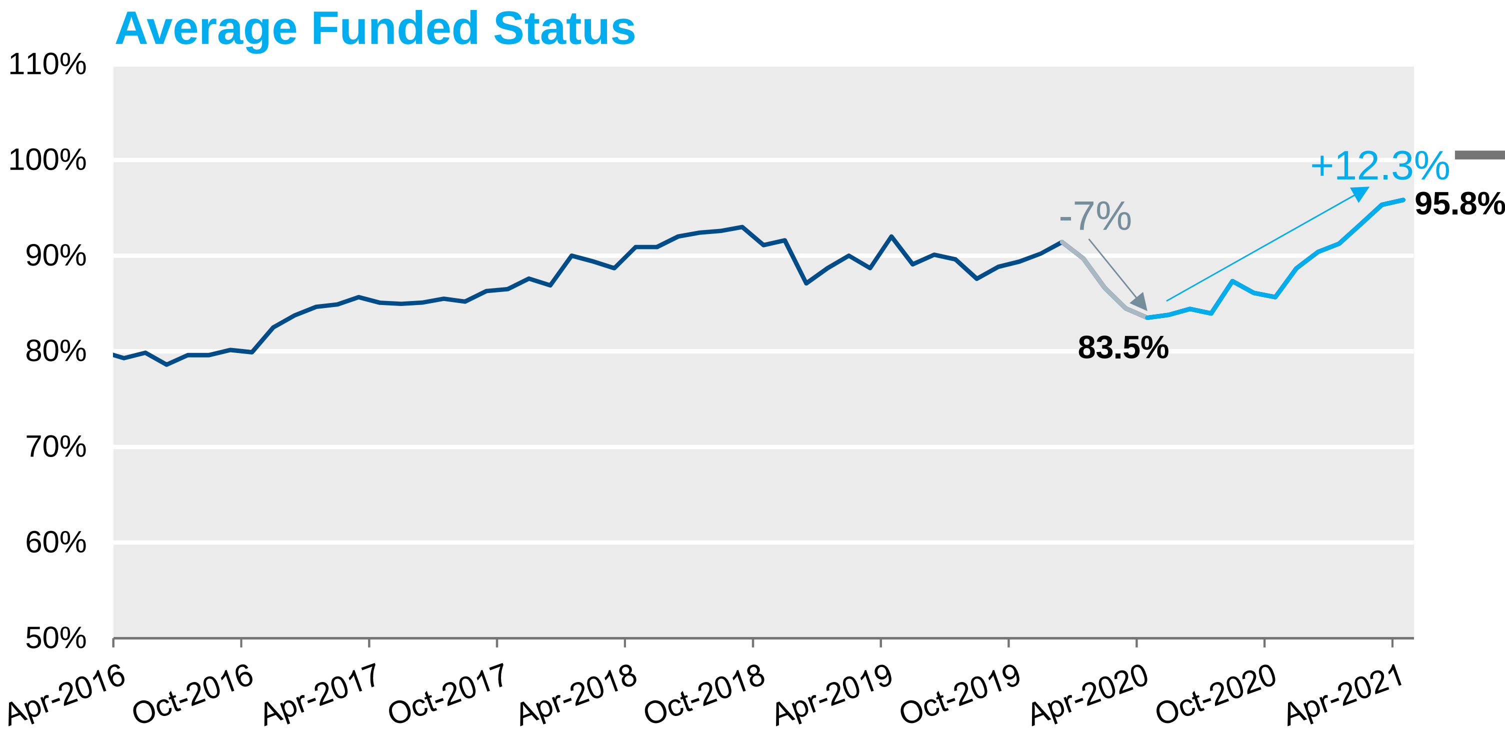
Funded Status Soars Post-March 2020



Market	Contribution to Funded Status Δ
Rates	+9.5%
Equity	+16.5%
Spreads	-13.7%
Net Impact	**+12.3%**

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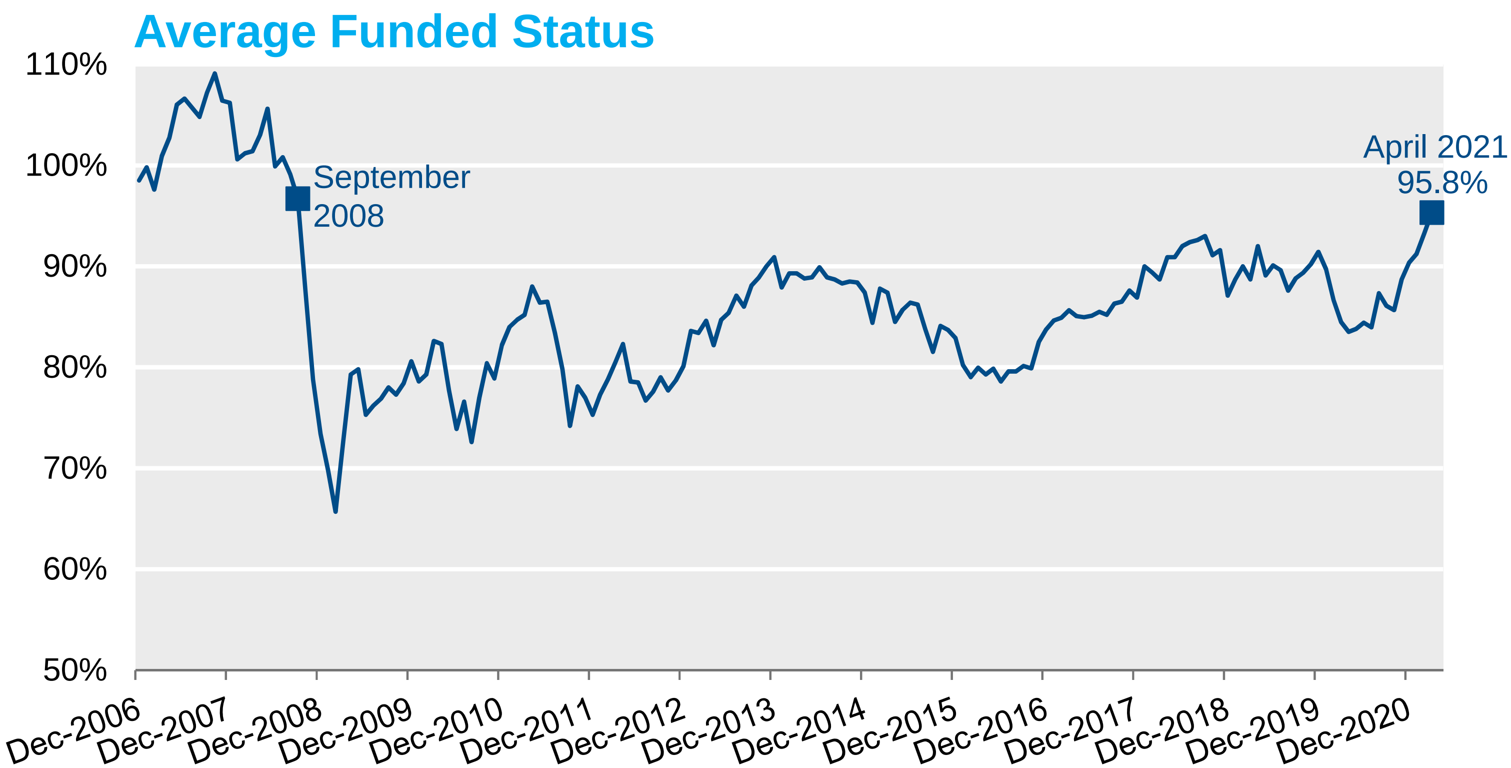
04/30/2016-04/30/2021. Data taken from NISA's PSRX® Index Data which is based on the 100 largest pension plans, as determined by NISA based on publicly available information. The PSRX Index is a forward-looking estimate of the funded status volatility of U.S. corporate defined benefit pension plans. For more information on the PSRX Index go to: www.nisa.com/resources/psrx.
Source: NISA calculations. Represents data for an illustrative plan with a duration of 12 years as of 4/30/2021.

And Has Returned to Pre-GFC Levels



Date range, 12/31/2006-4/30/2021, encompasses the full index history of NISA's PSRX® Index.
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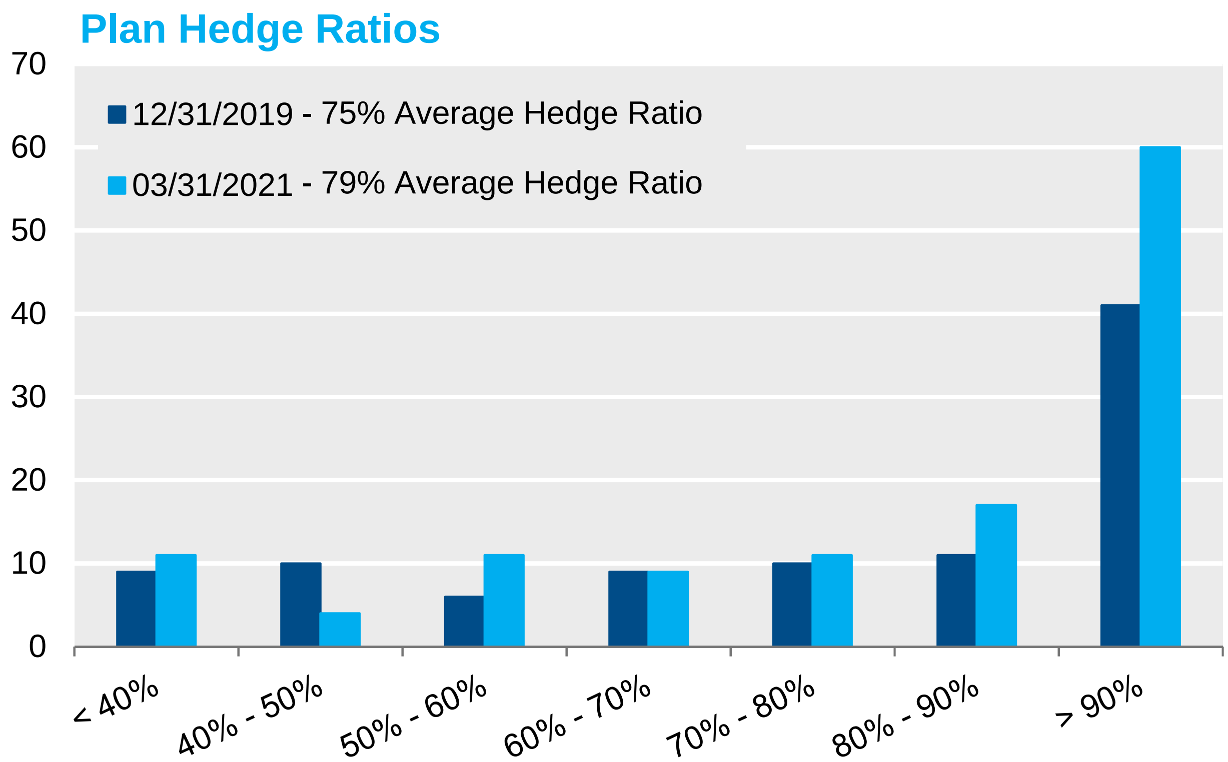
Source: NISA calculations. Represents data for an illustrative plan with a duration of 12 years as of 4/30/2021.

Higher Funded Status → Higher Hedge Ratio

- Sponsors have been steadily increasing hedge ratios since 12/31/2019.
- Since 2019 the number of plans targeting a greater than 90% hedge has increased by ~50%.



Note: This sampling should not be viewed as necessarily representative of all NISA clients or of the market in general, as NISA clients are generally predisposed towards targeting a larger hedge percentage. There are 123 plans for which the above information is available as of 03/31/2021. NISA does not have this data for all clients. NISA used data from the most recently available Form 5500 filings or a Plan's liability cash flows to determine the service cost percentage for each plan. All data points are defined benefit plans domiciled in the United States.

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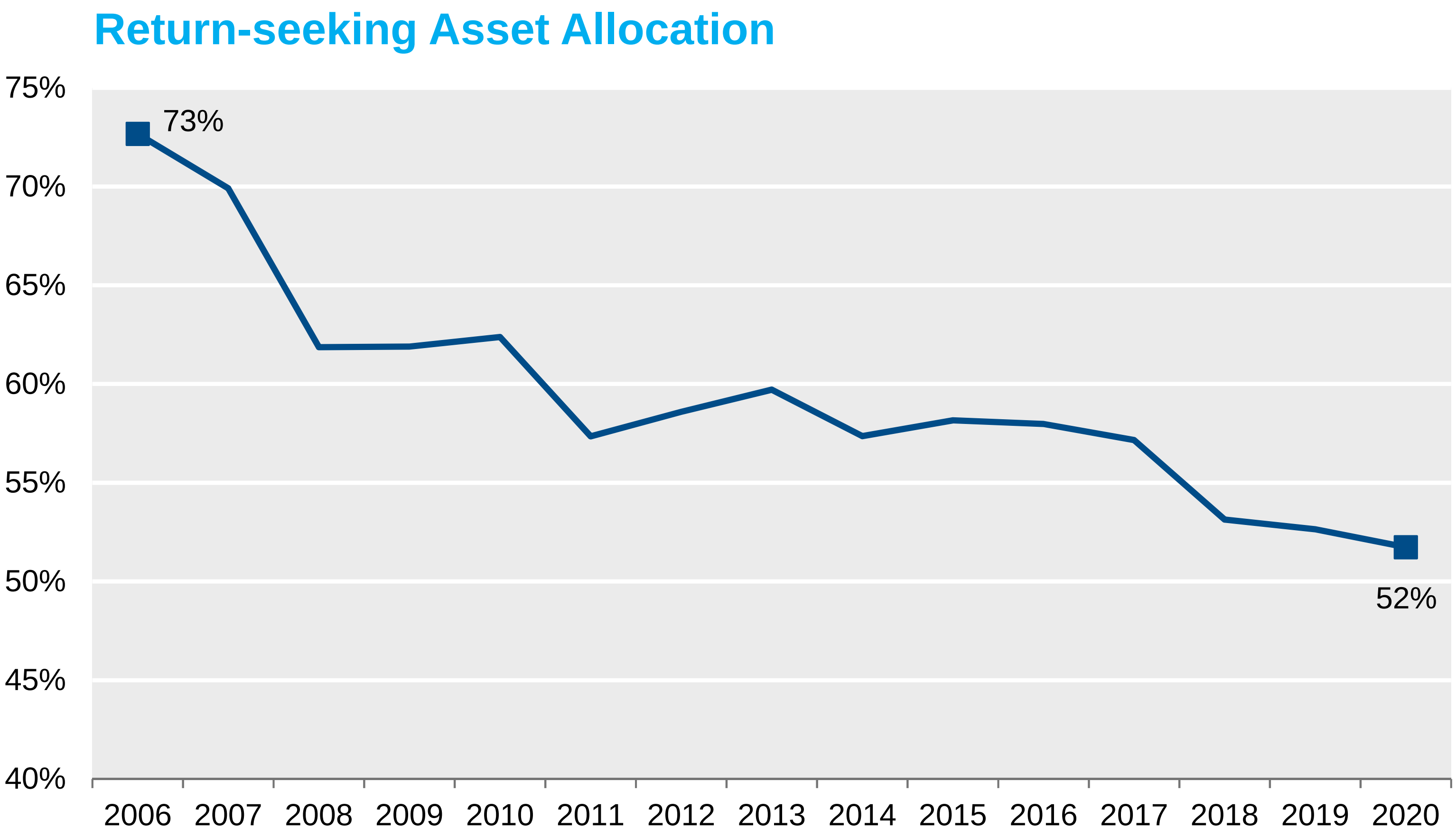
Equity Allocations Have Continued Their March Lower

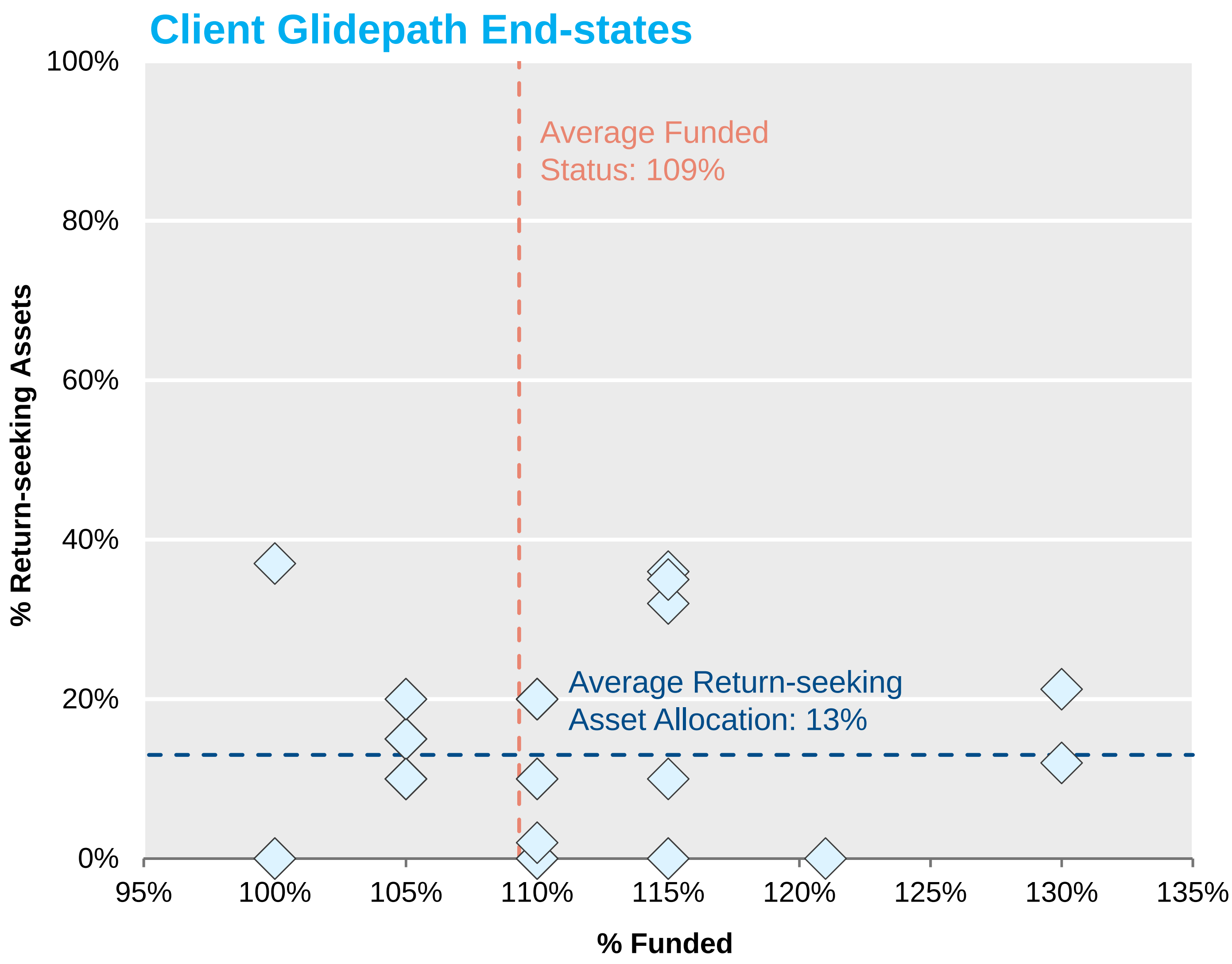
Since 2006, allocations to return-seeking assets have decreased from 73% to 52%, a reflection of plan sponsor de-risking activity.



12/31/2006-12/30/2020. Data taken from NISA's PSRX® Index Data which is based on the 100 largest pension plans, as determined by NISA based on publicly available information. The PSRX Index is a forward-looking estimate of the funded status volatility of U.S. corporate defined benefit pension plans. For more information on the PSRX Index go to: www.nisa.com/resources/psrx.
Source: NISA calculations.

Typical End-states

End-state strategies are influenced by risk preferences and plan characteristics.

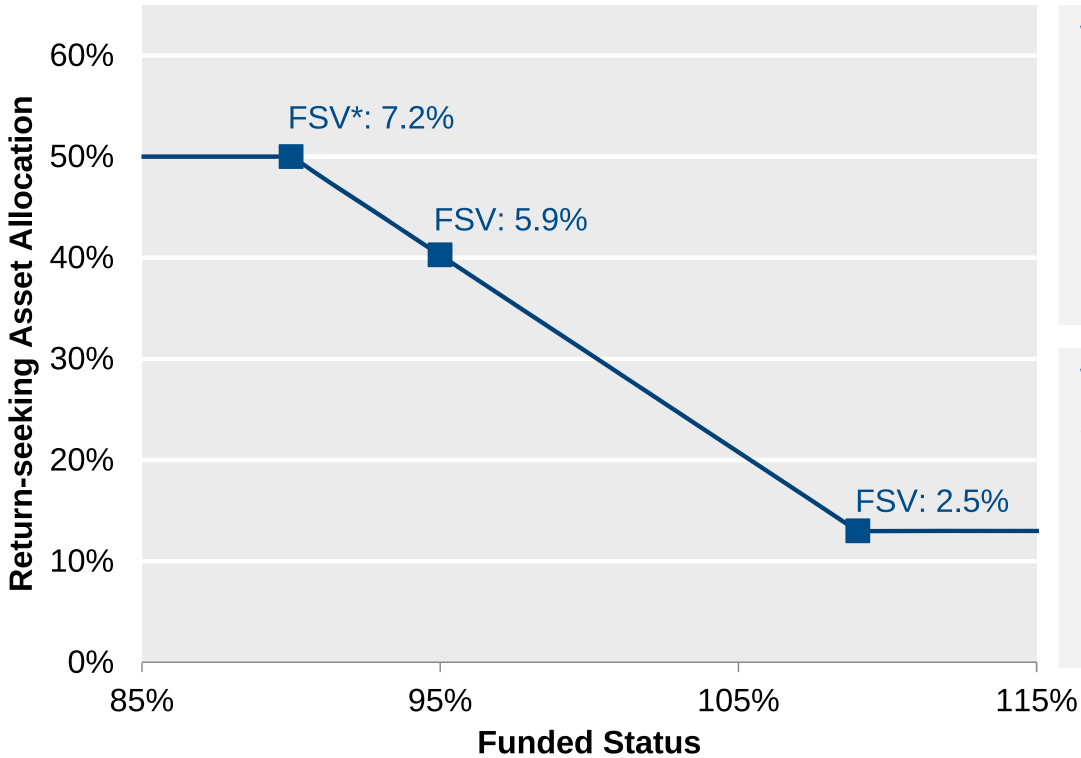


This sampling should not be viewed as necessarily representative of all NISA clients or of the market in general. There are 35 clients in which the above information is available as of 06/30/2021. Data estimated by NISA as of 06/30/2021.

Reexamining the Typical Glidepath

KEY QUESTION

Can sponsors reduce risk across the glidepath without materially increasing contributions?



When should plans hibernate later?

- Open Plans
- Plans that wish to earn service costs with portfolio returns
- Higher risk tolerance

When should plans hibernate sooner?

- Frozen Plans
- Plans that wish to earn service costs without portfolio returns
- Lower risk tolerance

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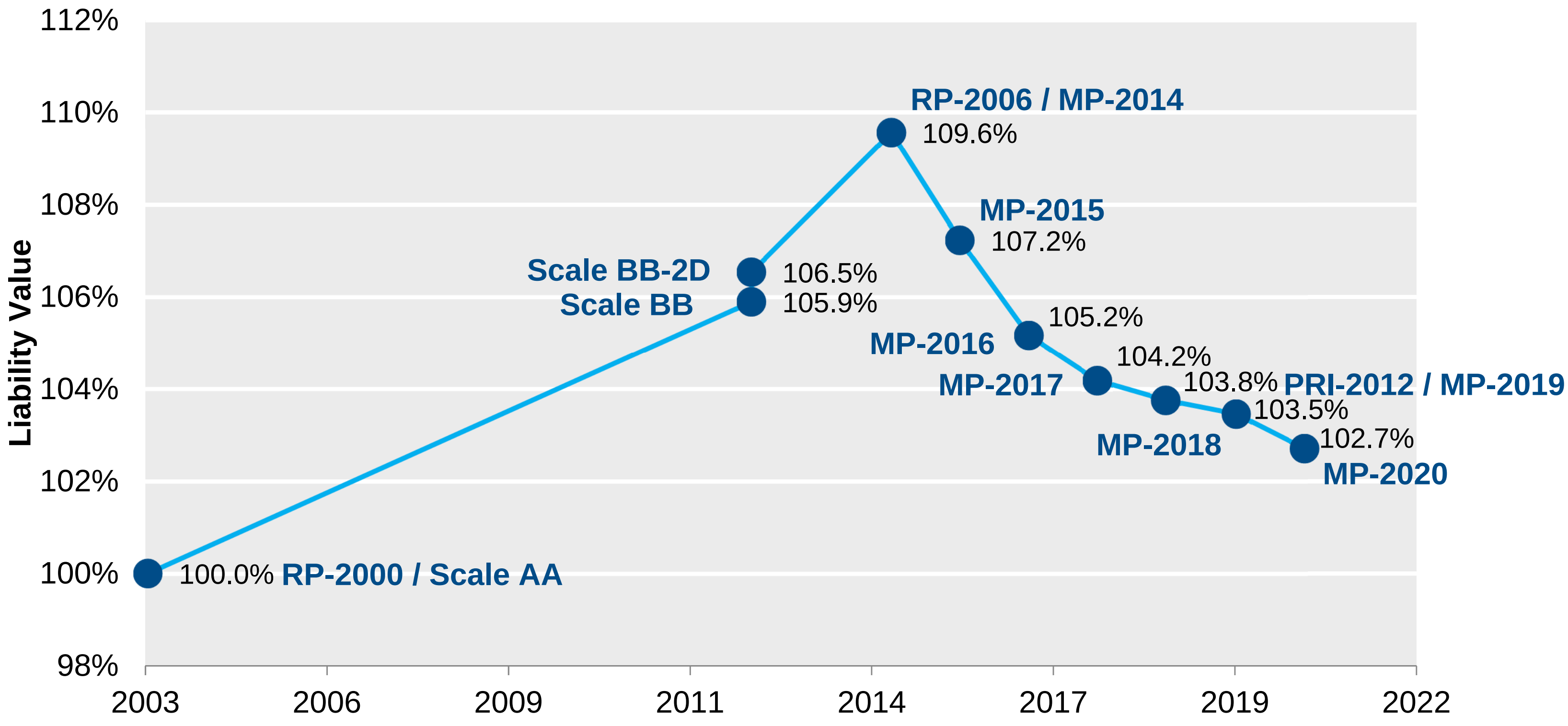
*Funded status volatility (FSV). Prospective return-seeking volatilities use one-year at-the-money ("ATM") implied S&P 500, MSCI EAFE, and Russell 2000 Index options volatilities. Correlation estimates use 15 years of monthly data. Prospective interest rate volatilities use ATM option implied volatilities on Treasury bonds and interest rate swaps. Prospective credit spread volatilities are calculated by scaling historical volatilities by the prevailing spread level. Based on an illustrative 12-year liability that has a present value of $1,000mm on 6/30/2021.

Mortality Surprises Should be Symmetric

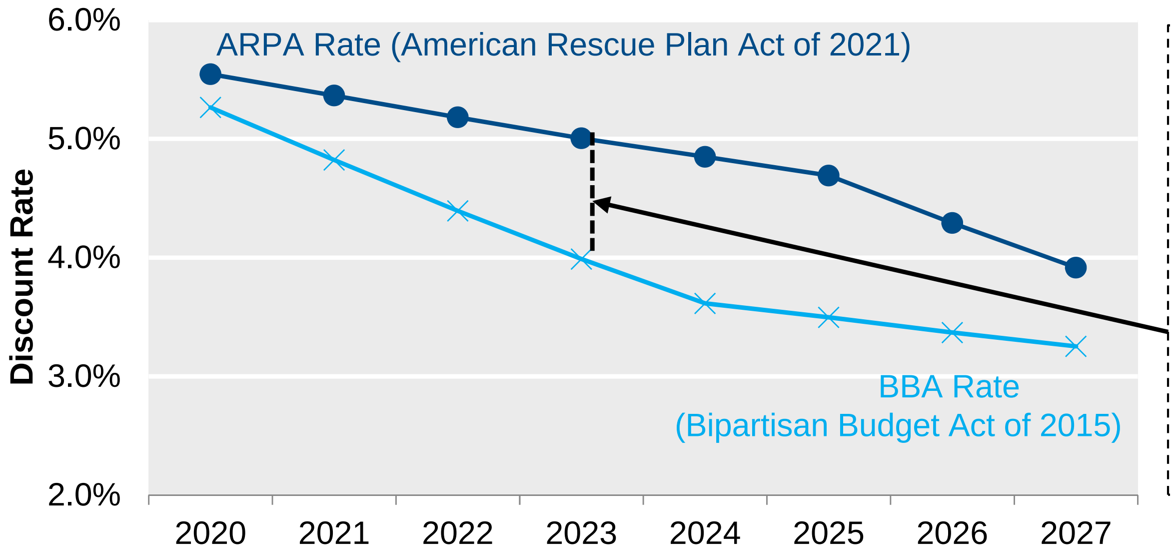
- Mortality revisions can result in both increases and decreases in plan funded status.
- Historically plans may have targeted a higher funded status to “reserve” against mortality. This may be unnecessary.



Mortality tables and scales provided by the Society of Actuaries. Based on a 50% male/50% female blend and retirement at age 65. Mortalities are scaled to 2021.
Source: NISA calculations. Represents data for an illustrative plan with a duration of ~13 years as of 5/31/2021 using RP-2000/Scale AA.

New Pension Relief Reduces Expected Contributions

Funding rates have been modified for the fourth time in 10 years.



Beginning in 2023, this change represents an ~1% adjustment to the funding discount rate.

For a 10-year duration liability this would represent an ~10% change in the liability value.

Amortization periods increased to 15 years and reset.

The typical Funding Liability is 93-98% of PBO.

	Annual Contributions (%)	
Funding Liability Funded Status (%)	15-year Period	7-year Period
100	0.0	0.0
95	0.3	0.7
90	0.7	1.4
85	1.0	2.1
80	1.3	2.9

Sources: IRS, NISA calculations. Contributions shown ignore Target Normal Cost and assume a 0% discount rate.

Five Illustrative Plans/Circumstances

Analysis has two goals:

- What is the impact of hibernation at different funded statuses?
- What is the impact of various asset allocation strategies at a particular funded status?

Alternative Investment Strategies Examined

Initial Funded Status (PBO/Accounting)	Asset Allocation	Illustrative Details
95%	Hibernation	10% Equity, 72% Long Credit, 18% Treasury, 100% Interest Rate Hedge
100%	Hibernation	
105%	Hibernation	
95%	Glidepath	Starting from 30% Equity / 70% Fixed income allocation (30/70), ending at Hibernation @110% funded
95%	Static 30/70	30% Equity, 56% Long Credit, 14% Treasury, 100% Interest Rate Hedge

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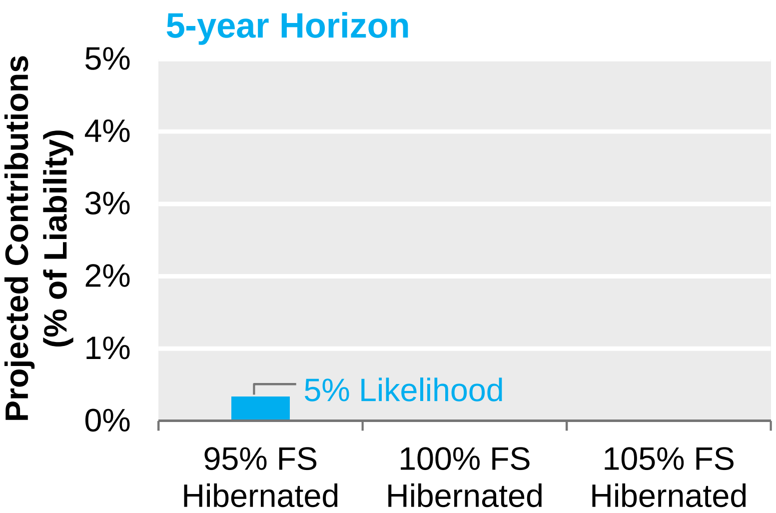
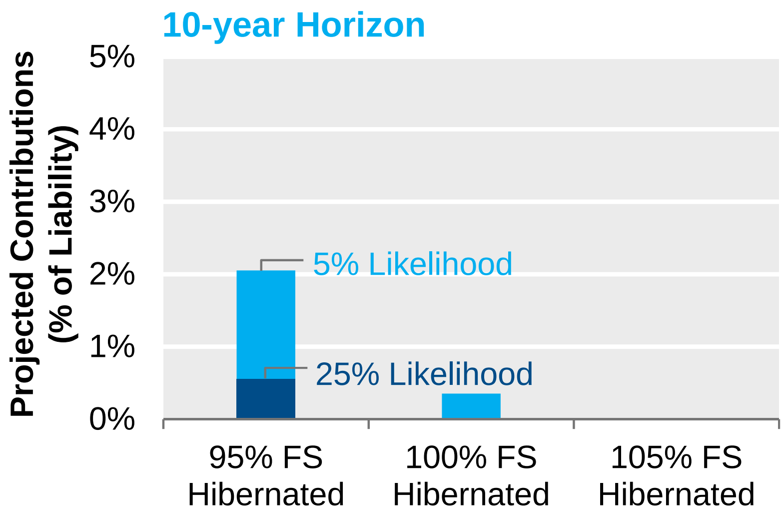
All plans are modeled with the same underlying liability profile and contribution policy. The initial liability has a 12-year duration discounted at the FTSE AA Pension discount curve as of 03/31/2021, and there are no service cost accruals. Contributions are modeled to be the greater of the Minimum Required Contribution and the amount necessary to maintain a minimum 80% Adjusted Funding Target Attainment Percentage (AFTAP). Plan administration costs are included in all scenarios. Simulations are based on NISA's capital market assumptions. NISA's capital market assumptions are available upon request.

Strong Argument to Hibernate at Lower Funded Status

Hibernating at 95% does not result in material contributions.





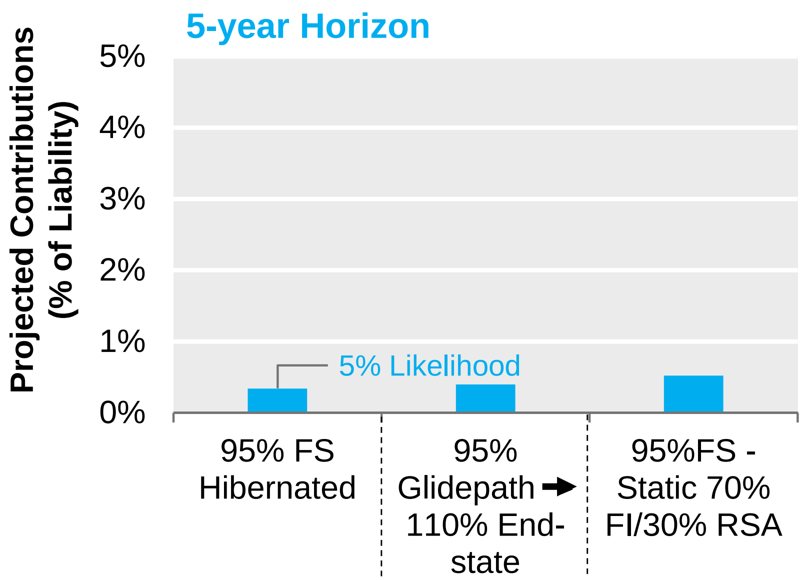
A hibernated 95% funded plan has only a **1 in 20** chance of contributing >0.5% over the next 5 years.

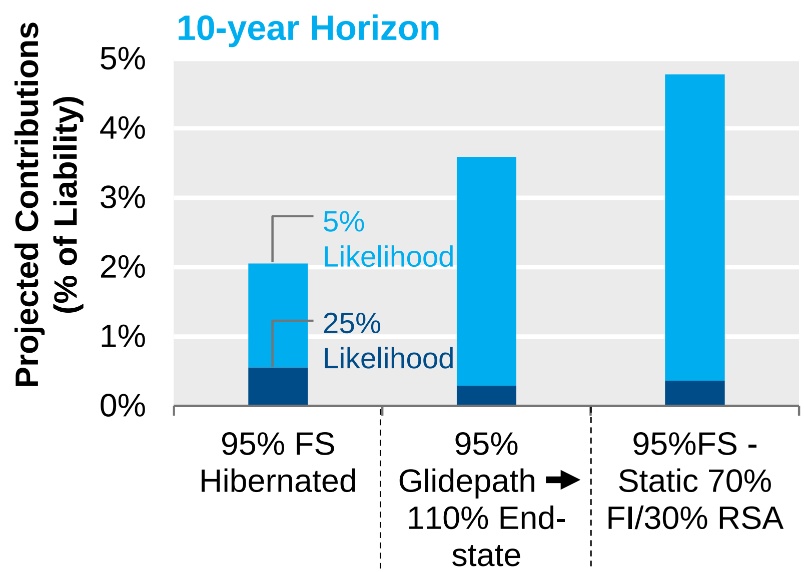
A hibernated 95% funded plan has only a **1 in 4** chance of contributing >0.6% to the plan over the next 10 years.

FS denotes Funded Status. Refer to p. 12 for asset allocation details.
Source: NISA Calculations.

And to Accelerate Your Glidepath

At 95% funded a hibernation portfolio is expected to result in less cumulative contributions over the next 5 and 10 years in a 1-in-20 downside outcome compared to both the Glidepath and Static 30/70 strategies.

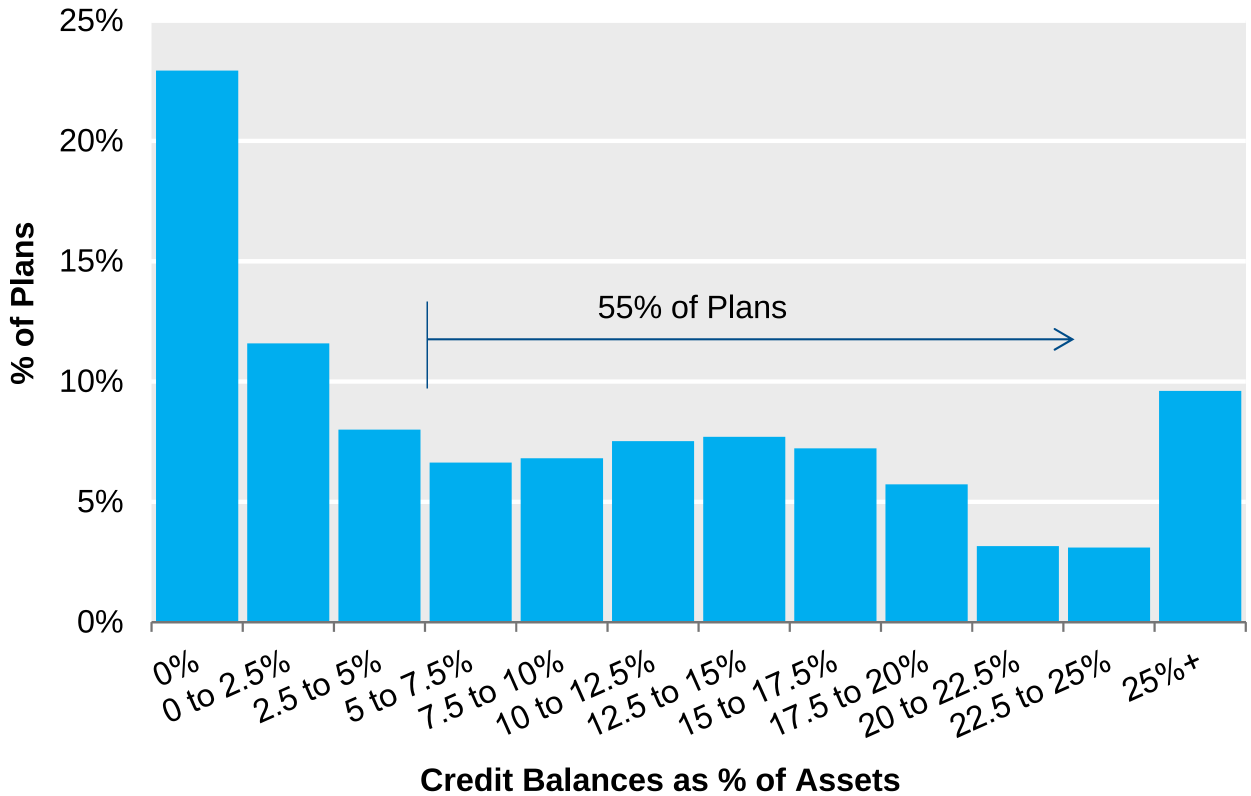




Refer to p. 12 for asset allocation details.
Source: NISA calculations.

Large Credit Balances are Commonplace Today

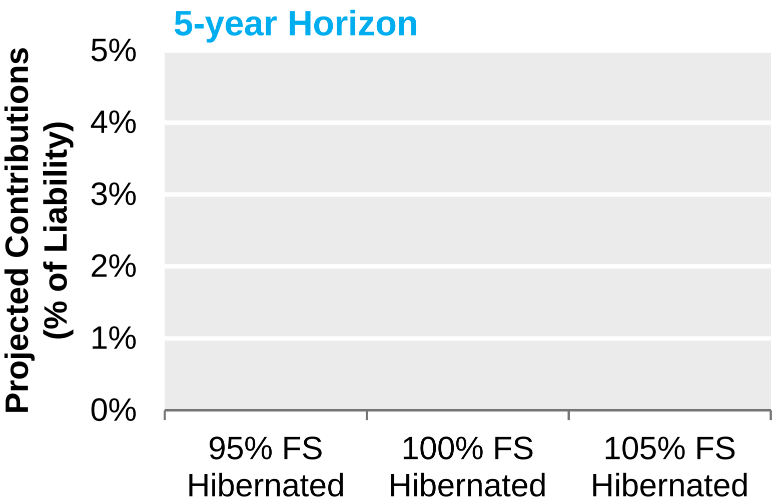
- More than 80% of plans have credit balances.
- 55% of plans have a credit balance of 5% or more.

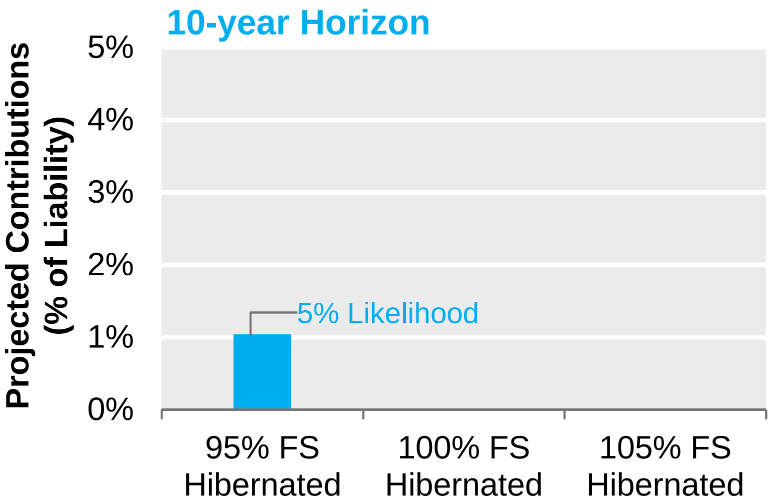


Source: Dept. of Labor 2019 Form 5500 datasets. For plans with at least $100mm in stated assets.

Credit Balance War Chest Further Reduces Contribution Risks

Once credit balances are considered, the amount of contributions needed over the next 5 or 10 years is dramatically reduced.





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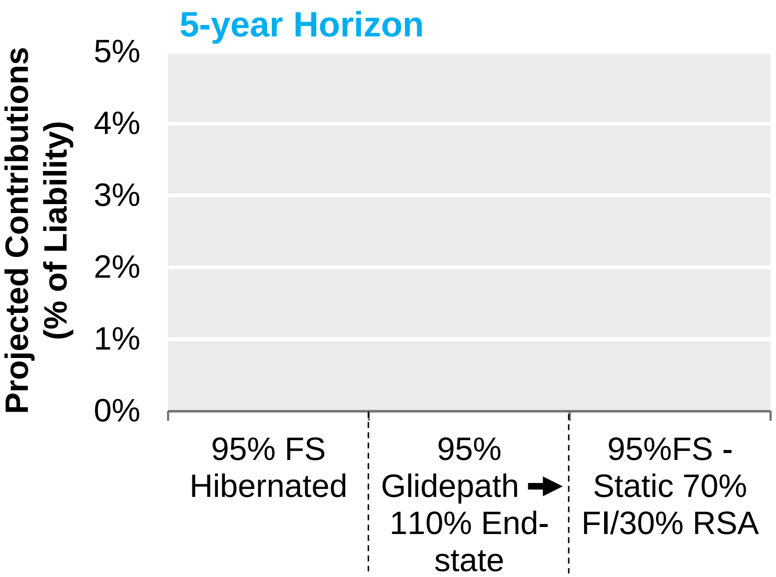
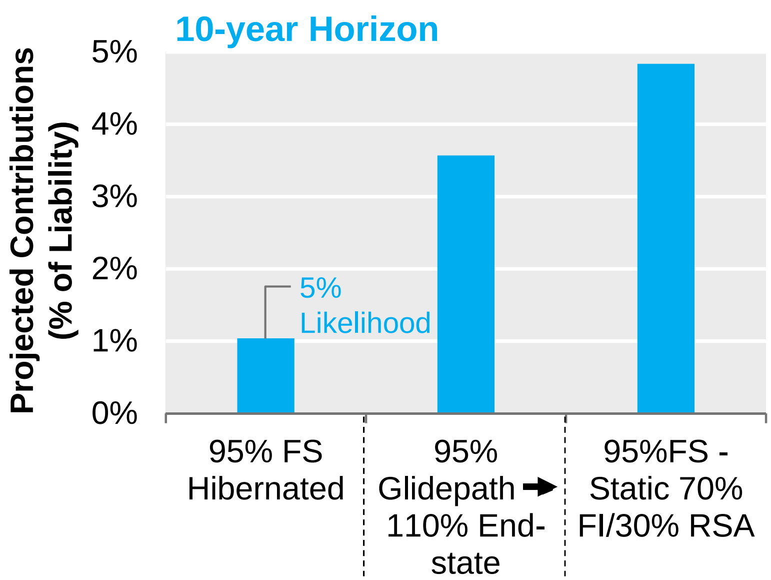
Refer to p. 12 for asset allocation details.
Source: NISA calculations. Initial credit balance is assumed to be 5% of assets.

Credit Balance War Chest Further Reduces Contribution Risks





Refer to p. 12 for asset allocation details.
Source: NISA calculations. Initial credit balance is assumed to be 5% of assets.

"Never Tell Me The Odds", Unless They Are Really Good

Odds of Contributing More Than Current Deficit

Strategy	5 years	10 years	15 years
95% Funded - Fully Hibernated	> 100 to 1	> 100 to 1	13 to 1
95% Funded - Glidepath	> 100 to 1	33 to 1	8 to 1
95% Funded - Static 30% RSA/70% FI	> 100 to 1	25 to 1	6 to 1

Odds of Making *Any* Contributions

Strategy	5 years	10 years	15 years
95% Funded - Fully Hibernated	> 100 to 1	13 to 1	3 to 1
100% Funded - Fully Hibernated	> 100 to 1	> 100 to 1	50 to 1
105% Funded - Fully Hibernated	> 100 to 1	> 100 to 1	> 100 to 1
95% Funded - Glidepath	> 100 to 1	11 to 1	4 to 1
95% Funded - Static 30% RSA/70% FI	> 100 to 1	9 to 1	4 to 1

Source: NISA Calculations. Initial credit balance is assumed to be 5% of assets.

Why 95% Funded?

PBO and other calculated liabilities can diverge. Variable Rate PBGC Premiums only come into play when assets fall below the Unfunded Vested Liability (UVB).

- PBGC and PPA (Funding) often use a higher discount rate than is used to value PBO.
- PPA Spot or a 24-month smoothed version of PPA can be used for calculating Variable Rate Premiums (VRP), subject to specific requirements.
- Unvested benefits are not reflected in the liability for VRP.

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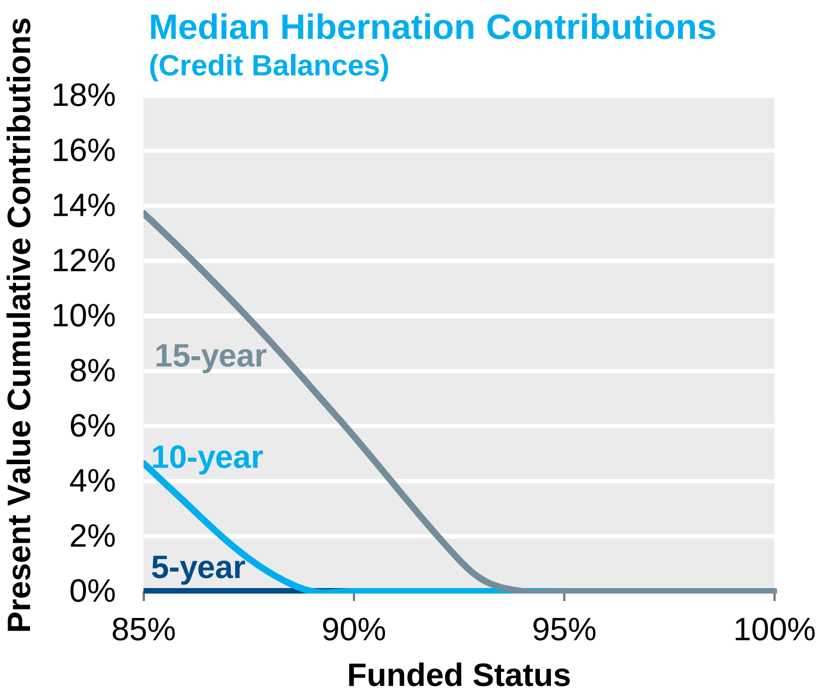
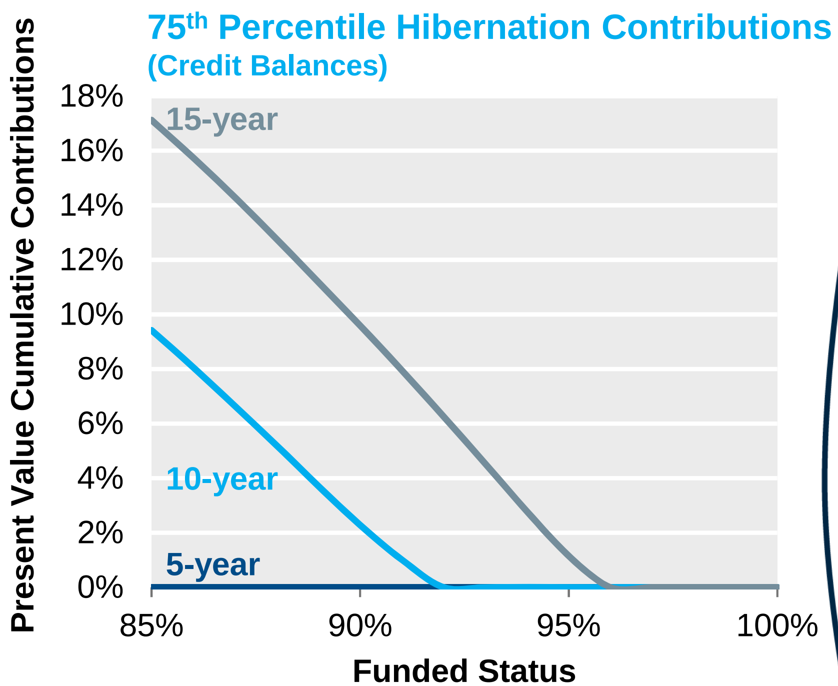
What If You Hibernate Even Earlier?



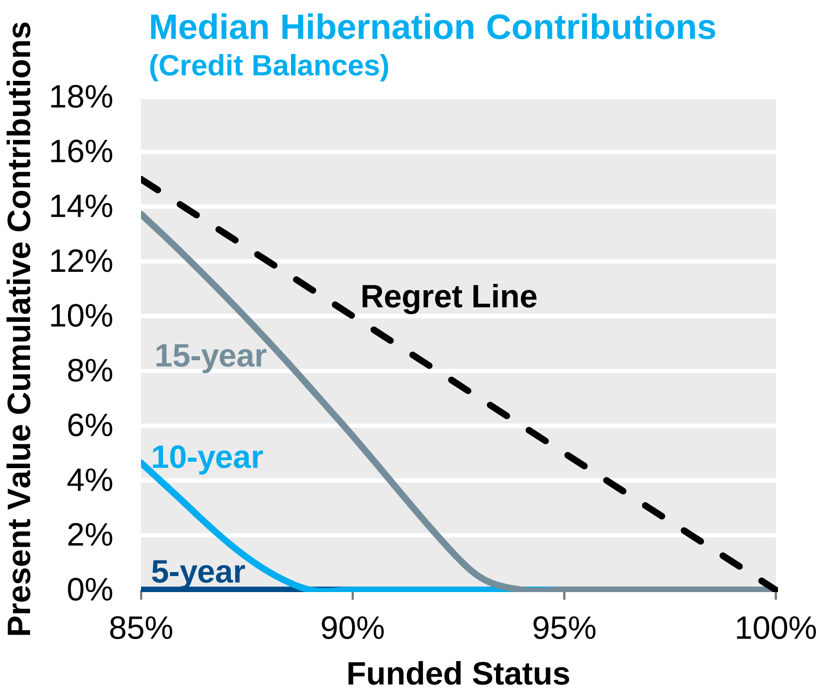


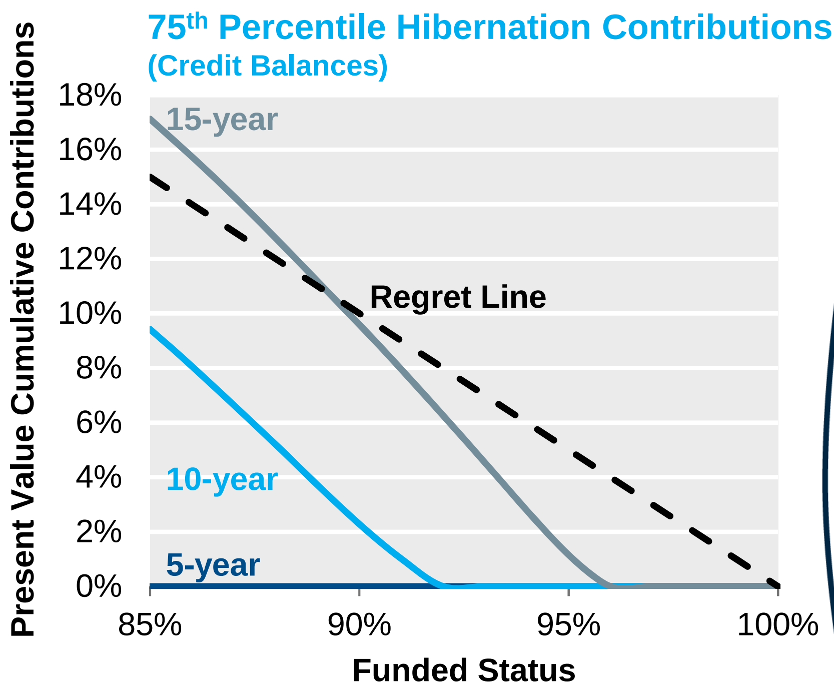
	Funded Status Before Making Contributions	
Horizon (Years)	Median (%)	75th Percentile (%)
5	<85	<85
10	89	92
15	94	96

Source: NISA Calculations. Initial credit balance is assumed to be 5% of assets.

What are the Chances You Regret Hibernating?

The regret line denotes when plans contribute more than their initial starting deficit.





	Funded Status Before Making Contributions	
Horizon (Years)	Median (%)	75th Percentile (%)
5	<85	<85
10	89	92
15	94	96

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Source: NISA Calculations. Initial credit balance is assumed to be 5% of assets.

Risk of Regret (Detailed)

- Regret occurs when you contribute more than your initial plan's deficit for a given strategy.
- The table below shows the risk of regret for each starting funded status at the 5-year, 10-year, and 15-year horizons.

Risk of Regret

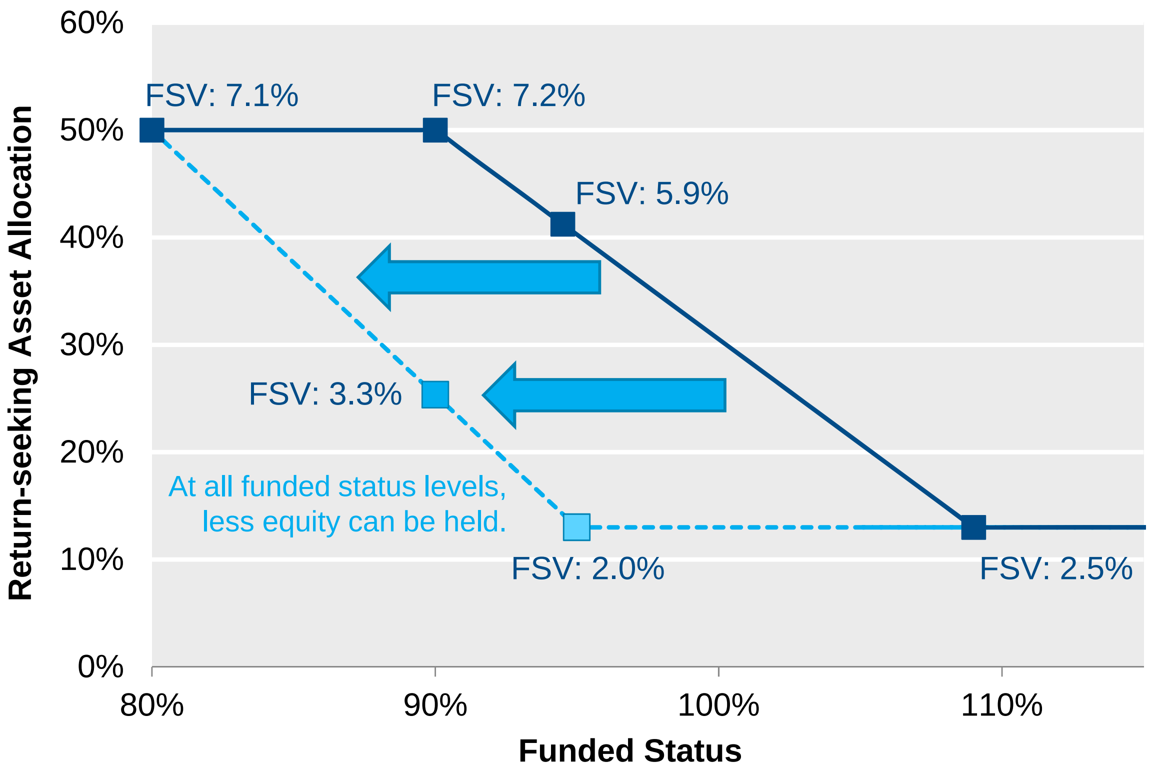
Initial Funded Status	85%	86%	87%	88%	89%	90%	91%	92%	93%	94%	95%	96%	97%	98%	99%	100%
5-year	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
10-year	4%	3%	3%	2%	2%	1%	1%	1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
15-year	40%	37%	33%	30%	26%	22%	19%	15%	13%	10%	8%	6%	5%	4%	3%	2%

At the 15-year horizon there is a 22% chance contributions exceed 10%.

Source: NISA calculations. Initial credit balance is assumed to be 5% of assets.

How to Adjust the Glidepath

- Sponsors have multiple ways to implement de-risking actions through their glidepath.
- Changes to the end-state definitionally changes the plan asset allocation today.



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Takeaways

- Funded Status has not been higher since 2008.
- Funding, PBGC, and accounting liabilities are different.
- The current environment provides many reasons to de-risk quicker and delay future contributions.
- The risk of regret from hibernating earlier is limited.

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