

P&I | CONFERENCES

# Pension Risk Strategies

San Francisco: Sept 12 | Dallas: Sept 14 | Chicago: Sept 26 | New York: Sept 28

## Exploring the End-State

# NISA

NISA INVESTMENT ADVISORS, LLC®

David Eichhorn, CFA  
Managing Director, Investment Strategies

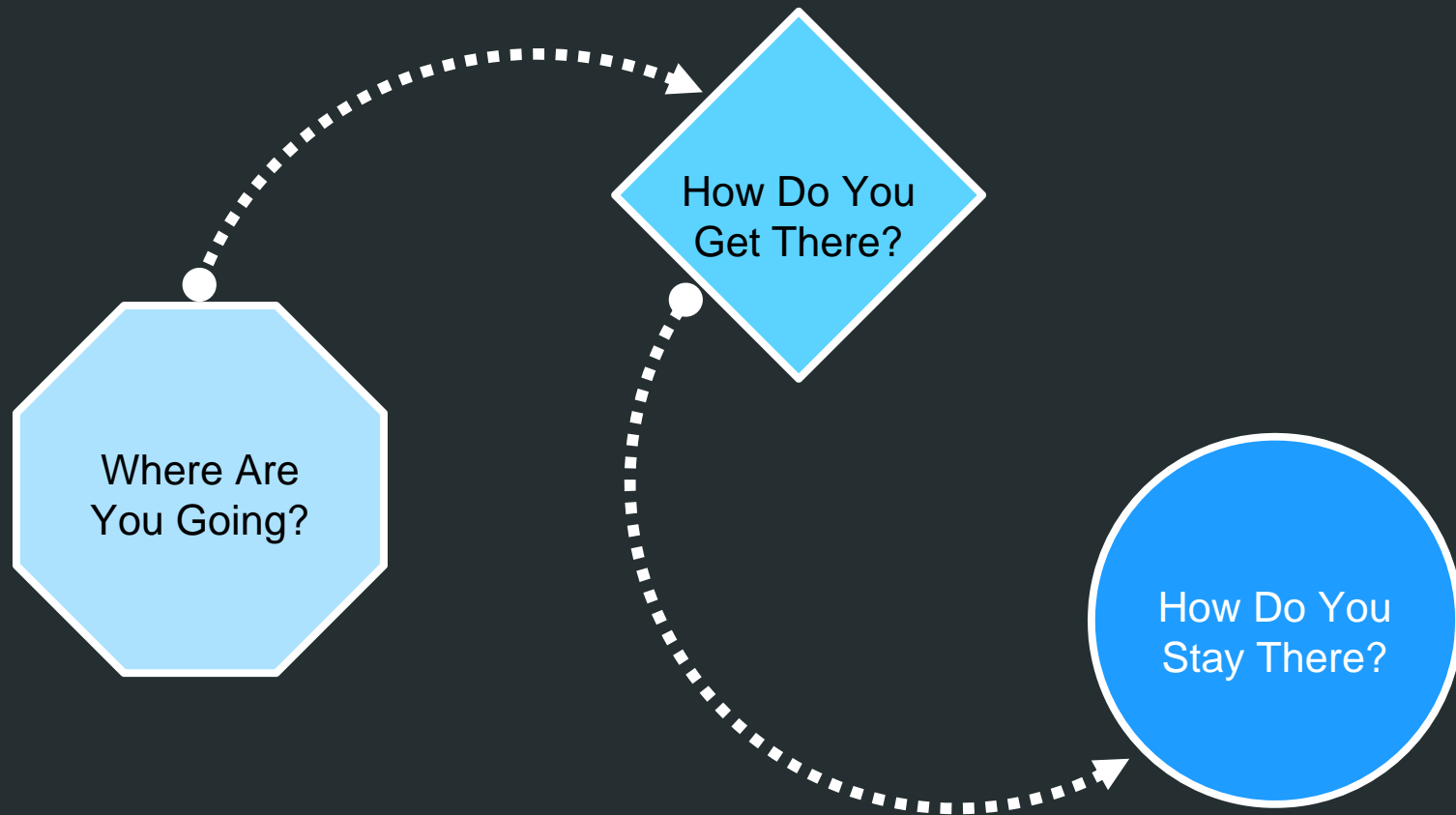
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All data presented are as of June 30, 2017, unless otherwise noted.

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# Agenda



# About NISA

**23  
years**

experience with  
liability-based strategies

Clients include  
**26** out of **50**

of the largest U.S.  
corporate retirement plans

**\$239  
billion**

in fixed income, equity,  
and derivatives notional  
under management

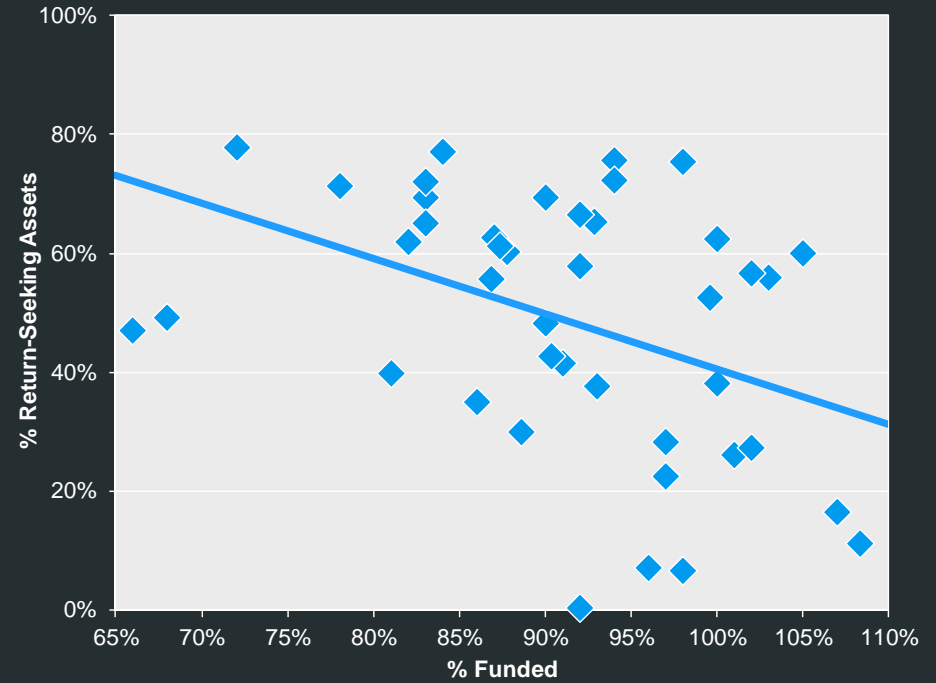
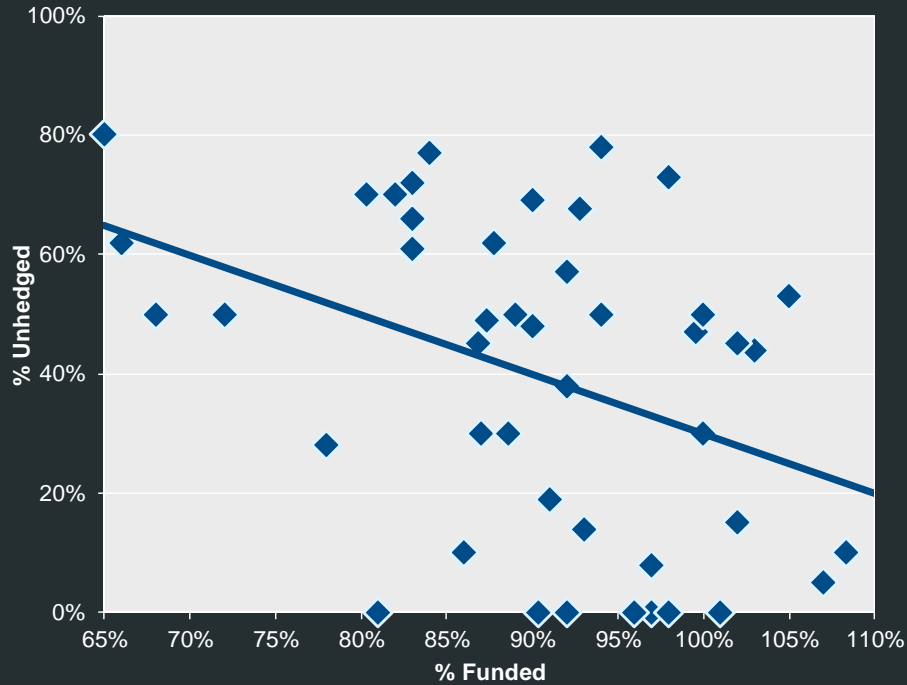
Over  
**\$1  
trillion**

total liabilities of our  
pension clients

Assets under management (AUM) data is in US dollars and represents \$149 billion of physical assets and \$90 billion in derivatives notional value as of 6/30/2017. Largest U.S. corporate retirement plans based on data from *Pensions & Investments* online, as of September 30, 2016. Total client pension liability estimate based on NISA calculations and the latest available asset data from Standard and Poor's Money Market Directories. NISA's calculations incorporate NISA's Pension Surplus Risk Index, or PSRX®, and uses the average funded status estimate of the 100 largest US corporate defined benefit pension plans, as determined by NISA based on publicly available information.

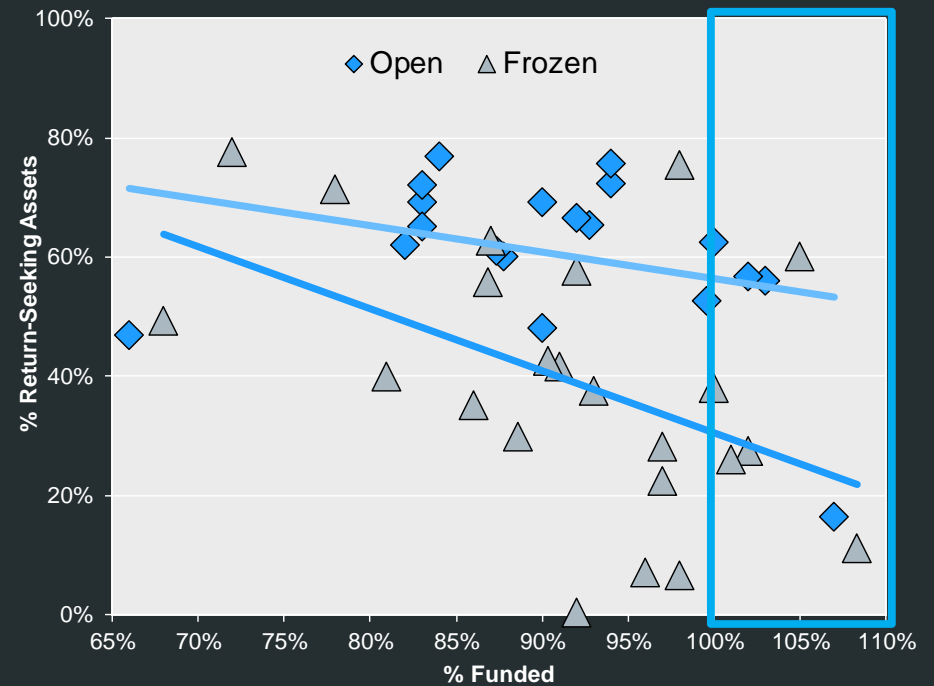
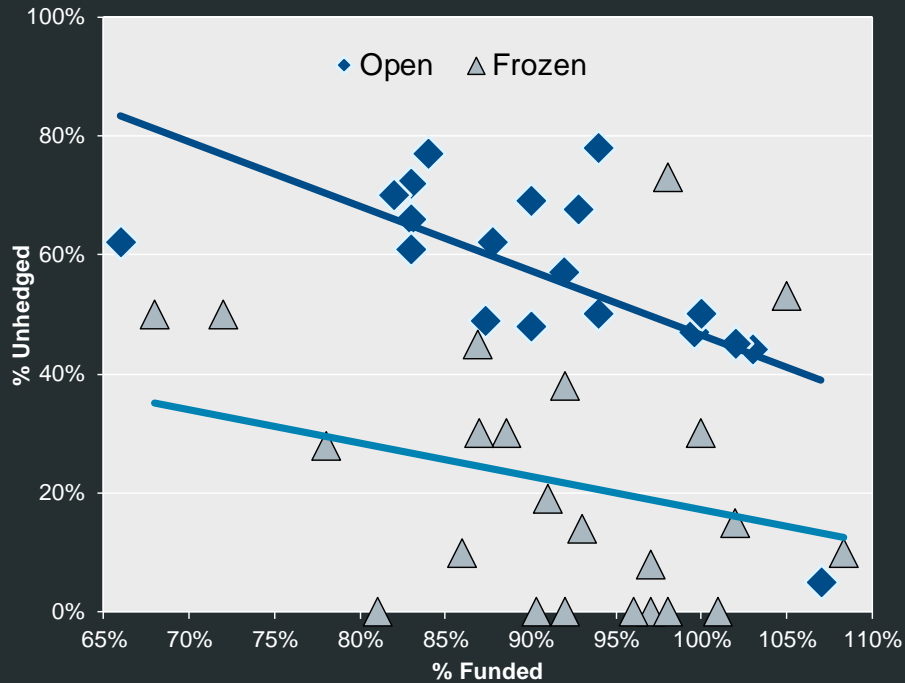


# Defining the End-State

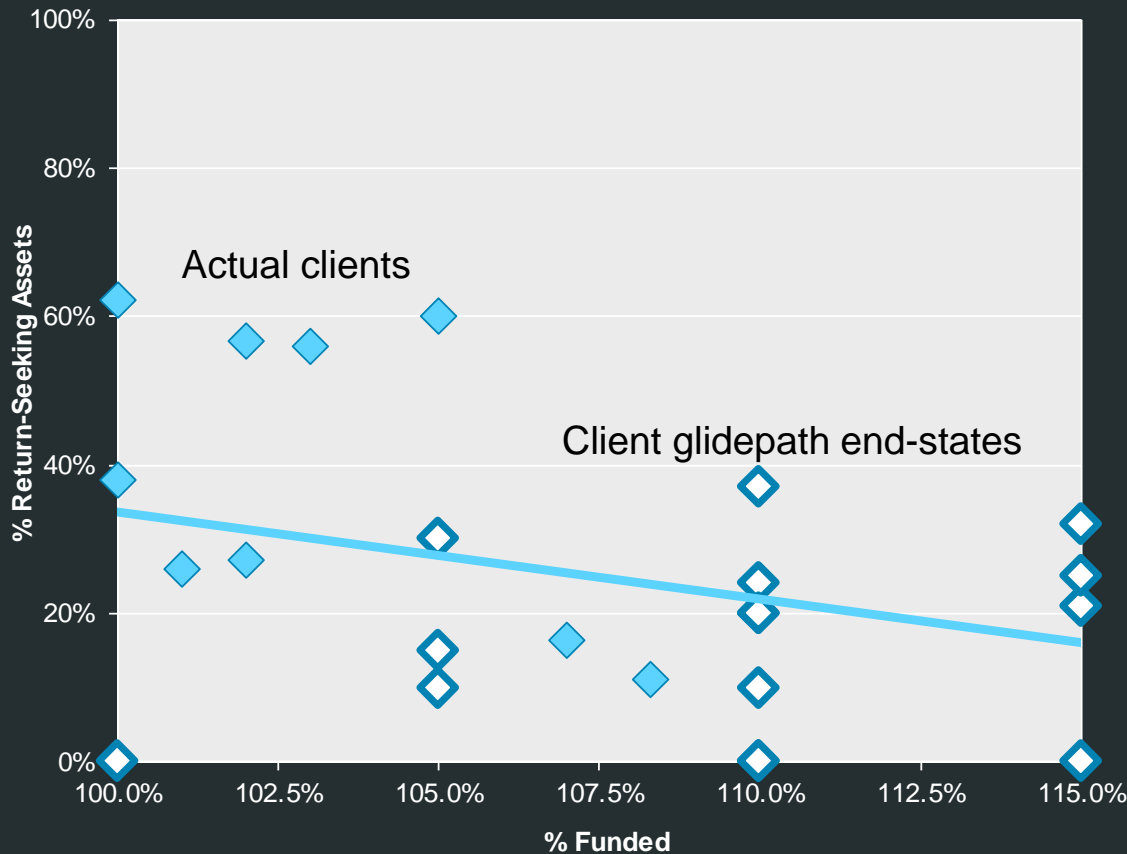


Defining the End-State

# Defining the End-State



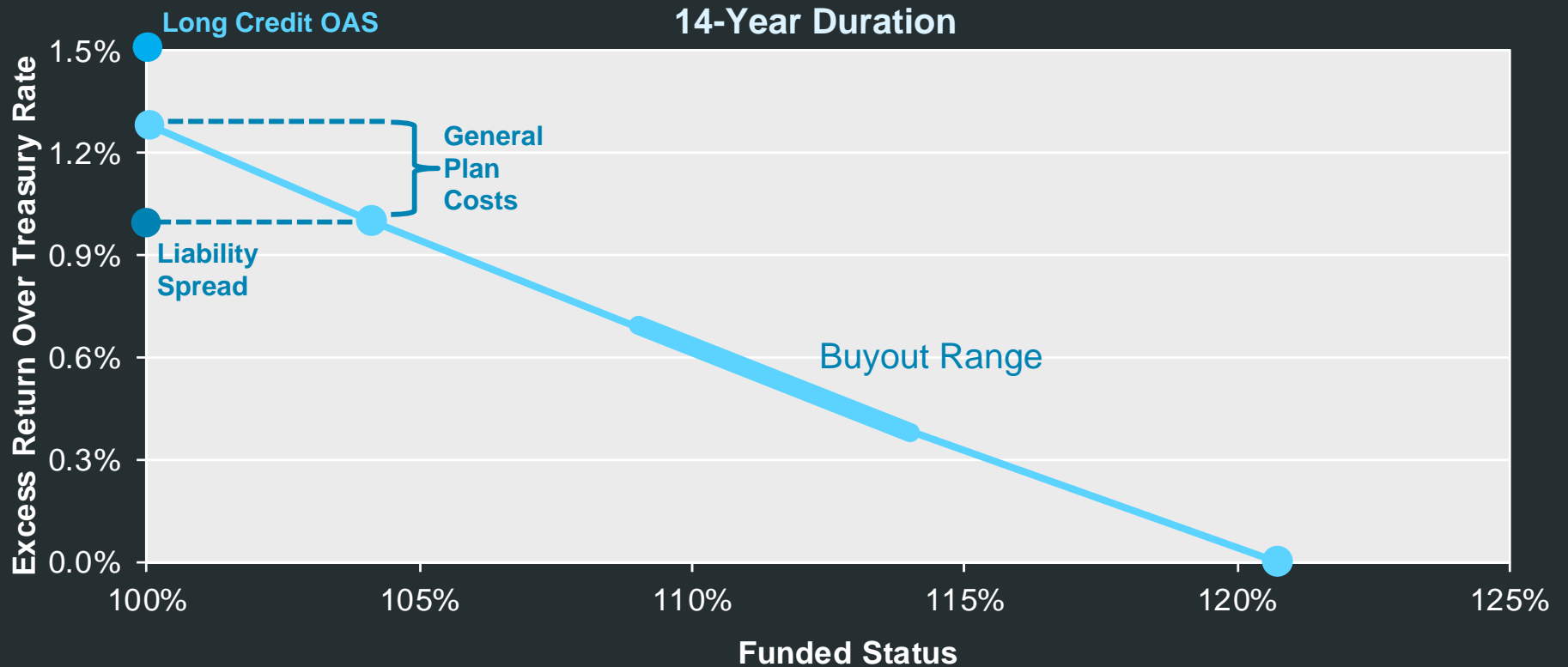
# End-States Can Be Different



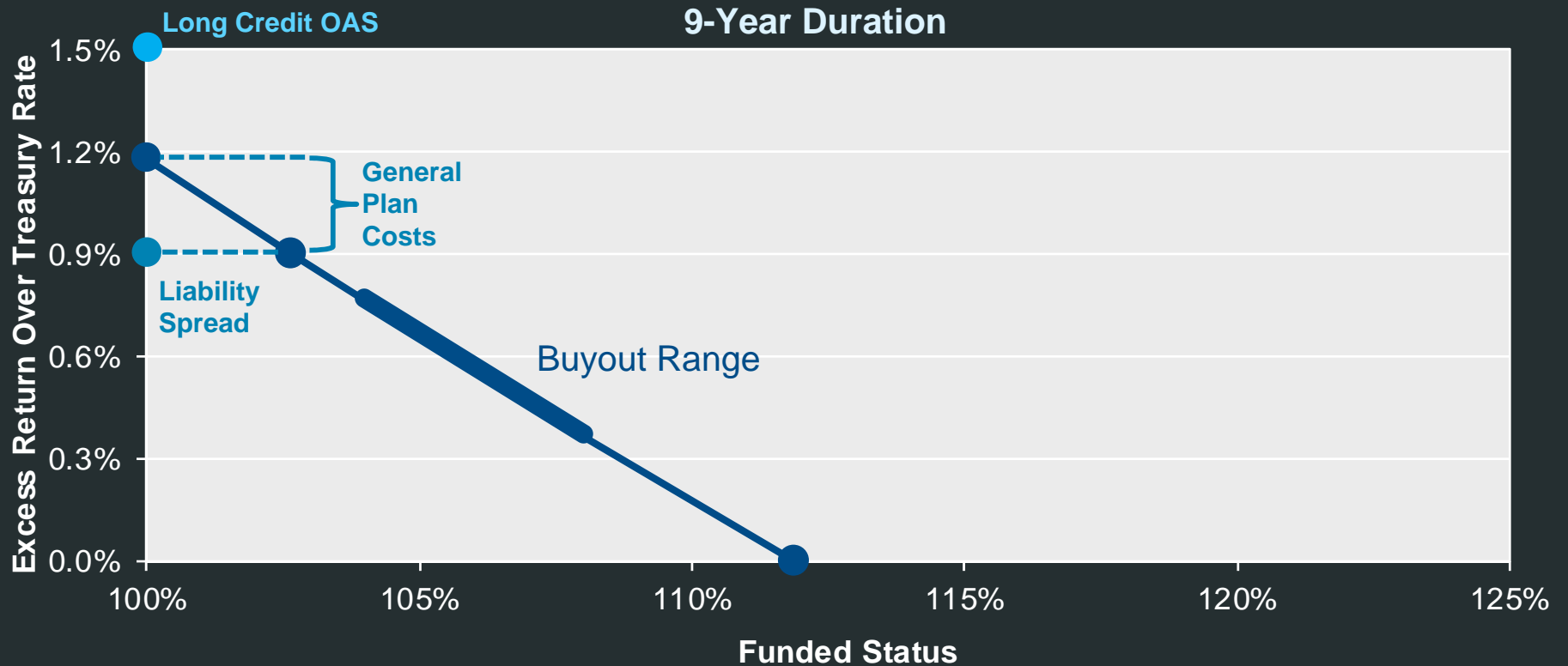
## Ongoing Costs

- Downgrades and defaults
- Fixed rate PBGC premiums
- Actuarial updates
- Service provider fees

# Choosing an End-State



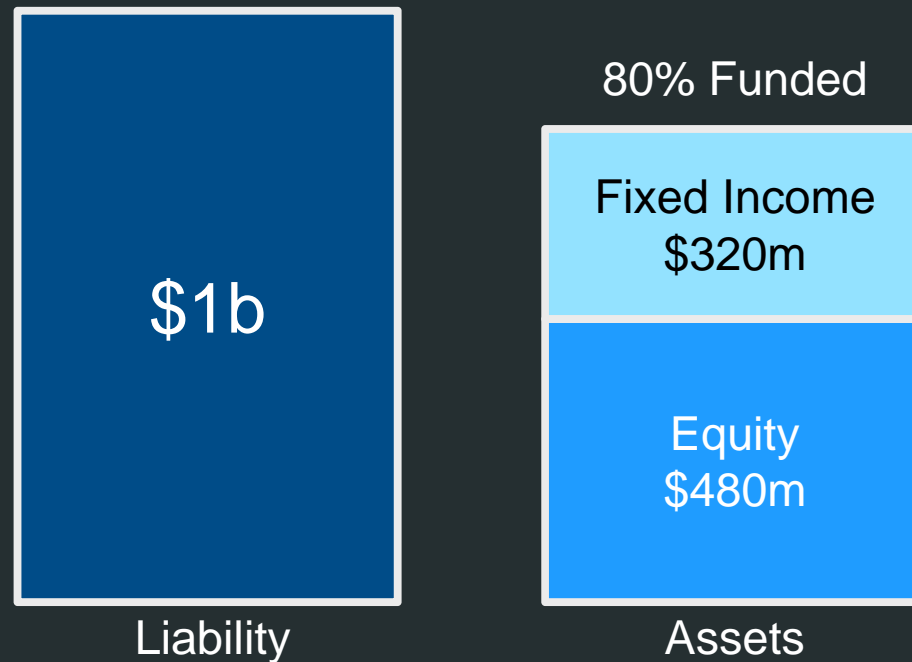
# Choosing an End-State







# Will Equity Get You There?



Analysis assumes the liability will grow at an annualized rate of 4.04%, which represents the average discount rate as of FY 2016 of the 100 largest US corporate defined benefit pension plans, as determined by NISA based on publicly available information. The fixed income is assumed to grow at an annualized rate of 3.61%, which represents the yield to maturity of the Bloomberg Barclays Long Government Credit Index as of 7/31/17.

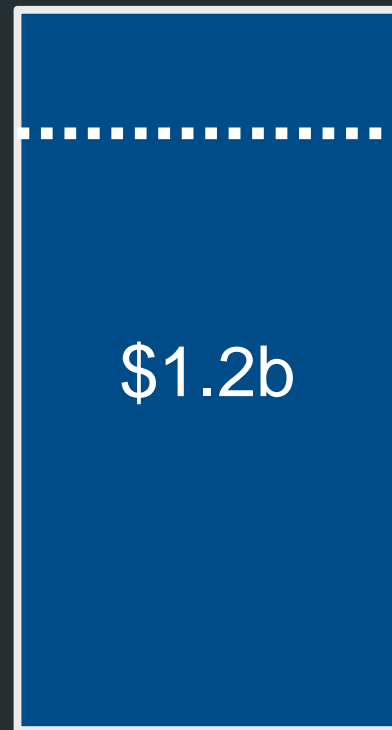


# Will Equity Get You There?

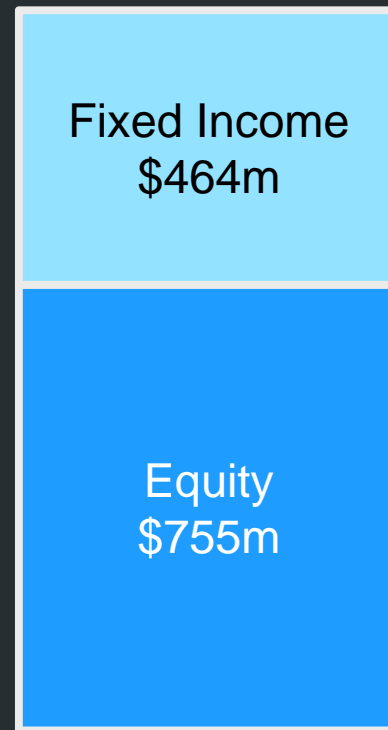
5 Years

78% Increase  
Over Five Years

Projected S&P 500  
Level<sup>1</sup>:  
4,114



Liability



Assets

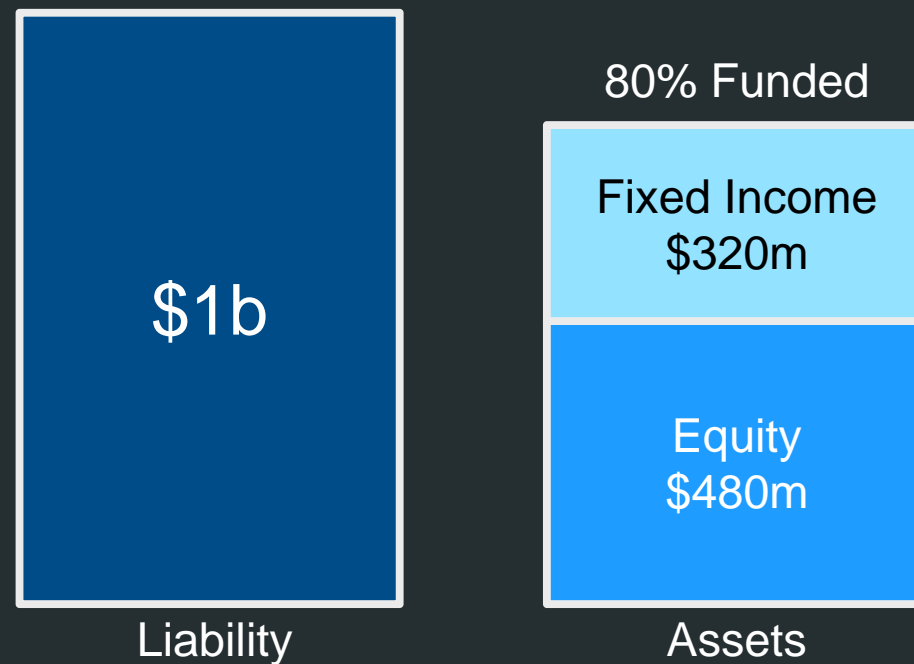
- 12% Return - 100%
- 9% Return - 91%
- 6% Return - 84%

<sup>1</sup>The projected S&P 500 level in five years represents a total return of 78% assuming a constant dividend yield of 1.88% beginning on 7/31/17. Analysis assumes the liability will grow at an annualized rate of 4.04%, which represents the average discount rate as of FY 2016 of the 100 largest US corporate defined benefit pension plans, as determined by NISA based on publicly available information. The fixed income is assumed to grow at an annualized rate of 3.61%, which represents the yield to maturity of the Bloomberg Barclays Long Government Credit Index as of 7/31/17.





# What About Interest Rates?



See "Will Equity Get You There?" page for more analysis information. The fixed income is assumed to grow at an annualized rate of 3.61% and have a duration of 14.90 years, which represents the yield to maturity and duration, respectively, of the Bloomberg Barclays Long Government Credit Index as of 7/31/17. Equity is assumed to grow at the Treasury IRR of 2.77% of an illustrative 14-year duration liability discounted at the Citigroup Above Median Discount Curve as of 7/31/17 plus a 4% equity risk premium.

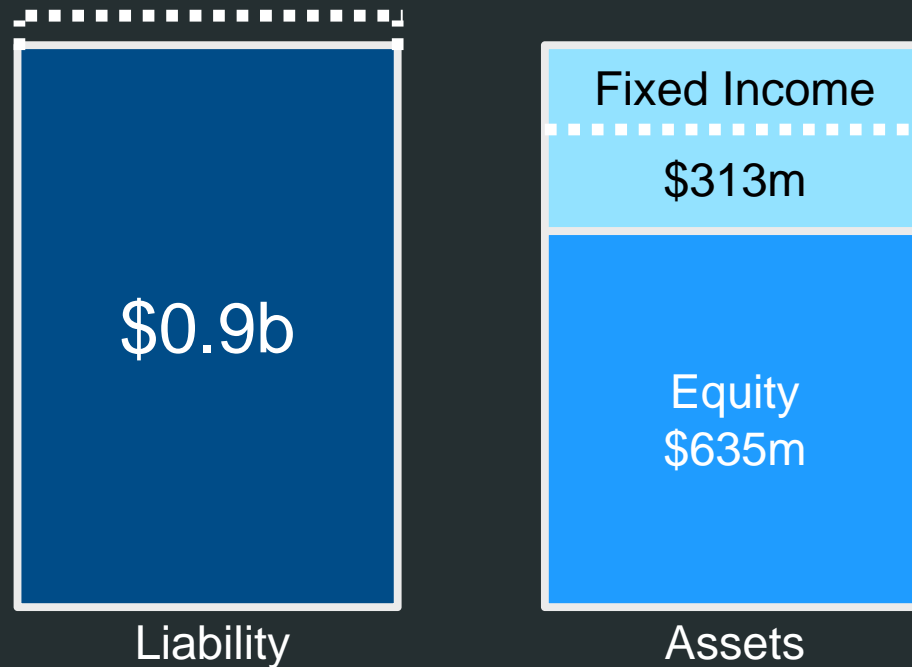




# What About Interest Rates?

5 Years

210 bps increase - 100%  
 150 bps increase - 94%  
 100 bps increase - 90%



	Current Yield	Projected Yield <sup>1</sup>
10-year	2.3%	4.5%
30-year	2.9%	4.9%
Citi Above Median	3.8%	5.9%

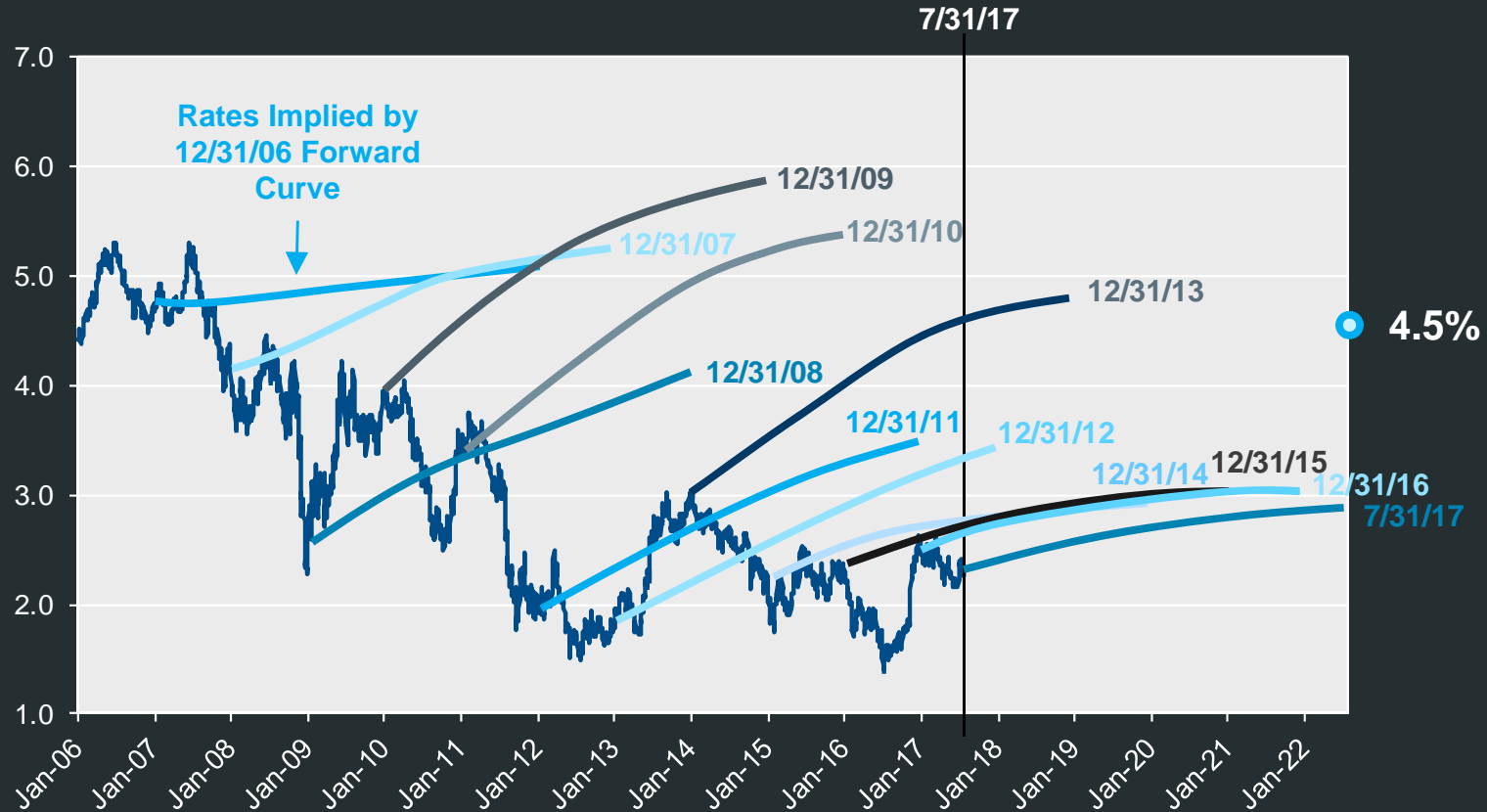
<sup>1</sup>The projected yield represents the yield five years from 7/31/17 for this plan to become fully funded. See "Will Equity Get You There?" page for more analysis information. The fixed income is assumed to grow at an annualized rate of 3.61% and have a duration of 14.90 years, which represents the yield to maturity and duration, respectively, of the Bloomberg Barclays Long Government Credit Index as of 7/31/17. Equity is assumed to grow at the Treasury IRR of 2.77% of an illustrative 14-year duration liability discounted at the Citigroup Above Median Discount Curve as of 7/31/17 plus a 4% equity risk premium. Citi Above Median yield assumes 14-year duration liability and includes a forward rate estimate derived from that of duration-weighted Treasuries.





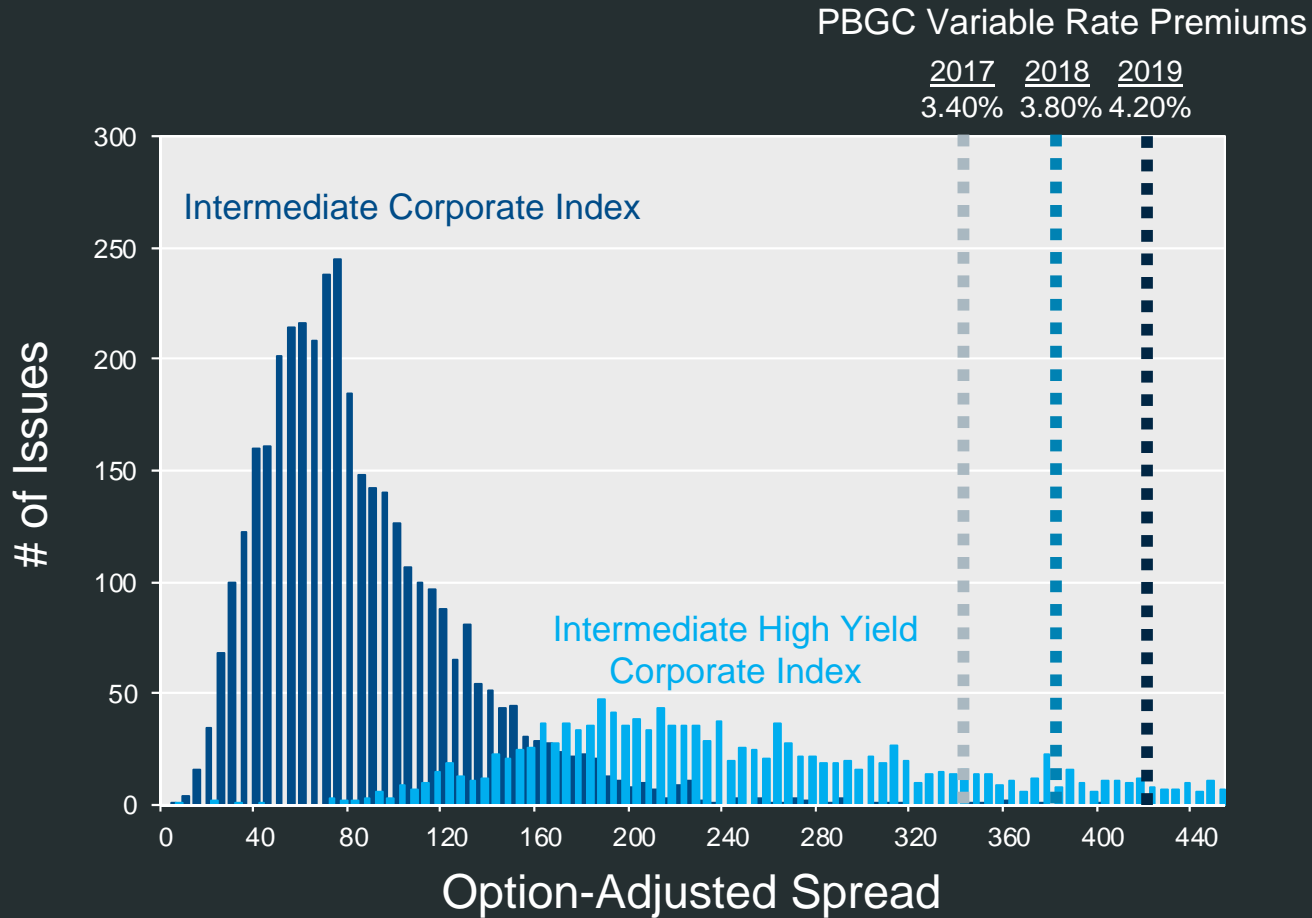
# Reaching the End-State

10-Year US Treasury Yield, %



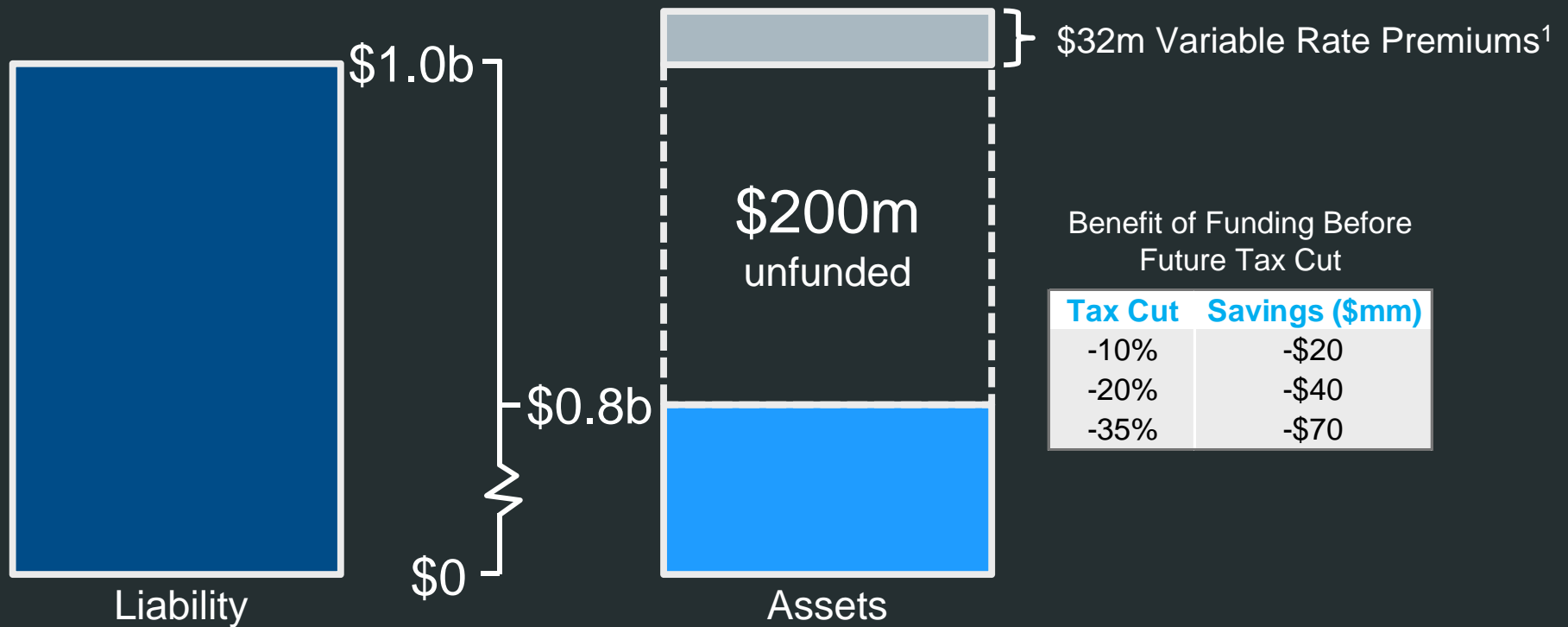


# Borrowing to Fund

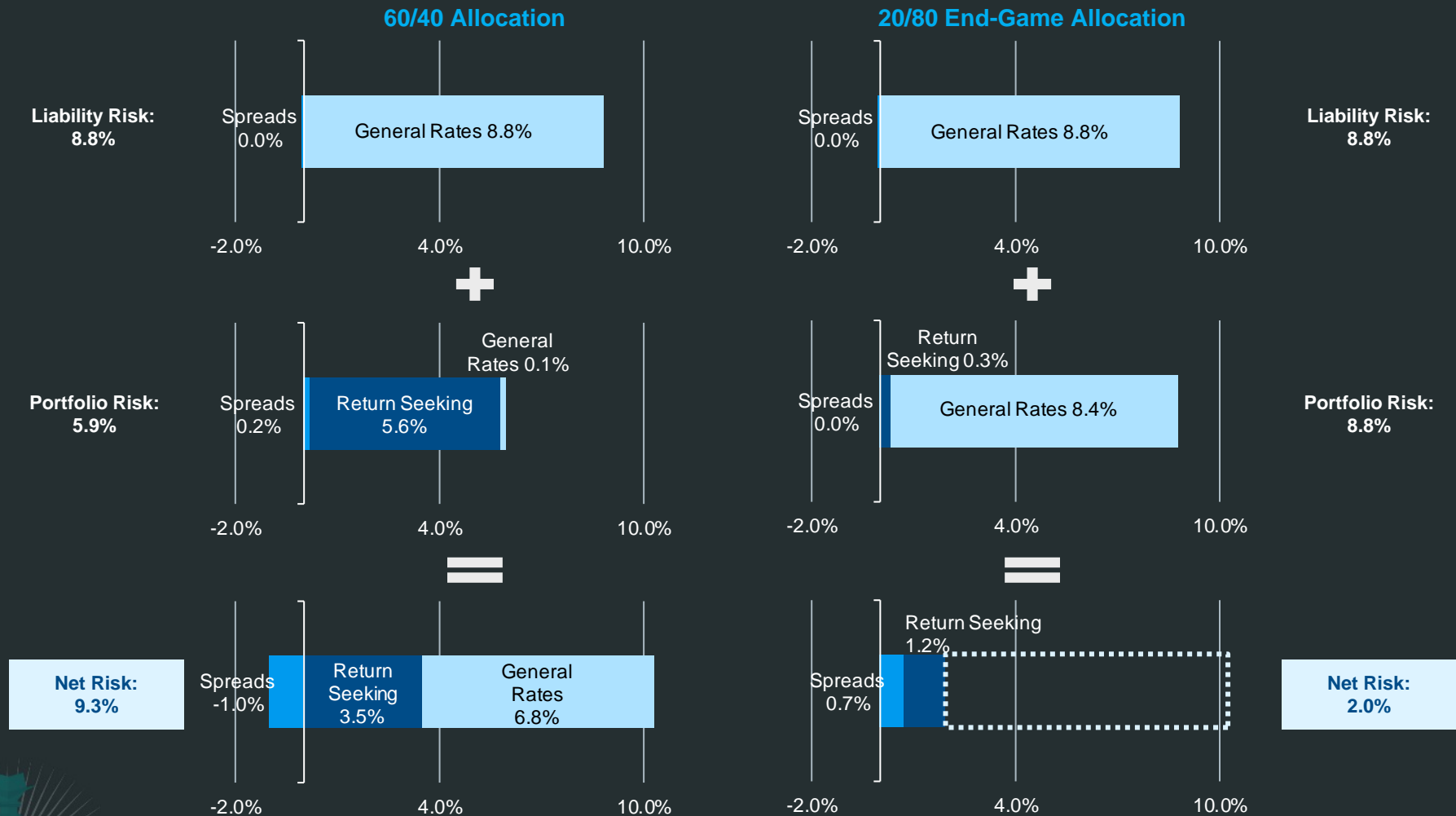




# Funding the Plan



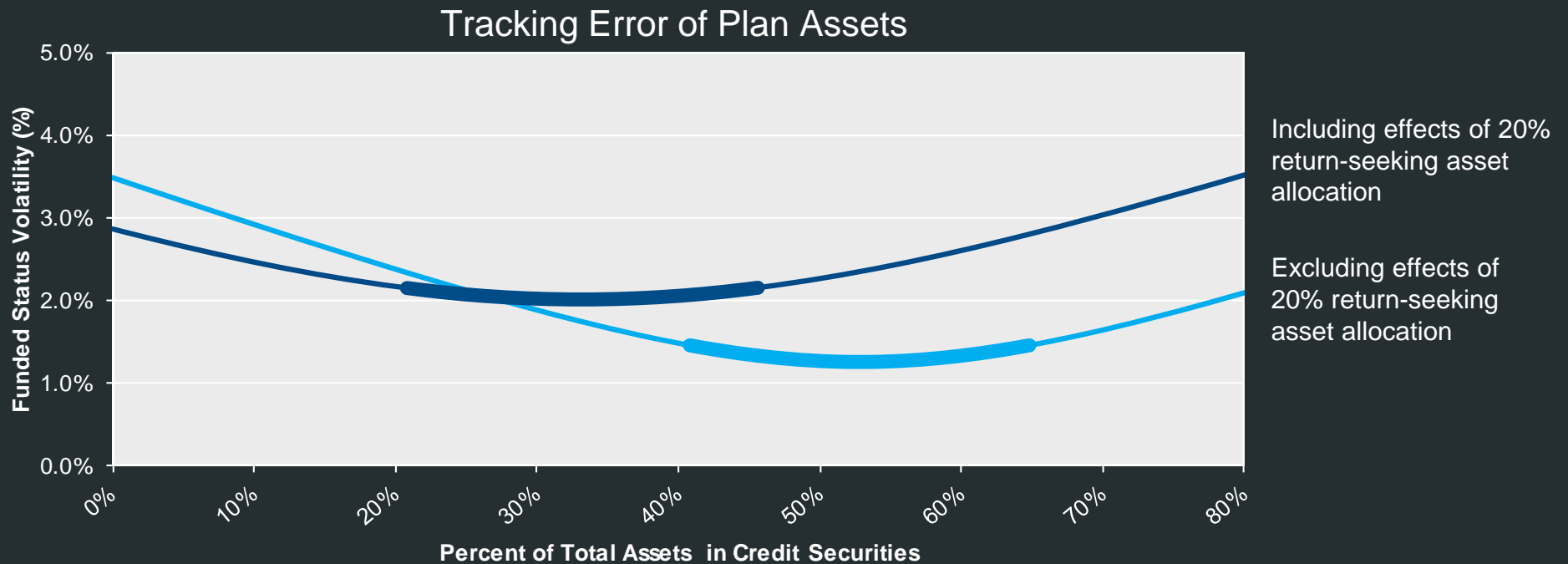
# Maintaining the End-State







# Choosing the Fixed Income

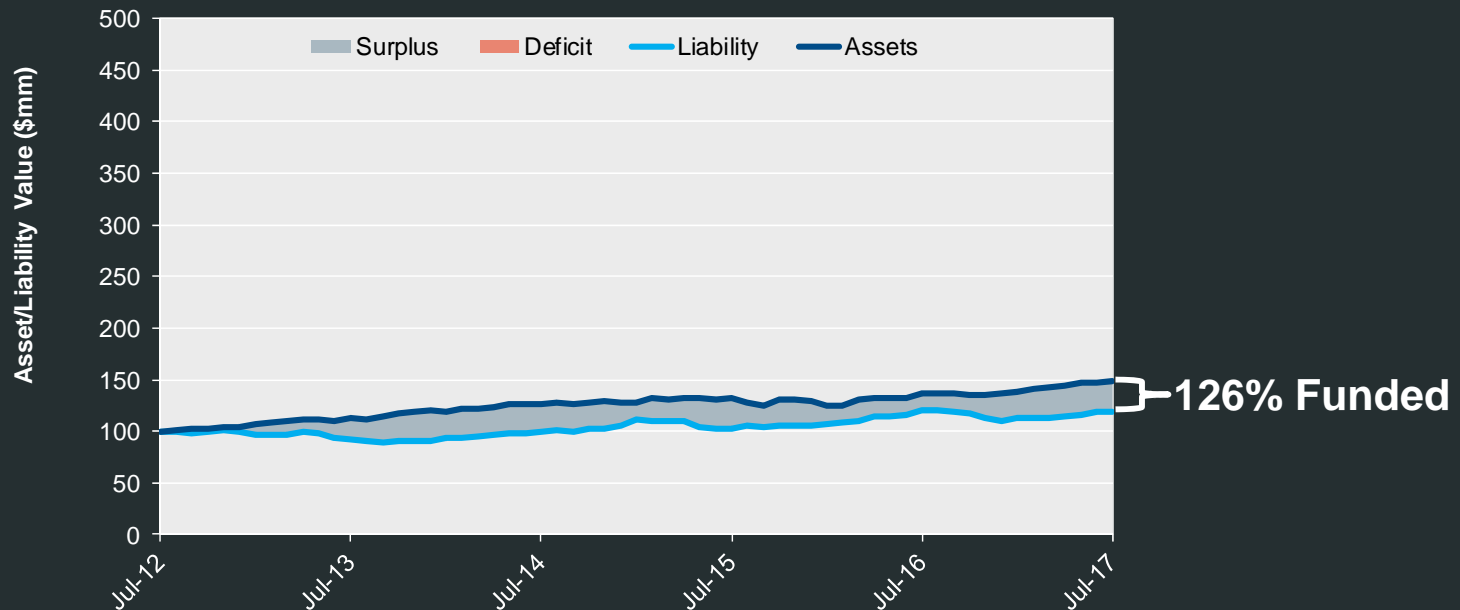




# Is the End-State Sustainable?

## 5 Years

### 60/40 Allocation



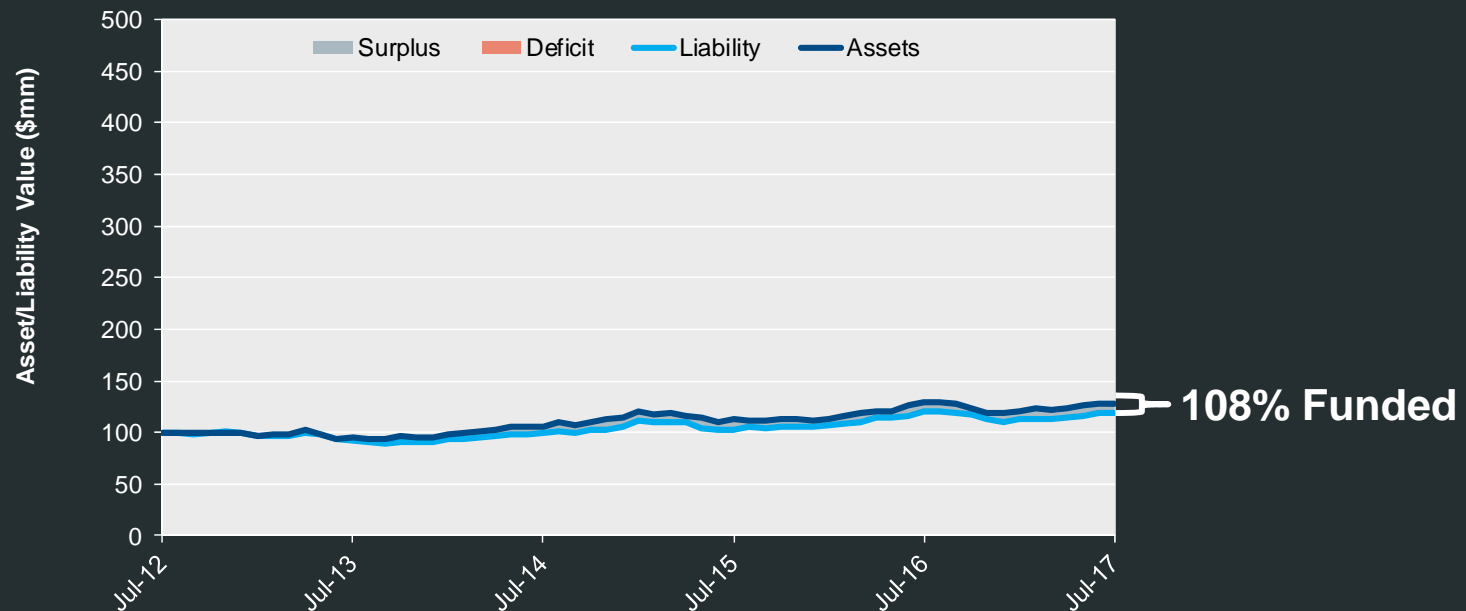
Analysis is based on an illustrative 14-year duration liability discounted at the Moody's Aa Corporate discount rate. 60/40 asset allocation is assumed to be 40% S&P 500, 20% MSCI EAFE, and 40% Bloomberg Barclays Aggregate. 20/80 asset allocation is assumed to be 13% S&P 500, 7% EAFE, 60% Bloomberg Barclays Long Government Credit, and 20% Citigroup 15+ STRIPS duration adjusted to achieve a 100% interest rate hedge of the liability. Assets are rebalanced monthly. Analysis assumes 30 bps of annual costs. Data ranges from 7/31/2012 to 7/31/2017. Source: Bloomberg.



# Is the End-State Sustainable?

## 5 Years

### 20/80 Allocation



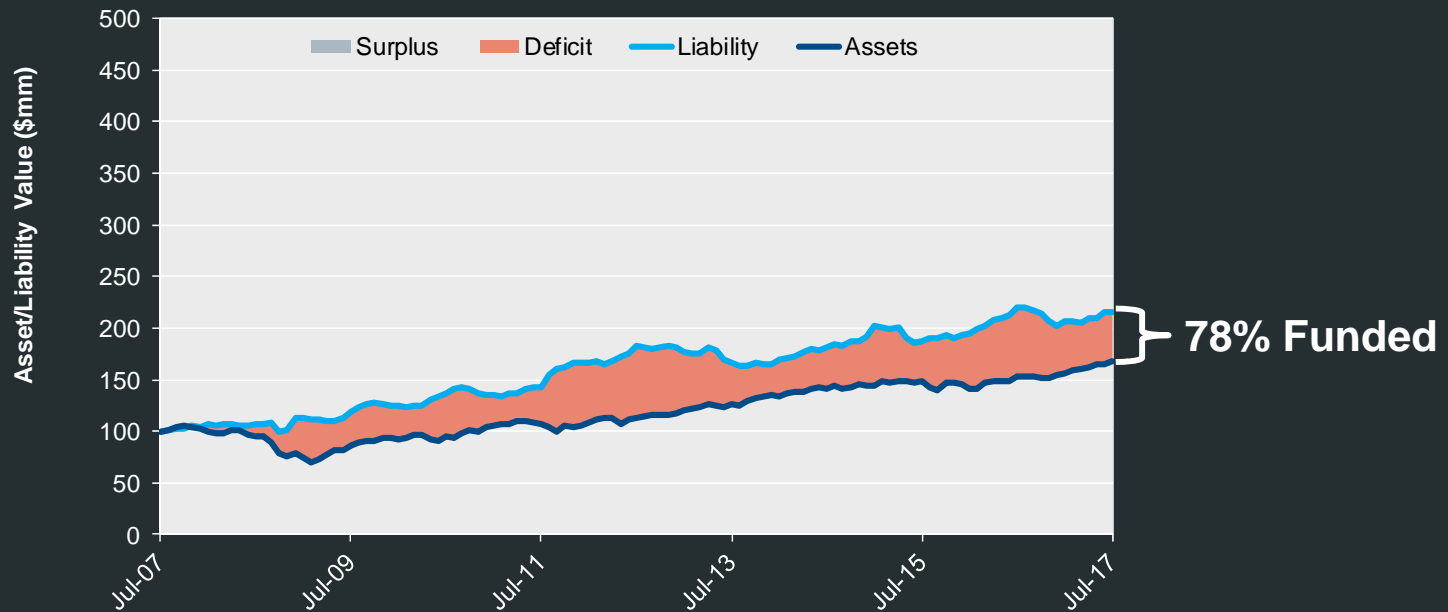
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# Is the End-State Sustainable?

## 10 Years

### 60/40 Allocation



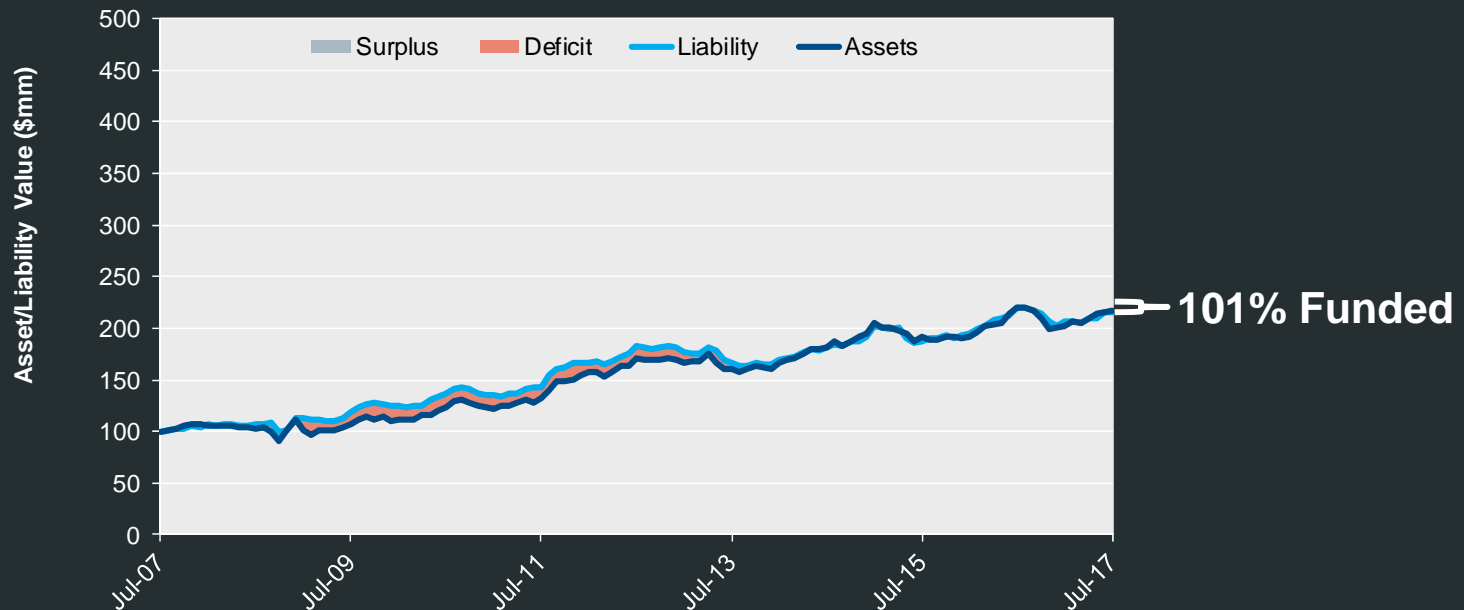
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# Is the End-State Sustainable?

10 Years

20/80 Allocation



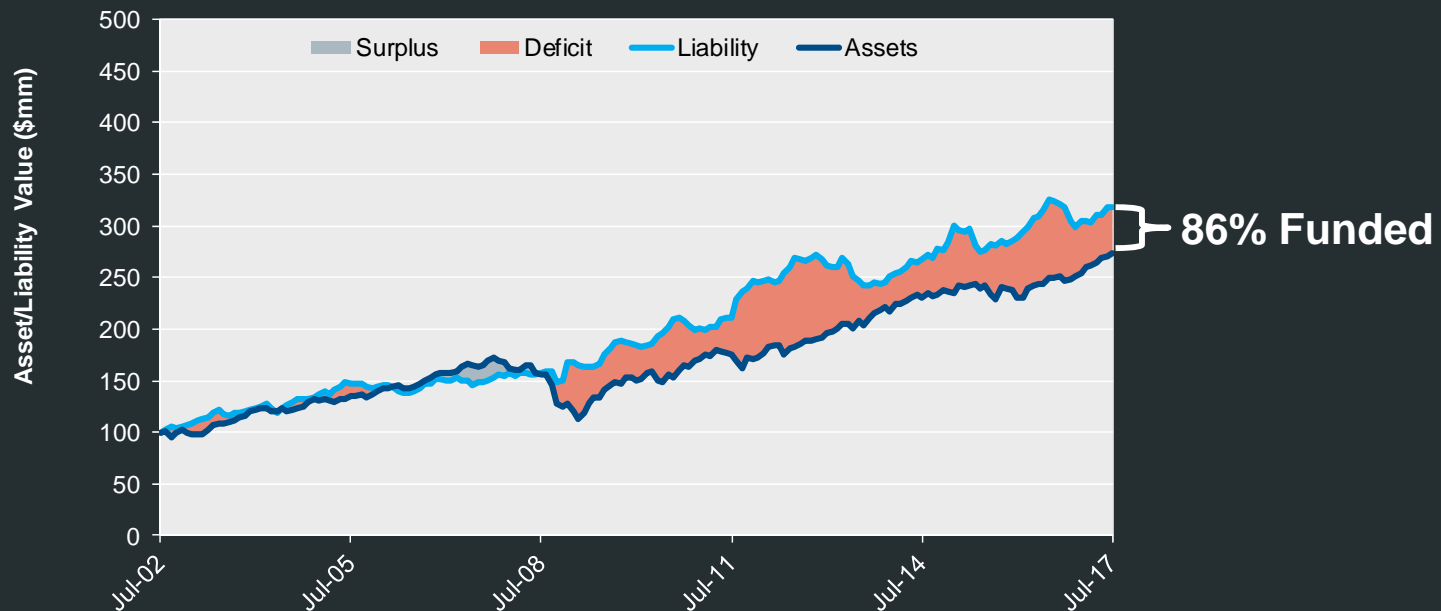
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# Is the End-State Sustainable?

15 Years

60/40 Allocation



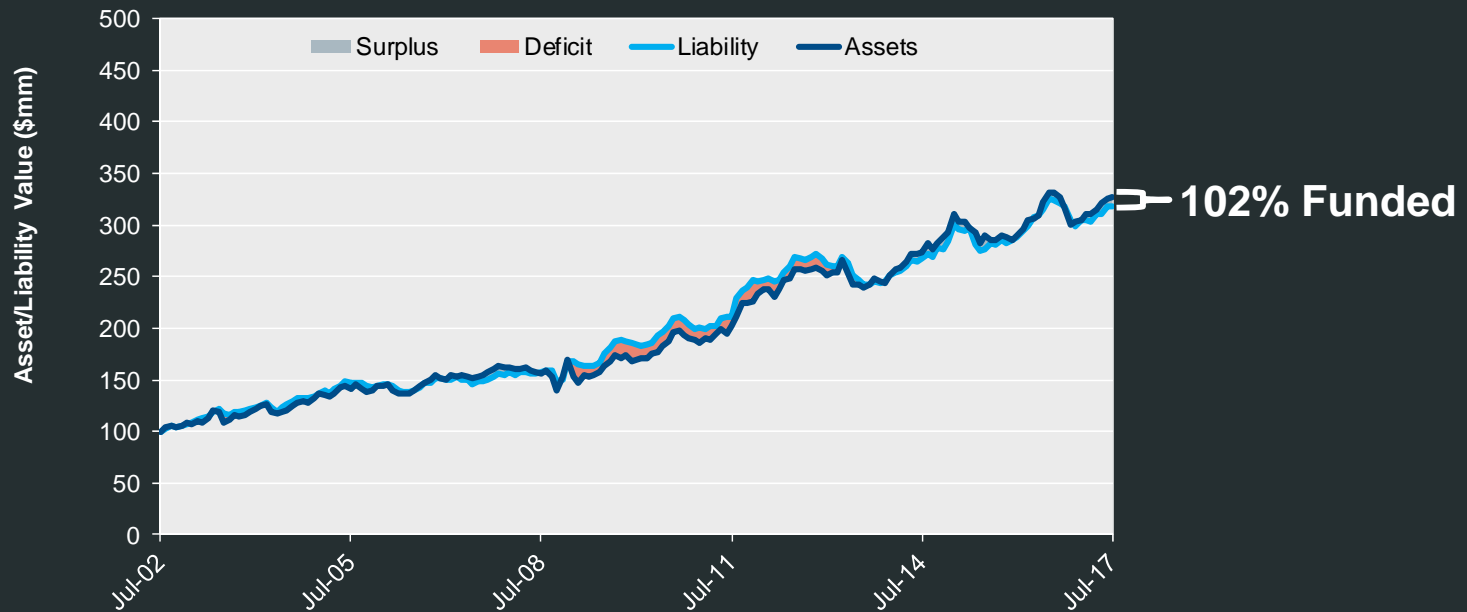
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# Is the End-State Sustainable?

15 Years

20/80 Allocation



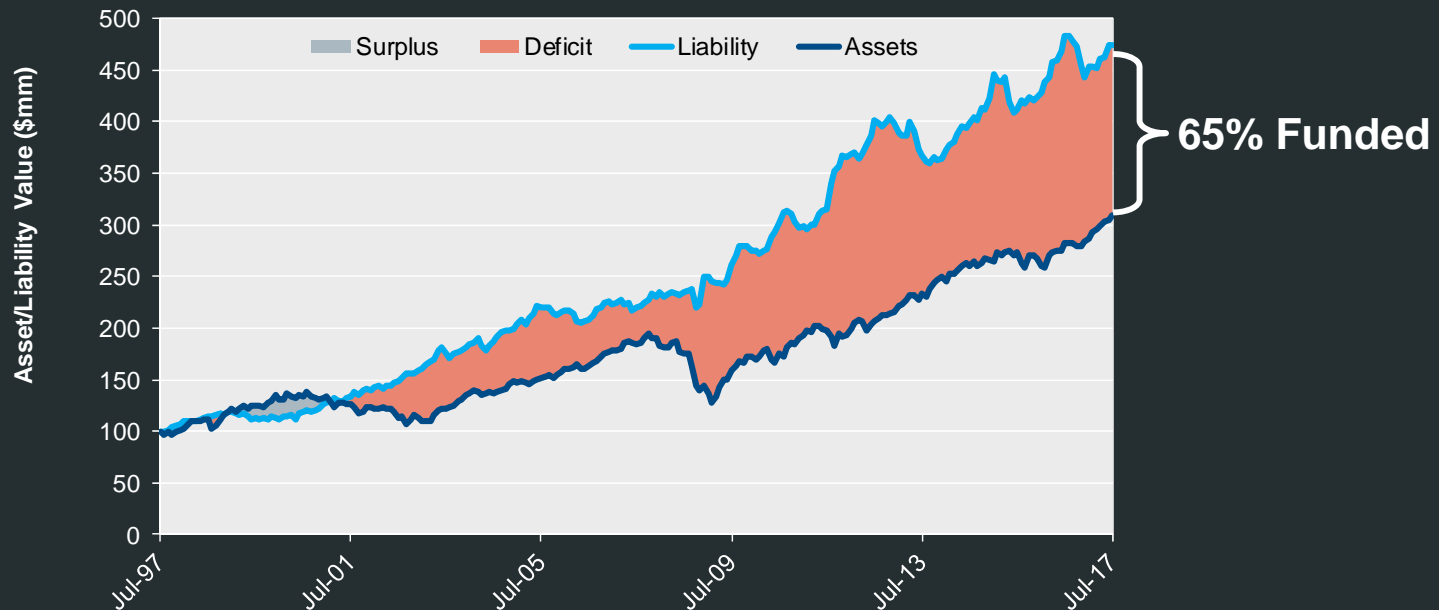
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# Is the End-State Sustainable?

20 Years

60/40 Allocation



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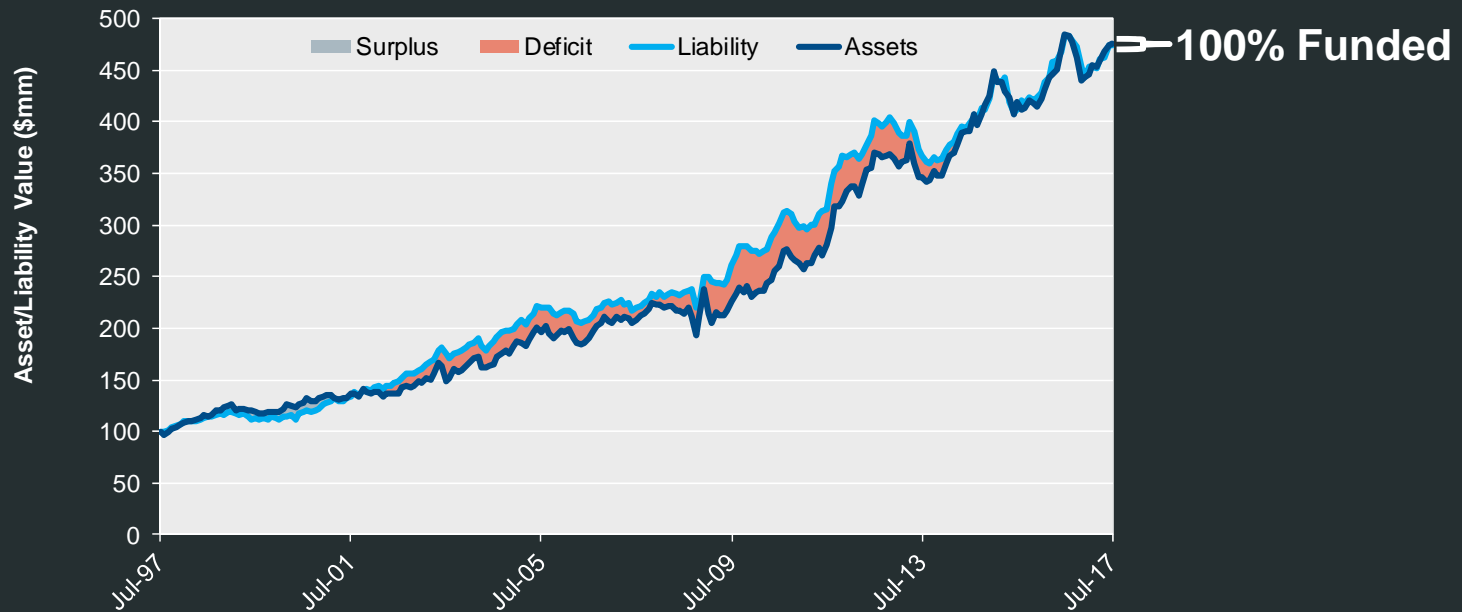




# Is the End-State Sustainable?

## 20 Years

### 20/80 Allocation



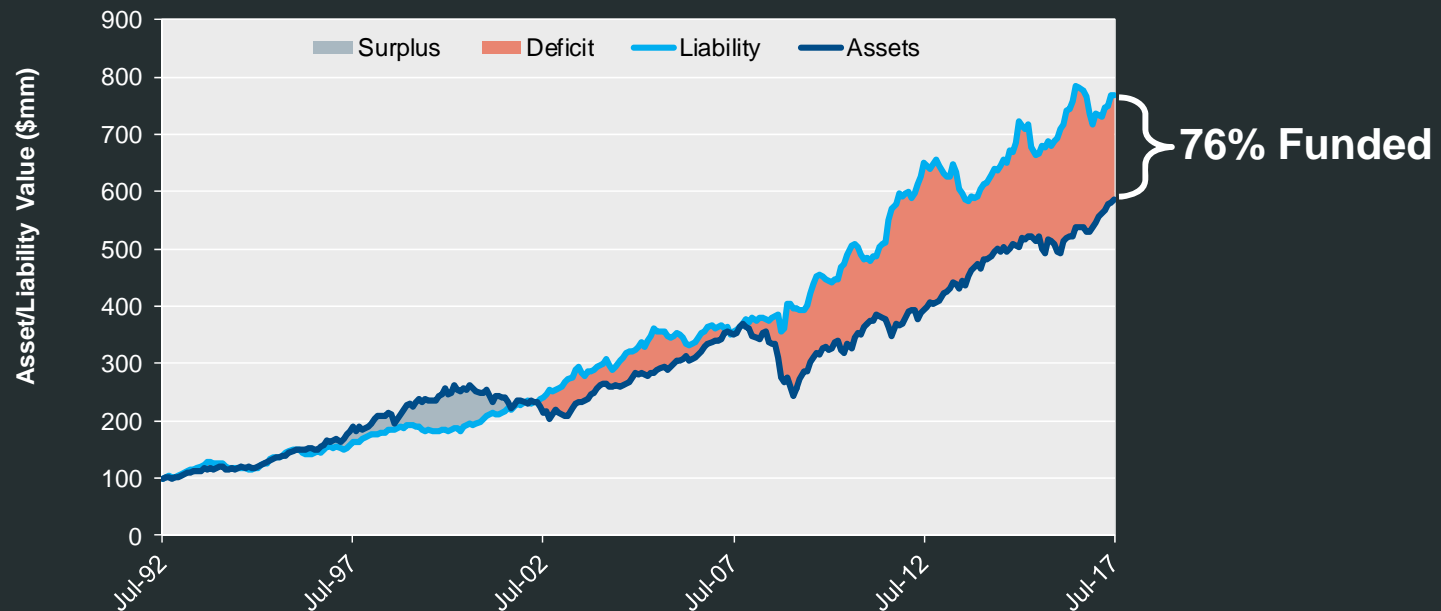
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# Is the End-State Sustainable?

25 Years

60/40 Allocation



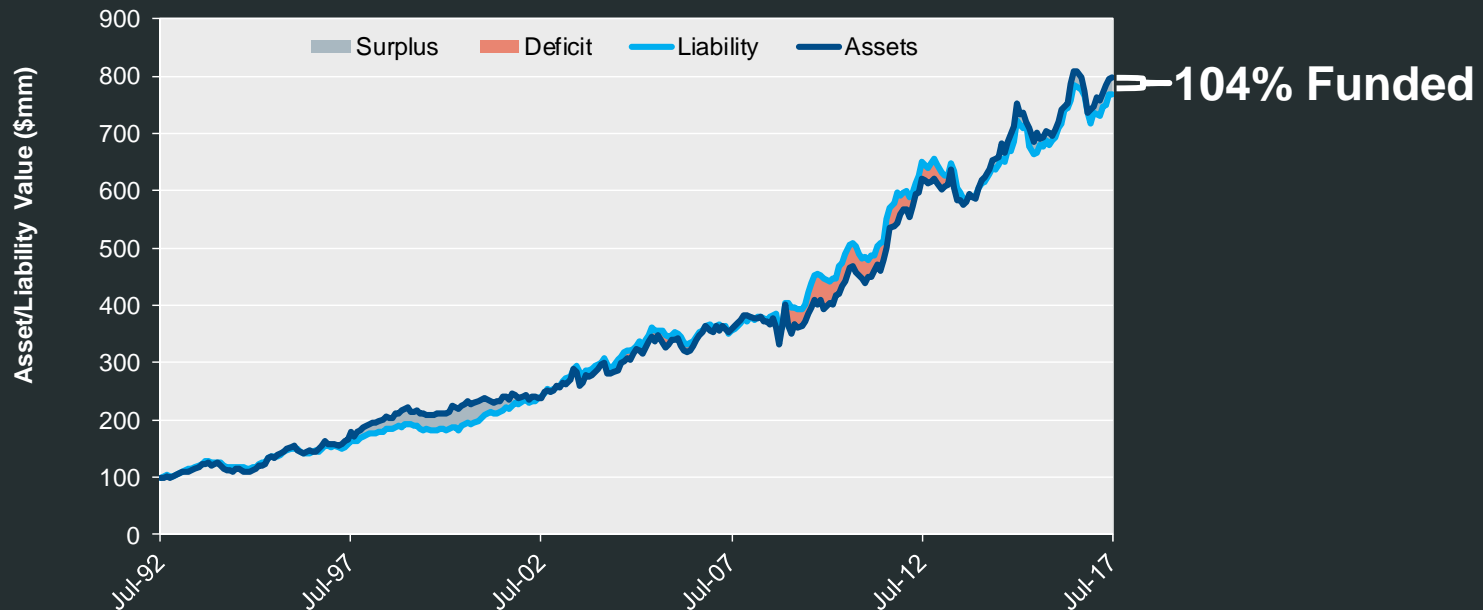
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# Is the End-State Sustainable?

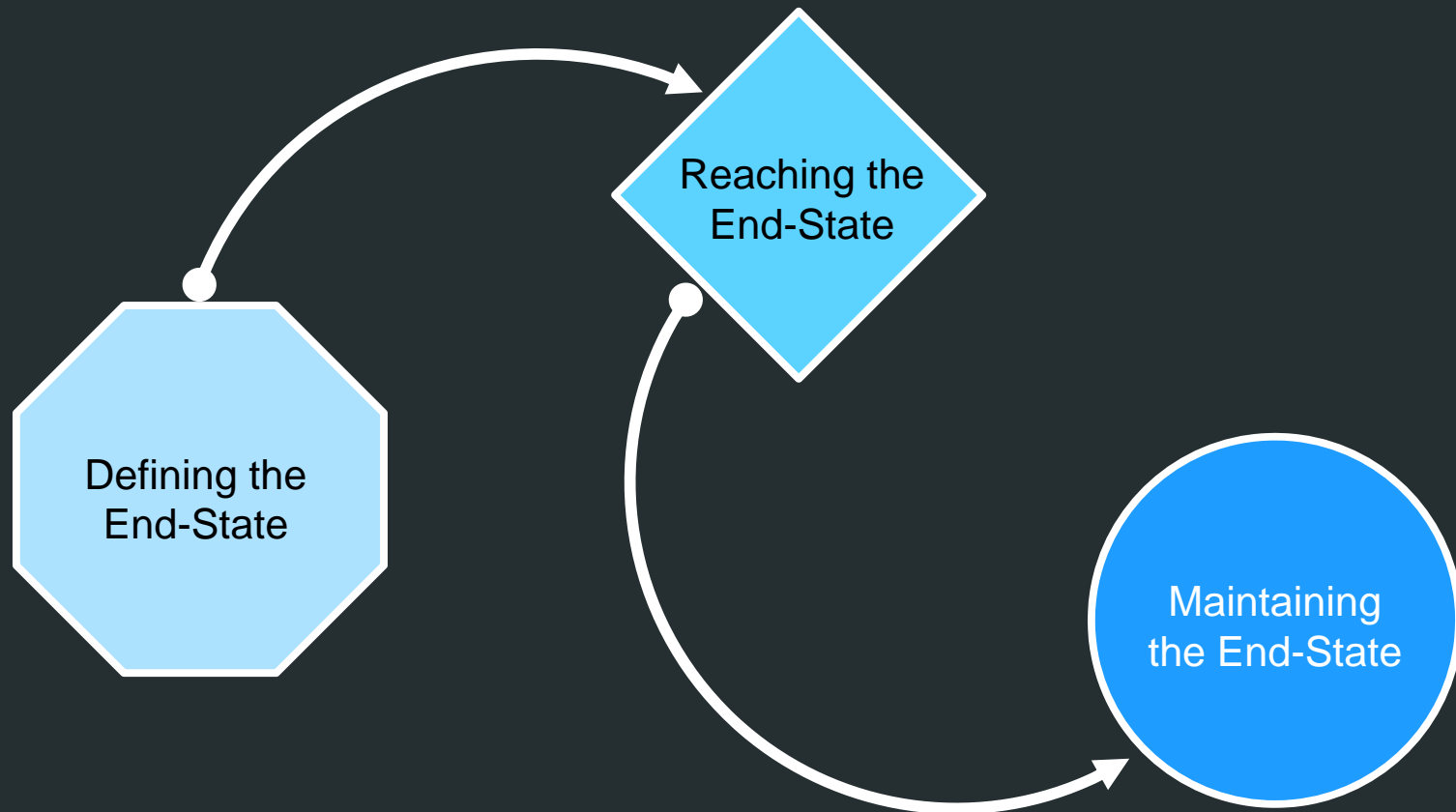
25 Years

20/80 Allocation



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# Agenda



# Q&A



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