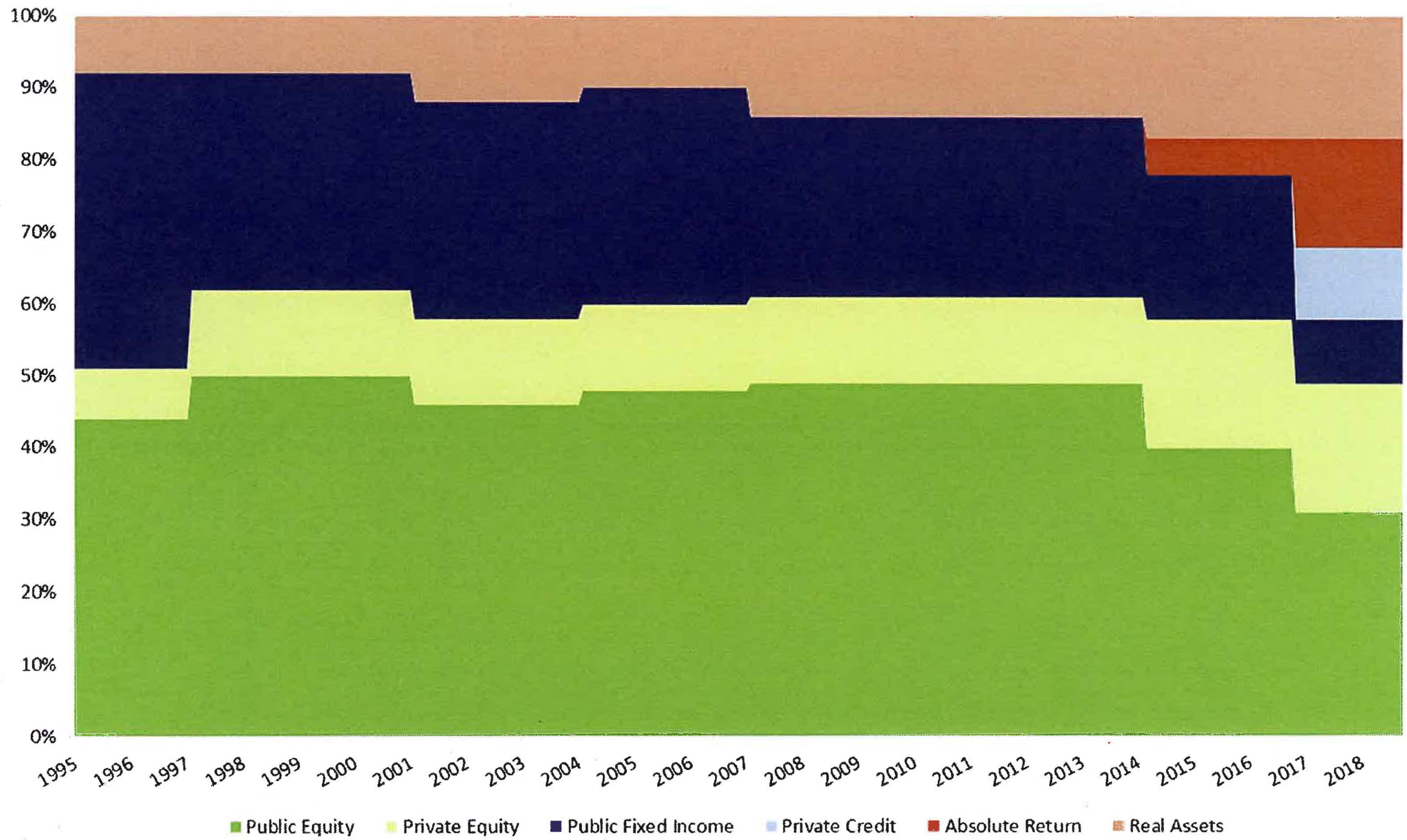
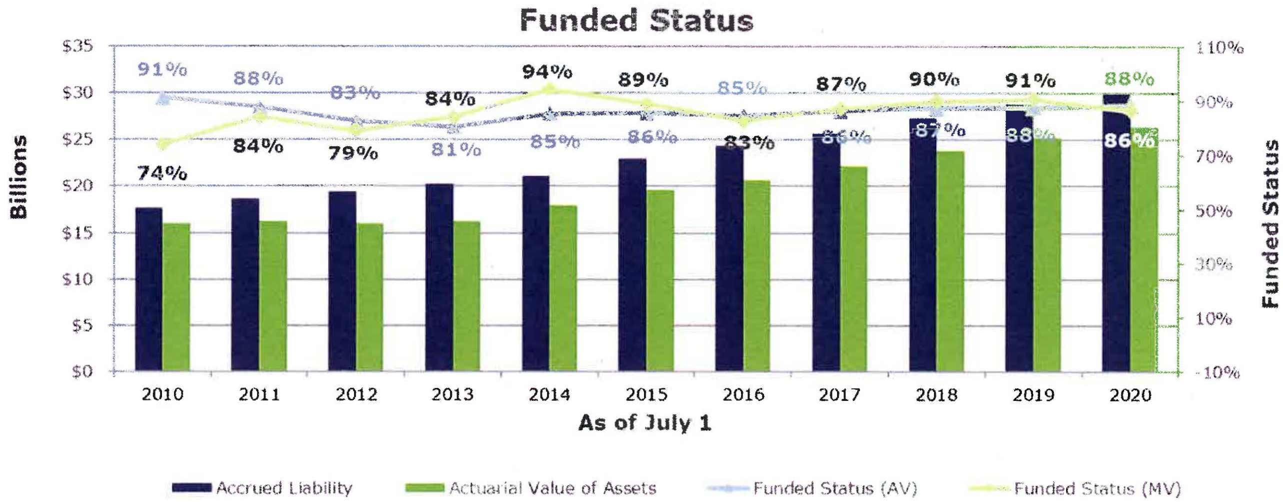
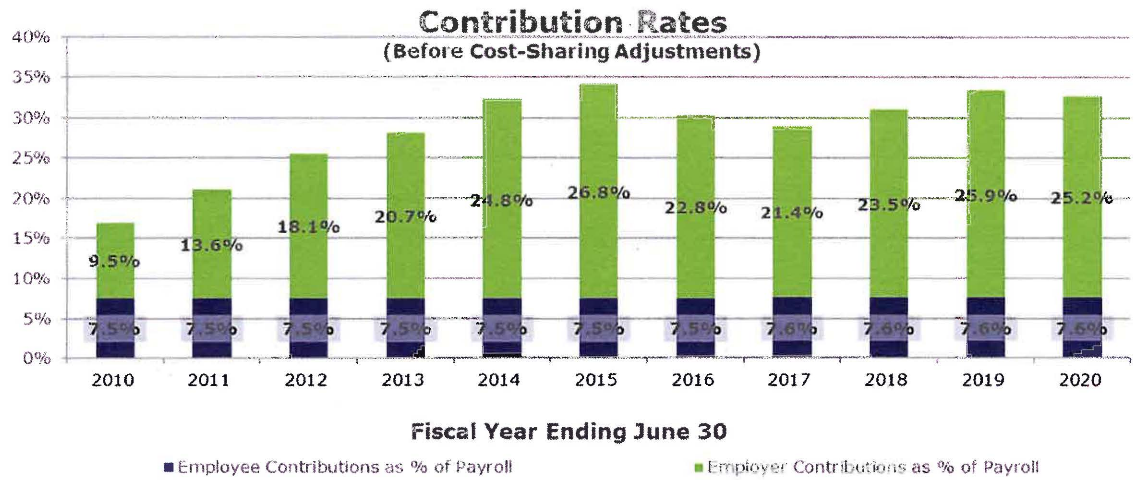
SFERS ASSET ALLOCATION POLICY HISTORY



	1995	1998	2002	2005	2008	2011	2014	2017
Public Equity	44.00%	50.00%	46.00%	48.00%	49.00%	49.00%	40.00%	31.00%
Private Equity	7.00%	12.00%	12.00%	12.00%	14.00%	14.00%	18.00%	18.00%
Public Fixed Income	41.00%	30.00%	30.00%	30.00%	25.00%	25.00%	20.00%	9.00%
Private Credit	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%
Real Assets	8.00%	8.00%	12.00%	10.00%	12.00%	12.00%	17.00%	17.00%
Absolute Return	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	15.00%
Cash	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

HISTORICAL PLAN REVIEW



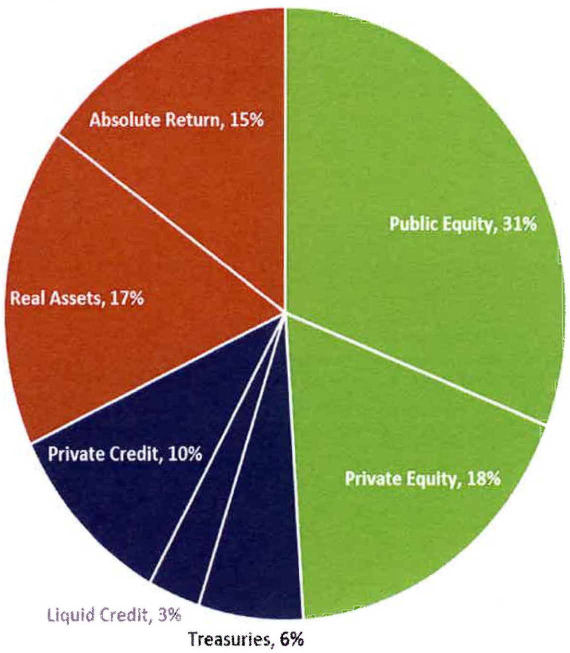


- **The plan's funded status has increased over the last 10 years from 74% to 86% on a Market Value basis**
- **Contribution rates have increased 265% over the last 10 years**

Historical figures provided by Cheiron. July 1, 2020 figures estimated by NEPC. FY 2019-20 investment return is estimated to be 1.3%.

CURRENT TARGET POLICY PROFILE

SFERS TARGET MIX – USING NEPC'S 2020 ASSUMPTIONS



	5-7 Year/ 10 Year		30 Year	
	2019	**2020**	**2019**	**2020**
Median Expected Return	7.7%	7.1%	8.6%	8.1%
Expected Volatility	13.7%	10.9%	13.7%	10.9%
Sharpe Ratio	0.38	0.48	0.41	0.53
Sortino Ratio	0.69	0.83	0.80	0.98

Probabilities using 2020 Assumptions	
Probability of 1-Year Return Under 0.00%	25.9%
Probability of 10 Year Return Under 0.00%	2.0%
Probability of 10 Year Return Under 7.40%	53.7%
Probability of 30-Year Return Under 7.40%	35.4%

**2020 Expected Volatility assumption based on smoothed volatilities in private markets asset classes; these are incorporated into the 2020 Sharpe and Sortino Ratio estimates*
**Smoothed volatility uses historical realized asset class volatility in determining the total portfolio expected volatility*

ASSET ALLOCATION

	Policy Target	Current Allocation
Global Equity	31%	33%
Private Equity	18%	22%
Total Growth/Capital Appreciation	**49%**	**55%**
Real Assets	17%	15%
Absolute Return	15%	14%
Total Diversifying Assets	**32%**	**29%**
Liquid Credit	3%	3%
Private Credit	10%	5%
Treasuries	6%	5%
GTAA/Defensive		
Cash	0%	3%
Total Income/Capital Preservation	**19%**	**16%**
Total	**100%**	**100%**
Expected Return 10 yrs	**7.1%**	**7.1%**
Expected Return 30 yrs	**8.1%**	**8.2%**
Standard Deviation	**10.9%**	**10.9%**
Sharpe Ratio (10 years)	**0.48**	**0.48**
Sharpe Ratio (30 years)	**0.53**	**0.53**
Probability of 1-Year Return Under 0%	**26%**	**26%**
Probability of 10-Year Return Under 0%	**2%**	**2%**
Probability of 10-Year Return Under 7.4%	**54%**	**54%**
Probability of 30-Year Return Under 7.4%	**35%**	**35%**

- **The current Policy Target has an expected return of 7.1% as of 2020**
- **The System's 7.4% EROA is not expected to be achievable over the next 10-year market cycle under the current Policy Target**
- **The EROA is expected to be attained at a 46% probability**
- **Over a longer 30-year time period, expected returns are higher for most asset classes and the expected return of the portfolio is 8.1%, greater than the 7.4% EROA**

ASSET ALLOCATION OBSERVATIONS

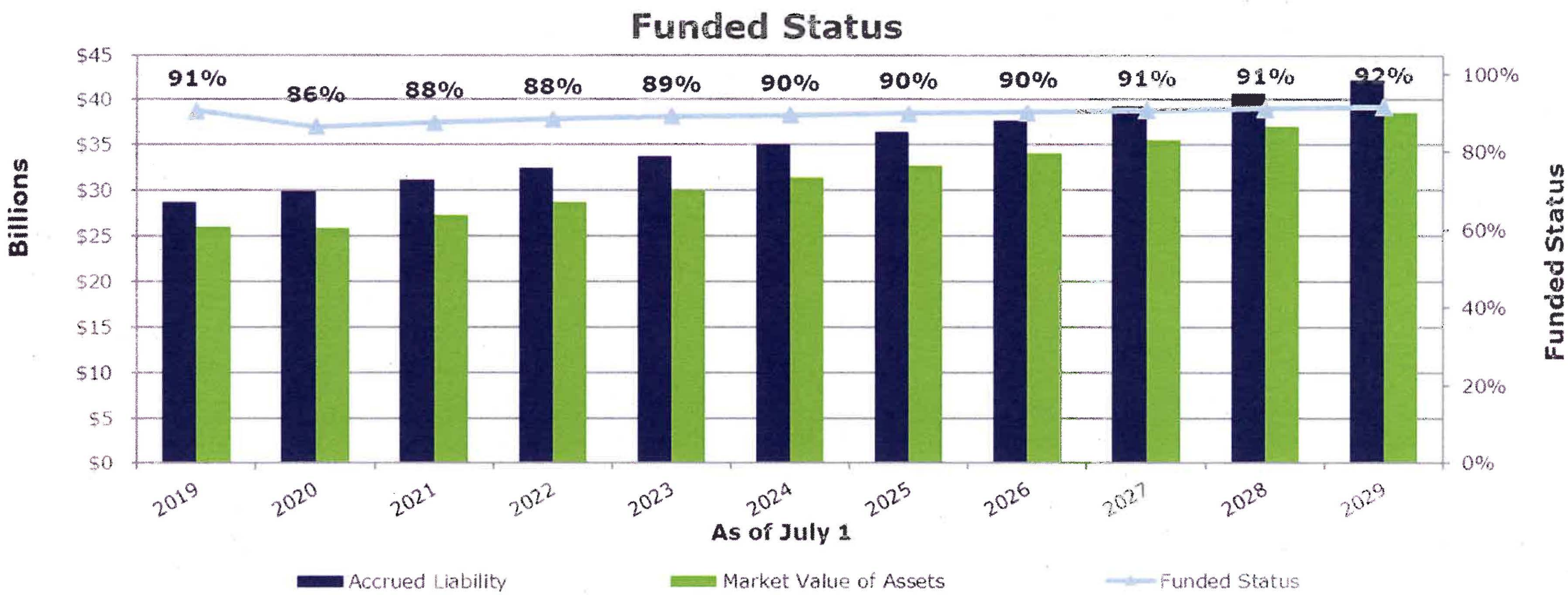
- **Asset allocation reflects San Francisco's degree of risk tolerance**
  - Expected return is 7.1% and does not reach the assumed actuarial rate of return of 7.4%
  - However the current Policy Target encompasses a strategic, long-term perspective of capital markets as well as the nature and structure of SFERS' liabilities
  - The portfolio's expected annual volatility for total plan performance has been reduced more than 20%, from 13.7% to 10.9%, due to smoothing of private investments' returns

- **Forward-looking environment may continue to be volatile with unique opportunities**
  - COVID-19 has had a significant effect of current market conditions, important to focus on long term strategic outlook
  - Market correction provides opportunities to add risk to the portfolio, while also highlighting the need to add protection against future market volatility
  - GTAA managers are well positioned to take advantage of this market environment

- **As the result of the change in the volatility risk estimate, we feel comfortable recommending a slight increase in equity exposure and slight leverage for the total plan**
  - Private markets – equity and debt
  - Public equities

- **Opportunities exist to take off risk, add protection and enhance liquidity**
  - Reduce absolute return and real asset investments
  - Add Treasuries and cash exposure
  - Add dedicated GTAA allocation for tail-risk management and liquidity

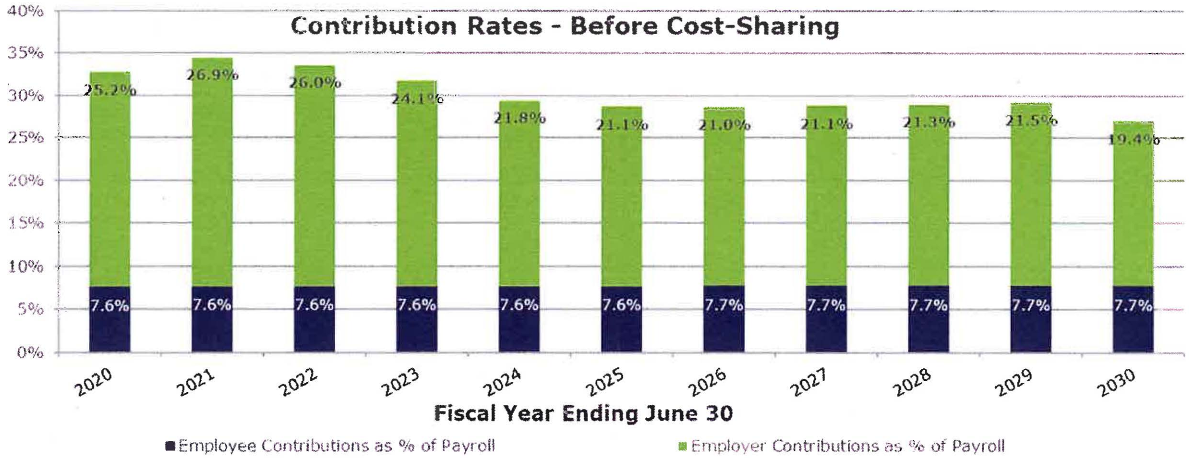
MEDIUM-TERM EXPECTATIONS

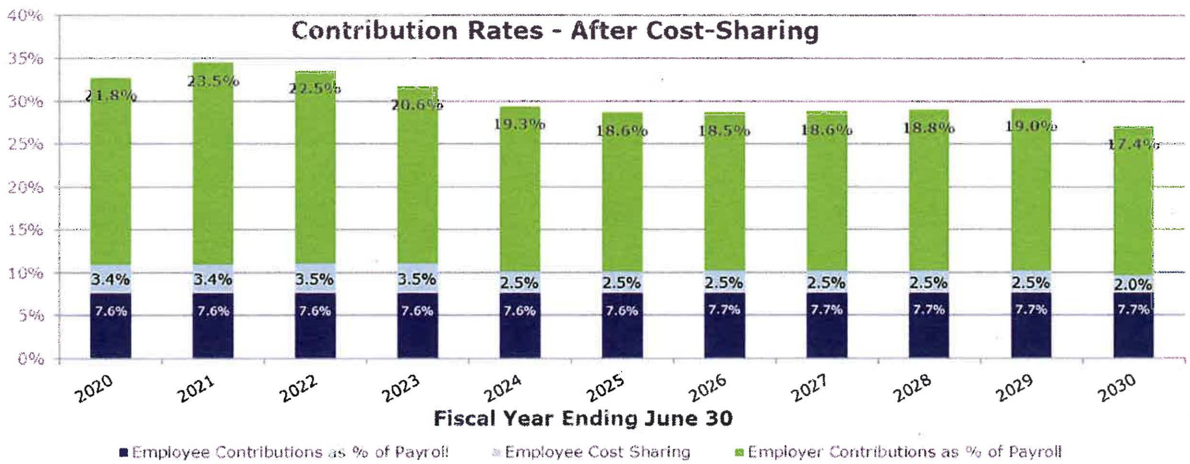


- **The funded status of the pension system is expected to decline to 86% in 2020, then gradually recover the next 10 years**
  - Funded Status = Market Value of Assets / Accrued Liability
- **Market value of assets is assumed to return 7.1%, NEPC's 10-year expected return forecast for SFERS**
  - Average annual increase in Market Value of assets is 4.0%
- **Liabilities grow at an average pace of 3.9% per year**
  - Discount rate assumed to remain level at 7.4%

Deterministic projections based on Current Policy Target allocation and NEPC's 2020 10-year return assumptions. FY 2019-20 investment return is estimated to be 1.3%.

MEDIUM-TERM EXPECTATIONS

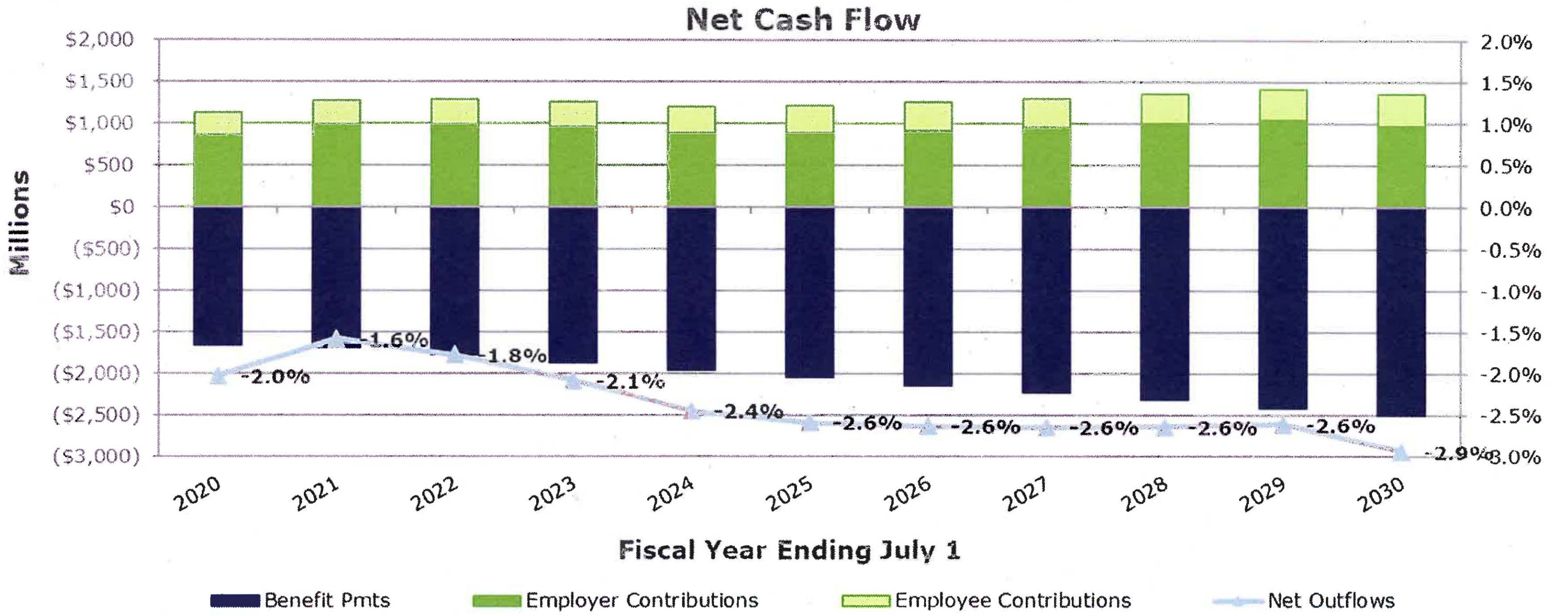




- **Employer contributions are projected to increase in 2021, then gradually decline and level out around 17% of payroll in 10 years**
- **Cost-sharing adjustments, which transfer some of the employer contribution percentage to employees, are determined based on the level of the Employer contribution rate**

Deterministic projections based on Current Policy Target allocation and NEPC's 2020 10-year return assumptions. FY 2019-20 investment return is estimated to be 1.3%.

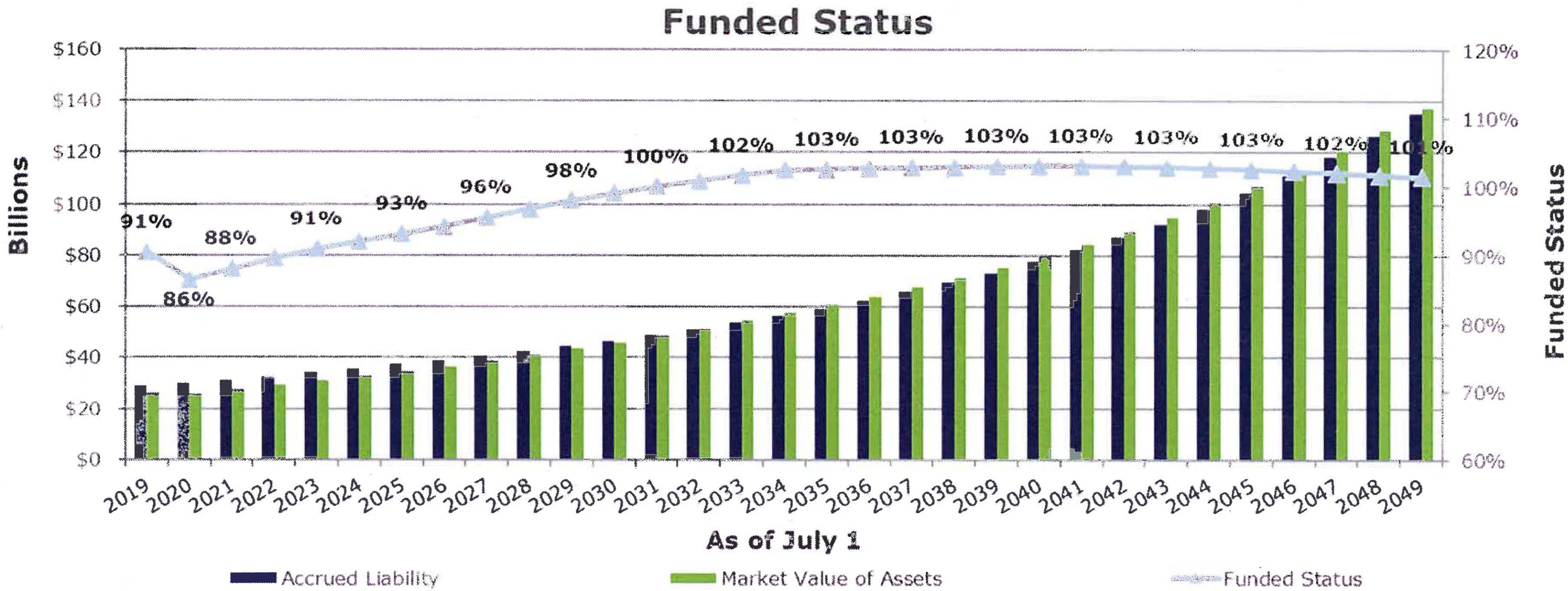
MEDIUM-TERM EXPECTATIONS



- **Benefit payments outweigh total contributions, creating a negative cash flow for the plan**
  - Difference must be made up through investment returns or additional contributions
- **Net cash outflows grow from 2.0% to 2.9% over the next 10 years**
  - A typical range for pension plans, presenting no unusual liquidity issues
- **Benefit payments average 6.5% of Market Value of Assets over the next ten years**

Deterministic projections based on Current Policy Target allocation and NEPC's 2020 10-year return assumptions. FY 2019-2020 investment return is estimated to be 1.3%

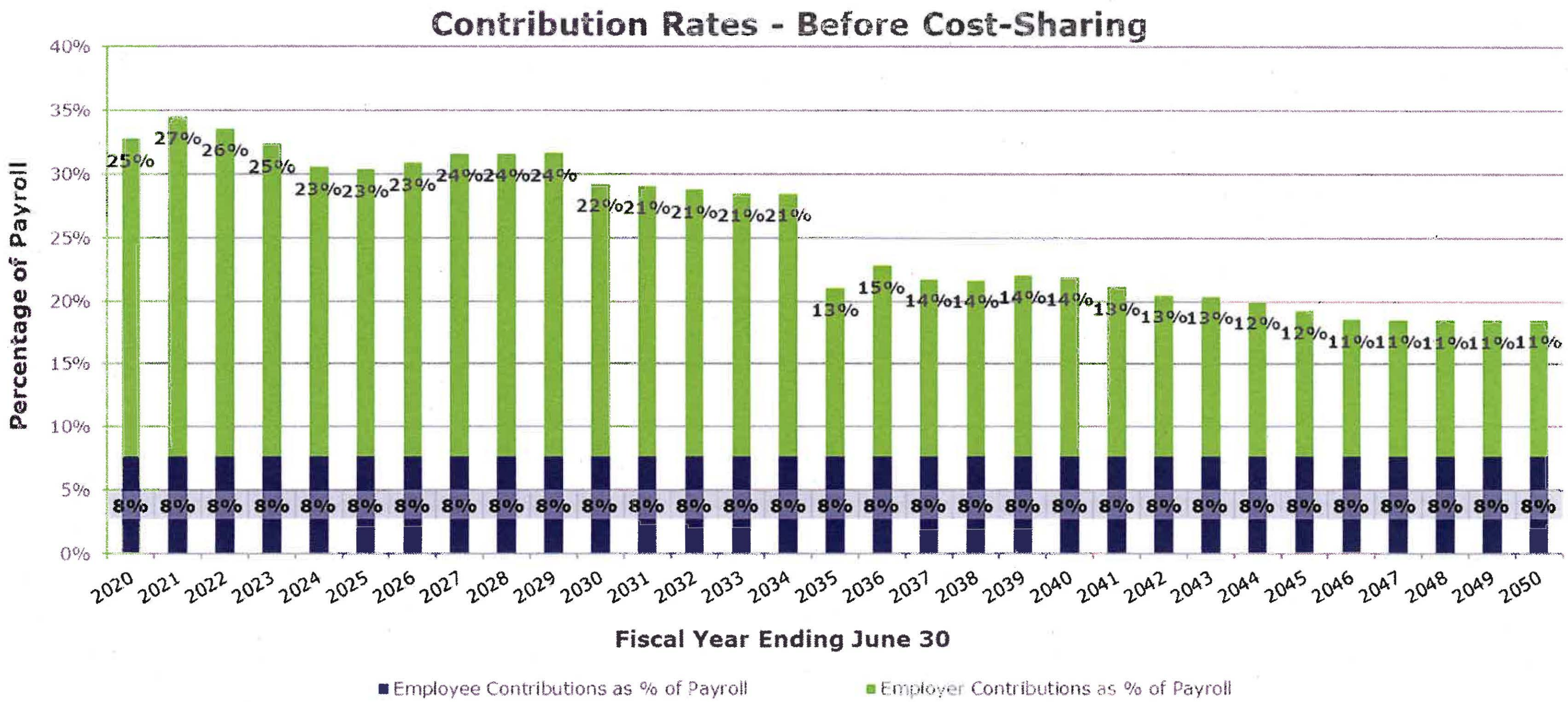
LONG-TERM EXPECTATIONS



- **After a drop in 2020, the funded status of the pension system is projected to increase steadily over the next 15 years to level out at 103%**
  - Funded Status = Market Value of Assets / Accrued Liability
- **Market value of assets assumed to return 8.1%, NEPC's 30-year expected return forecast for SFERS**
  - Average annual increase in Market Value of assets is 5.6%
- **Liabilities are estimated to grow at an average pace of 5.2% per year**
  - Discount rate assumed to remain level at 7.4%

Deterministic projections based on Current Policy Target allocation and NEPC's 2020 30-year return assumptions. FY 2019-2020 investment return is estimated to be 1.3%

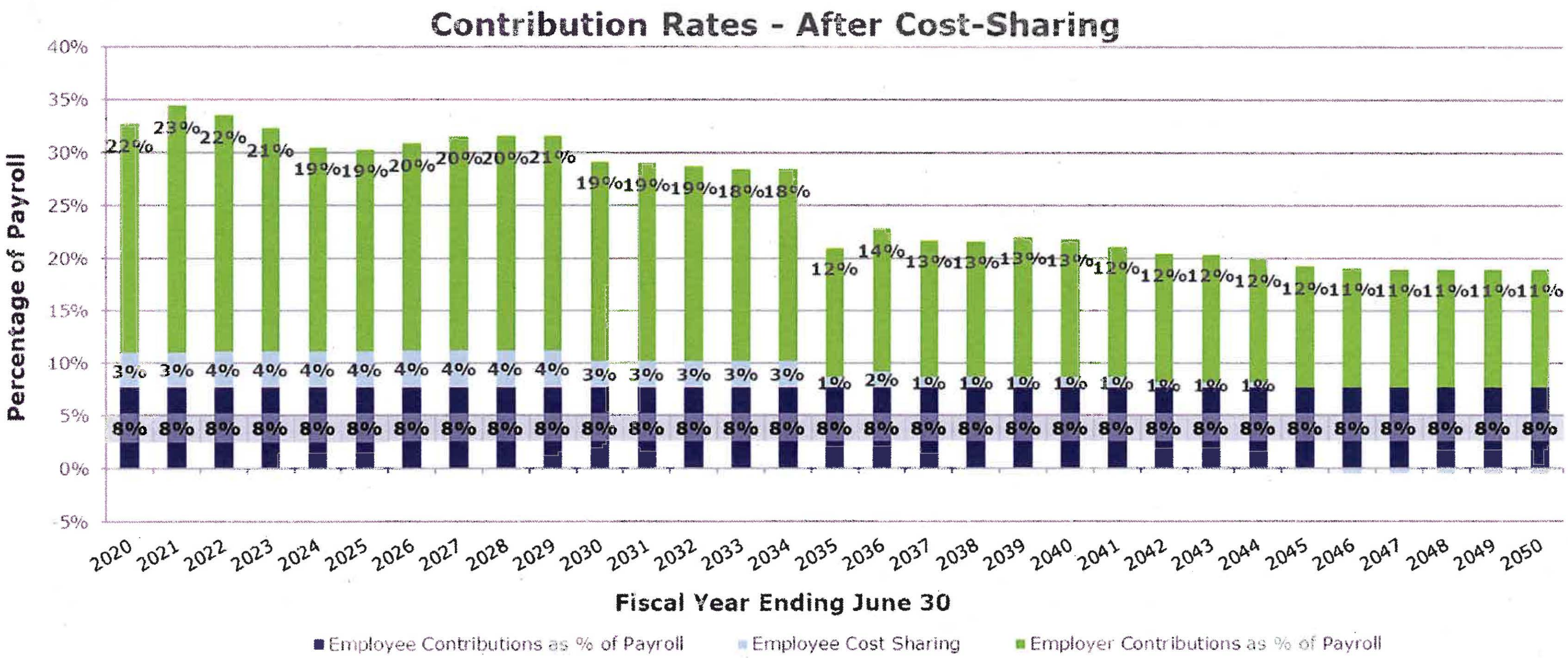
LONG-TERM EXPECTATIONS



- **Projected contributions are shown prior to any cost-sharing adjustments**
- **Assuming an 8.1% investment return, Employer contributions are projected to hover between 23% and 27% over the next nine years, then drop to 21% for five years, then drop to 11% to 15% from there**
  - Drops in contributions correspond to various gain or loss bases becoming fully amortized
- **Contributions increase to a higher percentage than under the medium-term assumptions since more Supplemental COLAs are assumed to be paid under the higher 30-year return assumption**

Deterministic projections based on Current Policy Target allocation and NEPC's 2020 30-year return assumptions. FY 2019-2020 investment return is estimated to be 1.3%

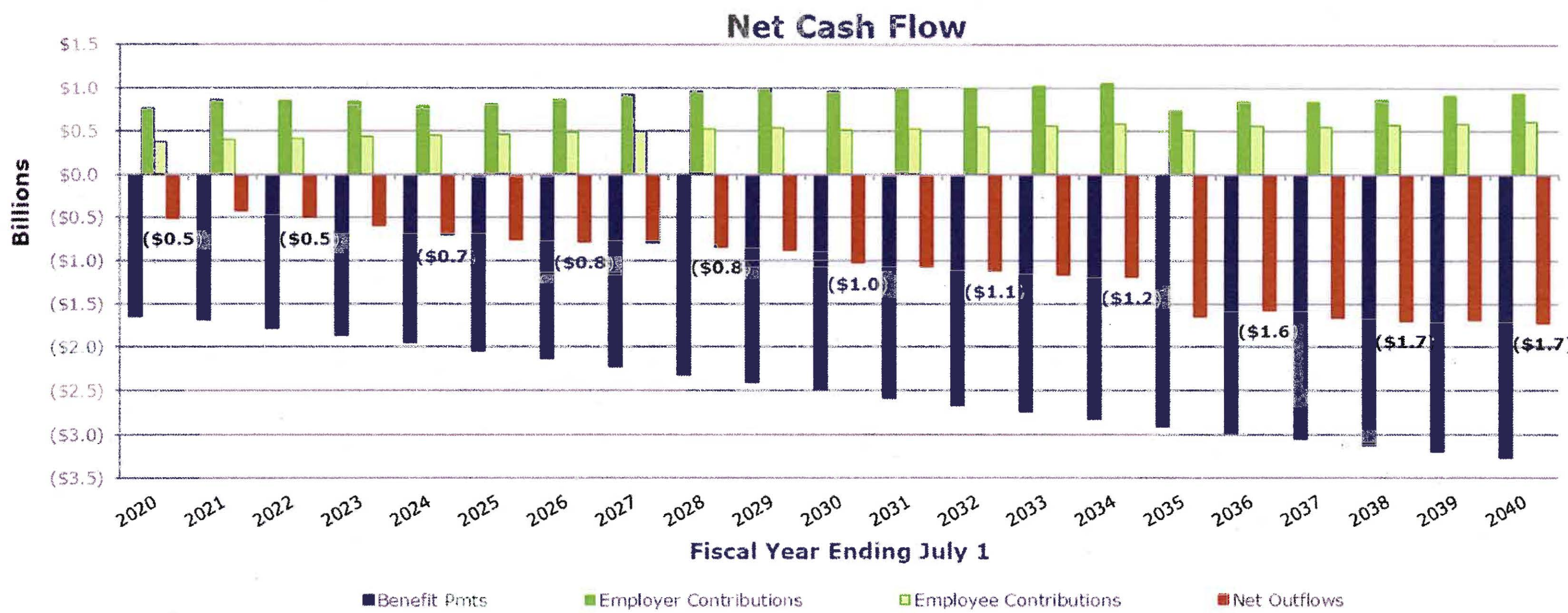
LONG-TERM EXPECTATIONS



- **Projected contributions reflect current cost-sharing provisions, which transfer some of the Employer contribution percentage to the Employees**
- **Assuming an 8.1% investment return, employer contributions are projected to hover between 19% and 23%, then decline in 2030 to 18% or 19%, then decline again in 2035 to around 12% and level out around 11% of payroll**
- **Employee contributions are projected to decline as well back to pre-cost sharing levels in the later years of the projection**

Deterministic projections based on Current Policy Target allocation and NEPC's 2020 30-year return assumptions. FY 2019-2020 investment return is estimated to be 1.3%

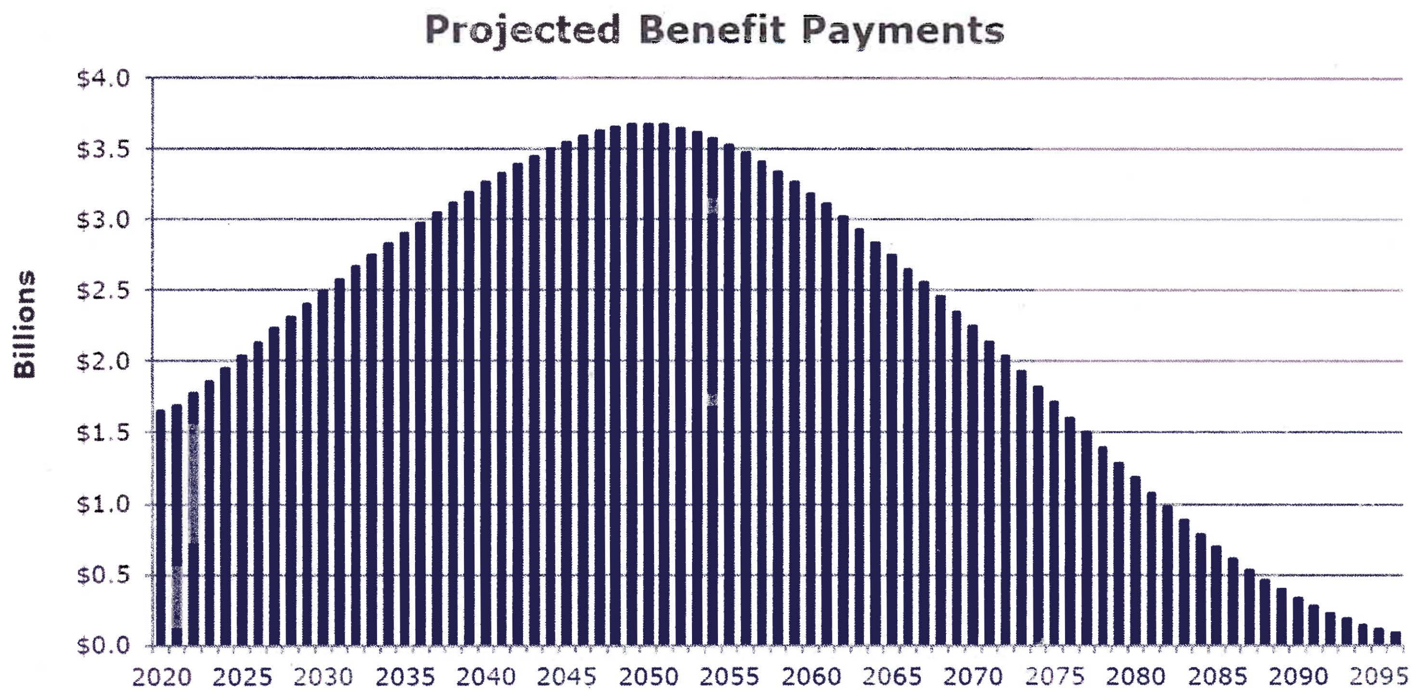
LONG-TERM EXPECTATIONS



- **Benefit payments outweigh total contributions, creating a negative cash flow for the plan**
  - Difference must be made up through investment returns
- **Average annual negative cashflow is $1.1 billion over 20 years**
- **Projection assumes a long-term investment return of 8.1%**

Deterministic projections based on Current Policy Target allocation and NEPC's 2020 30-year return assumptions. FY 2019-2020 investment return is estimated to be 1.3%

PROJECTED BENEFIT PAYMENTS



- **Closed group benefit payments are projected to increase from $1.65 billion per year to $3.68 billion at their peak in 2050**

Source: Cheiron

SUMMARY OF CURRENT PROFILE

- **Current Policy Target allocation is not expected to meet plan objectives over the next 10 years**
  - Long-term plan expected return of 7.4% is not achieved with the 2020 assumptions of 7.1%, however it is met over 30 years with an expected return of 8.1%
  - Contributions are projected to remain at reasonable levels and decline over time

- **The funded status of the plan has fallen from 91% to 86% over the last fiscal year**
  - Funded status of the plan is expected to increase if expectations are met and recommended contributions are made

- **Adding leverage would increase the probability of improved funded status and lower contributions, although leverage may also amplify volatility**

- **Given these results, six alternate asset mixes have been presented for further discussion and analysis in the next section**
  - Increase overall equity exposure through additions to global and private equities
  - Reduce real assets and absolute return allocations
  - Add a dedicated allocation to GTAA for liquid tail-risk protection
  - Consider an exposure to Long Treasuries to potentially protect against market volatility
  - Explore the use of leverage to increase exposure to equity markets

ALTERNATIVE ALLOCATIONS

PROPOSED ASSET ALLOCATIONS

The goals of the proposed allocations are to achieve:

- Increased liquidity
- Better diversification and tail-risk protection
- Higher expected returns

The following allocations are modeled in the next few pages under various economic scenarios:

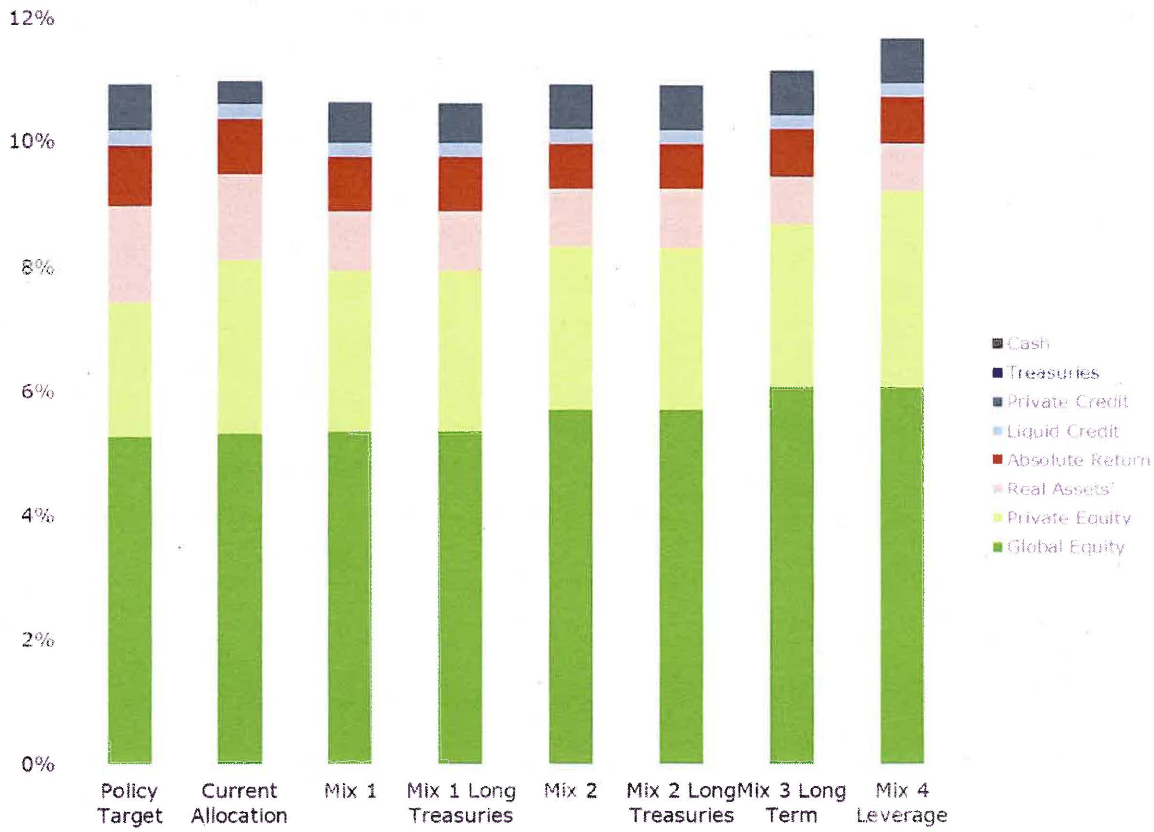
- **Mix 1**
  - Increase Private Equity from 18% to 20%, reduce real assets from 17% to 14%, reduce absolute return from 15% to 10%, slightly increase Liquid Credit from 3% to 4% and introduce GTAA allocation of 5% and 1% allocation to Cash
- **Mix 2**
  - Similar to Mix 1 with increase to Global Equity from 31% to 33%, GTAA allocation of 2%
  - Slight increase to both expected return and standard deviation
- **Mix 3 Long Term**
  - Further decrease Real Assets to 10%, increase Global Equity from 31% to 35%, increase Treasuries to 7% and GTAA allocation of 3%
- **Mix 4 Leverage**
  - Mix 4 Leverage allocation explores the use of leverage to increase exposure to public and private equity synthetically
  - Introduce 5% plan leverage, increase Public Equities to 35%, Private Equities to 24%, Treasuries to 7%, GTAA allocation of 3% and Cash at 2%
- **Long Treasuries**
  - Long Treasuries have been added to Mix 1 and 2 as alternative mixes
  - May provide protection in times of extreme market stress

ALTERNATE ALLOCATIONS

	Policy Target	Current Allocation	Mix 1	Mix 1 Long Treasuries	Mix 2	Mix 2 Long Treasuries	Mix 3 Long Term	Mix 4 Leverage
Global Equity	31%	33%	31%	31%	33%	33%	35%	35%
Private Equity	18%	22%	20%	20%	20%	20%	20%	24%
Total Growth/Capital Appreciation	**49%**	**55%**	**51%**	**51%**	**53%**	**53%**	**55%**	**59%**
Real Assets	17%	15%	14%	14%	14%	14%	10%	10%
Absolute Return	15%	14%	10%	10%	10%	10%	10%	10%
Total Diversifying Assets	**32%**	**29%**	**24%**	**24%**	**24%**	**24%**	**20%**	**20%**
Liquid Credit	3%	3%	4%	4%	4%	4%	4%	4%
Private Credit	10%	5%	9%	9%	10%	10%	10%	10%
Treasuries	6%	5%	6%	6%	6%	6%	7%	7%
GTAA/Defensive			5%	5%	2%	2%	3%	3%
Cash	0%	3%	1%	1%	1%	1%	1%	2%
Total Income/Capital Preservation	**19%**	**16%**	**25%**	**25%**	**23%**	**23%**	**25%**	**26%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**105%**
Expected Return 10 yrs	**7.1%**	**7.1%**	**7.1%**	**7.1%**	**7.1%**	**7.1%**	**7.1%**	**7.4%**
Expected Return 30 yrs	**8.1%**	**8.2%**	**8.1%**	**8.1%**	**8.2%**	**8.2%**	**8.1%**	**8.5%**
Standard Deviation	**10.9%**	**10.9%**	**10.6%**	**10.6%**	**10.9%**	**10.9%**	**11.1%**	**11.6%**
Sharpe Ratio (10 years)	**0.48**	**0.48**	**0.50**	**0.50**	**0.49**	**0.49**	**0.47**	**0.48**
Sharpe Ratio (30 years)	**0.53**	**0.53**	**0.54**	**0.54**	**0.53**	**0.53**	**0.52**	**0.52**
Probability of 1-Year Return Under 0%	**26%**	**26%**	**25%**	**25%**	**26%**	**26%**	**26%**	**26%**
Probability of 10-Year Return Under 0%	**2%**	**2%**	**2%**	**2%**	**2%**	**2%**	**2%**	**2%**
Probability of 10-Year Return Under 7.4%	**54%**	**54%**	**54%**	**53%**	**53%**	**53%**	**54%**	**50%**
Probability of 30-Year Return Under 7.4%	**35%**	**35%**	**35%**	**35%**	**35%**	**35%**	**36%**	**31%**
Liquidity Ratios								
LCR - Base Case	**2.12**	**2.14**	**2.16**	**2.16**	**2.14**	**2.14**	**2.23**	**2.14**
MLCR - Base Case	**1.05**	**1.09**	**1.19**	**1.19**	**1.13**	**1.13**	**1.17**	**1.08**

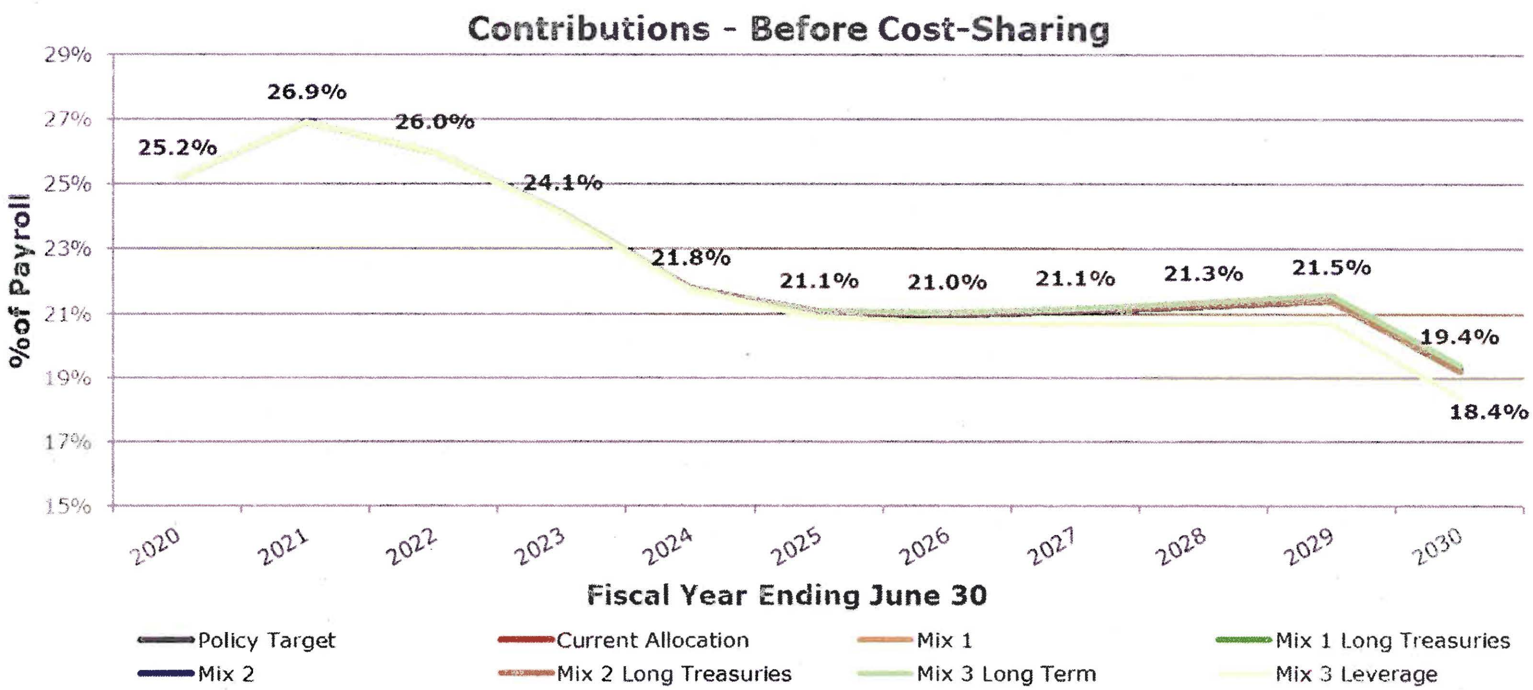
***Smoothed volatility uses historical realized asset class volatility in private market asset classes and is incorporated into Sharpe Ratio estimates*

RISK ANALYSIS



- **Asset volatility is measured by standard deviation of expected returns**
- **Public and private equity have the greatest contribution to portfolio volatility, while diversification of asset classes serves to reduce overall volatility**
- **Both Mix 1 allocations decrease asset volatility, while adding leverage to the portfolio increases overall plan risk**

MEDIUM-TERM EXPECTATIONS



- **Mix 4 Leverage results in lower medium-term employer contribution rate of 18.4% vs. 19.4% for all other asset allocation Mixes**

Deterministic projections based on Current Policy Target allocation and NEPC's 2020 10-year return assumptions. FY 2019-2020 investment return is estimated to be 1.3%