INVESTMENT ARCHITECTURE UPDATE

DELAWARE OFFICE OF THE TREASURER & CASH MANAGEMENT POLICY BOARD

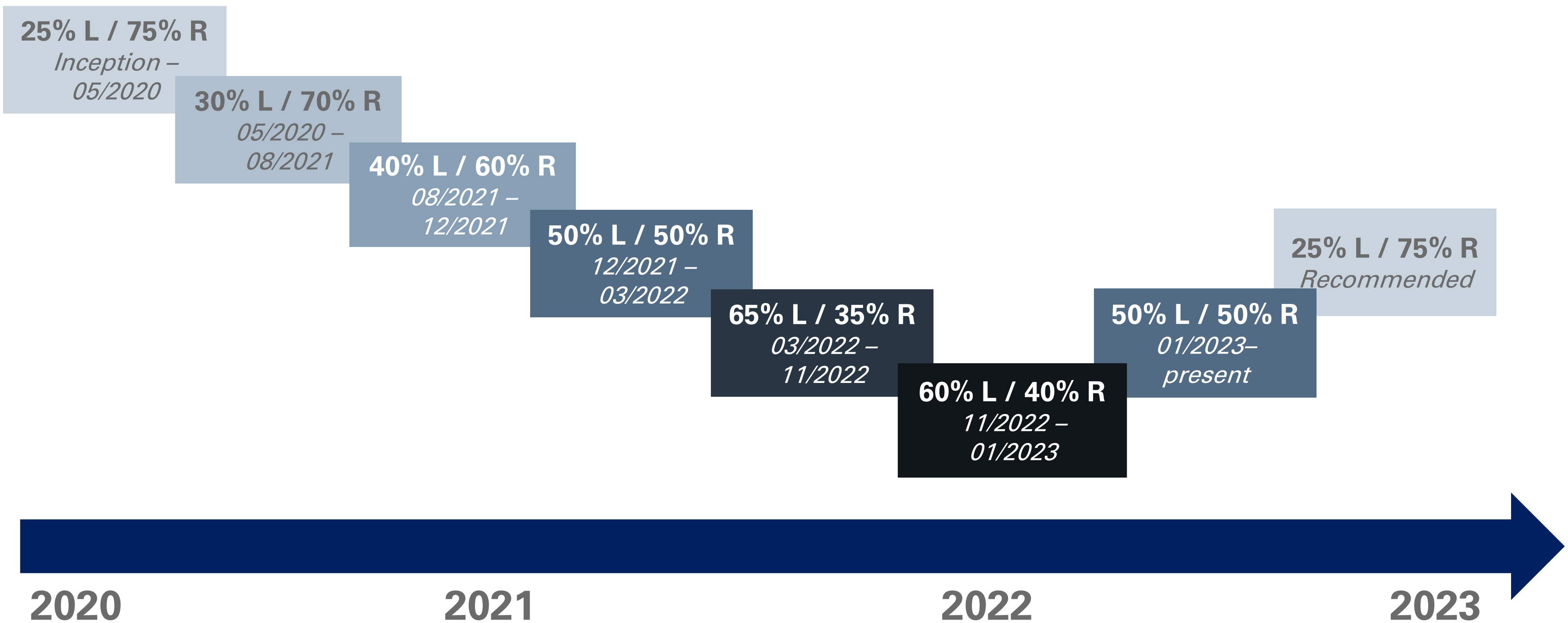
APRIL 2023

Jennifer Appel, CFA, Sr. Investment Director
Kevin M. Leonard, Partner
Alexandra Sollers, CFA, Consultant

ADJUSTMENTS TO THE ARCHITECTURE

- **The unprecedented volatility and interest rate uncertainty stemming from the COVID-19 pandemic caused the Board, with OST staff and NEPC support, to increase allocations to Liquidity in 2020 and 2021**

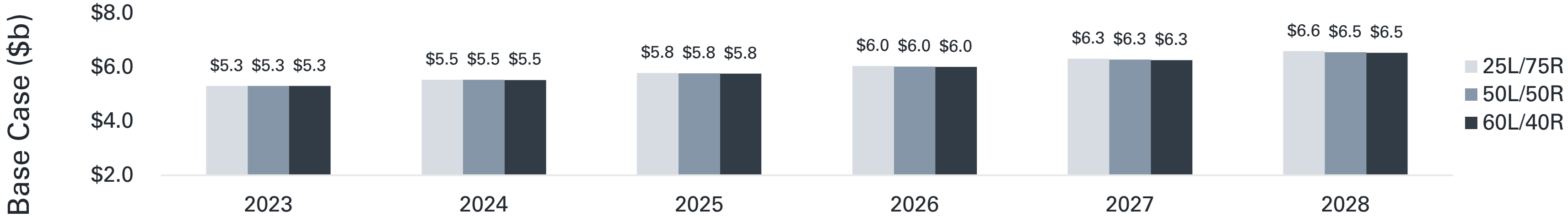
- **Market expectations imply that we are close to peak Fed Funds rate, suggesting an increase in the Reserve allocation is appropriate**

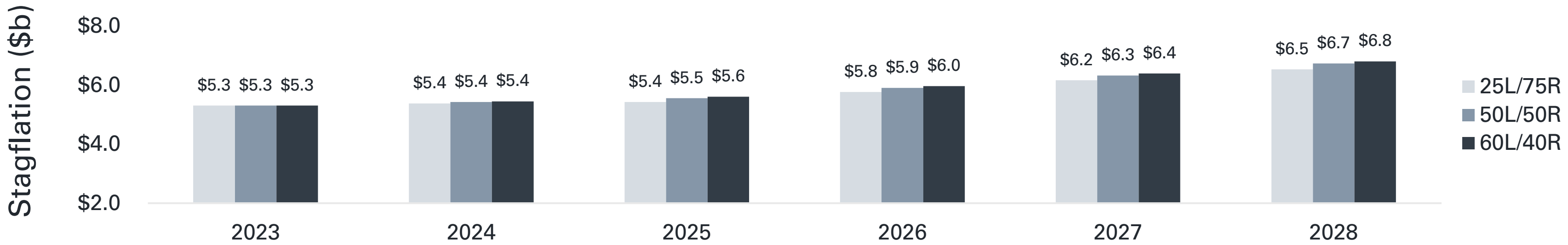


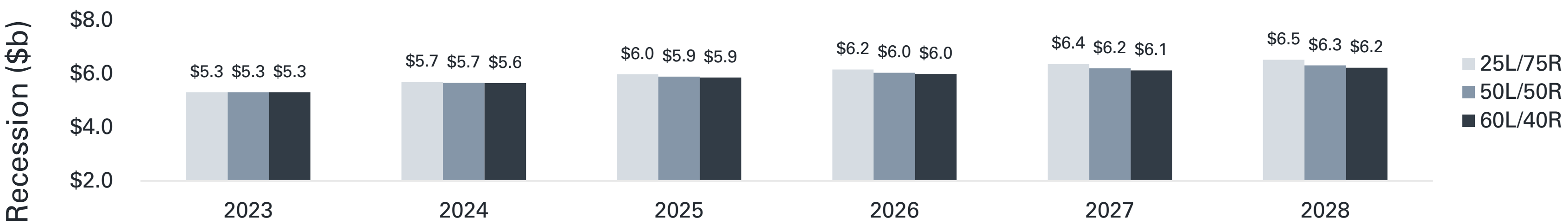
Notes: L = Liquidity Portfolio, R = Reserve Portfolio

FORWARD-LOOKING SCENARIO ANALYSIS

- **NEPC prepared a scenario analysis to assess the impact of higher interest rates and/or inflation on the Liquidity and Reserve portfolios**
  - NEPC's scenario analysis highlights the impact of shifting economic and market regimes on the portfolio and potential asset allocation mixes



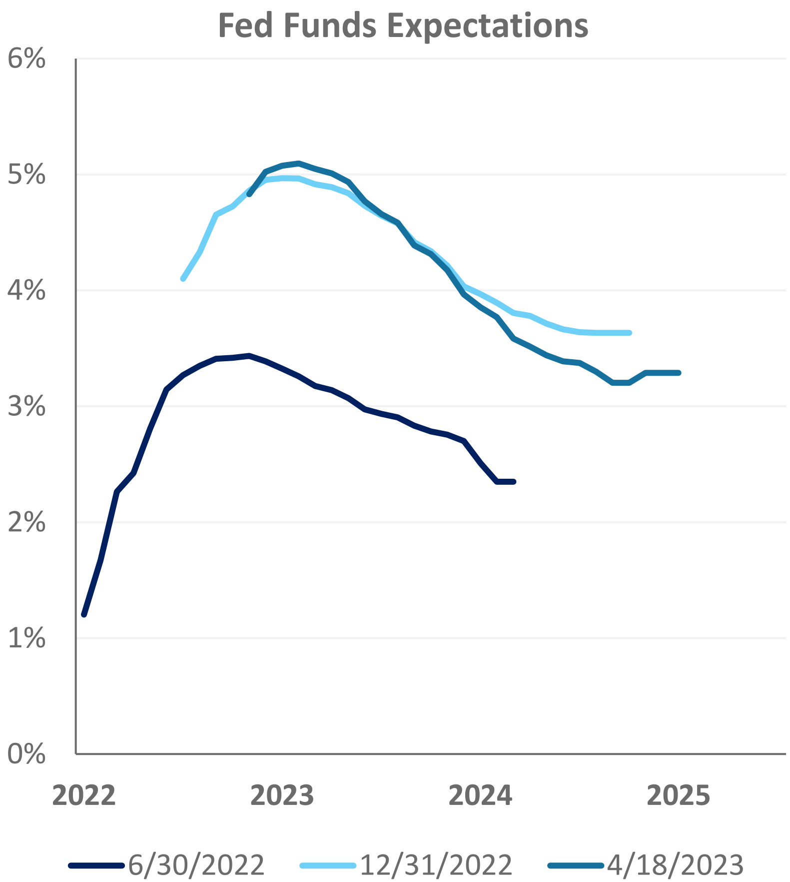




Asset assumptions as of 3/31/23.
Starting market values as of 3/31/23.

INTEREST RATE EXPECTATIONS

THE PATH FORWARD



- **Market expectations for the Fed Funds rate reflect broad recession concerns**
  - Pricing anticipates interest rates will fall by 1% through the end of 2023
- **Messaging by the Federal Reserve has indicated a tighter policy environment is here to stay amid still-elevated inflation pressures**
- **NEPC believes the Fed will maintain its tightening bias and that rates may remain at a level higher than current market pricing suggests**

Source: FactSet

CONCLUSIONS

- **The scenario analysis shows a small dispersion among various Liquidity and Reserve mixes**
  - Higher allocations to the Liquidity portfolio will outperform during rising rate environments, while the Reserve portfolio will outperform during times of stagnant or falling interest rates and credit spreads
  - The macroeconomic environment remains uncertain, but current data and Fed messaging reflect a tighter policy environment for the foreseeable future
- **NEPC recommends shifting to 25% Liquidity / 75% Reserve, which moves the portfolio in line with the original architecture framework**
  - A higher allocation to the Reserve portfolio will more effectively exploit the higher yield environment and the slightly longer duration profile will benefit disproportionately in the event of a recession
  - We encourage capitalizing on cash inflows that may present organic rebalancing opportunities, without realizing losses in the portfolio
- **While the market conditions stemming from the pandemic are unlikely to be repeated, we believe the state's Liquidity-Reserve allocations should be nimble during times of unprecedented market volatility**

APPENDIX

SCENARIO ANALYSIS: REGIME CHANGES

NEPC scenario analysis highlights the impact of shifting economic and market regimes on the portfolio and potential asset allocation mixes

- Risk asset returns are informed by credit returns which are based on changes in real rate, inflation, and credit spreads experienced across market regimes

Scenario	Description
Base Case	Reflects NEPC's Capital Market Assumptions, which assume interest rates continue to normalize and credit spreads revert to long-term medians
Stagflation	Informed by rising interest rates, rising inflation, depressed negative real rates, spread widening, and slowing growth
Recession	Informed by depressed interest rate levels, falling inflation, depressed positive real rates, spread widening and slowing growth

SCENARIO ANALYSIS DETAILS

5-Year Geometric Return

Base Case	Cash: 4.0% U.S. Treasury Bonds: 4.2% U.S. Corporate Bonds: 5.9%
Stagflation	Cash: 6.4% U.S. Treasury Bonds: 2.6% U.S. Corporate Bonds: 3.1%
Recession	Cash: 1.2% U.S. Treasury Bonds: 5.0% U.S. Corporate Bonds: 7.3%

NEPC DISCLOSURES

Past performance is no guarantee of future results.

All investments carry some level of risk. Diversification and other asset allocation techniques do not ensure profit or protect against losses.

Some of the information presented herein has been obtained from external sources NEPC believes to be reliable. While NEPC has exercised reasonable professional care in preparing this content, we cannot guarantee the accuracy of all source information contained within.

The opinions presented herein represent the good faith views of NEPC as of the publication date and are subject to change at any time.

This presentation contains summary information regarding the investment management approaches described herein but is not a complete description of the investment objectives, portfolio management and research that supports these approaches. This analysis does not constitute a recommendation to implement any of the aforementioned approaches.