INVESTMENT ARCHITECTURE ANALYSIS

DELAWARE OFFICE OF THE TREASURER & CASH MANAGEMENT POLICY BOARD

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OPENING THOUGHTS

- **Following adjustments to the Liquidity and Reserve accounts over the last few years, NEPC offered to conduct an investment architecture analysis to present at the September Board meeting**

- **After four years under the investment architecture framework, portfolio performance and cash flow needs continue to support the methodology for the State's funds**

- **Expectations of a continued tighter monetary policy environment may present a challenging environment for all investors**

- **While NEPC acknowledges the efficacy of the "tiered" investment architecture, we remain concerned about the uncertain path for interest rates going forward**
  - We recommend the target allocation be maintained at 65% Liquidity / 35% Reserve given the expected interest rate volatility and the potential for realized losses that may be incurred during another allocation adjustment

INVESTMENT ARCHITECTURE BACKGROUND

- **In 2017, the Board considered adopting a new investment architecture given the stability of the balances between the Liquidity and Reserve accounts historically**

- **NEPC prepared various liquidity analyses to help determine the appropriate structure for the portfolio, acknowledging the state's anticipated and unanticipated cash flow needs**

- **The Board adopted a new investment architecture that adjusted the split between Liquidity and Reserve accounts and introduced a "tiered" approach to longer-dated funds**
  - Liquidity funds would be consolidated into fewer managers and be used to handle the seasonal cash flow profile of the State's funds
  - Reserve funds would use a tiered duration mandate that enhances the risk-return profile of the portfolio through a longer duration and credit mandate

THE NEW INVESTMENT ARCHITECTURE

"Old" Architecture

50% Liquidity	Benchmark Proxy
Manager L1	75% 6-M T-Bills / 25% 1-3 Year Gov/Corp A+
Manager L2	75% 6-M T-Bills / 25% 1-3 Year Gov/Corp A+
Manager L3	75% 6-M T-Bills / 25% 1-3 Year Gov/Corp A+
Manager L4	75% 6-M T-Bills / 25% 1-3 Year Gov/Corp A+

50% Reserve	Benchmark Proxy
Manager R1	75% 1-3 Year Gov/Corp A+ / 25% 6-M T-Bills
Manager R2	75% 1-3 Year Gov/Corp A+ / 25% 6-M T-Bills
Manager R3	75% 1-3 Year Gov/Corp A+ / 25% 6-M T-Bills
Manager R4	75% 1-3 Year Gov/Corp A+ / 25% 6-M T-Bills

Total Portfolio:
Duration: 1.19
Yield: 0.97%

"New" Architecture

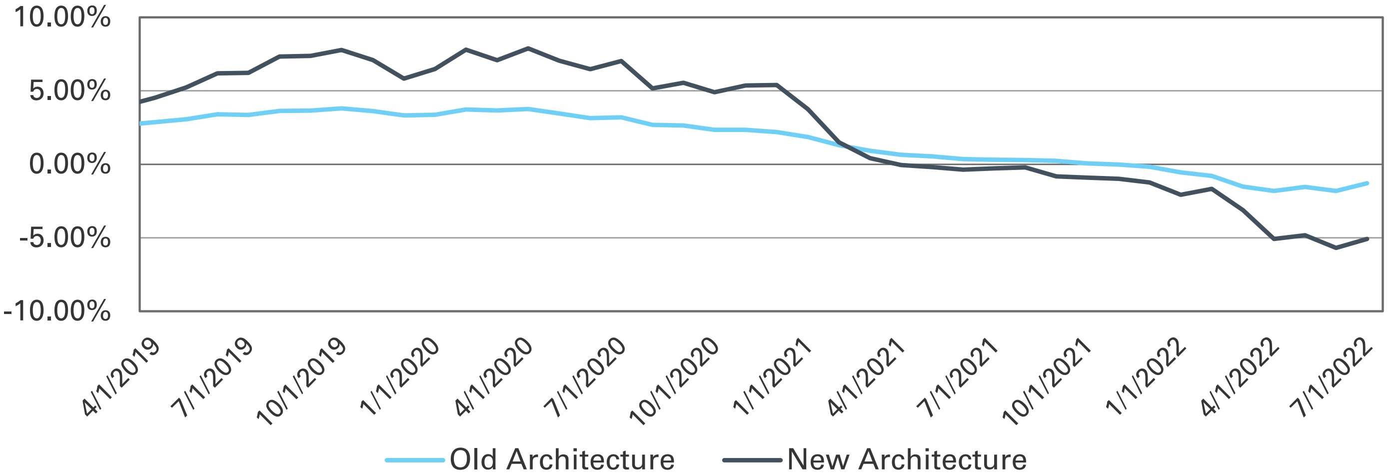
25% Liquidity	Benchmark Proxy
Manager L1	75% 6-M T-Bills / 25% 1-3 Year Gov/Corp A+
Manager L2	75% 6-M T-Bills / 25% 1-3 Year Gov/Corp A+

75% Reserve	Benchmark Proxy
Manager R1	1-3 Year Gov/Corp A+
Manager R2	1-5 Year Gov/Corp A+
Manager R3	5-10 Year Gov/Corp A+
Manager R4	5-10 Year Gov/Corp A+

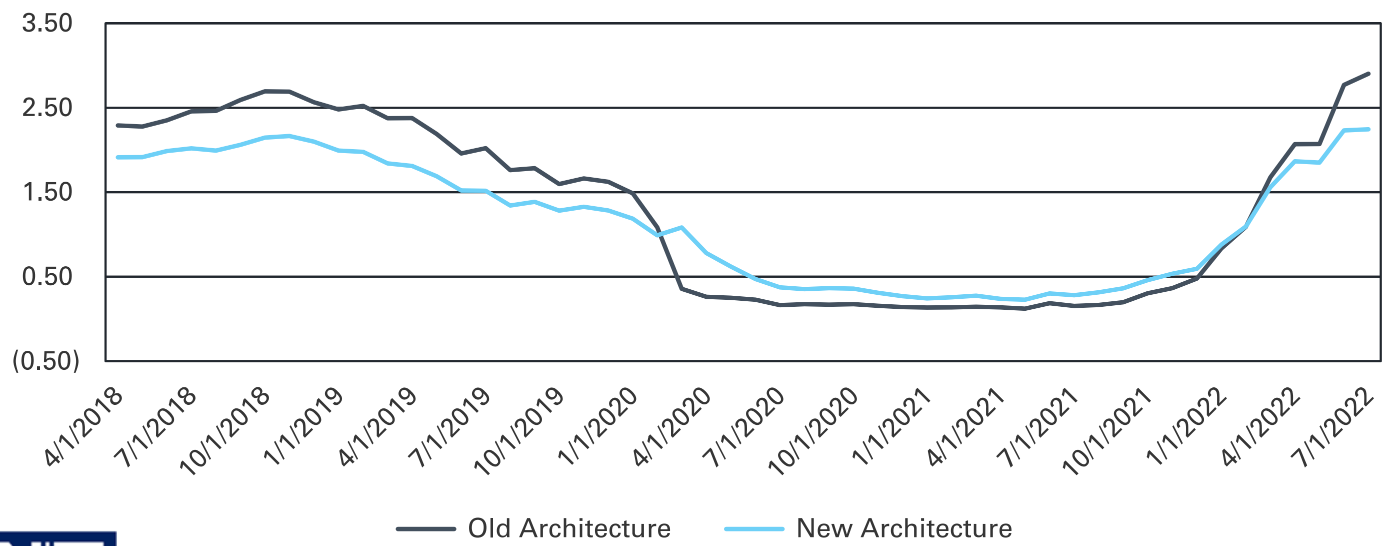
Total Portfolio:
Duration: 4.34
Yield: 1.62%

THE NEW INVESTMENT ARCHITECTURE

Rolling 1-Year Returns



Estimated Yield



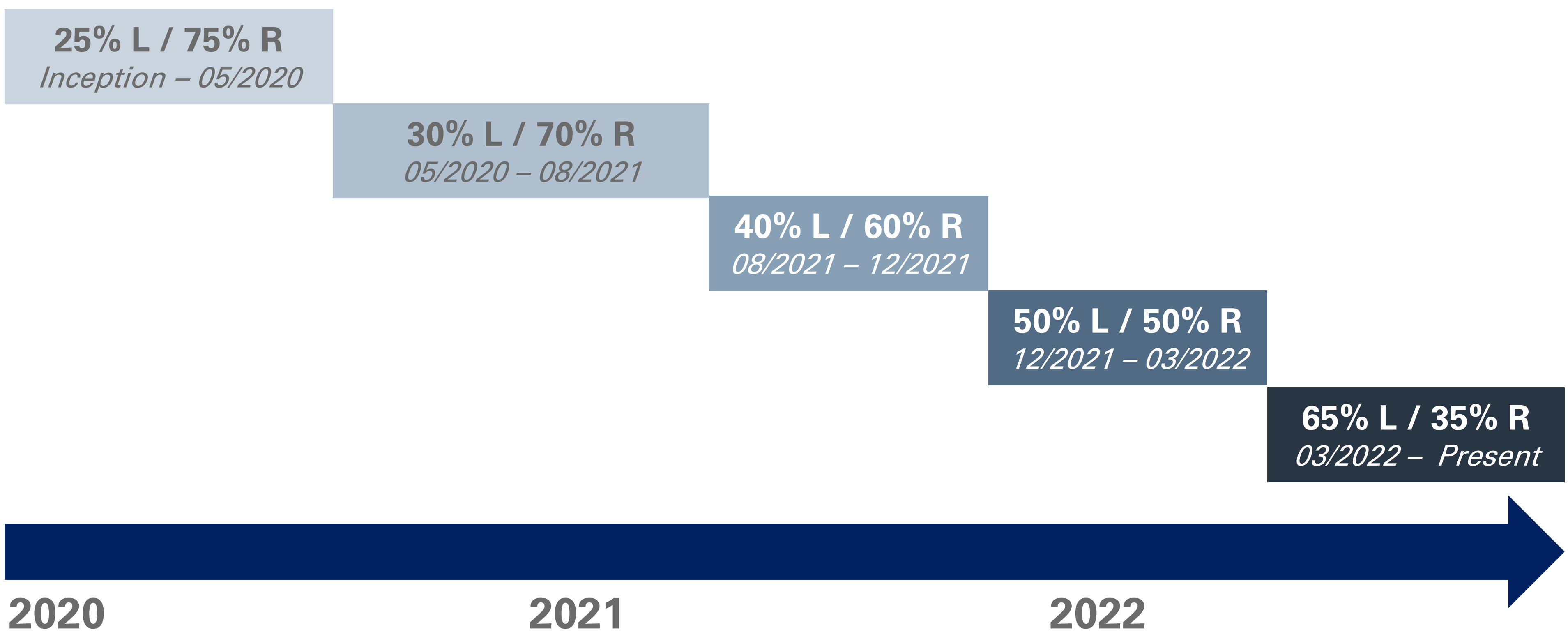
The old architecture experienced a multi-year period of underperformance as interest rates remained low.

The recent Fed rate hiking cycle has led to underperformance of the new architecture given the extended duration and credit profile.

Source: Evestment, FactSet

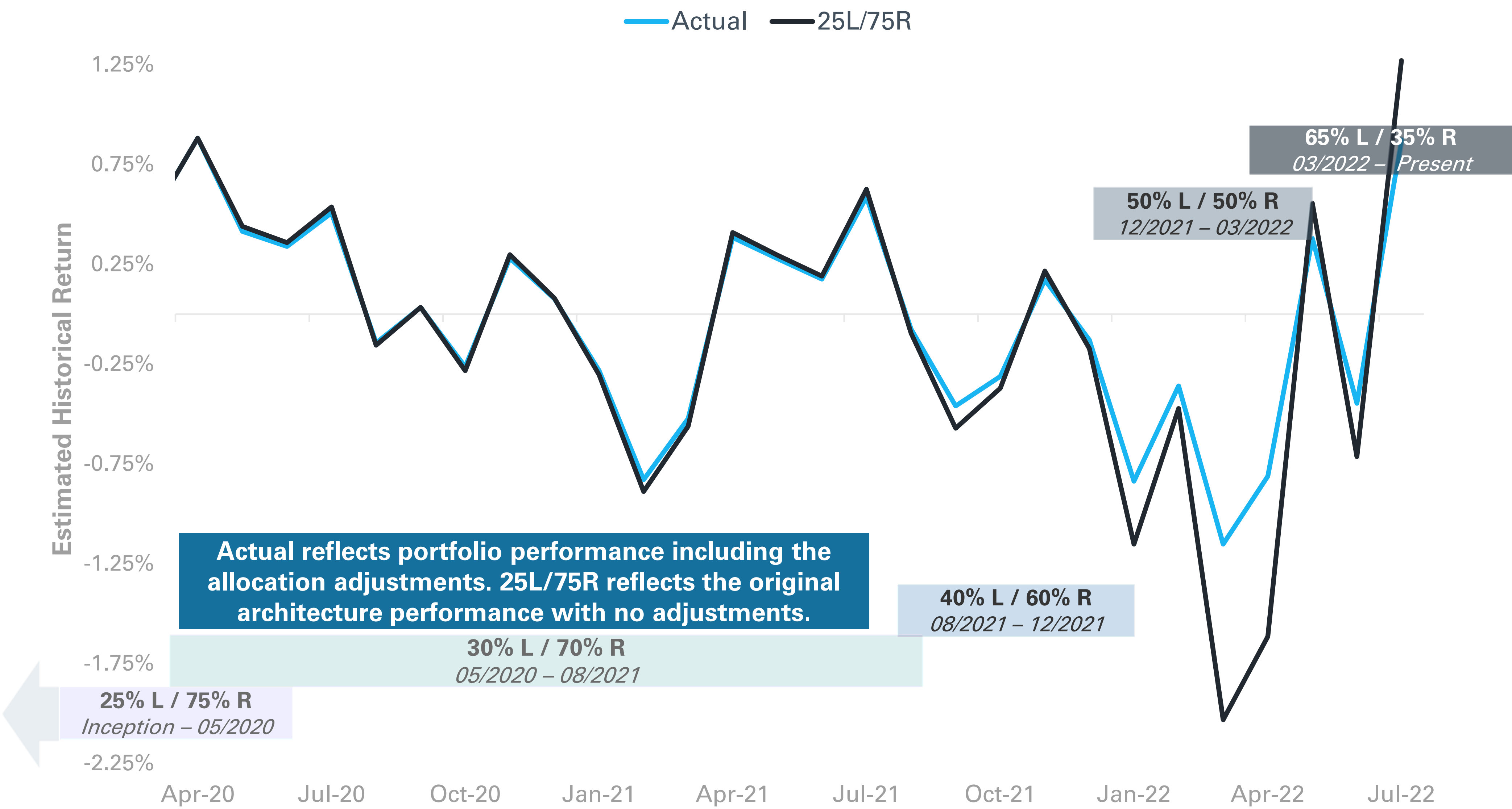
ADJUSTMENTS TO THE ARCHITECTURE

- **The economic and market disruption associated with the COVID-19 pandemic warranted discussion around the Liquidity/Reserve split**
  - The unprecedented volatility and uncertainty with interest rates caused the Board, with OST staff and NEPC support, to increase allocations to Liquidity



Notes: L = Liquidity Portfolio, R = Reserve Portfolio

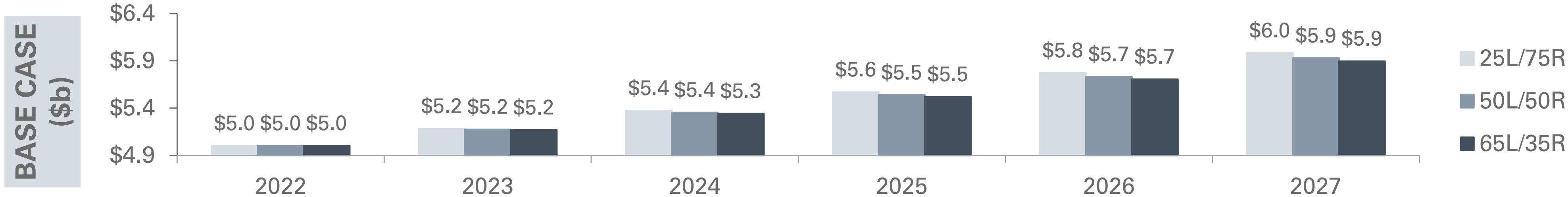
EVALUATING THE ADJUSTMENTS

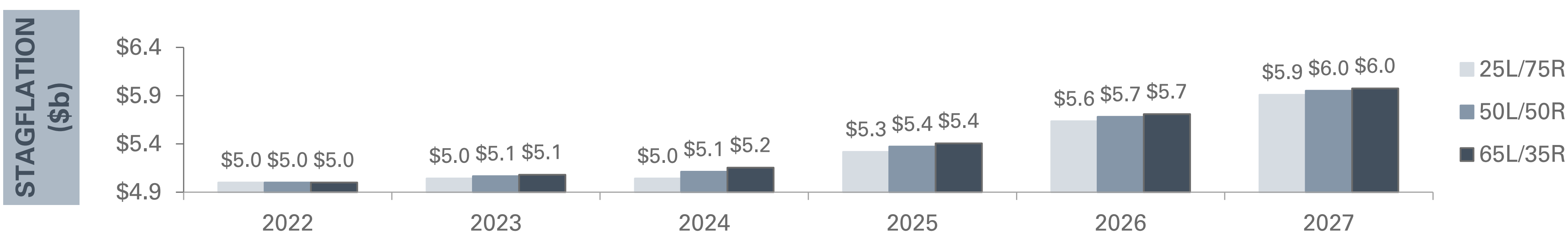


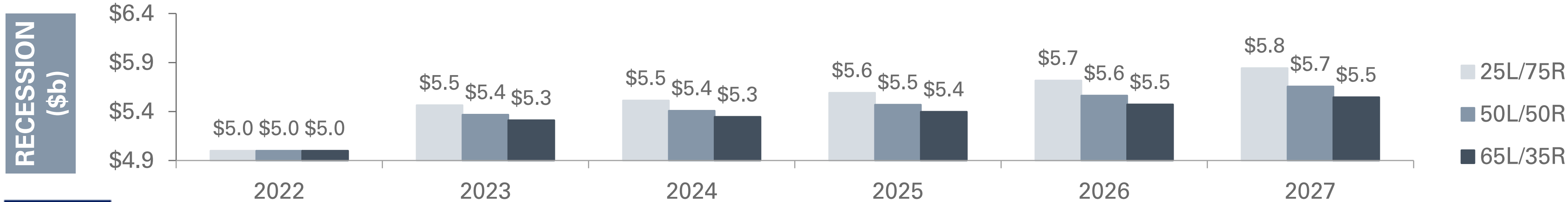
SCENARIO ANALYSIS

THE PATH FORWARD

- **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

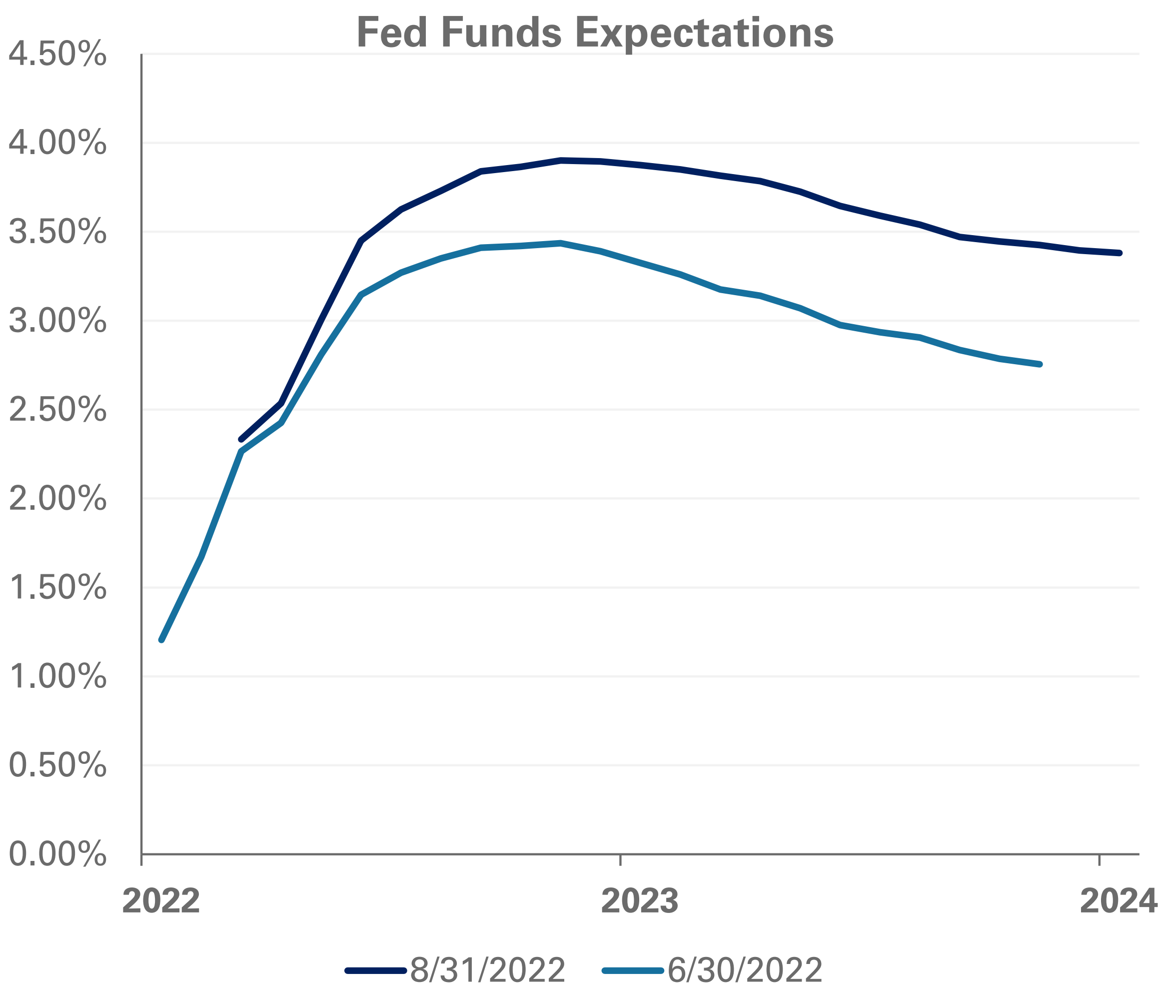






INTEREST RATE EXPECTATIONS

THE PATH FORWARD



"Restoring price stability will likely require maintaining a restrictive policy stance for some time." – Jerome Powell, August 2022

In the face of persistent inflation pressures, NEPC believes the Fed will maintain a tightening bias and continue hiking interest rates into a weakening economy.

Source: FactSet

CONCLUSIONS

- **The scenario analysis shows a small dispersion among various Liquidity and Reserve mixes**
  - Concerns about rising interest rates and elevated inflation, which are best reflected in the Stagflation scenario, suggest maintaining the outsized Liquidity allocation may be appropriate

- **NEPC recommends maintaining the current 65% Liquidity / 35% Reserve blend to offer continued protection from rising rates without sacrificing meaningful returns**

- **Additionally, we recommend the portfolio's long-term goal still be the original 25% Liquidity / 75% Reserve allocation and the State should consider adjusting once the volatile interest rate environment subsides**
  - A move back to the original architecture framework will continue to provide for the State's cash flow needs, while generating a more attractive yield profile than the current allocation

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Past performance is no guarantee of future results.

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