



The Impact of Higher Interest Rates and Arbitrage Rebate Considerations on Bond Proceeds Investment Strategies

Structured Products Group

Matthew Eisel, CFA, Managing Director

John Crotty, Director

Sarah Good, Senior Managing Consultant

November 14, 2025

PFM Financial Advisors LLC
pfm.com

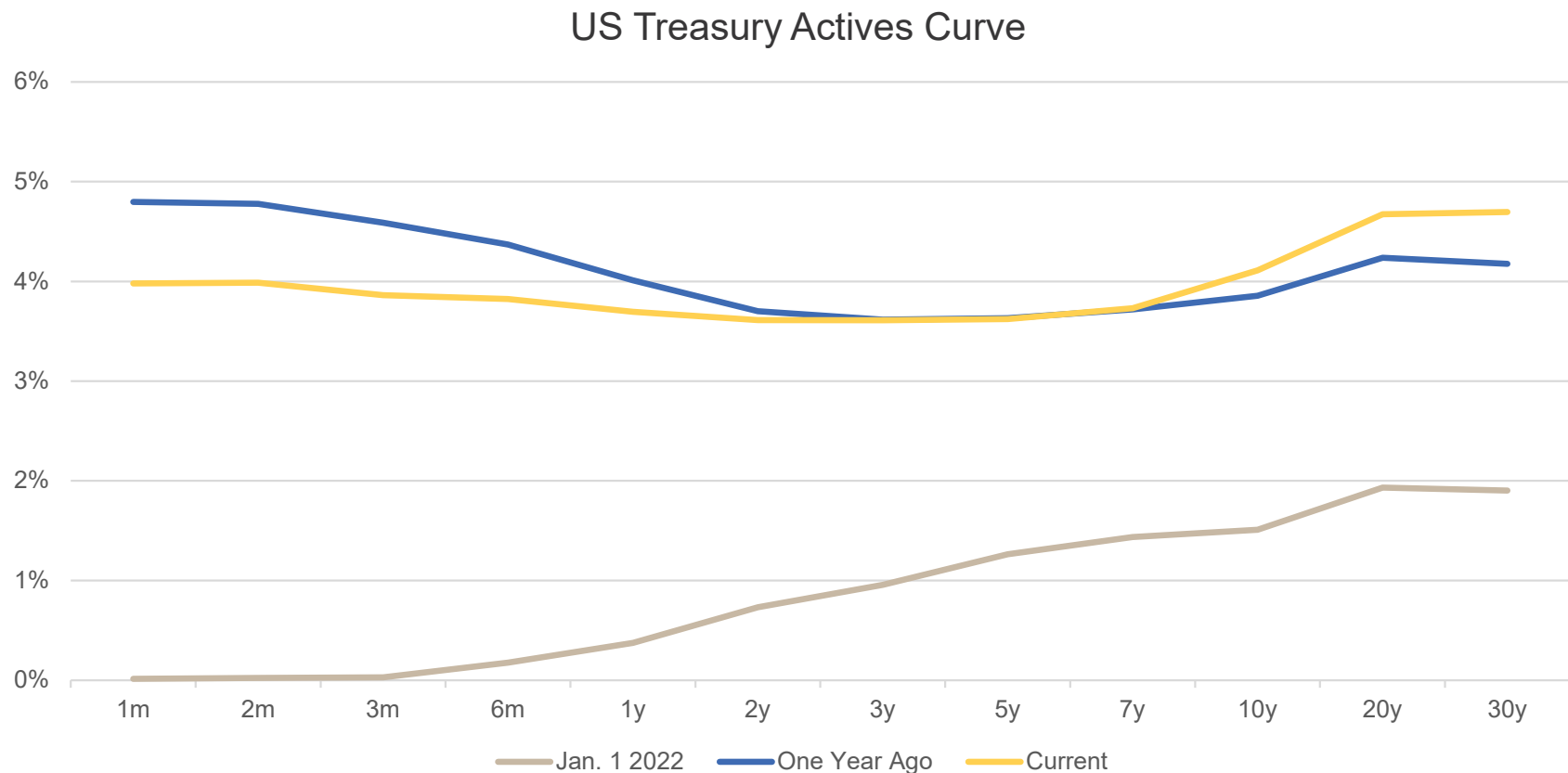
1735 Market Street
42nd Floor
Philadelphia, PA 19103
(215) 567-6100

pfm.com



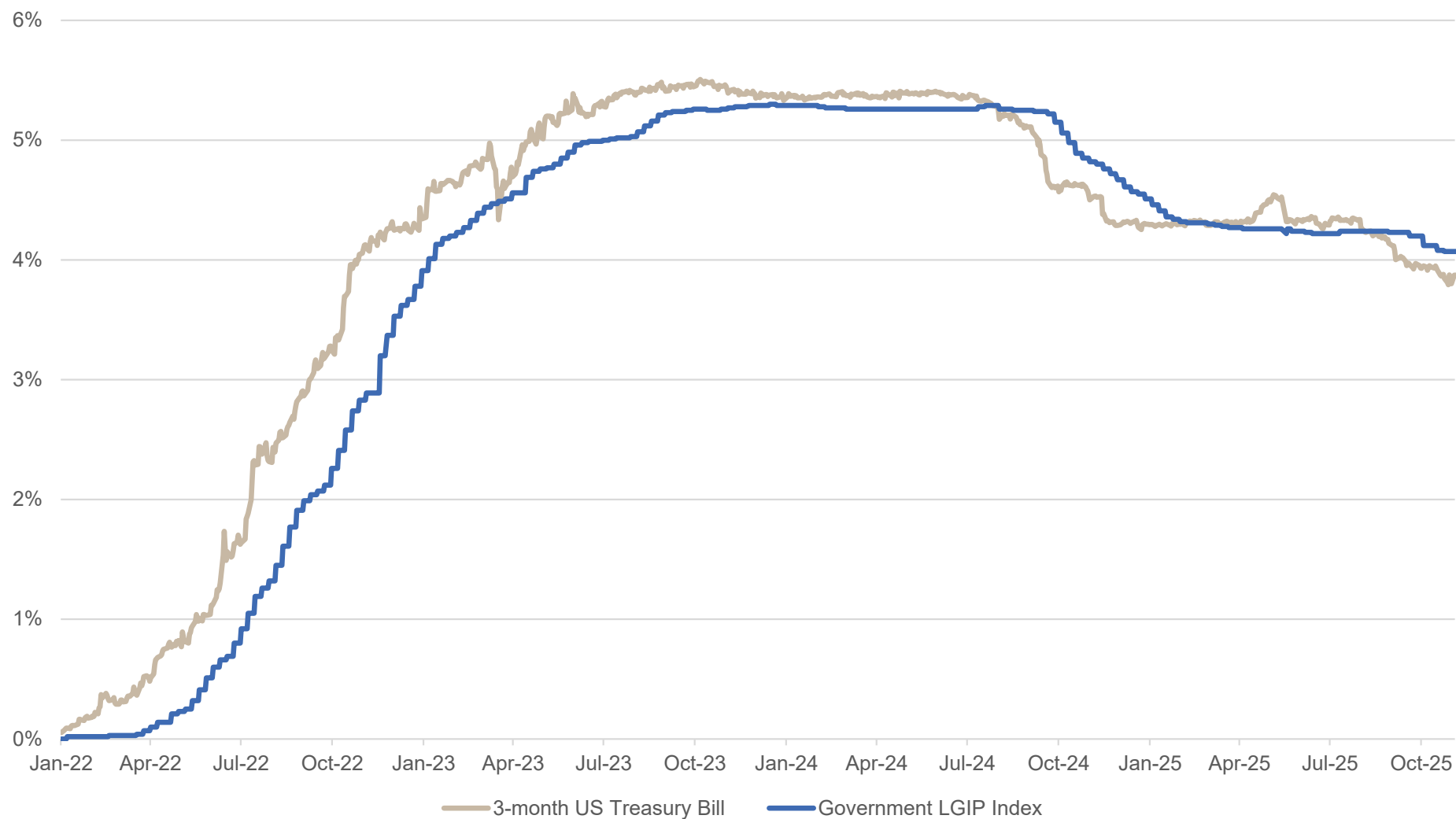
Overview of the Current Interest Rate Environment

- While interest rates have dropped over the past year, they are still reasonably high
- As of January 1, 2022, short-term rates were essentially zero, and the yield curve was upward sloping (normal)





Short-Term U.S. Treasuries vs Government LGIP Index



Slide 3

GP1

Check LGIP index data from October 24 and update to today

Gianna Paglia, 2025-10-28T20:34:11.084



Bond Proceeds Investments in the Current Interest Rate Environment

- Bond proceeds accounts differ in a wide variety of ways including:
 - Purpose of the fund
 - Time horizon
 - Arbitrage rebate and yield restriction considerations

| Account | Typical Fund Maturity | Typical Duration | Investment Yields | GP1 | Arbitrage Condition |
|-----------------------------|-----------------------|------------------|-------------------|-----|-------------------------------------------------|
| Bona Fide Debt Service Fund | Up to 40 Years | .083 to 1 | 3.94% to 3.72% | | No Rebate Restrictions |
| Current Refunding Escrow | 90 Days or less | Less than .25 | 3.94% to 3.88% | | No Rebate Restrictions |
| Construction/Project Fund | 1 to 3 Years | 1 to 3 | 3.72% to 3.65% | | Potentially No Rebate Restrictions |
| Debt Service Reserve Fund | Up to 40 Years | 1 to 5 | 3.72% to 3.76% | | Subject to Arbitrage Rebate |
| Cash Defeasance Escrow | Up to 10 Years | .083 to 10 | 3.94% to 4.11% | | Subject to Arbitrage Rebate & Yield Restriction |
| Long-Term Sinking Fund | Up to 40 Years | .083 to 20 | 3.94% to 4.75% | | Subject to Arbitrage Rebate & Yield Restriction |

Slide 4

GP1

Treasury yields based on duration

Gianna Paglia, 2025-10-28T20:34:55.157



Poll Question #1

- ◆ Money market funds and local government investment pools tend to lag the yield trends of short-term Treasury securities.
 - A. True
 - B. False



Poll Question #1

- Money market funds and local government investment pools tend to lag the yield trends of short-term Treasury securities.

A. True

B. False



Arbitrage Rebate



Arbitrage Basics

- Arbitrage rebate requirements apply to every tax-exempt borrowing and certain taxable subsidy obligations
- To get your positive arbitrage percent: actual investment earnings yield (-) average borrowing rate (aka, your arbitrage yield)
- Arbitrage rebate liability:
 - Earnings of bond proceeds invested in taxable securities less (-) earnings of bond proceeds invested at the arbitrage yield
 - **Positive arbitrage**: actual earnings are **greater than** your arbitrage yield
 - **Negative arbitrage**: actual earnings are **less than** your arbitrage yield
- Measured on an issue-by-issue basis
- Arbitrage rebate begins on the issue date



Exceptions to Arbitrage Rebate

◆ The Small Issuer Exception

- \$5 million of governmental bonds for municipalities, per calendar year
- \$15 million for public school construction, per calendar year
- Must have general taxing powers, non-private activities bonds, at least 95% of the proceeds used for local gov't

◆ The Spending Exceptions (*more info on following slide*)

- 6-month spending exception
- 18-month spending exception
- 2-year spending exception (most commonly used)

◆ Bona Fide Debt Service Fund Exception

- Depleted at least annually except for the greater of i) previous year's earnings in the fund, or ii) 1/12th of previous year's principal and interest payments
- ◆ Electing to pay the 1.5% penalty in lieu of rebate
- ◆ Investing in tax-exempt obligations such as demand deposit SLGS (eliminating the "arbitrage")



Spending Exceptions – Very Important With High Interest Rates

- ◆ **“Reward”** for spending bond proceeds quickly
- ◆ Allowed to keep positive arbitrage
- ◆ Simple way to establish compliance (no future value, no yields)
- ◆ Must meet each benchmark - no catch-up allowed

* Exception for 5% of the proceeds of the issue if spent within one year

** De minimis (lesser of 3% or \$250K) and reasonable retainage (5% spent in 12 months) exceptions may apply for last benchmark

| 6-Month | | |
|--------------------|--|--|
| All gross proceeds | | |

| | | |
|---|----------|--------|
| ✓ | 6 months | 100% * |
| | | |
| | | |
| | | |

| 18-Month | | |
|---------------|--|--|
| All new money | | |

| | | |
|---|-----------|---------|
| ✓ | 6 months | 15% |
| ✓ | 12 months | 60% |
| ✓ | 18 months | 100% ** |
| | | |

| 2-Year (ACP) | | |
|---------------------|--|--|
| Construction issues | | |

| | | |
|---|-----------|---------|
| ✓ | 6 months | 10% |
| ✓ | 12 months | 45% |
| ✓ | 18 months | 75% |
| ✓ | 24 months | 100% ** |



Poll Question #2

- ◆ Which of the following is not an exception from arbitrage rebate?
 - A. Small issuer exception
 - B. Two-year spending exception
 - C. Saving exception
 - D. Bona fide debt service exception



Poll Question #2

- ◆ Which of the following is not an exception from arbitrage rebate?
 - A. Small issuer exception
 - B. Two-year spending exception
 - C. Saving exception
 - D. Bona fide debt service exception



Demand Deposit SLGS – Exempt from Arbitrage Regulations

- ◆ Demand Deposit SLGS are one-day certificates of indebtedness that pay interest based on a floating rate and **are exempt from arbitrage rebate and yield restriction**
- ◆ **Arbitrage rebate and yield restriction are two different calculations**
- ◆ Demand Deposit SLGS offer a unique investment opportunity
 - The yield on the Demand Deposit SLGS is 3.00%
 - The yield may be higher than certain tax-exempt bond arbitrage yields related to issuances from the past several years
 - As a result, an opportunity may exist for issuers to earn and retain positive arbitrage by utilizing these securities



General Portfolio Structuring Considerations



Overview of Fixed Income Portfolios for Bond Proceeds

◆ Gross vs Net Funding

- Net funding will help to lower financing costs, particularly in a higher interest rate environment.

◆ Asset-liability Matching

- As a best practice, the Government Finance Officers Association (GFOA) recommends cash flow requirements are matched with investment maturities.¹

◆ Reinvestment Risk

- Money market funds and local government investment pools provide variable rates of return that may drop substantially if interest rates trend lower.

◆ Budgetary Certainty

- Purchasing a portfolio of securities locks in earnings over an extended period of time.

◆ Arbitrage Rebate and Yield Restriction

- Consider IRS rules regarding spending exceptions to arbitrage rebate, temporary periods, blending across different funds, and other factors that may impact retainable earnings.

¹ (March 4, 2022). *Best Practices Investment of Management of Bond Proceeds*. GFOA. <https://www.gfoa.org/materials/investment-and-management-of-bond-proceeds>.



General Goals For Bond Proceeds Investments

◆ Main Factors

- Safety
- Liquidity
- Yield

◆ What else is important?

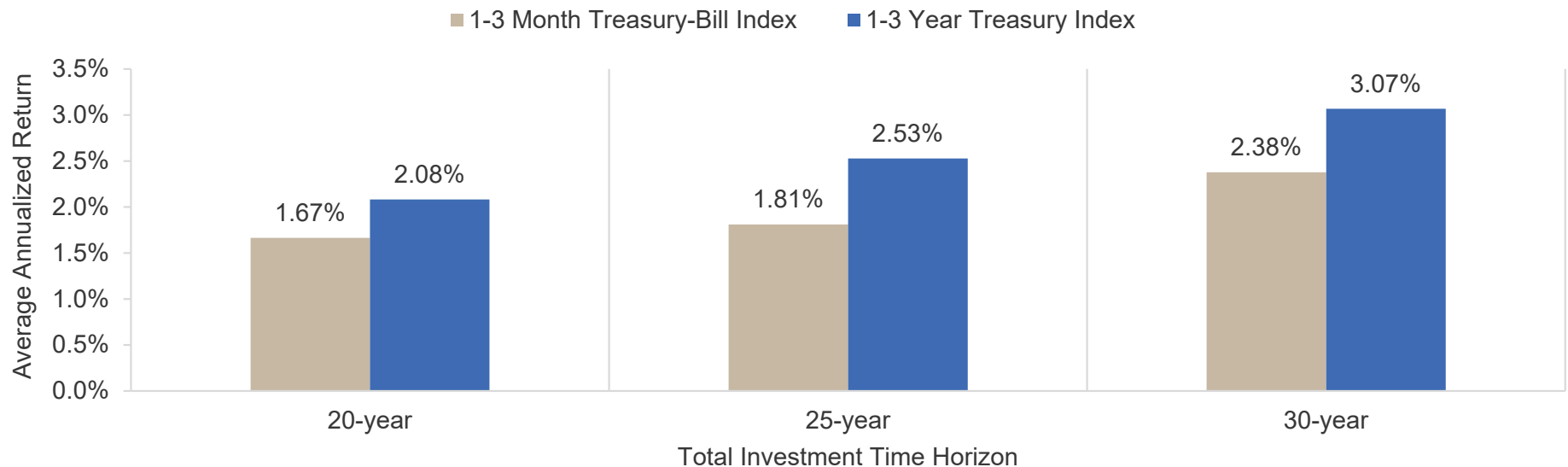
- Budgetary certainty
- Complexity and ongoing administration
- Fees and other transaction costs



Why Invest Out the Curve Instead of Keeping All Funds Very Liquid?

- Historical data indicates that buying long duration, relative to short, yields better return on an average annualized basis.
- Below is a graphical representation of the performance of two indices: one with modest duration similar to a project fund (*1-3 year US Treasury Index*) and one with very short duration (*1-3 month US T-Bills Index*) over a 20-, 25-, and 30- year horizon.

Historical Relative Value of Buying Duration of Treasury Indices



Source: Bloomberg U.S. Treasury: 1-3 Y (LT01TRUU Index) and U.S. Treasury Bills: 1-3 M (LD12TRUU Index), as of September 1, 2025.

Past performance does not necessarily reflect and is not a guaranty of future results.

Short-term market volatility can produce substantially different results.

Analysis of shorter time horizons omitted from the chart because a substantial rise in interest rates skews the results.



Why Might A One-Time Procurement Make Sense?

◆ Active Managers Often Aren't Adding Value

- Many fixed income (FI) managers claim to outperform the market, but most of their returns just come from taking on common risks that anyone can access without paying for an active manager.¹

◆ Paying for Something You Could Get for Less

- Investors often pay high fees to active managers, but these managers might just be giving them the same type of returns they could get through a cheaper, passive approach.²

◆ Outperformance Might Be Misleading

- It's not as easy as it seems for active managers to consistently beat the market, and when they do, it's often because they're taking on more risk than being more skillful.³

◆ Losing the Safety Net

- By investing in riskier parts of the bond market, investors can end up with portfolios that behave too much like stocks, which defeats the purpose of owning bonds for safety and diversification.¹

◆ Research Supports Passive Strategies

- Studies suggest that passive strategies, which follow the market rather than try to beat it, often make more sense. They provide access to market returns without the high costs and risks of active management.³

¹ Mattu, R., M. Devarajan, S. Sapra, and D. Nikalaichyk. 2016. "Fixed Income Manager Selection: Beware of Biases." PIMCO Quantitative Research.

² Asness, C., A. Iilmanen, R. Israel, and T. Moskowitz. 2015. "Investing with Style." *Journal of Investment Management* 13: 27–63.

³ Brooks, J., T. Gould, and S. Richardson. 2020. "Active Fixed Income Illusions." *Journal of Fixed Income*: 5–19.



Importance of Developing an Investment Strategy in a Timely Manner

- Worked with an issuer to evaluate the draw schedule and how it might change well in advance of the bond pricing
 - Developed portfolio structure that addressed liquidity needs and procured it on the pricing date of the bonds
- More than 18 basis points of yield drop avoided (almost \$118,000 of earnings) by locking in SLGS on July 25, 2025, ahead of FOMC meeting and major economic releases instead of waiting
- Below chart shows a Treasury Note with an approximate duration of 1 as a proxy for the project fund portfolio



Source: Bloomberg - U.S. Treasury Note as proxy for project fund portfolio with similar duration
Market conditions from July 25, 2025 through August 7, 2025
For illustrative purposes only, and actual results may vary substantially.
Please refer to additional disclosures at the end of this presentation.



Passive Portfolio Strategies



Project Funds



Project Fund Draw Schedule Considerations and Questions

- If possible, a detailed and comprehensive draw schedule should be developed concurrent with the bond issue.
- Key questions to consider include:
 - How large and complex is the project?
 - Are there substantial risks related to materials, contractors, weather events, or other factors that could cause substantial delays? If so, has the draw schedule been adjusted to reflect these risks?
 - Are there any remaining hurdles with permits or other required approvals that could delay the start of the project?
 - Is there any cushion for unexpected cost overruns?
 - How much does budgetary certainty matter (reliance on interest earnings to fund project costs)?
 - How much extra liquidity is appropriate to accommodate potential changes in the draw schedule?
 - Particularly concerned about potential need to spend money faster than originally projected



Project Fund Considerations

◆ Define the universe of permitted investments

- Can be found in bond indentures/resolutions, state laws, and/or investment policies
- Willingness to take on credit risk if permitted (e.g. commercial paper)

◆ Evaluate draw schedule

- Spending exceptions to arbitrage rebate (see *table*)

◆ Importance of good liquidity vehicle

- Expense ratio / net yield
- Limitations on liquidity

◆ Portfolio optimization

- Meet cash flows needs, size, and complexity
- Relative value analysis
- Consider liquidity buffer

| Spending Exception | Expenditure of Proceeds Timeframe |
|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Six-Month Spending Exception (All Gross Proceeds) | 6 months – 100% ¹ |
| Eighteen-Month Spending Exception (All New Money) | 6 months – at least 15% 12 months – at least 60% 18 months – 100% ² |
| Two-Year Spending Exception (Construction Issues) | 6 months – at least 10% 12 months – at least 45% 18 months – at least 75% 24 months – 100% ² |

Slide 23

GP1

Flag for Sarah and Crotty

Gianna Paglia, 2025-10-28T20:47:51.264

SG1 0

I'm fine with keeping this slide if we make the main focus liquidity vehicles

Sarah Good, 2025-11-05T22:21:26.071



Project Fund Sample Portfolio – U.S. Treasuries & SLGS

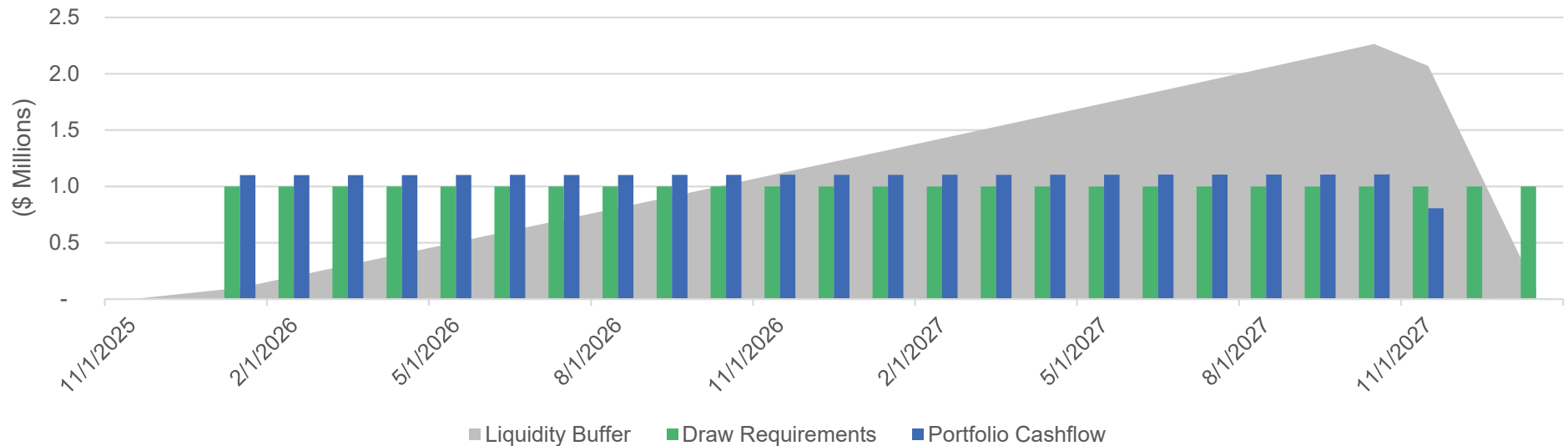
Portfolio Statistics

| | |
|---------------------------------|--------------|
| Invested Amount | \$24,100,402 |
| Portfolio Duration ¹ | 0.990 years |
| Net Yield ^{2, 3} | 3.509% |
| Net Earnings (Proj.) | \$949,811 |

Strategy Overview

- \$25 million draw schedule
- Money market fund used as liquidity vehicle for idle balances – yield assumed to be 3.62%
- 10% liquidity buffer

Net Funded Project Fund Portfolio Cashflows with 10% Liquidity Buffer



All yields sourced from Bloomberg and based upon market conditions as of November 6, 2025.
Net yield and net earnings include PFM fee for structuring and procurement of a portfolio.

¹ Portfolio duration is based on securities only.

² Includes earnings based on estimated MMF yield, decreasing over time aligned with Fed Funds Futures, for idle balances (liquidity buffer).

³ Yield calculated on a 30/360 basis with semi-annual compounding.



Project Fund Sensitivity Analysis

- The below sensitivity analysis provides a comparison of locking in a portfolio of Treasuries relative to investing in a money market fund or local government investment pool
- **Base Case:** Assumes the MMF yield follows current market expectations for Fed cuts
- **Scenario 1:** Assumes the MMF yield is held constant throughout the entirety of the project fund
- **Scenario 2:** Assumes the Fed aggressively cuts rates such that the MMF yield falls to 2% by April of 2026

| Base Case - Portfolio (MMF follows market expectations) | |
|------------------------------------------------------------|--------------|
| Total Portfolio Cost | \$24,100,402 |
| Interest Earnings | \$949,811 |
| Net Yield | 3.509% |



| Base Case – MMF Only (MMF follows market expectations) | |
|-----------------------------------------------------------|--------------|
| Total Portfolio Cost | \$24,100,402 |
| Interest Earnings | \$823,319 |
| Net Yield | 3.062% |

| Scenario 1 - Portfolio (MMF yield is held constant) | |
|--------------------------------------------------------|--------------|
| Total Portfolio Cost | \$24,100,402 |
| Interest Earnings | \$968,487 |
| Net Yield | 3.575% |



| Scenario 1 – MMF Only (MMF yield is held constant) | |
|-------------------------------------------------------|--------------|
| Total Portfolio Cost | \$24,100,402 |
| Interest Earnings | \$986,529 |
| Net Yield | 3.645% |

| Scenario 2 - Portfolio (MMF falls to 2% by April of 2026) | |
|--------------------------------------------------------------|--------------|
| Total Portfolio Cost | \$24,100,402 |
| Interest Earnings | \$928,333 |
| Net Yield | 3.432% |



| Scenario 2 – MMF Only (MMF falls to 2% by April of 2026) | |
|-------------------------------------------------------------|--------------|
| Total Portfolio Cost | \$24,100,402 |
| Interest Earnings | \$587,774 |
| Net Yield | 2.208% |

*Preliminary, subject to change based on market conditions.
Net yield and net earnings include PFM fee for structuring and procurement of a portfolio.
All yields sourced from Bloomberg and based upon market conditions as of November 6, 2025.
Includes earnings based on estimated MMF yield.
Yield calculated on a 30/360 basis with semi-annual compounding.*



Debt Service Reserve Funds



Debt Service Reserve Funds

- Unique challenge because funds are designed to be set aside for life of bond issue but may need to be drawn earlier in the event of a shortfall.
 - Should we think of this as a short-term or long-term investment?
- Willingness and ability to take risk must both be considered.
 - How is the reserve valued and at what frequency?
 - How risky is the project, and what stage is it in?
 - How strong is debt service coverage for the project?
 - Does the issuer value budgetary certainty or have a bias on the trajectory of interest rates?
 - Is a refunding being considered in the near term that would require a liquidation?
 - Is it appropriate to take credit risk inside of a debt service reserve fund?



Breakeven Analysis – Debt Service Reserve Funds

- Forward curve analysis allows the client to compare where rates will need to be in the future to be indifferent today.
- Below is an example for a 5-year investment horizon. The yields are color-coded to corresponding highlight where rates would need to be for the client to breakeven against a 5-year UST today.

5 Year Investment Strategy

| U.S. Treasury | Current yield | 1 year from now | 2 years from now | 3 years from now | 4 years from now |
|---------------|---------------|-----------------|------------------|------------------|------------------|
| 1-year | 3.60% | 3.44% | 3.54% | 3.82% | 3.82% |
| 2-year | 3.52% | 3.49% | 3.68% | 3.82% | |
| 3-year | 3.53% | 3.59% | 3.72% | | |
| 4-year | 3.59% | 3.65% | | | |
| 5-year | 3.64% | | | | |



Market Value Sensitivity Analysis – Debt Service Reserve Funds

| 2-year U.S. Treasury Note ¹ | | |
|----------------------------------------|--------------|-------------------|
| <u>Change in Yield</u> | <u>Value</u> | <u>Difference</u> |
| - 100 bps | \$10,185,444 | \$185,444 |
| - 50 bps | \$10,092,284 | \$92,284 |
| - | \$10,000,000 | \$ - |
| + 50 bps | \$9,908,580 | \$(91,420) |
| +100 bps | \$9,818,010 | \$(181,990) |

¹ Yield of 3.518% and duration of 1.84 as of October 28, 2025.

| 3-year U.S. Treasury Note ² | | |
|----------------------------------------|--------------|-------------------|
| <u>Change in Yield</u> | <u>Value</u> | <u>Difference</u> |
| - 100 bps | \$10,282,754 | \$282,754 |
| - 50 bps | \$10,140,342 | \$140,342 |
| - | \$10,000,000 | \$ - |
| + 50 bps | \$9,861,692 | \$(138,308) |
| +100 bps | \$9,725,382 | \$(274,618) |

² Yield of 3.521% and duration of 2.79 as of October 28, 2025.

| 4-year U.S. Treasury Note ³ | | |
|----------------------------------------|--------------|-------------------|
| <u>Change in Yield</u> | <u>Value</u> | <u>Difference</u> |
| - 100 bps | \$10,369,383 | \$369,383 |
| - 50 bps | \$10,182,891 | \$182,891 |
| - | \$10,000,000 | \$ - |
| + 50 bps | \$9,820,631 | \$(179,369) |
| +100 bps | \$9,644,709 | \$(355,291) |

³ Yield of 3.582% and duration of 3.62 as of October 28, 2025.

| 5-year U.S. Treasury Note ⁴ | | |
|----------------------------------------|--------------|-------------------|
| <u>Change in Yield</u> | <u>Value</u> | <u>Difference</u> |
| - 100 bps | \$10,456,858 | \$456,858 |
| - 50 bps | \$10,225,621 | \$225,621 |
| - | \$10,000,000 | \$ - |
| + 50 bps | \$9,779,848 | \$(220,152) |
| +100 bps | \$9,565,020 | \$(434,980) |

⁴ Yield of 3.631% and duration of 4.46 as of October 28, 2025.



Hypothetical Analysis for Debt Service Reserve Funds at Valuation Date

| Security | <u>2-year T-Note</u> | <u>3-year T-Note</u> | <u>4-year T-Note</u> | <u>5-year T-Note</u> |
|-------------------------------------|----------------------|----------------------|----------------------|----------------------|
| Purchase Date | 10/29/2025 | 10/29/2025 | 10/29/2025 | 10/29/2025 |
| DSRF Amount | \$9,983,515 | \$9,983,515 | \$9,983,515 | \$9,983,515 |
| Par Amount | \$9,987,000 | \$9,989,000 | \$10,013,000 | \$9,986,000 |
| Price | 99.965 | 99.941 | 99.699 | 99.973 |
| Coupon | 3.500% | 3.500% | 3.500% | 3.625% |
| Yield | 3.518% | 3.521% | 3.582% | 3.631% |
| Annual Coupon Payments ¹ | \$349,545 | \$349,615 | \$350,455 | \$361,993 |
| Valuation Date | 10/29/2026 | 10/29/2026 | 10/29/2026 | 10/29/2026 |
| Remaining Life | 1 year | 2 years | 3 years | 4 years |
| Breakeven Yield ² | 7.547% | 5.435% | 4.910% | 4.654% |

All yields sourced from Bloomberg and based upon market conditions as of October 28, 2025.

¹ Coupon payments vary based upon the characteristics of each security, and the yield of each security is realized over time through a combination of coupon payments and price amortization to par.

² Yield at which market value loss on security offsets income earned over the course of one year.

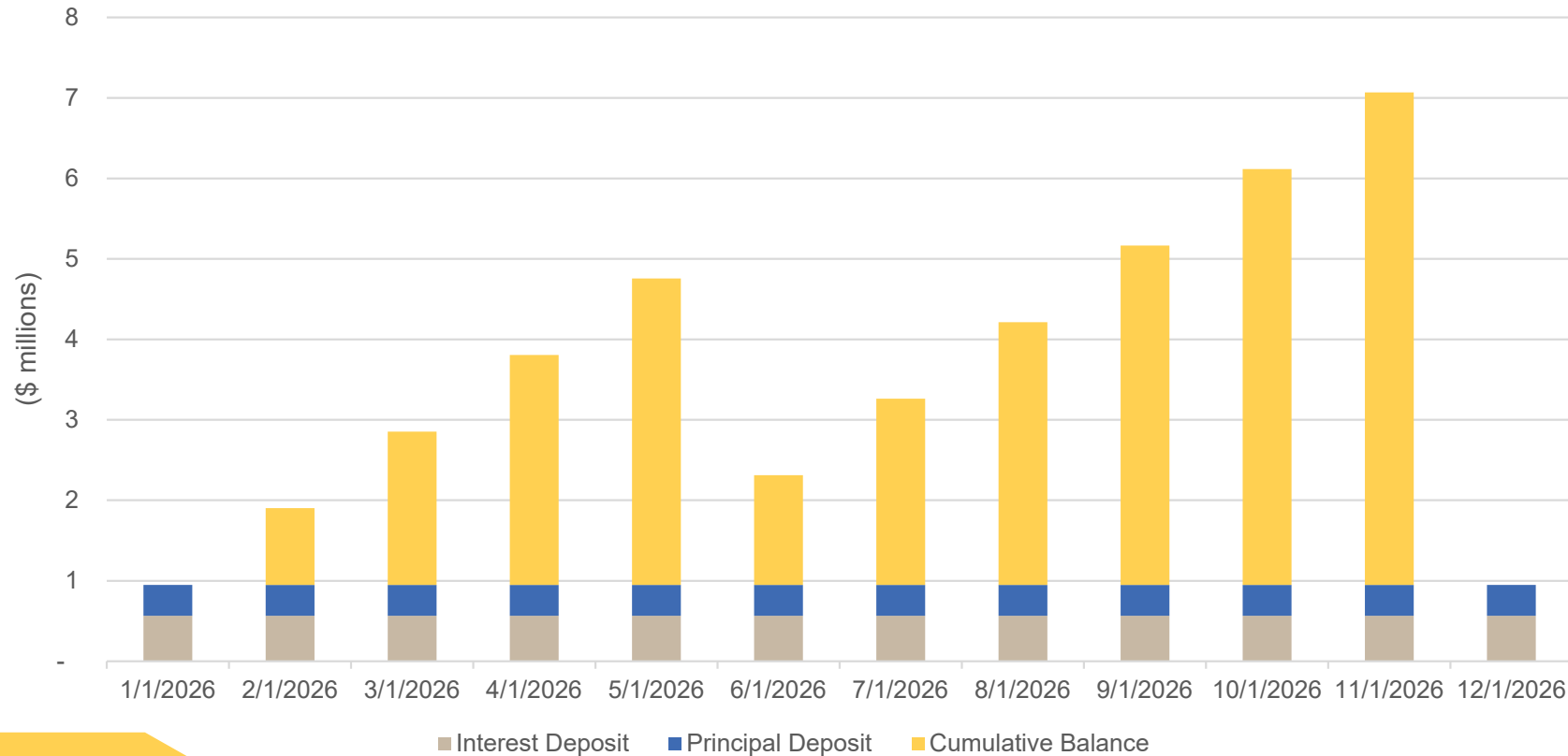


Debt Service Funds



Debt Service Funds

- 1/6th of interest payments and 1/12th of principal payments are deposited monthly into a debt service fund to meet required debt service payments.
- Often invested in a liquidity vehicle but securities purchases also an option – what has value?
- Managing the cash flows to maintain bona fide debt service fund status can be very valuable.



Slide 32

GP1

Find model to update this

Gianna Paglia, 2025-10-28T20:51:23.550



Structured Investments



Structured Investments Landscape

◆ **Uncollateralized Guaranteed Investment Contracts (GICs)**

- Unsecured pledge to pay principal and interest on investment; historically provided by insurance companies or banks

◆ **Collateralized Guaranteed Investment Contracts**

- Referred to as Collateralized GICs – pledge to repay principal and interest is secured by collateral posted to a third-party custodian

◆ **Repurchase Agreements**

- Referred to as Repo, Flex Repo, Term Repo – agreement to purchase securities and resell back to counterparty in the future at a guaranteed yield; typically provided by broker-dealers and banks

◆ **Forward Delivery Agreements (FDAs)**

- Referred to as Forward Purchase (Purchase and Sale) Agreements (FPAs) – agreement stipulating the outright purchase of securities from a counterparty through time; typically provided by broker-dealers and banks

◆ Counterparties (“providers”) vary depending on agreement type



Structured Investments – Important Considerations

◆ Different structures have different risks

- Credit risk and concentration risk
- Bankruptcy treatment

◆ Bidding regulations

- Meeting the safe harbor rules requires procurement of 3 disinterested bids – in the current market, this may be a challenge
 - Can you and your legal team get comfortable with being outside of the safe harbor?

◆ Arbitrage rebate implications

- Carefully evaluate risk/return dynamics of investment along with corresponding tax risk



Poll Question #3

- ◆ Which of the following is an important consideration of structured investments?
 - A. Safe harbor rules and your ability to meet them
 - B. Tax risk
 - C. Credit risk and concentration risk
 - D. All of the above



Poll Question #3

- ◆ Which of the following is an important consideration of structured investments?
 - A. Safe harbor rules and your ability to meet them
 - B. Tax risk
 - C. Credit risk and concentration risk
 - D. All of the above



Questions/Discussion



Important Disclosure Information

ABOUT PFM

PFM is the marketing name for a group of affiliated companies providing a range of services. All services are provided through separate agreements with each company. This material is for general information purposes only and is not intended to provide specific advice or a specific recommendation. PFM does not provide tax, legal or accounting advice.

Financial advisory services are provided by PFM Financial Advisors LLC, a registered municipal advisor with the Securities and Exchange Commission (SEC) and the Municipal Securities Rulemaking Board (MSRB) under the Dodd-Frank Act of 2010.

Swap advisory services are provided by PFM Swap Advisors LLC which is registered as a municipal advisor with both the MSRB and SEC under the Dodd-Frank Act of 2010, and as a commodity trading advisor with the Commodity Futures Trading Commission. Additional applicable regulatory information is available upon request.

PFM Group Consulting LLC clients, which may have been listed, were selected based on non-performance-based criteria to show a representation of clients. A full list is available upon request. The list of clients is for informational purposes only and does not constitute an endorsement or testimonial.

For more information regarding PFM's services or entities, please visit www.pfm.com.

Special disclaimer regarding the research and forecasts included in today's presentation: This research and any forecasts are based on current public information, as of the date of this presentation (or as of such date as may be specified in the presentation), that we consider reliable, but we do not represent it as accurate or complete, and it should not be relied on as such. The information, opinions, estimates and forecasts contained herein are also as of the date hereof and are subject to change without prior notification.

Case studies are provided for information purposes only and do not constitute specific advice or a recommendation. Opinions, results, and data presented are not indicative of future performance. Actual results may vary. Inclusion on this list does not represent endorsement of PFM's services.