# Investing 101: Back to Basics

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*PFM Asset Management LLC*

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# Presenter

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Nelson joined PFM Asset Management in 1993. He focuses on providing investment advisory services to public entities and non-profit organizations, including the design and adoption of investment policies, benchmarking investment performance, developing and implementing investment strategies, discretionary management of public funds and benefit plans, and the management of bond proceeds in compliance with arbitrage rebate regulations.

# Agenda

- Investment Basics
- Permitted Investments
- Risks Associated with Investing in Fixed Income Securities
- Considerations for Designing a Strong Investment Program
- Questions

# Investment Basics

# Fixed Income Securities

*A debt obligation of a corporate, governmental entity, or trust. May provide periodic coupon payments based on a fixed or floating interest rate. Upon maturity, the face value or principal of the security is redeemed to the investor.*

**Potential Advantages**
- Competitive rates of return
- Opportunity to realize capital gains if interest rates decline
- Fixed maturity value if held to maturity
- Set coupons create predictable cash flow

**Potential Disadvantages**
- Fixed coupon rate creates inflation risk
- Loss of value possible if interest rates increase
- Rating agency downgrade can negatively affect value

# Types of Fixed Income Securities

## Money Market (Mature in <1 Year)

- U.S. Treasury Bills
- Federal Agency Discount Notes
- Commercial Paper
- Bankers' Acceptances
- Repurchase Agreements
- Certificates of Deposit
- Money Market Mutual Funds

## Bonds (Mature in >1 Year)

- U.S. Treasury Notes/Bonds
- Federal Agency Notes/Bonds
- Mortgage-Backed Securities
- Corporate Notes
- Mutual Funds (aka Bond Funds)

# Interest Rates

**Real Interest Rate** + **Inflation Premium** + **Risk Premium** = **Interest Rate** (aka YIELD)

| Real Interest Rate | Inflation Premium | Risk Premium | Interest Rate (aka YIELD) |
| --- | --- | --- | --- |
| Compensation to the investor | Expectations of inflation over the investment term | Compensation for current or possible risks | |
| Averages 2 – 3% over long historical periods | Preserves the purchasing power of the investor | | |

*Source: Bloomberg, as measured by the average 2-year U.S. Treasury yield over the past 25 years, ended February 1999.*

# The “Income” in Fixed Income

**Par Value (Face Value)**

*principal amount of the bonds*

- Amount that will be repaid by issuer
- Price may be above (premium) or below (discount) the face amount

**Coupon Rate (Nominal Yield)**

*stated interest rate*

- Expressed as a fixed percentage of par

**Coupon Payment**

*dollar value of interest payment*

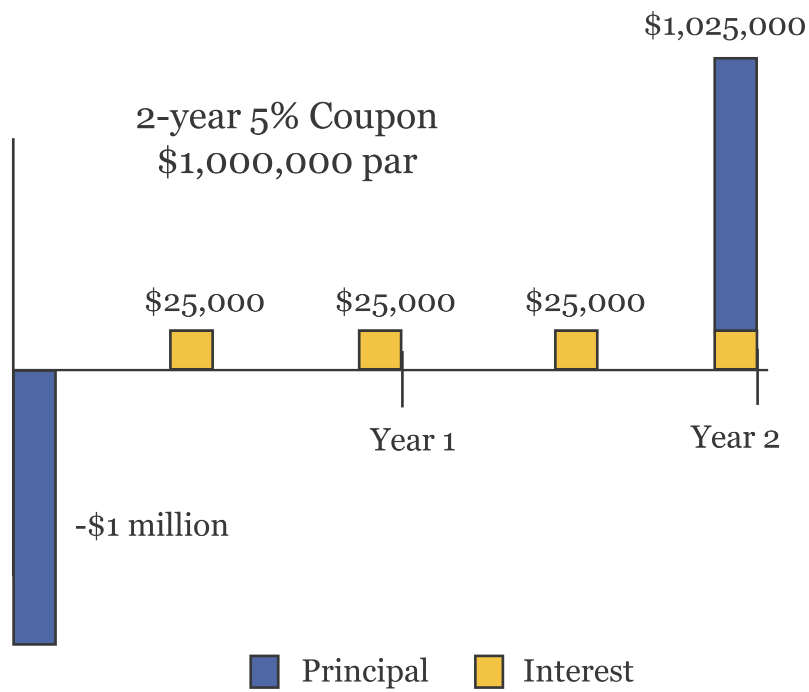
- Multiply the coupon rate by par value
- Typically paid semi-annually
- Last interest payment is made when the bond matures

**Maturity**

*end of investment period*

- The length of time until the principal is scheduled to be repaid

**(Coupon ÷ Market Price) = Current Yield**




*For illustrative purposes only.*

# Term to Maturity

- Number of years remaining in the life of the bond
- Maturity = Term = Term to Maturity = Final Maturity
- Term bonds (“bullets”) have a single, fixed maturity date
- Mortgaged-backed and asset-backed securities pay down principal periodically until final maturity or earlier
- Call Date: the date on which the issuer may redeem bonds early
- Relative terms for all types of investors
  - Short Term - 1 to 5 years
  - Intermediate Term - 5 to 12 years
  - Long Term - More than 12 years

# Basis Points

1 Basis Point = 1/100 of 1% = 0.01%

*(one hundredth)*

50 Basis Points = 50/100 of 1% = 0.50%

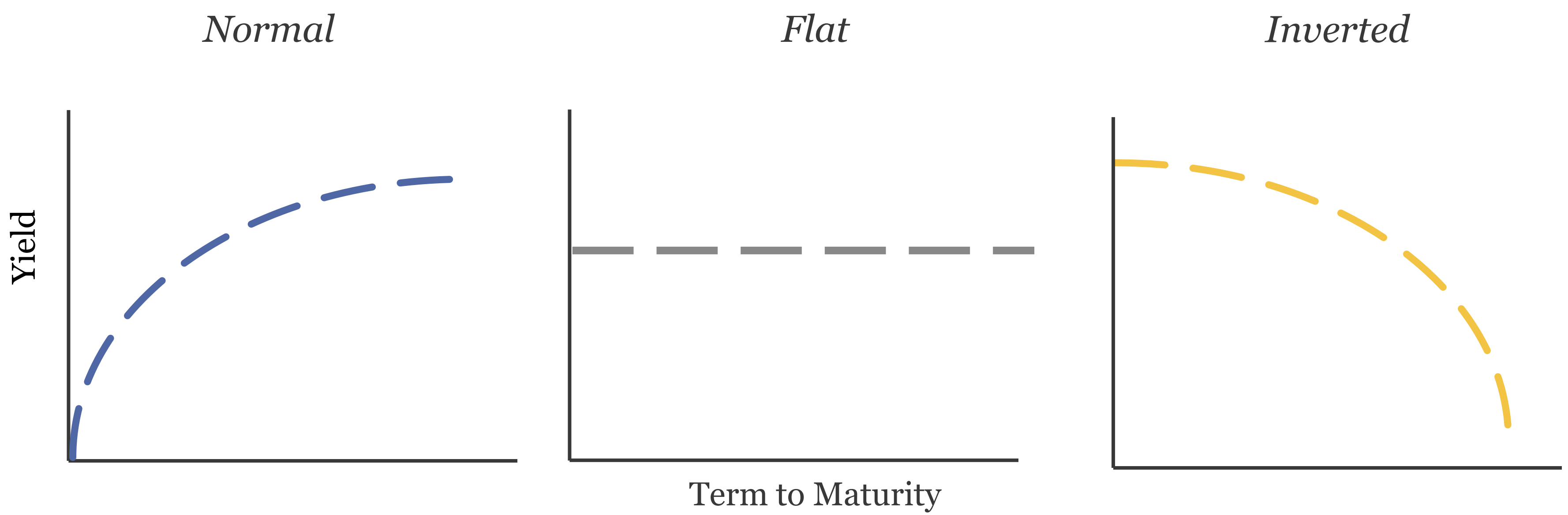
*(half a percentage)*

100 Basis Points = 1.00%

The difference between 4.90% and 4.95% is 5 basis points

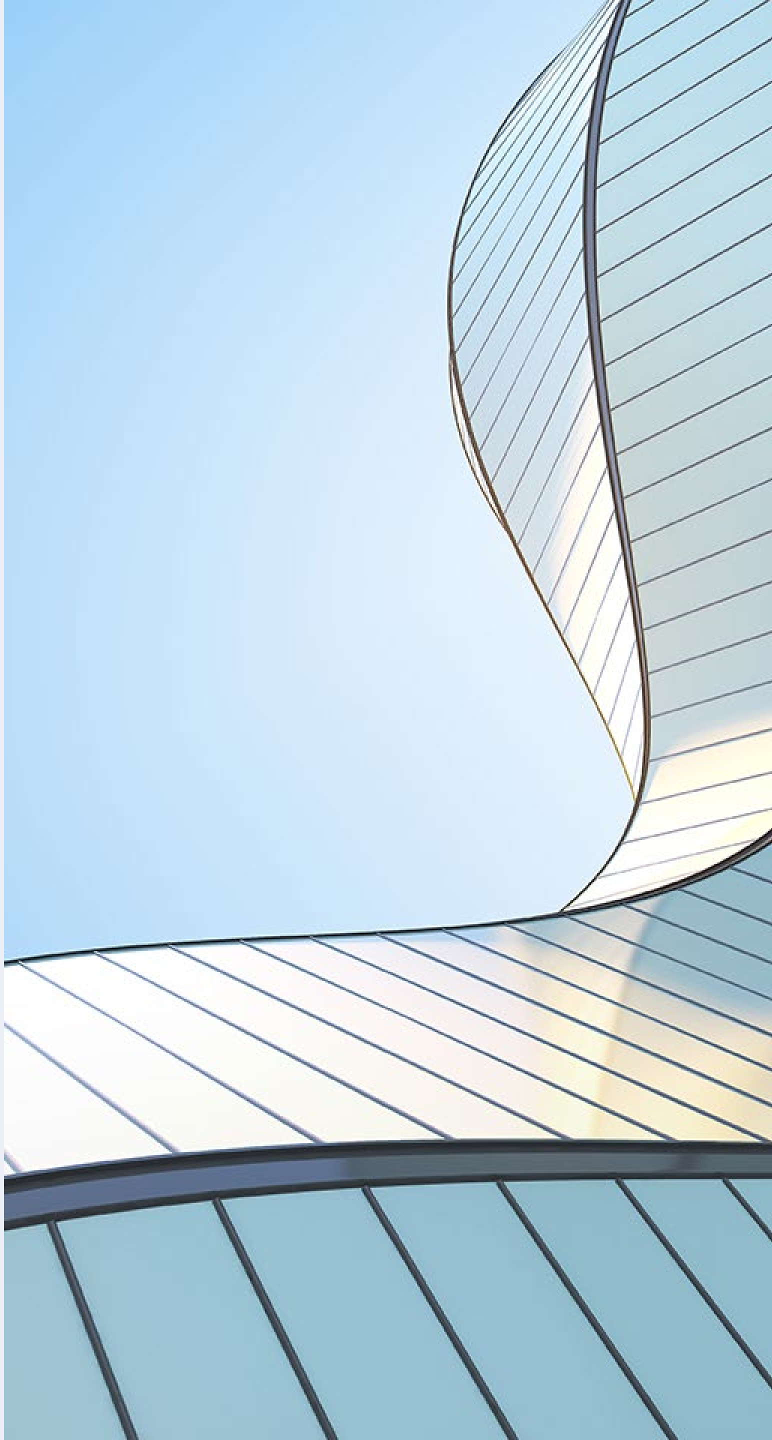
# Yield Curves

- Shows the relationship between yield and maturity
- Rates at the short end of the curve (under 1 year) are directly correlated to the **federal funds rate** established by the Federal Open Market Committee
- The longer end of the curve typically reflects **investor expectations**
- There are three types of curves:



# Pop Quiz

1. Which features determine the yield on a security?
2. Describe a “normal” yield curve.



# Permitted Investments

# Fixed Income Securities in the Public Funds Investment Act (PFIA)

| Investment Type | General Permission | Limited Permission |
|---|---|---|
| U.S. Treasury Obligations | 2256.009 | |
| Federal Agency Obligations | 2256.009 | |
| Municipal Obligations | 2256.009 | |
| Repurchase Agreements | 2256.011 | |
| Commercial Paper | 2256.003 | |
| Bankers' Acceptances | 2256.002 | |
| Bank Demand and Time Deposits in Approved Depositories | 2256.010 | |
| Money Market Mutual Funds | 2256.014 (a) | |
| Bond Mutual Funds | 2256.014 (b) | |
| Local Government Investment Pools | 2256.016 & .019 | |
| Guaranteed Investment Contracts | | 2256.015 |
| Negotiable Certificates of Deposit | | 2256.020 |
| Corporate Notes | | 2256.020 |

*Source: https://statutes.capitol.texas.gov/Docs/GV/htm/GV.2256.htm#2256.001*

# U.S. Treasury Obligations

**Issuer:** U.S. Government

**Credit Quality:** "Minimal Risk"

**Liquidity:** High (active market)

**Custody:** Federal Reserve (Book entry)

*Treasuries*

| Type | Term to Maturity | Interest | Price Quotes | Maturity |
|---|---|---|---|---|
| **Bills** | 1, 3, 6,12 months | Interest at Maturity | Discount (Not equal to yield) | Thursdays |
| **Notes** | 2 – 10 years | Semi-Annual Coupon | Price per $100 | 15th or last day of month |
| **Bonds** | 10 – 30 years | Semi-Annual Coupon | Price per $100 | |
| **Strips** | 3 months – 30 years | Interest at Maturity | Discount (Not equal to yield) | |

*Source: https://www.treasurydirect.gov/marketable-securities/treasury-bonds/*

# Federal Agency / Government Sponsored Enterprises (GSE) Obligations

## *Agencies*

| | |
|---|---|
| **Issuer:** | Federal Agencies<br>Government sponsored enterprises (GSE) |
| **Credit Quality:** | Most **do not** carry explicit U.S. Government guarantee (full faith and credit) |
| **Term of Maturity:** | 1 day to 30 years |
| **Liquidity:** | Generally high, but depends on structure |
| **Custody:** | Federal Reserve (Book entry) |
| **Return:** | Sometimes higher than U.S. Treasury obligations |
| **Caution:** | May have complicated structures and may be callable |

*Source: https://corporatefinanceinstitute.com/resources/fixed-income/agency-bonds/*

# Most Common GSE / Agency Issuers

**GSE:**

- Fannie Mae (previously, Federal National Mortgage Association)
- Federal Home Loan Banks (FHLB)
- Freddie Mac (previously, Federal Home Loan Mortgage Corporation)
- Federal Farm Credit Banks (FFCB)

**Agency:**

- Government National Mortgage Association (GNMA or “Ginnie Mae”)

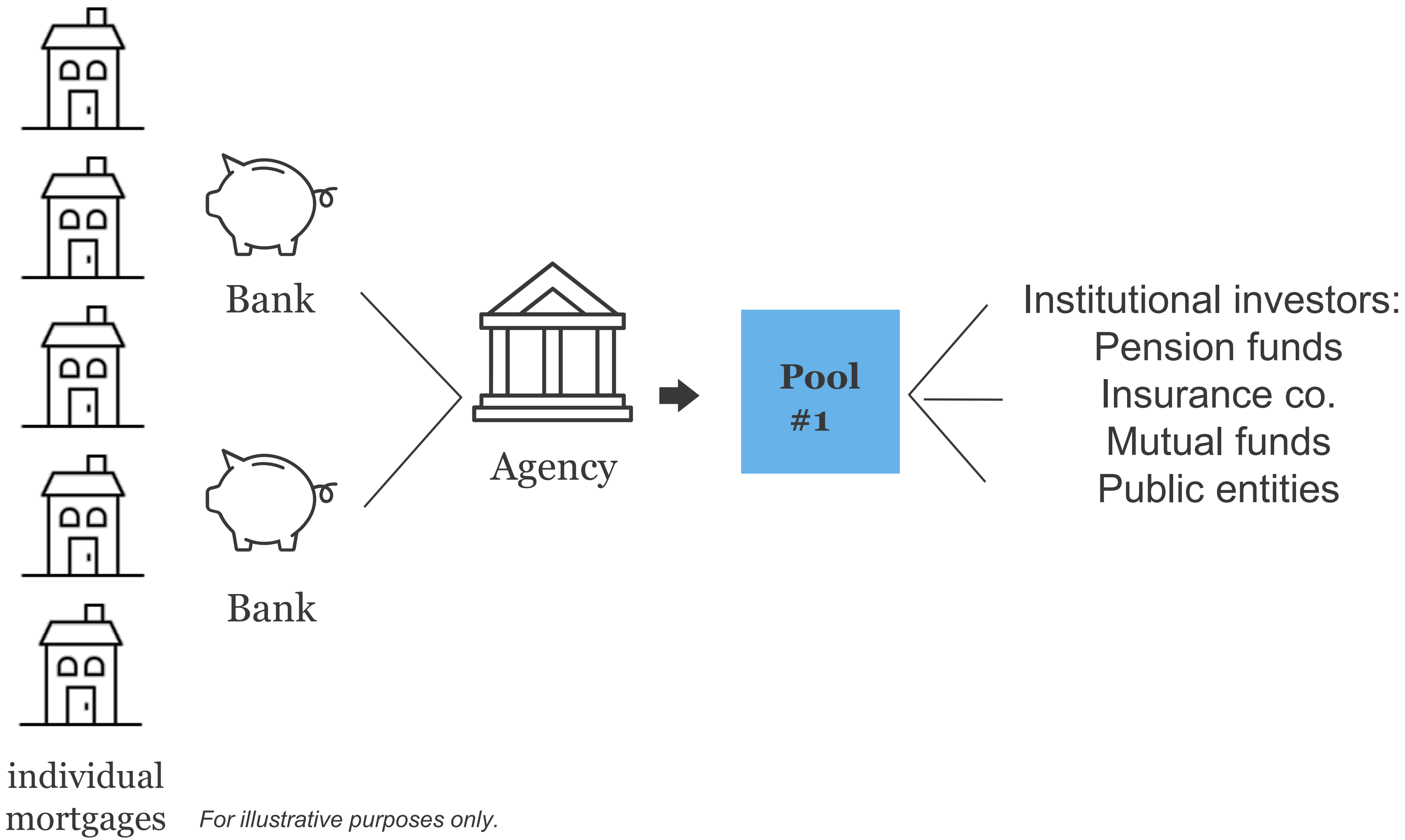
# Mortgage-Backed Securities

## *MBS*

| | |
|---|---|
| **Issuer:** | Federal Agencies/GSEs |
| **Credit Quality:** | High quality, may carry Government guarantee |
| **Term of Maturity:** | Typically 5 - 30 years |
| **Liquidity:** | Moderate to high, depends on structure, volume |
| **Custody:** | Federal Reserve (Book entry) |
| **Return:** | Typically higher than other U.S. Government |
| **Caution:** | Prepayment risk<br>Cash flow variability<br>Sophisticated accounting system required |

*Source: https://corporatefinanceinstitute.com/resources/fixed-income/agency-bonds/*

# Mortgage-Backed Securities




*For illustrative purposes only.*

# Commercial Paper

*CP*

*PFIA imposes credit rating requirements*

| | |
|---|---|
| **Issuer:** | Domestic and foreign corporations |
| **Credit Quality:** | Investment grade |
| **Term of Maturity:** | 1 to 365 days |
| **Liquidity:** | Moderate to high |
| **Custody:** | Depository Trust Company (Book entry) |
| **Return:** | Moderate to high |
| **Caution:** | Unsecured promissory note<br>Bankruptcy risk extends for 90 days after maturity<br>May be asset-backed |

*https://corporatefinanceinstitute.com/resources/fixed-income/commercial-paper*

# Bankers' Acceptances

## BAs

*Time drafts used in international trade*

| | |
|---|---|
| **Issuer:** | Commercial banks |
| **Credit Quality:** | Based on bank rating<br>Irrevocable obligation of issuing bank |
| **Term of Maturity:** | Up to 270 days |
| **Liquidity:** | Moderate to high |
| **Custody:** | DTC (Book entry) or Physical |
| **Return:** | Moderate to high |
| **Caution:** | Foreign banks may impose additional credit risks |

*Source: https://corporatefinanceinstitute.com/resources/fixed-income/bankers-acceptance*

# Municipal Obligations

## *Munis*

| | |
|---|---|
| **Issuer:** | State and local governments |
| **Credit Quality:** | Varies (not always rated)<br>May carry bond insurance |
| **Term of Maturity:** | 1 week to 30 years |
| **Liquidity:** | Relatively low |
| **Custody:** | DTC (Book entry) |
| **Return:** | Tax-exempt return (lower than comparable Treasury)<br>Some may offer higher (taxable) returns |
| **Caution:** | May be callable |

*Source: https://corporatefinanceinstitute.com/resources/fixed-income/municipal-bond*

# Certificates of Deposit

## *CDs*

| | |
|---|---|
| **Issuer:** | Commercial banks, savings & loans |
| **Credit Quality:** | Varies<br>First $250,000 insured by FDIC<br>May be secured by pledged collateral |
| **Term of Maturity:** | Greater than 7 days; as long as 5 years |
| **Liquidity:** | Low to moderate |
| **Custody:** | DTC (Book entry) or Physical |
| **Return:** | Moderate (depends on credit quality) |
| **Caution:** | Some issuers may impose significant early withdrawal penalties |

*Source: https://corporatefinanceinstitute.com/resources/wealth-management/certificate-of-deposit-cd*

# Repurchase Agreements

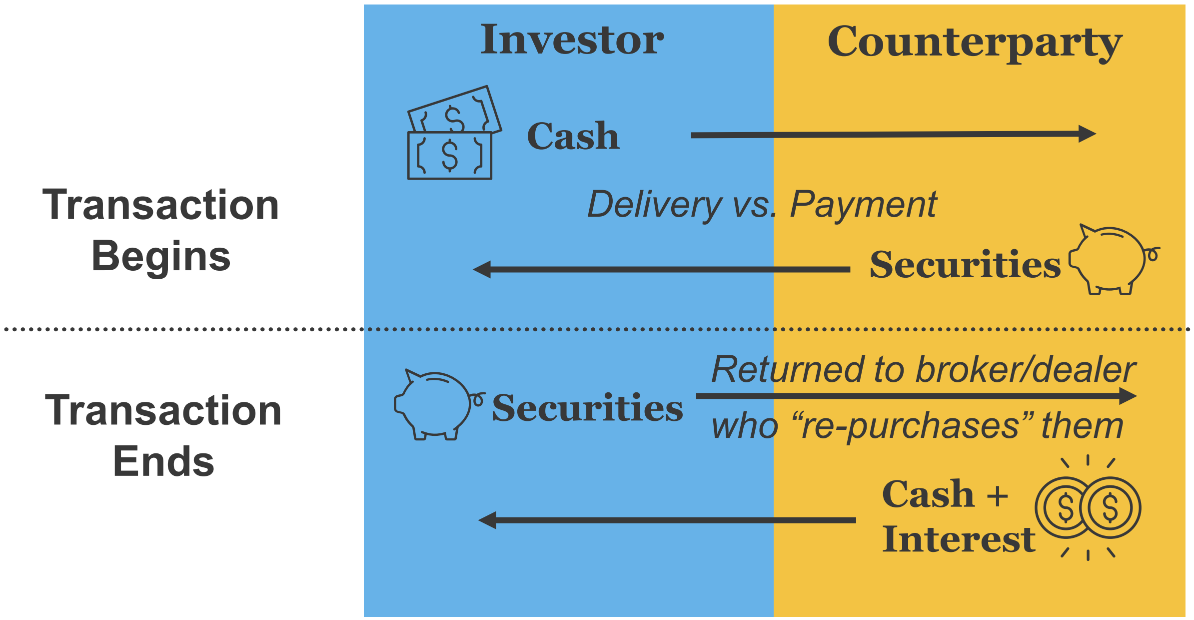
## *Repos*

| | |
|---|---|
| **Issuer:** | Banks and brokerage firms |
| **Credit Quality:** | Varies by issuer and collateral |
| **Term of Maturity:** | 1 day to several years |
| **Liquidity:** | Typically, none prior to maturity |
| **Custody:** | Book entry (collateral) |
| **Return:** | Generally higher than Treasuries |
| **Caution:** | Investors should require a third-party custodian<br>Monitor credit quality of counterparty and collateral value |

*Source: https://corporatefinanceinstitute.com/resources/fixed-income/repurchase-agreement-repo*

# Repurchase Agreements

- An agreement in which an investor buys securities from a counterparty who agrees to buy the securities back at a later date, at an agreed upon price and rate
- Yield determines the "repurchase price"



# Local Government Investment Pool

## *LGIP*

- Invests exclusively in securities permitted for Texas public funds investors
- Must be rated AAA or equivalent
- Constant or variable share price
- Low expense ratio
- Most designed to offer daily liquidity
- Yields move with market

*Source: https://statutes.capitol.texas.gov/Docs/GV/htm/GV.2256.htm#2256.016*

# Mutual Funds

- Customized by asset classes, maturities, etc.
- Highly liquid
- Convenient
- Constant net asset value (lower volatility)
  - 2a-7 funds (money market funds)
  - "$ in, $ out"
  - SEC modifications to Rule 2a-7 may have additional impacts
  - Money market funds typically lag changes in short-term investments
- Fluctuating net asset value (higher volatility)
  - Bond and equity funds
  - Accounting for gains and losses may be challenging
- Fees netted from income
- Don't invest without first reading the fund's prospectus
- PFIA has prohibitions and limitations on investments in bond mutual funds

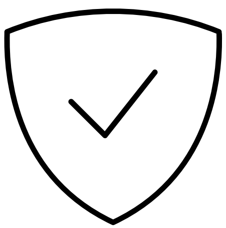
# Risks

Associated with Investing in Fixed Income Securities

# Remember the Key Investment Objectives

**1**

Safeguard Principal



**2**

Meet Liquidity Needs

**3**

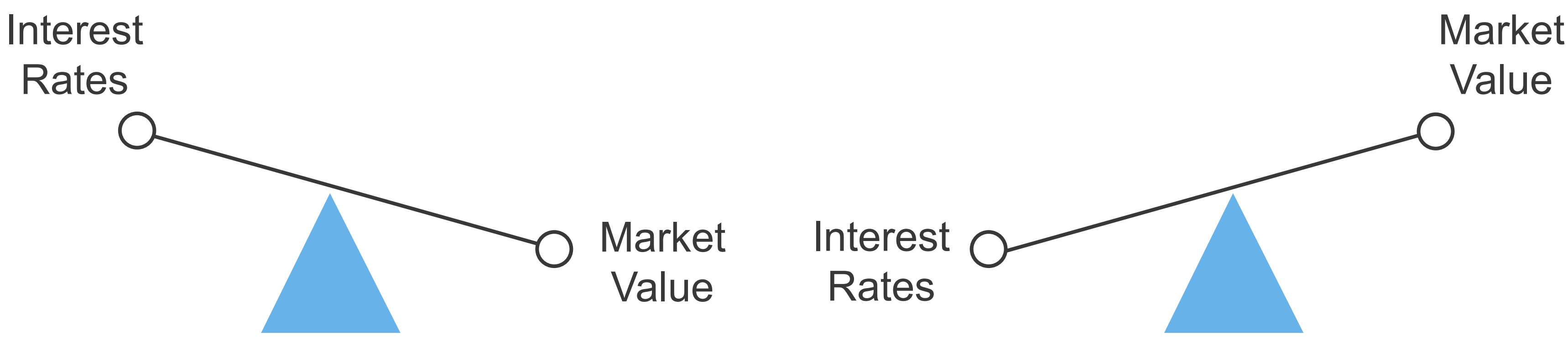
Achieve a Market Return/Yield

# Understand and Be Prepared to Explain the Risks

| Type of Risk | Definition |
| --- | --- |
| Interest Rate Risk | Variability of return/price related to changes in interest rates |
| Credit Risk | Risk of default or decline in security value due to conditions outside investor's control |
| Purchasing Power Risk | Loss of purchasing power over time as a result of inflation |
| Liquidity Risk | Inability to sell portfolio holdings at a competitive price |
| Reinvestment Risk | The risk that a security's cash flow will be reinvested at a lower rate of return than what is being earned by the security |

# Interest Rate Risk

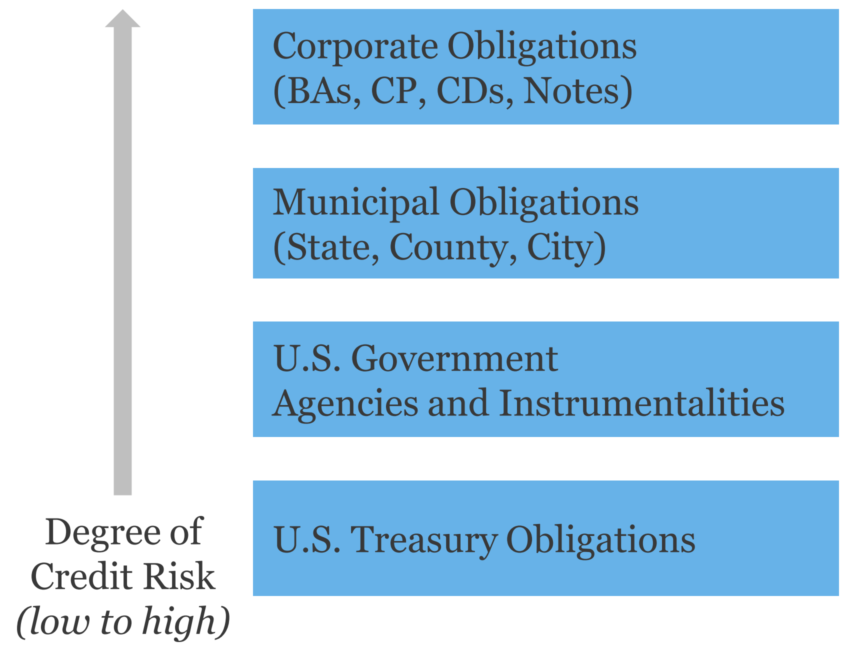
- Market values and interest rate movements are inversely related
- Longer maturity = Greater risk




*Duration is the metric for interest rate risk on individual securities and your portfolio*

# Credit Risk

- Risk of default or decline in security value due to conditions outside investor's control
  - Bankruptcy
  - Rating agency downgrades
  - Regulatory changes




*For illustrative purposes only.*

# Monitoring Credit Risk

- Nationally Recognized Statistical Rating Organizations (NRSRO)
  - Designated by the SEC
- Largest and most active NRSROs
  - Standard & Poor's
  - Moody's Investors Service
  - Fitch Ratings

| Actions | Definition |
|---|---|
| Credit Rating | Reflection of the probability of default (default rate) & loss to investor (loss rate) |
| Rating Watch | Indication that the NRSRO is reassessing the rating in response to a material change to the credit quality of the issuer<br>Potential upgrade or downgrade may occur within 3 months |
| Rating Outlook | Longer-term projection of a possible ratings change<br>Potential upgrade or downgrade may occur 6 months – 2 years |

# Long-Term Credit Ratings

| S&P | Moody's | Explanation of Rating |
|---|---|---|
| AAA | Aaa | High quality. Smallest degree of investment risk. |
| AA | Aa | High quality. Differs only slightly from highest-rated issues. |
| A | A | Adequate capacity to pay interest and repay principal. |
| BBB | Baa | More susceptible to adverse effects of changes in economic conditions. |
| BB | Ba | Has speculative elements; future not considered to be well-assured. |
| B | B | Generally lack characteristics of desirable investment. |
| CCC | Caa | Poor standing. Vulnerability to default. |
| C | C | Extremely poor prospect. |
| D | D | In default. |

*For additional information and detail regarding ratings criteria, you can visit S&P (https://www.standardandpoors.com/en_US/web/guest/article/-/view/sourceId/504352) and Moody's (https://www.moodys.com/Pages/amr002002.aspx?stop_mobi=yes).*

# Short-Term Credit Ratings

| S&P | Moody's | Explanation of Rating |
|---|---|---|
| A-1+ | P-1 | High quality. Smallest degree of investment risk. |
| A-1 | P-1 | High quality. Differs only slightly from highest-rated issues. |
| A-2 | P-2 | Adequate capacity to pay interest and repay principal. |
| A-3 | P-3 | More susceptible to adverse effects of changes in economic conditions. |
| B | Not Prime | Highly speculative; future not considered to be well-assured. |
| C | Not Prime | Poor standing. Vulnerability to default. |
| / | / | In default. |

*For additional information and detail regarding ratings criteria, you can visit S&P (https://www.standardandpoors.com/en_US/web/guest/article/-/view/sourceId/504352) and Moody's (https://www.moodys.com/Pages/amr002002.aspx?stop_mobi=yes).*

# Don’t Forget Liquidity Risk

- Inability to sell portfolio holdings at a competitive price
  - Substantial penalty for earlier withdrawal
  - Capital losses if interest rates have gone up
  - Fire sale prices

Long-Term Corporate Bonds

Mortgage-Backed Issues/CMOs

Non-negotiable Bank CDs

Federal Agency Bonds/Municipals

Long-term Government Bonds

Negotiable CDs

Commercial Paper

Bankers’ Acceptances

Federal Agency Discount Notes

Overnight Repo Agreements

Money Market Mutual Fund, LGIP

Treasury Bills

Degree of Liquidity
*(cash to illiquid)*

# Reinvestment Risk May Rise as Rates Fall

- The risk that a security's cash flow will be reinvested at a lower rate of return than what is being earned by the security

- Exposure to reinvestment risk
  - Callable securities
  - Asset- and mortgage-backed securities
  - Securities with larger earlier cash flows (high coupon bonds)

# Considerations to Mitigate Risk

- Diversification
  - Asset class
  - Issuer
  - Maturity

- Purchase securities with an active secondary market

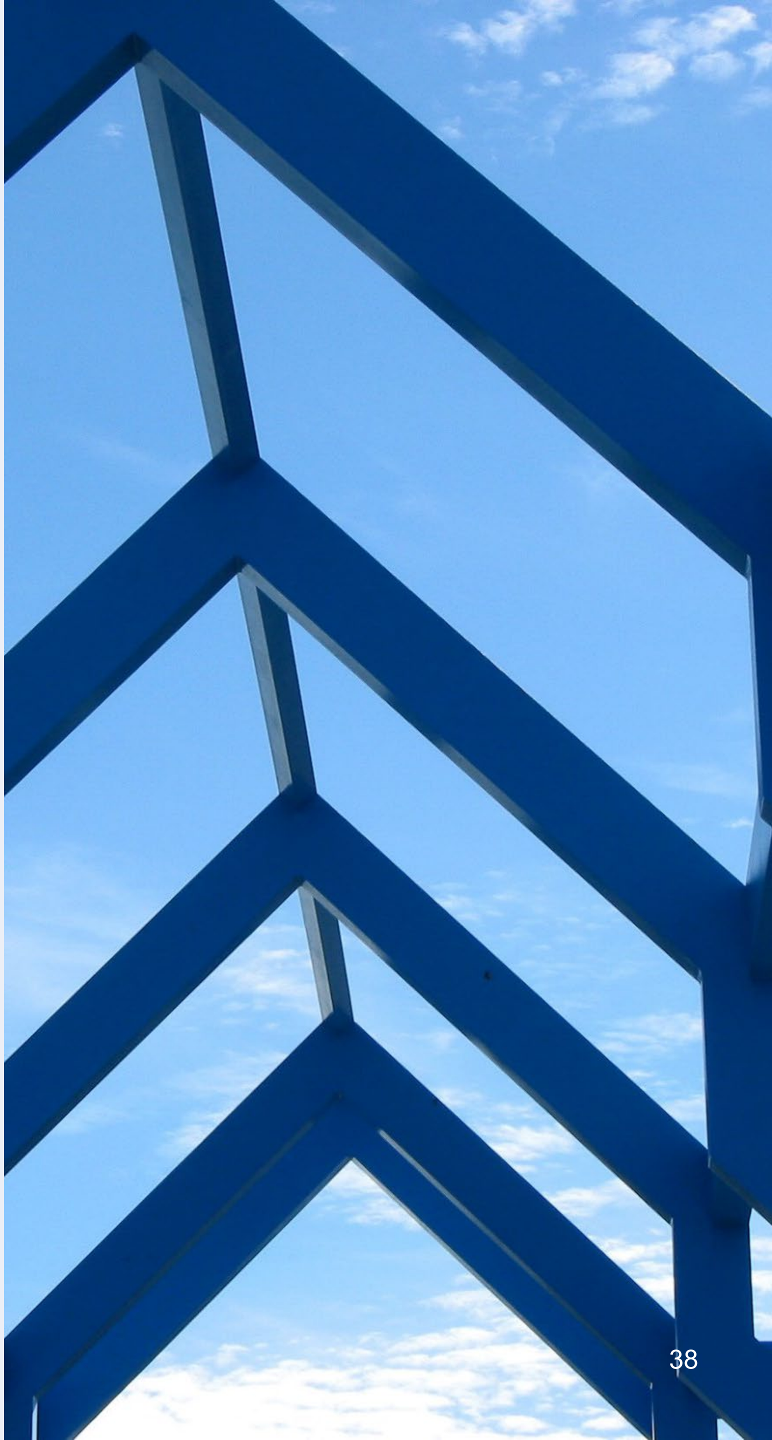
- Match portfolio to expected cash flow requirements

# Pop Quiz

1. True or False? Callable securities have reinvestment risk.

2. Which type of fixed income security has the least amount of credit risk?

3. All else held equal, if interest rates fall, the market value of your portfolio will ________ (increase/decrease).



# Considerations for Designing a Strong Investment Program

# Building Blocks to Consider

| | |
|---|---|
| How do we communicate results? | Communication, Reporting & Benchmarks |
| How should we implement our strategy? | Strategy Execution |
| How much/how should we invest? | Strategy Development<br>*Cash Flow Analysis and Investment Policy* |
| What is our return objective and our risk tolerance? | Goals and Objectives |

# Tips for Developing a Strong Investment Policy

- An Investment Policy should be structured to place the highest priority on the:
  - Safety of principal
  - Liquidity of funds
- The optimization of returns shall be secondary (yet important)—maximize earnings through diversification
- Compliance with legal restrictions/regulations
- Flexibility/simplicity
- Provides a roadmap during periods of volatility

## Investment Policy Best Practices

Update language to meet current industry standards and best practices

Update language to conform to current statutes

Reevaluate use of different investment sectors

Reevaluate maturity limits

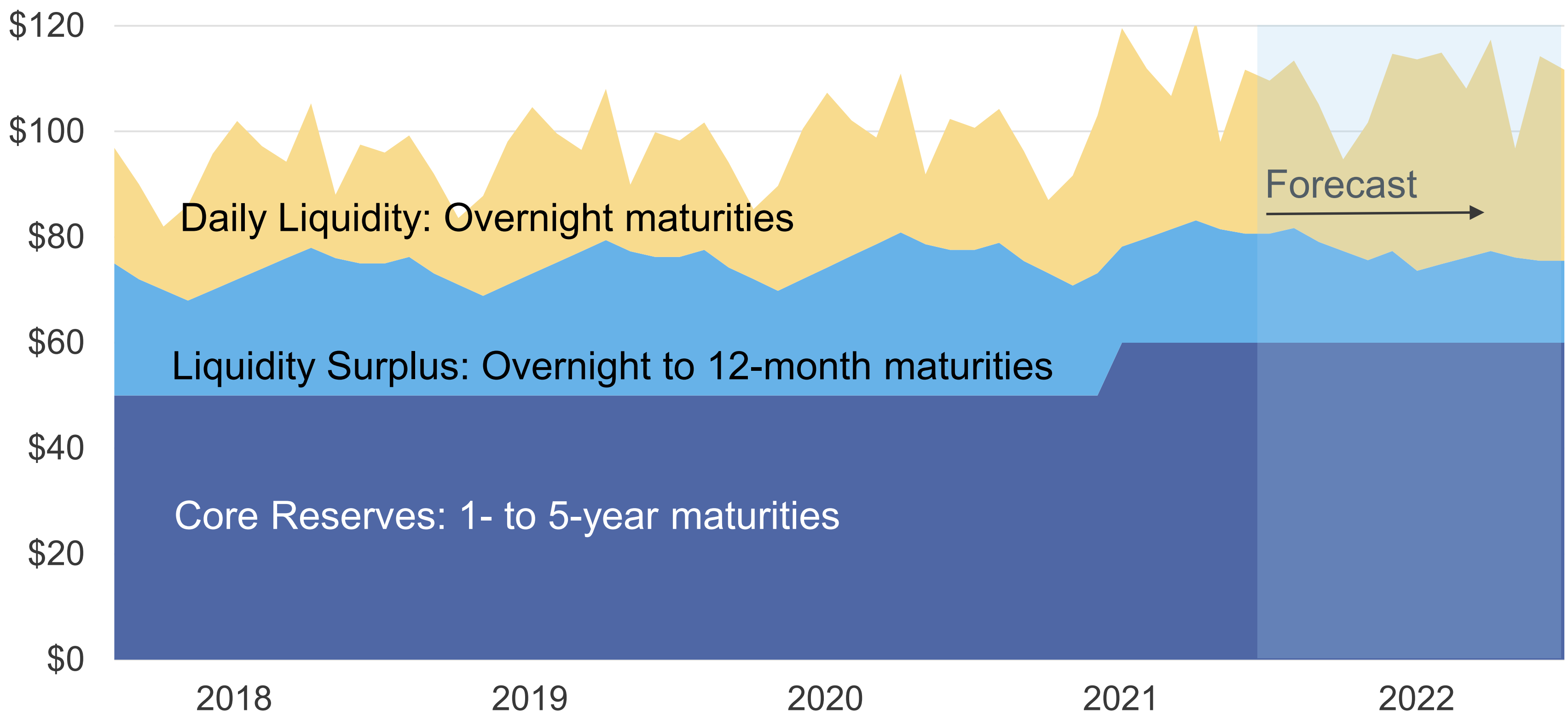
Incorporate diversification and maturity standards

Strengthen controls

Establish an appropriate benchmark

# The Importance of Knowing Your Cash Flows

- Understanding your liquidity needs is vital to define investment strategies
- There are opportunity costs for excess – as well as insufficient – liquidity




*For illustrative purposes only.*

# Monitoring Your Investment Program

- Quarterly Performance Report
  - Performance relative to the markets
  - Investment Policy compliance
  - Credit ratings

- Custody Statement
  - Official books and records
  - Ensure holdings consistent with internal records

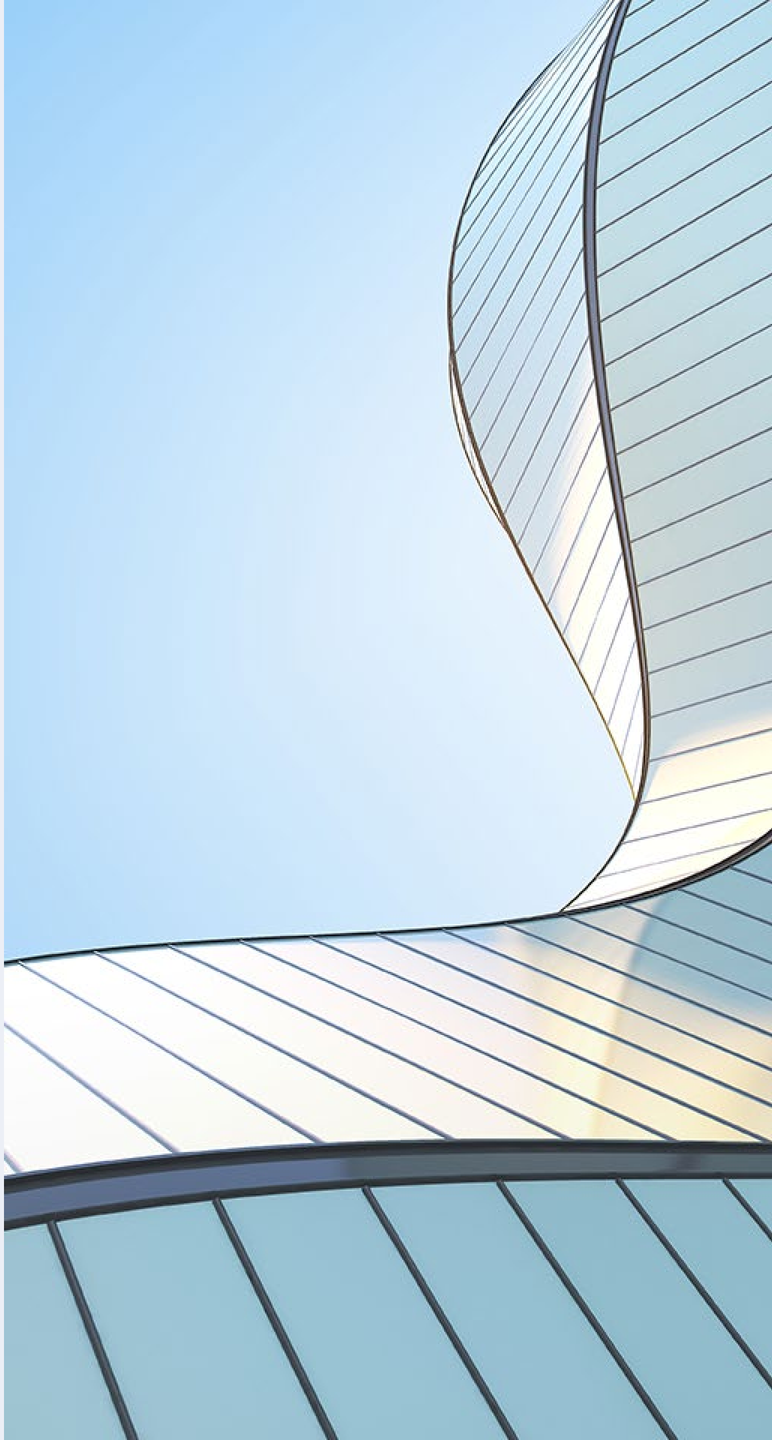
# Even When Investing for the Short Term, Long-Term Plans Help Ensure Success

# Pop Quiz

1. What are the three key investment objectives for government entities?

2. Why shouldn't you put all your "eggs in one basket"?

3. True or False? Corporate notes produce higher returns than Treasuries all the time because of their higher yields.



# Regardless of Your Strategy, Communication Is Important

- Ensure that major components of your entity's investment program are conveyed to managers/elected officials
  - Internal controls
  - Investment policy/risk tolerances
  - Overall investment strategy
- Tailor communications to audience
  - Elected Officials: Highlight the big picture but report the requirements
  - Manager: Detailed, fact-filled, yet concise reports
- Be prepared to explain
  - New market conditions
  - Market value losses (unrealized/realized)
  - Initial losses on sales of securities, but overall benefit
  - Importance of long-term approach

# Thank you!
# Questions?

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