

# INTERMEDIATE PUBLIC FUNDS INVESTING



## WEBINAR 2 | CASH FLOW AND CASH FLOW FORECASTING

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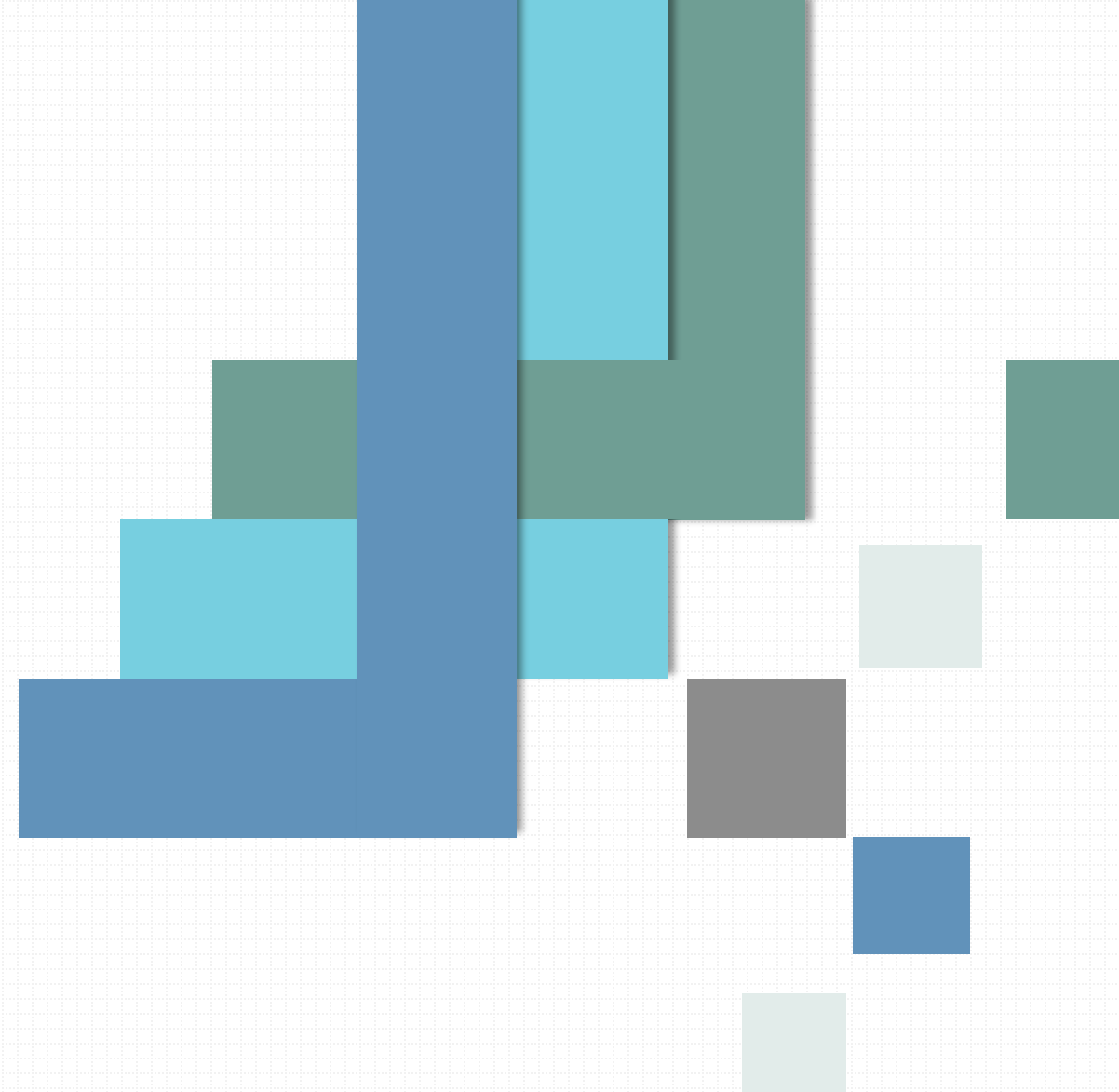
January 27, 2022

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# SESSION OVERVIEW

- Management of a public agency's cash requirements,
- Balancing revenues (taxes and fees) with monthly obligations, periodic debt-service payments, and other recurring or non-recurring cash demands.
- Practice for preparing and implementing a cash flow forecast
- Using budgetary and statistical forecast to make investment decisions





# Determining Cash Available

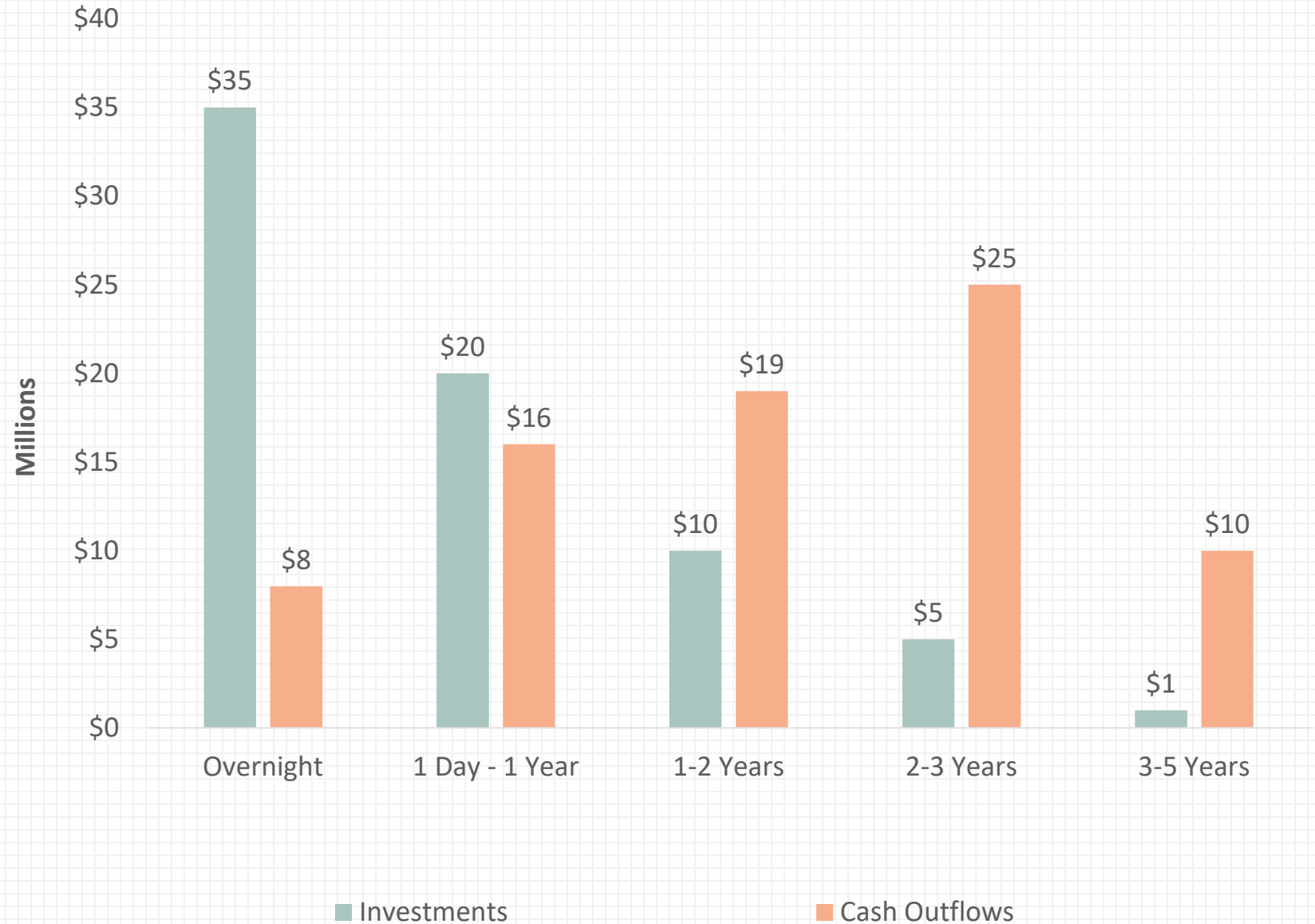
## How Much Liquidity is Enough?

Do your investments meet cash needs?



How Much  
Liquidity is  
Enough?

Are your investments  
optimized for return?



## How Much Liquidity is Enough?

Cost of Insufficient Liquidity:



Delayed payments



Additional Borrowing Costs



Additional Transaction Costs



Negative Internal and External Headlines

# How Much Liquidity is Enough?

Cost of Excess Liquidity:



# How Much Liquidity is Enough?

Most Crucial Questions:



*Am I meeting my Code-mandated goal of safety and liquidity?*



*Will I have the cash available when I need it?*



*Am I earning as much as I could?*



## The Cost of Too Much Liquidity

### Select Fixed-Income Benchmark Total Returns By Duration As of December 31, 2021

Index	Duration	10 YR Annualized Return	Cumulative Value of \$100 Million	Additional Value Over LAIF
Local Agency Investment Fund	0.93 Years	0.84%	\$108,683,932	N/A
ICE BofA 1-3 YR Treasury Index	1.83 Years	1.09%	\$111,414,486	\$2,730,554
ICE BofA 1-5 YR Treasury Index	2.53 Years	1.35%	\$114,361,028	\$5,677,096
ICE BofA 1-10 YR Treasury Index	3.69 Years	1.68%	\$118,175,220	\$9,491,288

Source: Bloomberg, ICE BofA Indices and LAIF. Data as of December 31, 2021. Performance for ICE BofA indices based on a \$100 million portfolio, relative to LAIF. Performance shown is hypothetical and not based on an actual client's account. LAIF returns include an administrative fee charged to investors by the California State Treasurer. LAIF duration estimated based on average maturity in days, as of December 31, 2021 divided by 365 days. Past performance is not a guarantee of future results. Please see disclosures at the end of this presentation for further details. Index returns assume reinvestment of all distributions. Historical performance results for investment indexes generally do not reflect the deduction of transaction and/or custodial charges or the deduction of an investment management fee, the incurrence of which would have the effect of decreasing historical performance results. It is not possible to invest directly in an index



# POLLING QUESTION

To earn CPE credits, participants must participate in at least three of the polling questions.

## Why a Cash Flow Analysis?

*“The analysis is intended to measure and assess the government’s ability to meet its needs, to negate the need for any short-term borrowing or liquidation of long-term investments before maturity, and to identify any idle funds, and the duration of that idle period, to determine whether those funds could be invested over that time frame. Cash flow analysis is therefore an essential tool for informed management decision making.”*

- GFOA Best Practice: “Cash Flow Analysis”

## What is a Cash Flow Analysis?



Projection of anticipated cash receipts



Projection of anticipated cash disbursements



It considers all funds



It considers timing of receipts and disbursements

## What a Cash Flow Analysis Is NOT!



“Cash” is the operative word in “Cash Flow Forecasting”



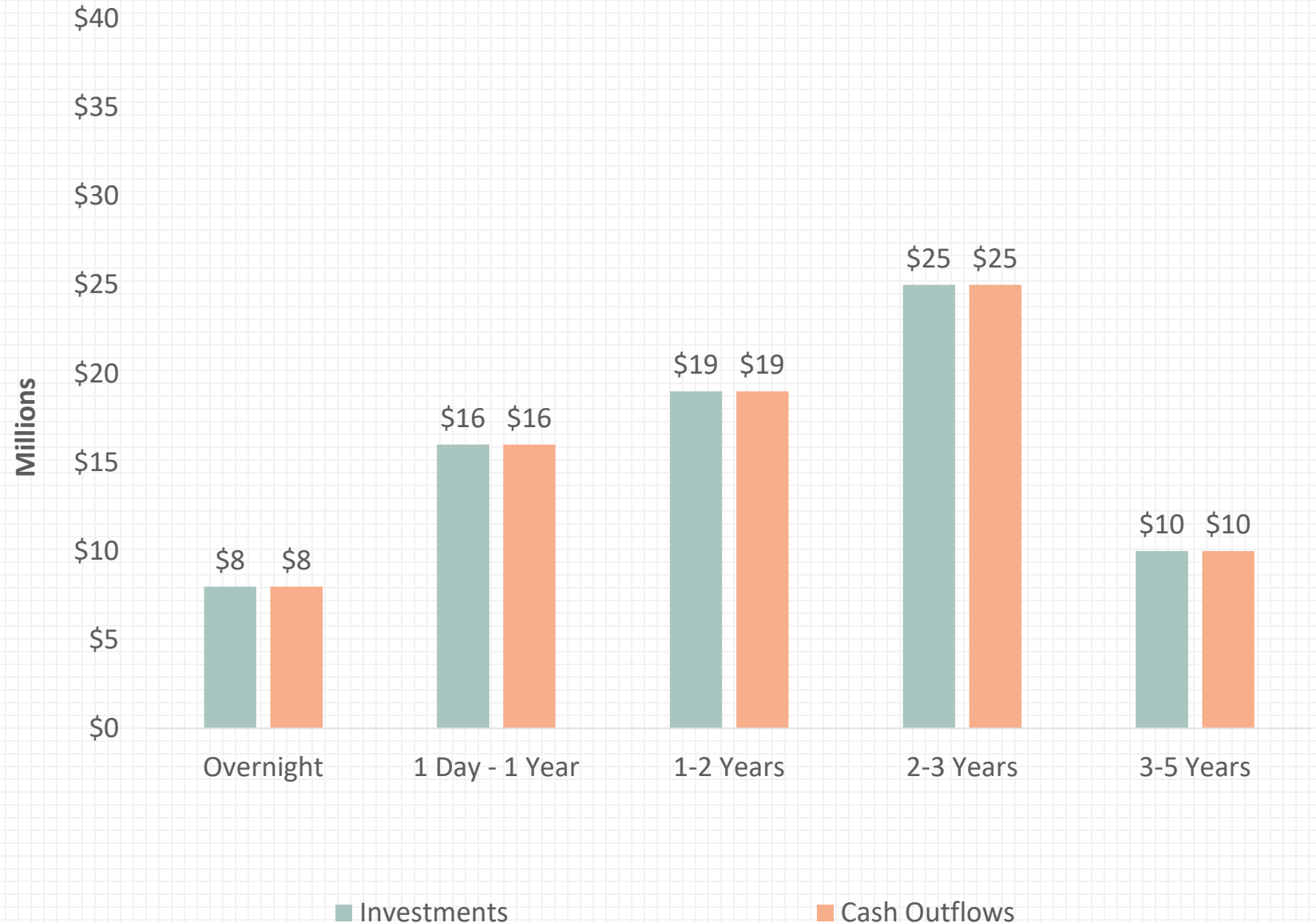
It is not accruals or budgeted funds



Only cash is spendable or investable!

## Ensuring Liquidity

Ensuring maturing cash and reserves are available when needed by matching investments to cash outflows



## Ensuring Liquidity



Total balances trend higher or lower



Balances fluctuate through the year

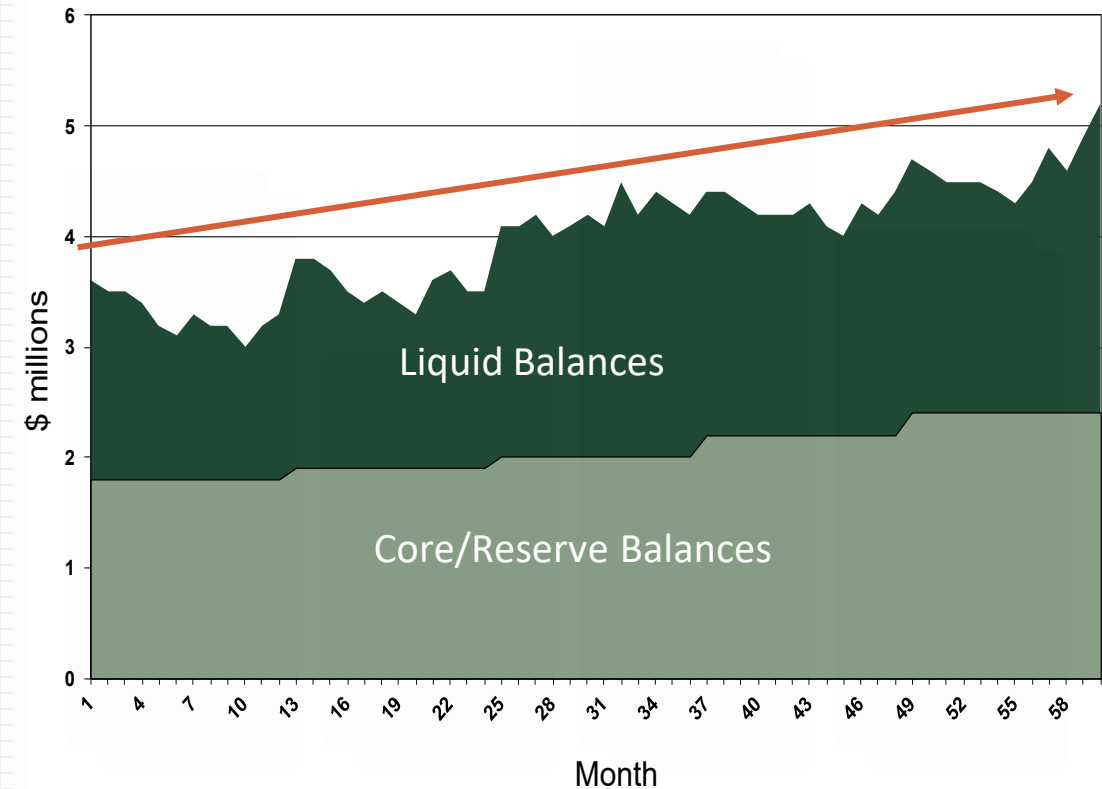


The “liquid” balances are for meeting cash needs



The “core” balances are available for longer-duration investing

Sample Local  
Government Balances  
5 Year Period



*This is shown as an example for illustrative purposes only. Please refer to the important disclosures at the end of this presentation.*

## What Are You Hoping to Accomplish?



Ensure sufficient liquidity for 6-12 months of disbursements



Identify short-term cash deficits



Improve earnings:

- Match sources and uses of cash
- Invest core funds in longer duration investments for higher return potential
- Manage liquidity and market risks



Warn of impending budget problems



## Annual Cash Flow Forecasts



Estimates monthly cash position for next 12 months



Determines cash available for investments of more than 30 days



Provides a useful monthly overview for investment decision-making

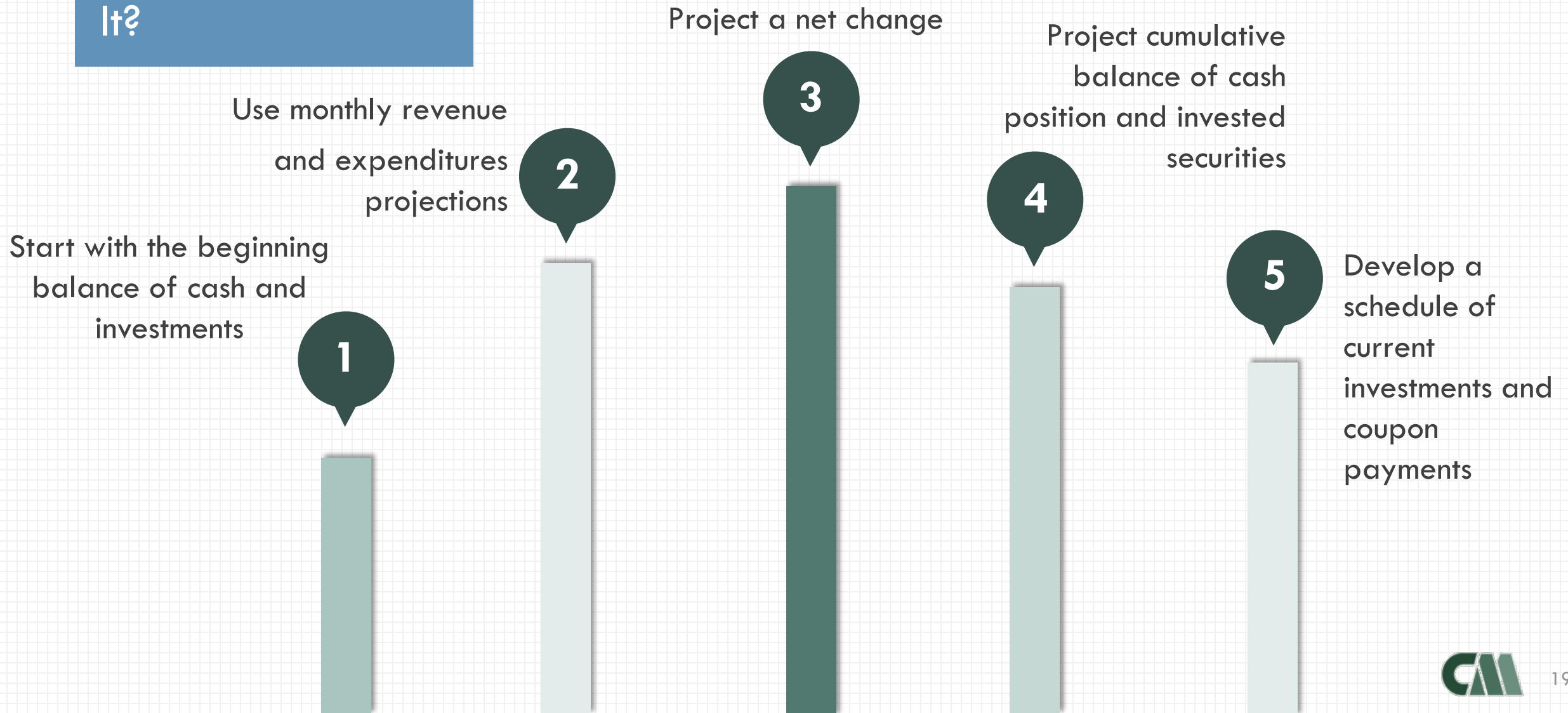


Covers anything from this fiscal year to the next out to possibly 3 years

# POLLING QUESTION

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# How Do I Create It?



## Start by Identifying Revenues and Expenditures

Major Revenues	Major Expenditures
Property taxes	Payroll and benefits
Sales and use taxes	Operating expenses
User fees	Debt service
Shared revenues	Capital projects (spending schedules)
Non-recurring revenues (financing)	Non-recurring
Other	Other

## Sources of Information



Historical data from general ledger



Current year budget



Capital project spending projections



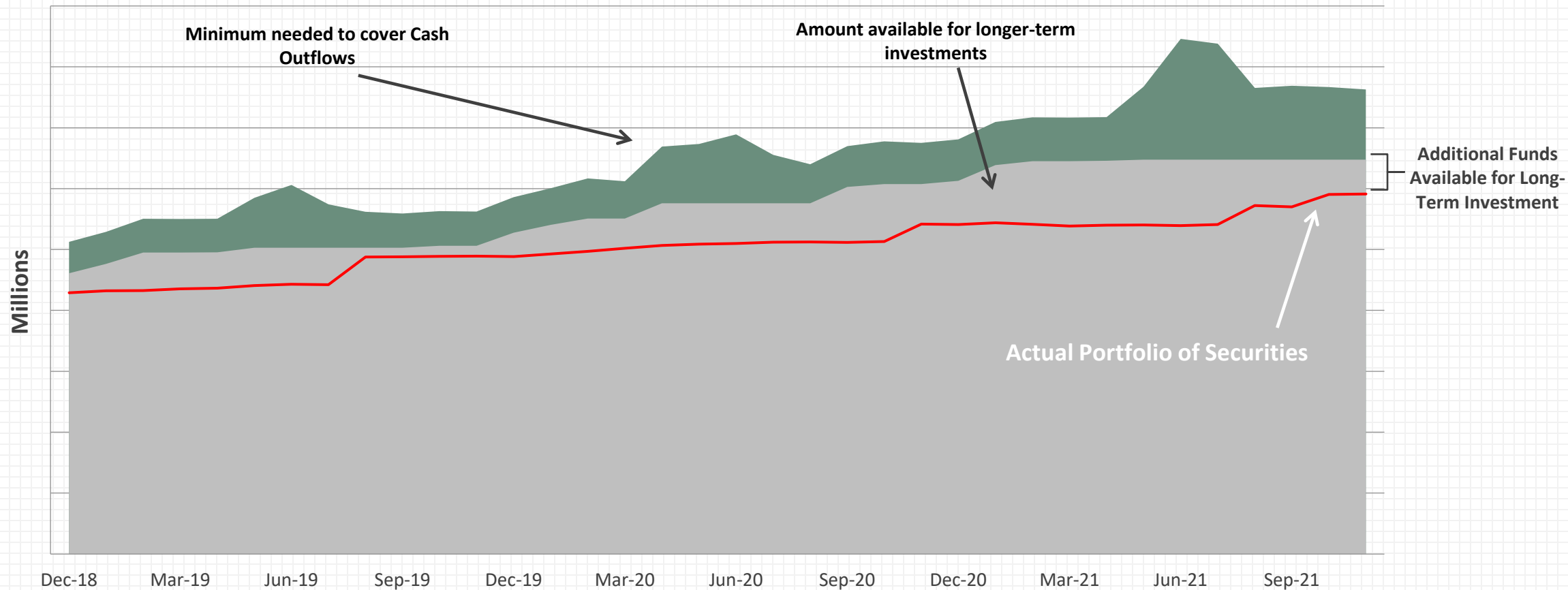
Historical data from bank, pool investments  
Schedule of maturities and coupon payments

# The Budgetary Approach

Beg. Liq. Balance													
Cash Flow Projection	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Average
Liquid Funds Balance	75,542,961	72,193,828	72,989,997	75,608,994	68,206,564	79,169,321	85,840,491	79,609,930	71,751,540	72,031,107	70,112,247	73,518,379	74,714,613
<b>Inflows</b>													
Sales Tax/User Fees	3,516,116	3,164,504	2,848,054	2,278,443	2,050,599	1,845,539	1,476,431	1,328,788	3,164,504	2,531,604	2,278,443	2,050,599	
Development Fees	250,000	225,000	202,500	162,000	145,800	131,220	104,976	94,478	225,000	180,000	162,000	145,800	
Property Tax Collections							9,658,325	3,889,856		8,474,249	3,264,252		
Intergovernmental Revenue	10,264,623	10,264,623	10,264,624	6,532,625	10,264,625	4,141,257			10,264,627		10,264,628	2,314,254	
Other Revenues	7,919,282	1,000,025	3,000,075	500,013	11,500,288	14,429,296	221,989	443,978	125,000	150,369	536,412	141,487	
	21,950,021	14,654,152	16,315,253	9,473,081	23,961,311	20,547,312	11,461,721	5,757,101	13,779,131	11,336,222	16,505,735	4,652,140	14,199,432
<b>Outflows</b>													
Payroll	(16,534,645)	(12,457,365)	(12,333,658)	(15,834,779)	(11,856,123)	(11,633,792)	(16,534,645)	(12,457,365)	(12,333,658)	(12,078,453)	(11,856,123)	(11,633,792)	
Operating and Maintenance	586,124	(900,254)	(882,249)	(864,604)	(900,255)	(882,250)	(864,605)	(900,256)	(882,251)	(864,606)	(900,257)	(882,252)	
Charges for Services	(1,597,717)	(500,364)	(160,116)	(176,128)	(193,741)	(213,115)	(234,427)	(257,869)	(283,656)	(312,022)	(343,224)	(377,546)	
Debt Servcie	(1,093,706)					(1,093,706)							
Other Expenses	(6,659,210)		(320,233)		(48,435)	(53,279)	(58,607)					(94,387)	
	(25,299,154)	(13,857,983)	(13,696,256)	(16,875,511)	(12,998,554)	(13,876,142)	(17,692,283)	(13,615,490)	(13,499,565)	(13,255,081)	(13,099,603)	(12,987,977)	(15,062,800)
Projected Net Change	(3,349,133)	796,169	2,618,997	(7,402,430)	10,962,758	6,671,170	(6,230,562)	(7,858,389)	279,566	(1,918,859)	3,406,132	(8,335,837)	(863,368)
Projected Liquid Balance	72,193,828	72,989,997	75,608,994	68,206,564	79,169,321	85,840,491	79,609,930	71,751,540	72,031,107	70,112,247	73,518,379	65,182,542	73,851,245
Projected Core Balance	141,565,000	141,565,000	141,565,000	141,565,000	141,565,000	141,565,000	141,565,000	141,565,000	141,565,000	141,565,000	141,565,000	141,565,000	141,565,000
Total Projected Balance	213,758,828	214,554,997	217,173,994	209,771,564	220,734,321	227,405,491	221,174,930	213,316,540	213,596,107	211,677,247	215,083,379	206,747,542	215,416,245
Actual Liquid Balance													
Actual Core Balance													
Total Actual Balance													

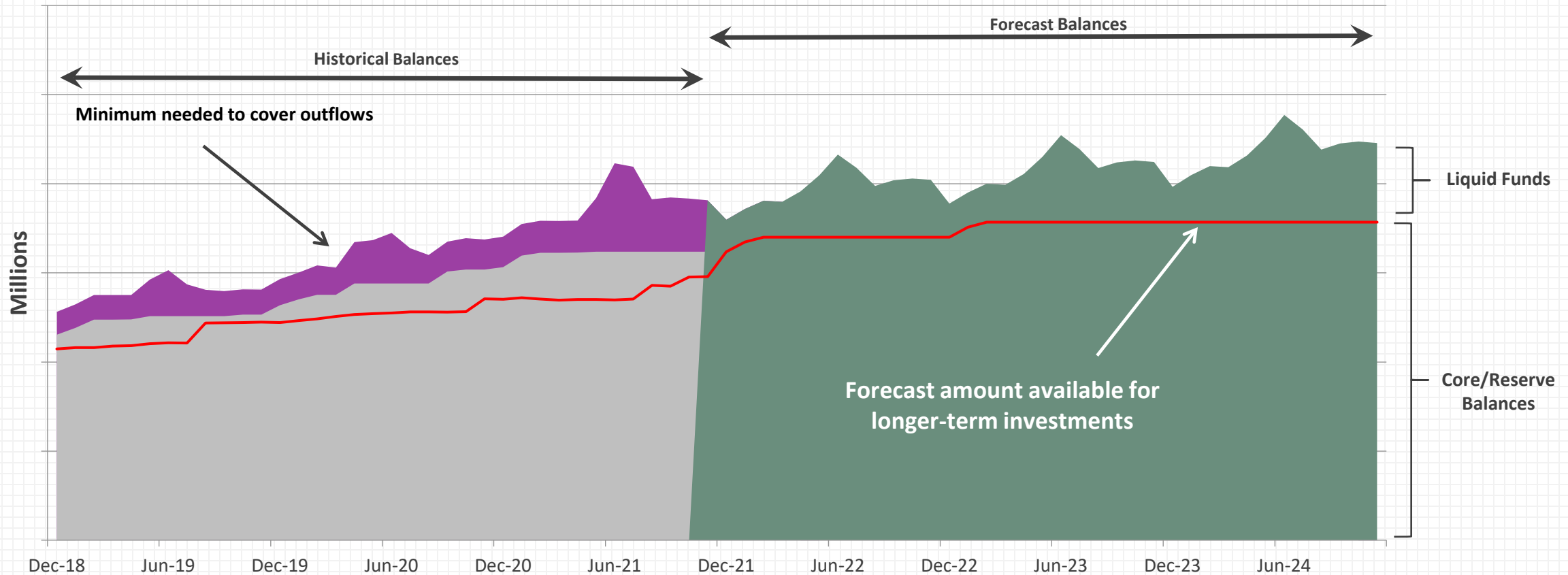
# The Statistical Approach

## Sample Balances Analysis



# The Statistical Approach

## Sample Balances Analysis with Forecast





## Challenges to Developing Forecasts



**Systems**: limitations of computer systems for historical data or data management



**Physical Structure**: Locations of people



**Political**: Elected officials' agendas



**Inter-departmental Communications**: Other departments not understanding importance of information

## Review and Maintain Cash Flow Forecast



**Compare actual results vs. forecast results**

Make sure to identify reasons for variances



**Adjust assumptions if warranted**



**Follow up with department heads on capital project slippage**



**Update your model and retain documentation for future reference**

## How Do I Invest It?

You must take into account:



Cash Flow Needs



California Government Code and your investment Policy



Investment objectives



Current Market Conditions

## In Summary:



Determine how much is needed liquid



Check in with all your resources:

- Revenues and expenditures historical and to date
- Debt payments
- Everchanging CIP schedules



Reduce unnecessary liquidity



Safety and liquidity are more important than return

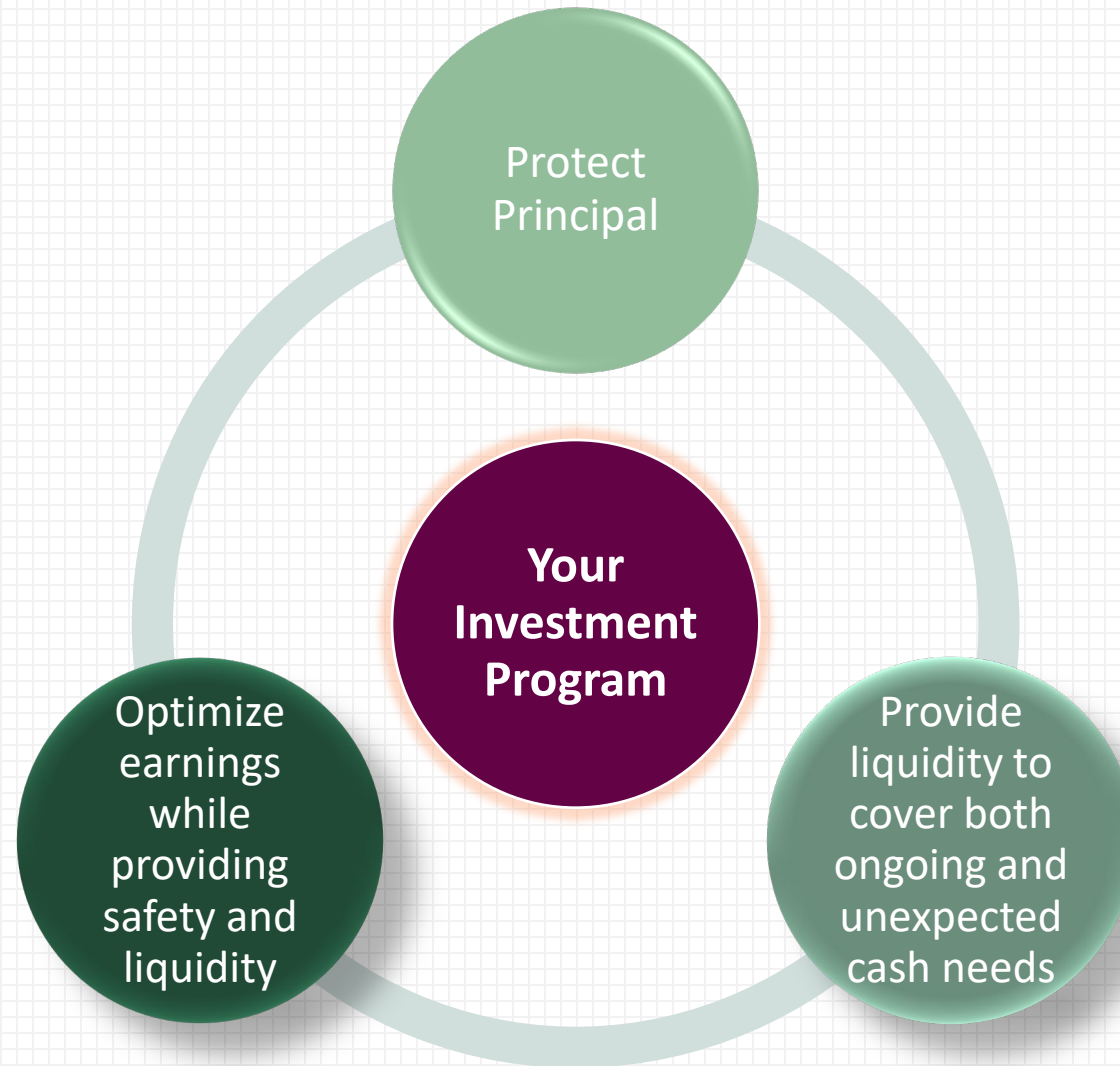
# POLLING QUESTION

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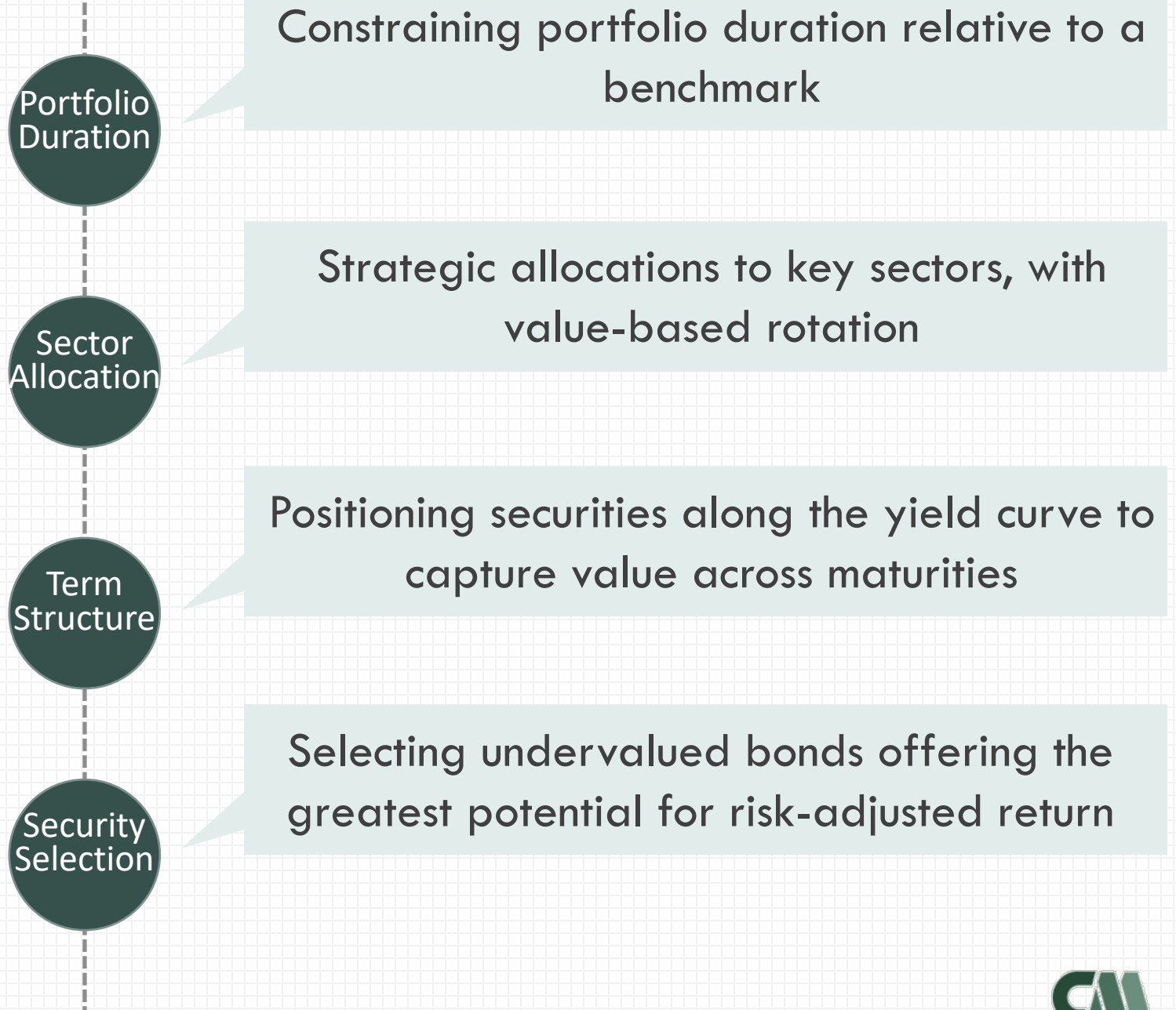
Now What Do You Do With It?

## Meet Your Code-Mandated Objectives



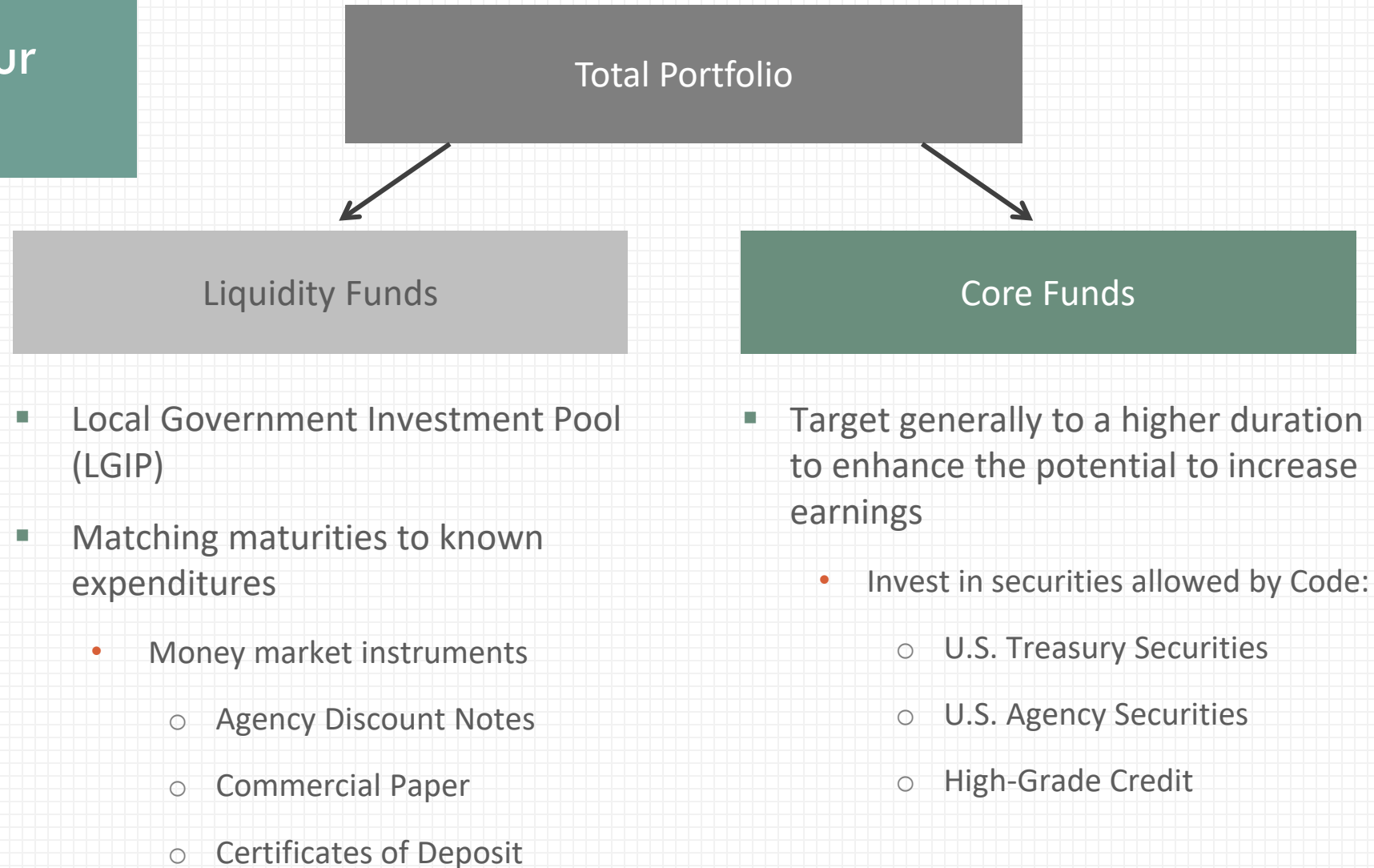
## Meet Your Code-Mandated Objectives

Based on cash flow analysis, California Government Code, and the Investment policy, these decisions must be made:

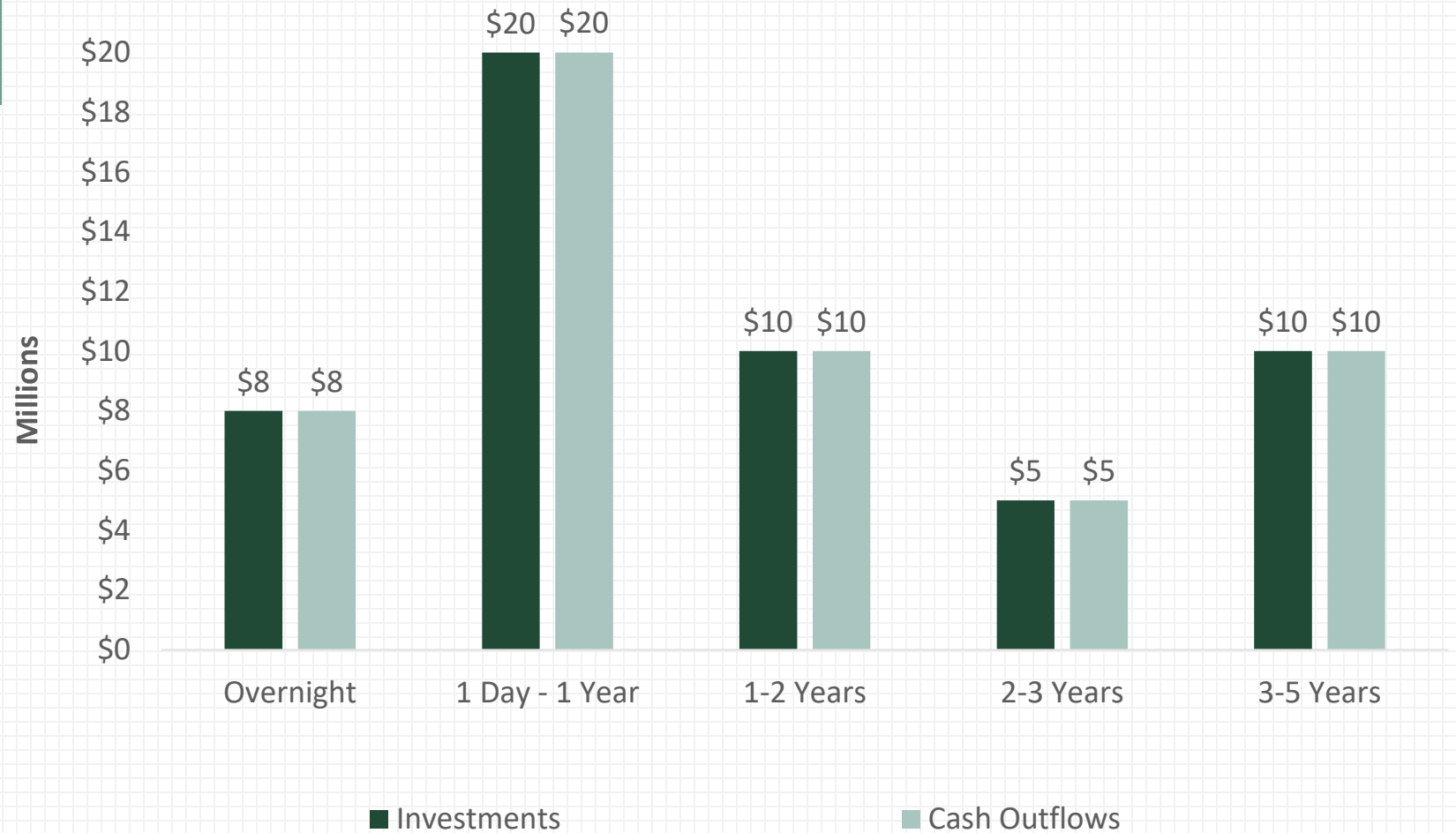




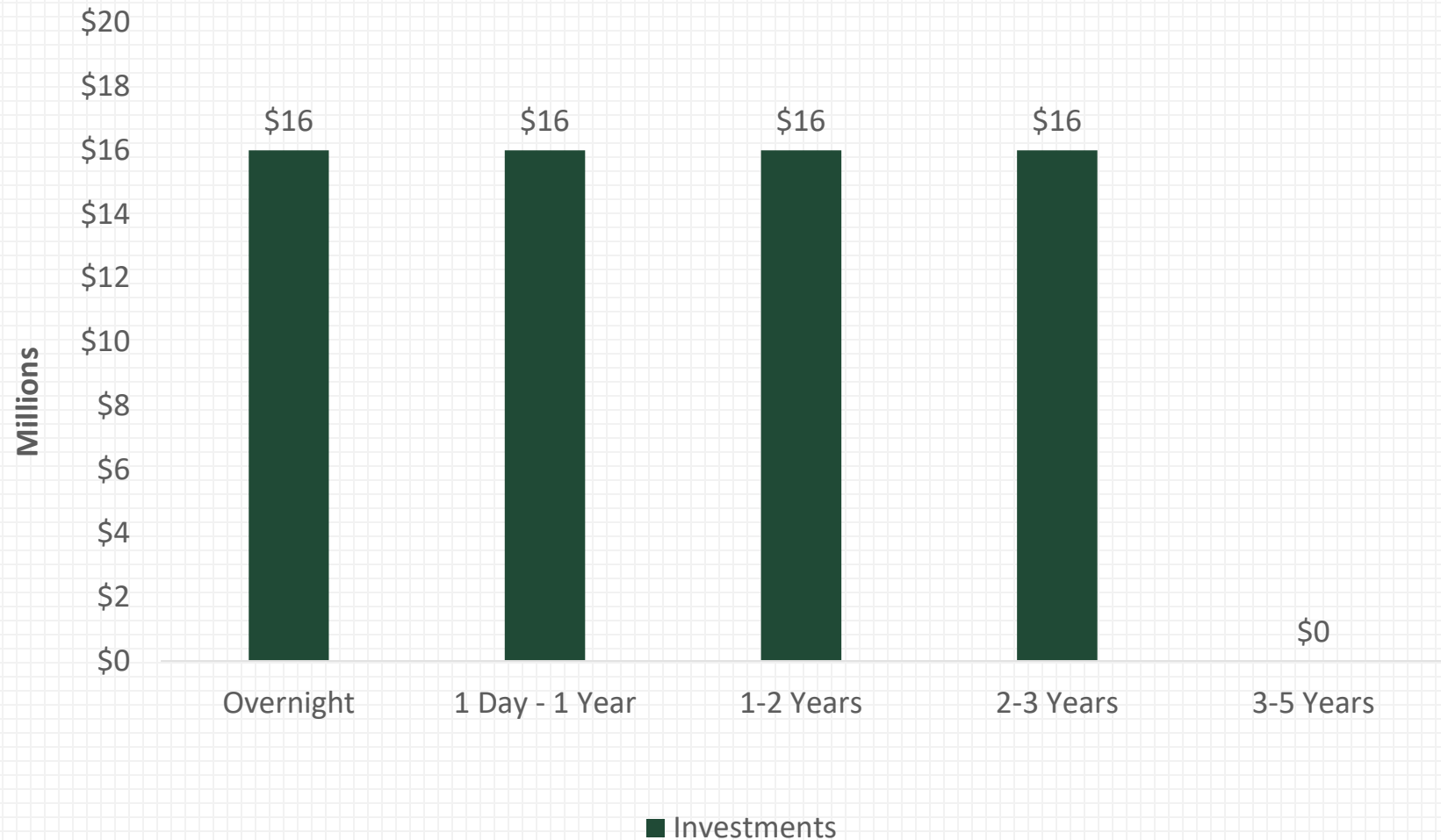
## Structuring Your Funds



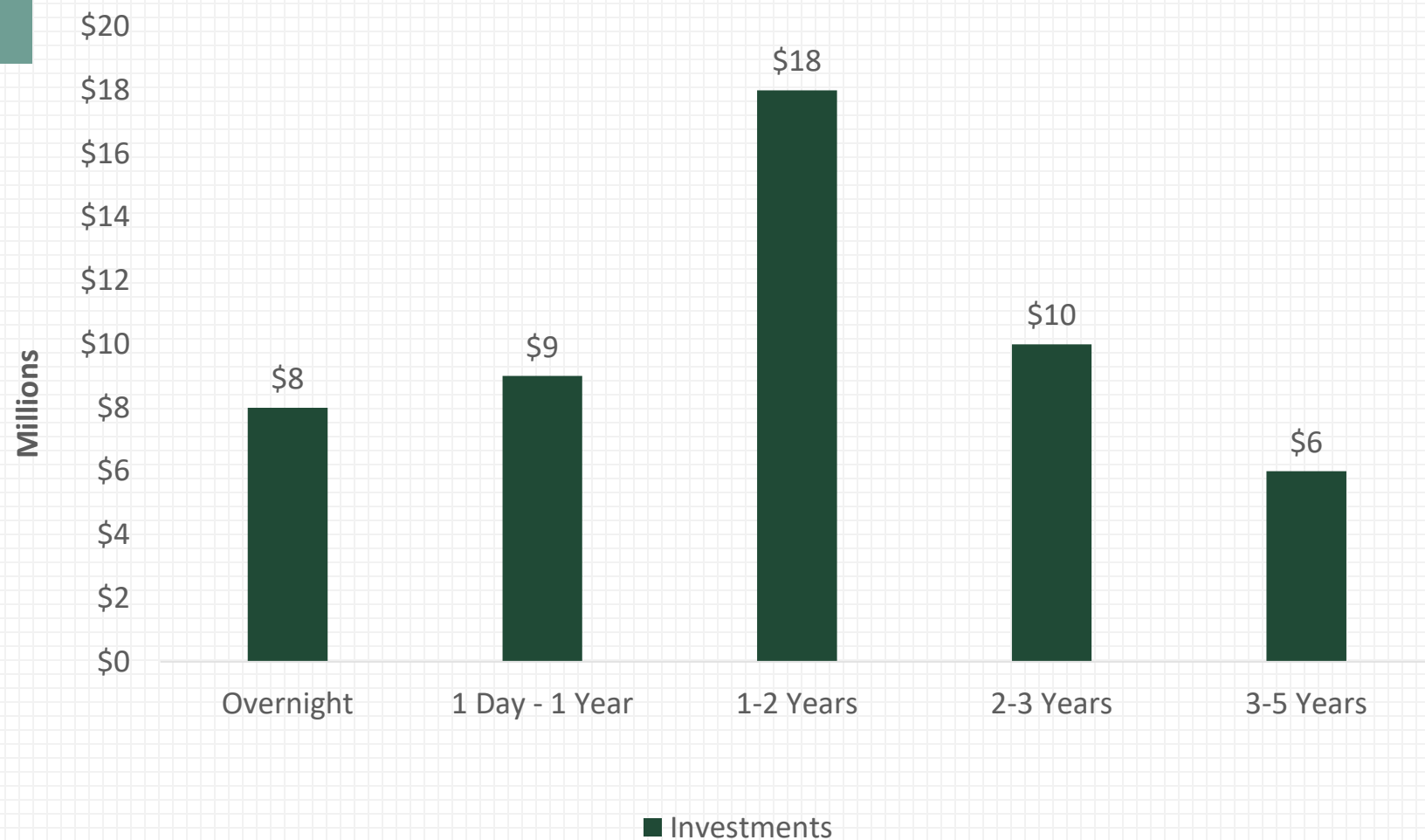
## Matching Cash Flows Maturity Structure



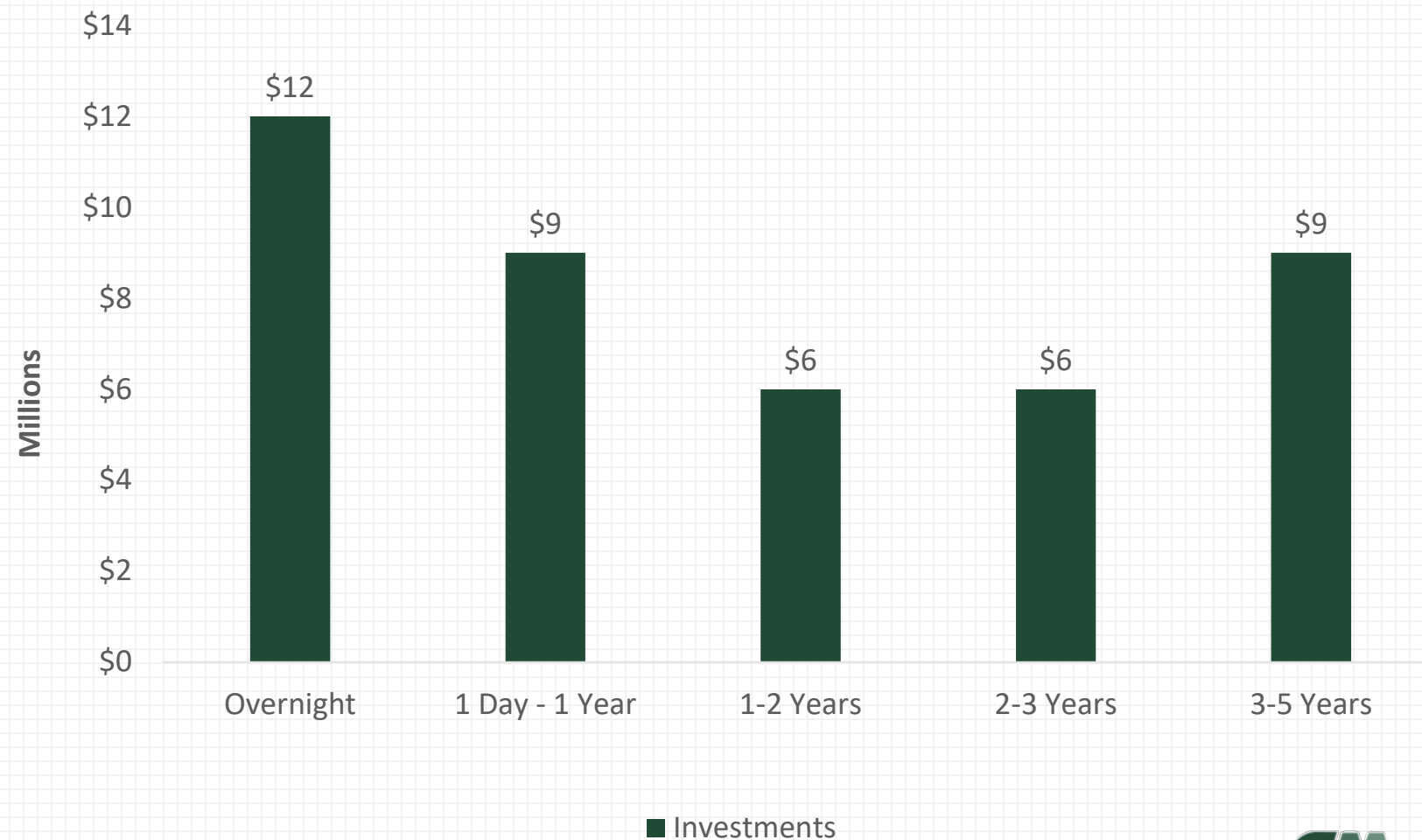
## Laddered Maturity Structure



## Bullet Maturity Structure



## Barbell Maturity Structure



# POLLING QUESTION

To earn CPE credits, participants must participate in at least three of the polling questions.

Longer duration targets are associated with higher return and volatility

Annual Benchmark Study  
Period Ending December 31, 2021

	ICE BofA 1-3 Yr. US Treasury/Agency	ICE BofA 1-5 Yr. US Treasury/Agency	ICE BofA 1-10 Yr. US Treasury/Agency
0-6 months			
6-12 months			
1-3 years	100.00%	63.16%	43.34%
3-5 years		36.84%	26.15%
5-10 years			30.51%
Treasury	100.00%	96.57%	96.93%
Agency		3.43%	3.07%
Corporate			
Modified Duration 12/31/2021	1.83	2.53	3.69
10 Year Annualized Total Return	1.09%	1.35%	1.68%
10 Year Standard Deviation	0.77%	1.33%	2.18%
Sharpe Ratio	0.59	0.54	0.48
<b>Qualitative Risk Objective</b>	<b>12/31/1988 - 12/31/2021</b>	<b>12/31/1988 - 12/31/2021</b>	<b>12/31/1988 - 12/31/2021</b>
Negative Quarterly Return Occurrences	15	19	29
Negative Return For Year Occurrences	1	2	3
Worst Year Total Return	-0.55%	-1.09%	-1.63%

Source: ICE BofA Indices.

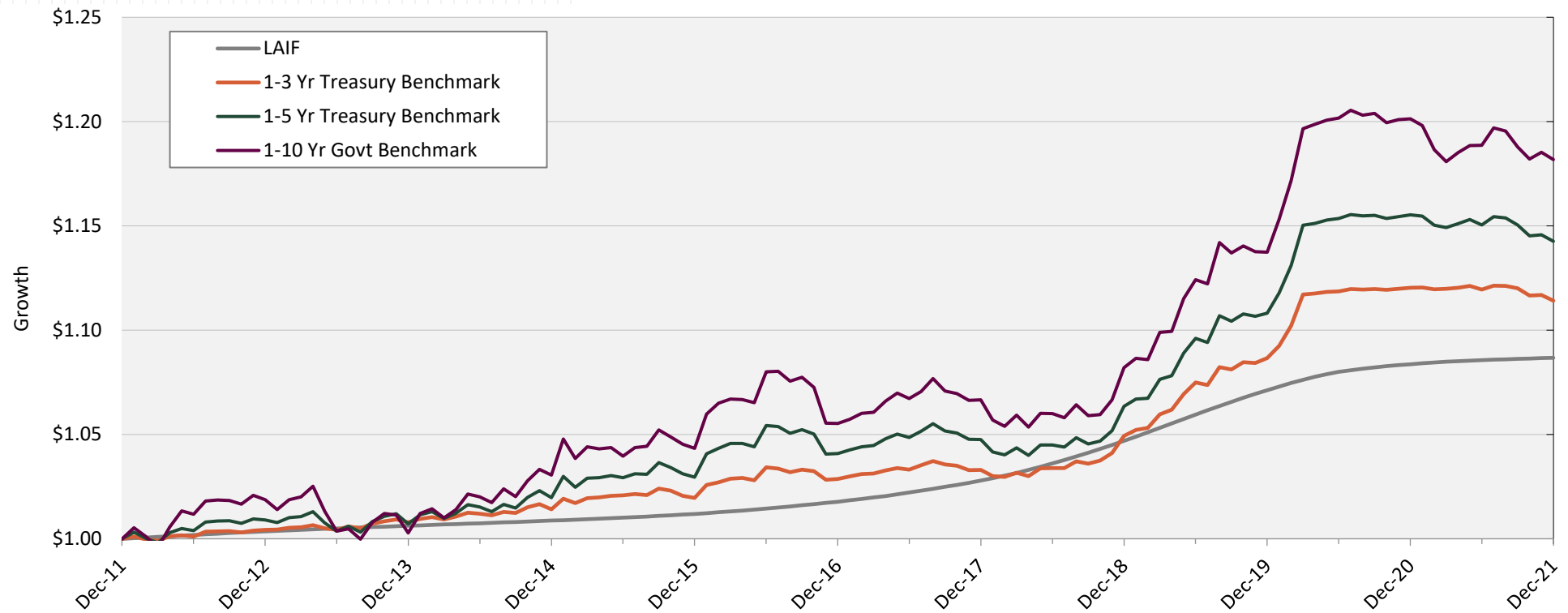
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# Benchmark Comparison

## Value on 12/31/2021 of \$200 million invested 12/31/2011

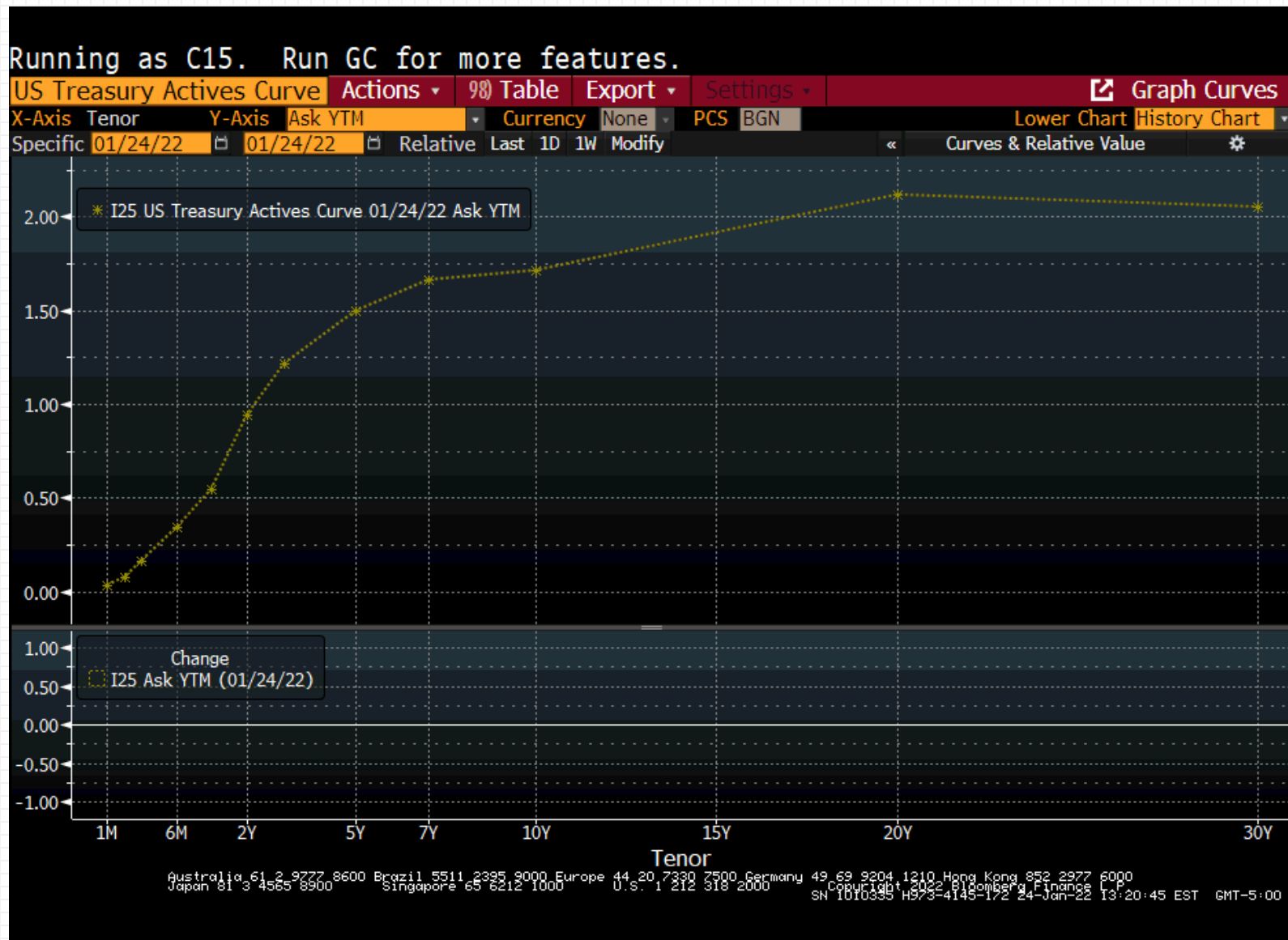
	12/31/2021	Annualized Return
LAIF	\$217,367,864	0.84%
1-3 Yr Treasury Benchmark	\$222,828,973	1.09%
1-5 Yr Treasury Benchmark	\$228,517,984	1.34%
1-10 Yr Govt Benchmark	\$236,350,440	1.68%



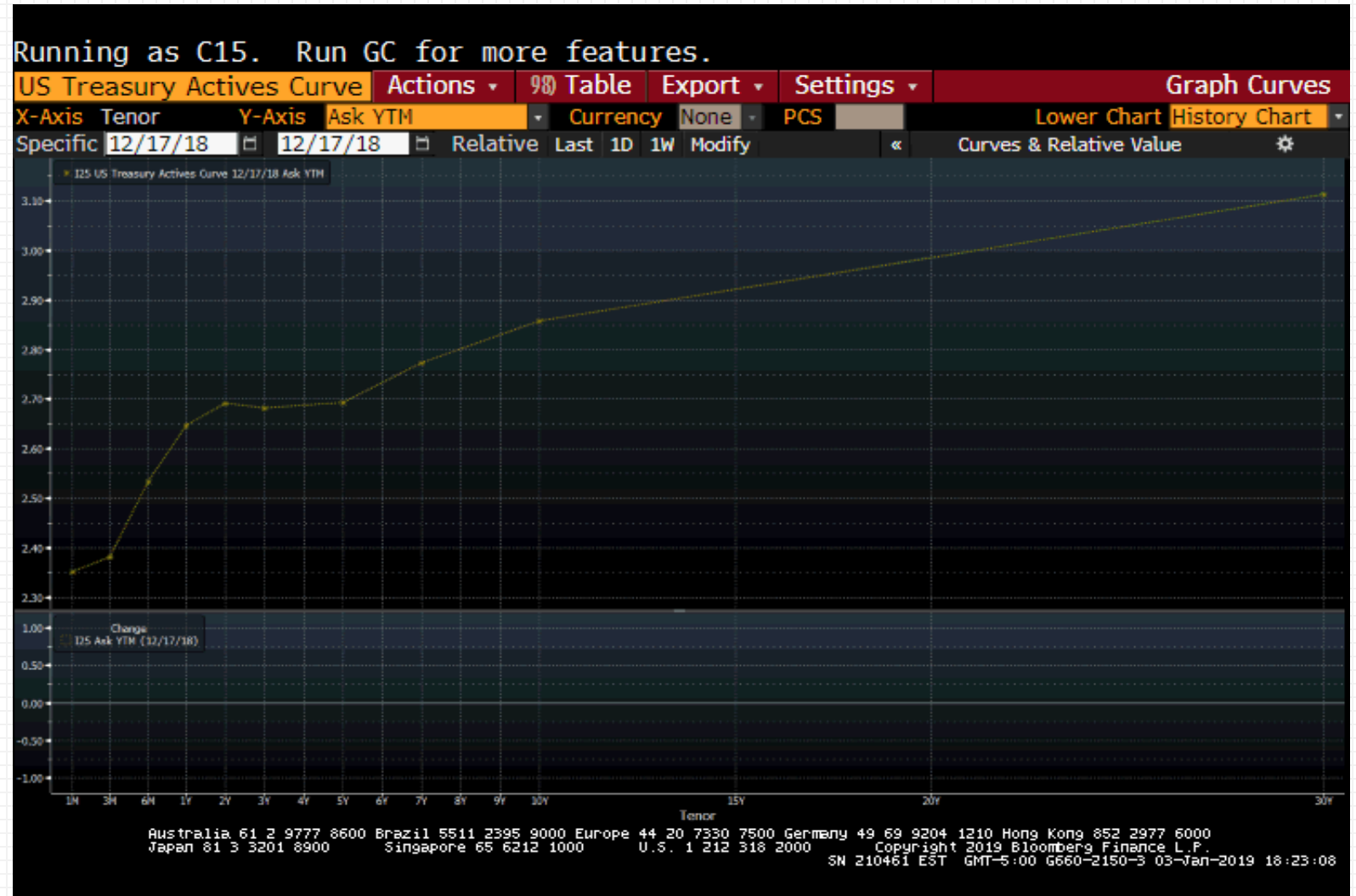
Source: LAIF and ICE BofA Indices as of 12/31/2021. LAIF returns include an administrative fee charged to investors by the California State Treasurer. Index returns assume reinvestment of all distributions. Historical performance results for investment indexes generally do not reflect the deduction of transaction and/or custodial charges or the deduction of an investment management fee, the incurrence of which would have the effect of decreasing historical performance results. It is not possible to invest directly in an index. Past performance is not indicative of future results. Please see disclosures at the end of this presentation.



# Normal Yield Curve



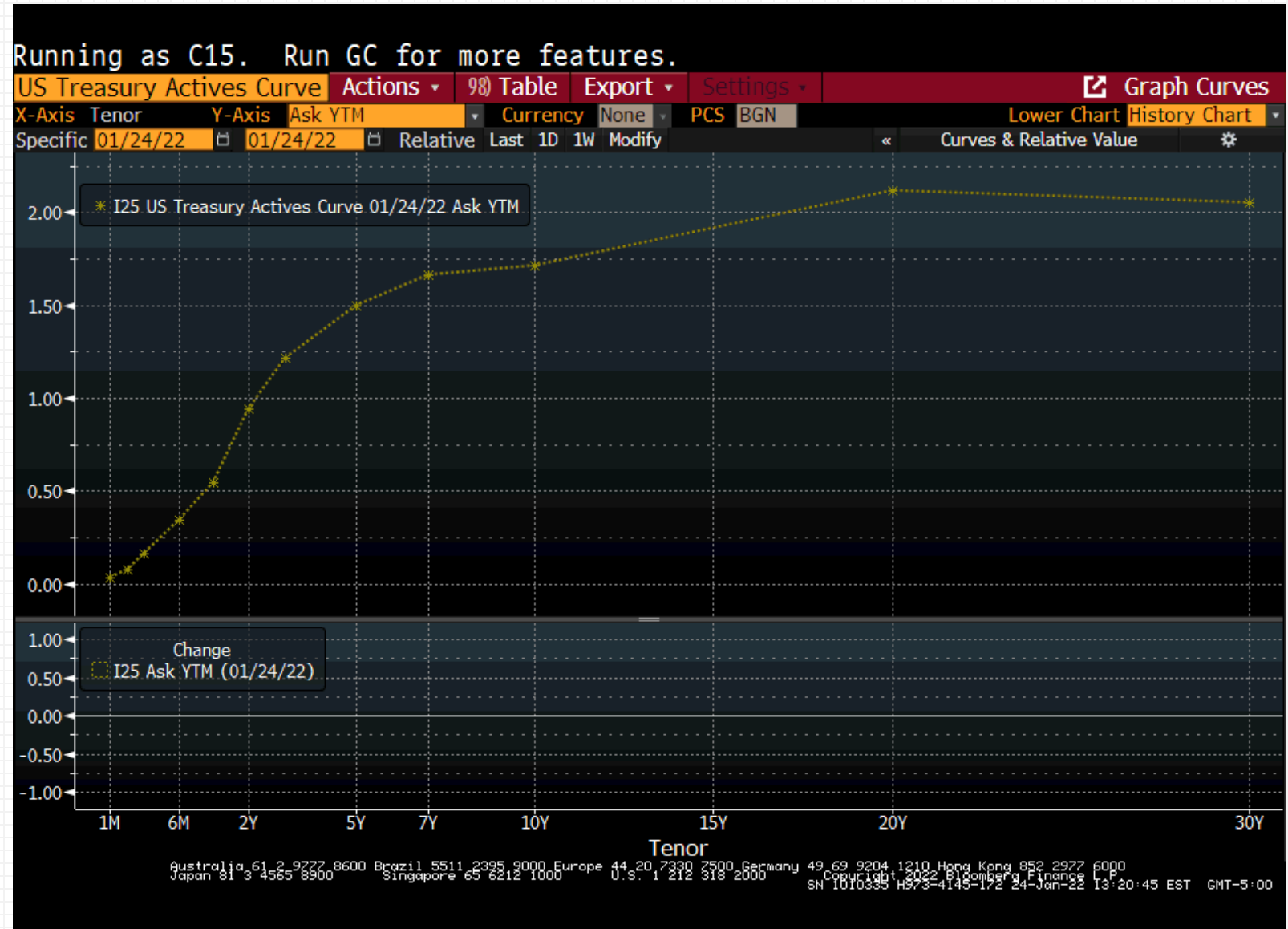
# Flattening Yield Curve



# Inverted Yield Curve



# Yield Curve Today



# Yield Spread Between 3-Month and 10-Year Treasury Securities



## Yield Levels

*Assuming a long-term time horizon, what is the main risk of keeping funds invested one year or less?*

*As of December 31, 2020*

LAIF	3 MO TSY	6 MO TSY	1 YR TSY	2 YR TSY	3 YR TSY	5 YR TSY	10 YR TSY
0.57%	0.08%	0.09%	0.09%	0.12%	0.18%	0.38%	0.38%

*As of December 31, 2021*

LAIF	3 MO TSY	6 MO TSY	1 YR TSY	2 YR TSY	3 YR TSY	5 YR TSY	10 YR TSY
0.22%	0.03%	0.18%	0.38%	0.73%	0.96%	1.26%	1.51%

*As of January 24, 2022*

LAIF	3 MO TSY	6 MO TSY	1 YR TSY	2 YR TSY	3 YR TSY	5 YR TSY	10 YR TSY
0.24%	0.16%	0.34%	0.55%	0.95%	1.24%	1.50%	1.72%



# Disclosures

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Economic factors, market conditions and investment strategies will affect the performance of any portfolio and there are no assurances that it will match or outperform any particular benchmark. The data contained in this presentation is the property of those providers, which was obtained from sources believed to be reliable, but are subject to change at any time at the provider's discretion. Unless otherwise noted, Chandler is the source of data contained in this presentation.

Fixed income investments are subject to interest, credit and market risk. Interest rate risk: the value of fixed income investments will decline as interest rates rise. Credit risk: the possibility that the borrower may not be able to repay interest and principal. Low rated bonds generally have to pay higher interest rates to attract investors willing to take on greater risk. Market risk: the bond market in general could decline due to economic conditions, especially during periods of rising interest rates.

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# Disclosures

## **ICE BofA 1 Year US Treasury Note Index**

The ICE BofA 1-Year US Treasury Note Index is comprised of a single issue purchased at the beginning of the month and held for a full month. At the end of the month that issue is sold and rolled into a newly selected issue. The issue selected at each month-end rebalancing is the outstanding two-year Treasury note that matures closest to, but not beyond, one year from the rebalancing date. (Index: GC03. Please visit [www.mlindex.ml.com](http://www.mlindex.ml.com) for more information).

## **ICE BofA 1-3 Year US Treasury Index**

The ICE BofA 1-3 Year US Treasury Index tracks the performance of US dollar denominated sovereign debt publicly issued by the US government in its domestic market. Qualifying securities must have at least one year remaining term to final maturity and less than three years remaining term to final maturity, a fixed coupon schedule and a minimum amount outstanding of \$1 billion. Qualifying securities must have at least 18 months to final maturity at the time of issuance. (Index: G1O2. Please visit [www.mlindex.ml.com](http://www.mlindex.ml.com) for more information).

## **ICE BofA 1-3 Year US Treasury & Agency Index**

The ICE BofA 1-3 Year US Treasury & Agency Index tracks the performance of US dollar denominated US Treasury and nonsubordinated US agency debt issued in the US domestic market. Qualifying securities must have an investment grade rating (based on an average of Moody's, S&P and Fitch). Qualifying securities must have at least one year remaining term to final maturity and less than three years remaining term to final maturity, at least 18 months to maturity at time of issuance, a fixed coupon schedule and a minimum amount outstanding of \$1 billion for sovereigns and \$250 million for agencies. (Index: G1A0. Please visit [www.mlindex.ml.com](http://www.mlindex.ml.com) for more information).

## **ICE BofA US 1-5 Year Treasury Index**

The ICE BofA US 1-5 Year Treasury Index tracks the performance of US dollar denominated sovereign debt publicly issued by the US government in its domestic market. Qualifying securities must have at least one year remaining term to final maturity and less than five years remaining term to final maturity, a fixed coupon schedule and a minimum amount outstanding of \$1 billion. Qualifying securities must have at least 18 months to final maturity at the time of issuance. (Index: GVQ0. Please visit [www.mlindex.ml.com](http://www.mlindex.ml.com) for more information).

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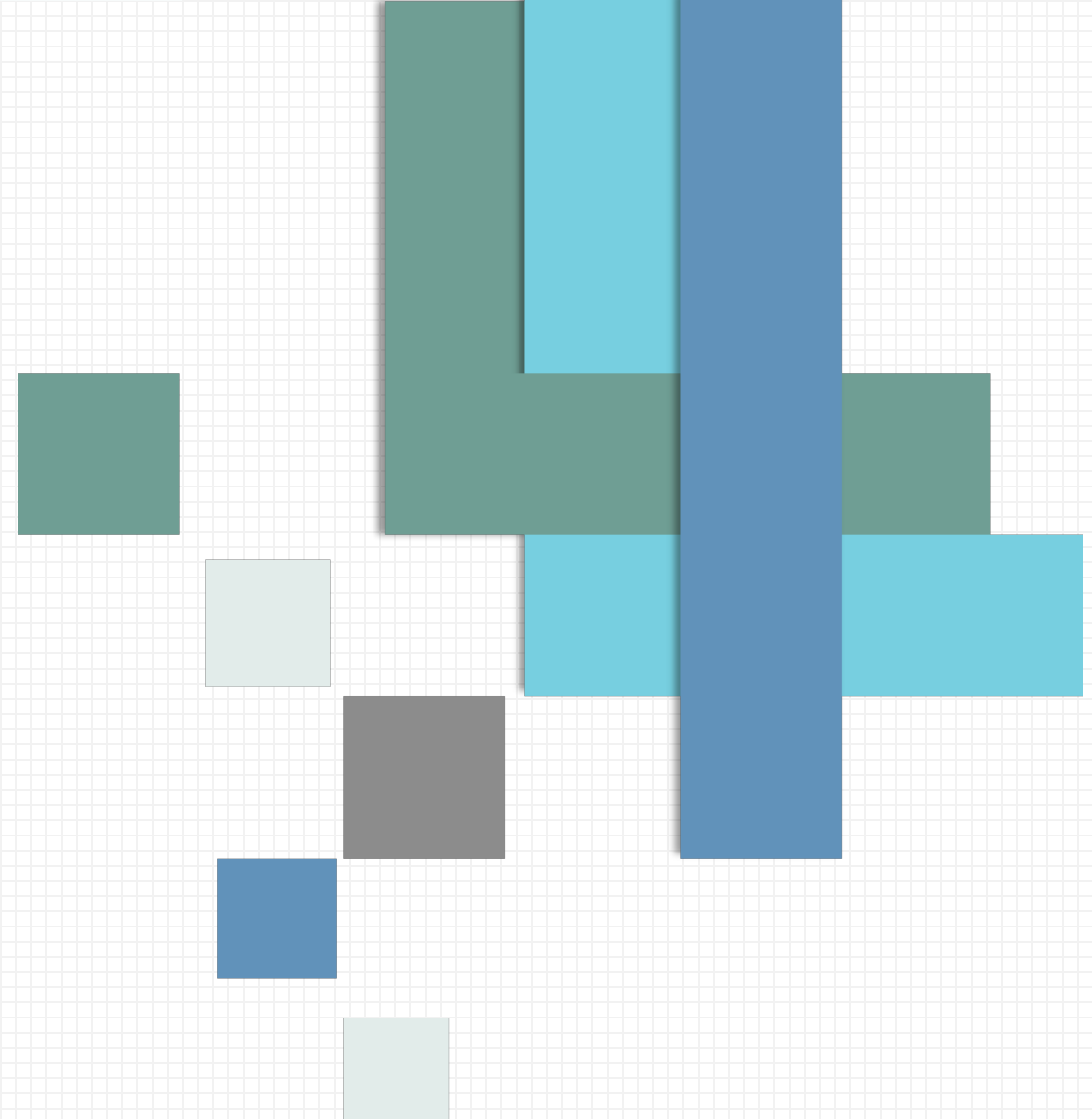
## **ICE BofA 1-10 Year US Treasury & Agency Index**

The ICE BofA 1-10 Year US Treasury & Agency Index tracks the performance of US dollar denominated US Treasury and nonsubordinated US agency debt issued in the US domestic market. Qualifying securities must have an investment grade rating (based on an average of Moody's, S&P and Fitch). Qualifying securities must have at least one year remaining term to final maturity and less than ten years remaining term to final maturity, at least 18 months to maturity at time of issuance, a fixed coupon schedule and a minimum amount outstanding of \$1 billion for sovereigns and \$250 million for agencies. (Index: G5A0. Please visit [www.mlindex.ml.com](http://www.mlindex.ml.com) for more information).

## **LAIF**

The California State Local Agency Investment Fund (LAIF) is an investment portfolio managed by the State Treasurer. All securities are purchased under the authority of Government Code Section 16430 and 16480.4 and include securities issued by entities of the US Government, including the US Treasury and Agencies, Corporate debt, Certificates of Deposit, Mortgage Backed Securities and certain loans to the State and state agencies. The average maturity of the Fund will be between 120 days and 18 months.

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*Understanding and Managing Risk in Public Investing*

