

Investment Committee
Thursday, April 17, 2025, 11:00 a.m.
Virtual Only
[Click here to join the meeting](#)

AGENDA

- I. **CALL TO ORDER AND ACCEPTANCE OF AGENDA – *(Committee Action)***
- II. **ACCEPTANCE OF MINUTES (March 14, 2025) – *(Committee Action)***
- III. **STRATEGY REVIEW (75 minutes) – *(Information Only)***
 - A. Internal Investment Roll Out – *Mr. Gandhi, Mr. Moss*
 - i. Trade Error Procedure – *Mr. Anderson*
 - B. Performance Update – *Mr. Anderson*
 - C. Risk and Informational Technology – *Mr. Vaidya, Mr. Yu*

(Break)

- IV. **MANAGER UPDATE (10 minutes) – *(Information Only)***
 - A. Public Markets – *Mr. Chin, Mr. Cox, Mr. Posch*
- V. **QUARTERLY REPORTS (10 minutes) – *(Information Only)***
 - A. Contracts – *Mr. Anderson*
- VI. **DISCUSSION**
- VII. **ADJOURNMENT**

**STATE INVESTMENT BOARD
INVESTMENT COMMITTEE
MEETING MINUTES OF THE
MARCH 14, 2025, MEETING**

MEMBERS PRESENT: Thomas Beadle, State Treasurer, Chair
Joseph Heringer, Trust Lands Commissioner, Vice Chair
Scott Anderson, Chief Investment Officer
Eric Chin, Deputy Chief Investment Officer
Dr. Prodosh Simlai, External Representative

ABSENT: Pete Jahner, External Representative

STAFF PRESENT: Jac Collins, Senior Investment Analyst
Cory Cox, Investment Analyst
Derek Dukart, Senior Investment Analyst
Jennifer Ferderer, Fiscal Investment Admin
Chirag Gandhi, Portfolio Manager
Brian Hermanson, Investment Accountant
Rachel Kmetz, Interim CFO/COO
Robbie Morey, Investment Accountant
Sarah Mudder, Communication & Outreach Director
Matt Posch, Portfolio Manager
Chad Roberts, Deputy Executive Director/Chief Retirement Officer
Jodi Smith, Interim Executive Director
Nitin Vaidya, Chief Risk Officer
Susan Walcker, Senior Financial Accountant
Alexander Weissman, Investment Analyst
Jason Yu, Risk Officer
Lance Zietlow, Portfolio Manager

GUESTS: Marc Gesell, Verus
Robert Goldthorpe, NEPC
Joe Nankof, NEPC
Members of the Public

CALL TO ORDER

Treasurer Beadle called the State Investment Board (SIB) Investment Committee (IC) meeting to order at 12:02 p.m. on Friday, March 14, 2025. The meeting was held virtually.

The following members were present representing a quorum: Mr. Anderson, Treasurer Beadle, Mr. Chin, Commissioner Heringer, and Dr. Simlai.

AGENDA

The agenda was considered for the March 14, 2025, meeting.

IT WAS MOVED BY MR. ANDERSON AND SECONDED BY DR. SIMLAI AND CARRIED BY A VOICE VOTE TO APPROVE THE AGENDA FOR THE MARCH 14, 2025, MEETING AS DISTRIBUTED.

AYES: MR. ANDERSON, MR. CHIN, COMMISSIONER HERINGER, DR. SIMLAI, AND TREASURER BEADLE

NAYS: NONE

ABSENT: MR. JAHNER

MOTION CARRIED

MINUTES

The minutes were considered for the February 14, 2025, meeting.

IT WAS MOVED BY COMISSIONER HERINGER AND SECONDED BY MR. CHIN AND CARRIED BY A VOICE VOTE TO APPROVE THE MINUTES FOR THE FEBRUARY 10, 2025, MEETING AS DISTRIBUTED.

AYES: MR. ANDERSON, MR. CHIN, COMMISSIONER HERINGER, MR. JAHNER, DR. SIMLAI, AND TREASURER BEADLE

NAYS: NONE

ABSENT: MR. JAHNER

MOTION CARRIED

ORGANIZATIONAL ANNOUNCEMENTS

Mr. Anderson announced the retirement of Mr. Vaidya, Chief Risk Officer. Mr. Vaidya's last day is yet to be determined, as he will continue to assist the team with ongoing projects until further notice.

Mr. Gandhi introduced Mr. Alex Weissman to the Committee. The team welcomed Mr. Weismann as the Investment Analyst of Internal Fixed Income.

BENCHMARK MEMO

Mr. Gesell from Verus presented a memorandum to update the benchmark recommendations. Committee discussion followed.

IT WAS MOVED BY MR. ANDERSON AND SECONDED BY DR. SIMLAI AND CARRIED BY A ROLL CALL VOTE TO APPROVE TO RECOMMEND THE UPDATED BENCHMARK RECOMMENDATIONS AS PRESENTED.

AYES: COMMISSIONER HERINGER, MR. ANDERSON, DR. SIMLAI, MR. CHIN AND TREASURER BEADLE

NAYS: NONE

ABSENT: MR. JAHNER

MOTION CARRIED

STRATEGY REVIEW

Mr. Nankof and Mr. Goldthorpe of NEPC provided a presentation regarding asset allocations for the six pension fund clients of the SIB. The presentation covered capital market assumptions and an overview including the projected returns and risks. Information was presented about a range of asset allocations to demonstrate the possible enhancements. Committee discussion followed.

Mr. Vaidya and Mr. Gandhi provided an update on the internal investment program, including the acquisition of the Order Execution Management System (OEMS), Portfolio & Treasury Management System (PMS), and the Data Warehouse/Exchange platforms. Mr. Vaidya reviewed the timeline and milestones, noting which activities are on track for the go-live date. Mr. Gandhi then reviewed the internal investment pilot with a targeted execution date in April 2025.

Mr. Anderson shared an organizational structure for the investment team, proposing the integration of the risk and public markets teams into a single Funds Management team to enhance the funds management capabilities with an internal investment team. Committee discussion followed.

The Committee recessed at 1:40 p.m. and reconvened at 1:46 p.m.

MANAGER RECOMMENDATION

IT WAS MOVED BY MR. ANDERSON AND SECONDED BY DR. SIMLAI AND CARRIED BY A ROLL CALL VOTE TO ENTER INTO EXECUTIVE SESSION PURSUANT TO N.D.C.C. 44-04-19.2, 44-04-18.4 (2)(A) AND N.D.C.C. 44-04-18.4(2)(D) TO REVIEW AND DISCUSS CONFIDENTIAL COMMERCIAL INFORMATION AND TRADE SECRETS.

AYES: DR. SIMLAI, MR. CHIN, COMMISSIONER HERINGER, MR. ANDERSON AND TREASURER BEADLE

NAYS: NONE

ABSENT: MR. JAHNER

MOTION CARRIED

The executive session began at 1:50 p.m. and ended at 2:23 p.m. The session was attended by Committee members, Mr. Collins, Mr. Cox, Mr. Dukart, Ms. Ferderer, Ms. Kmetz, Ms. Mudder, Mr. Posch, Ms. Smith, Mr. Vaidya, Mr. Yu, and Mr. Zietlow.

IT WAS MOVED BY COMMISSIONER HERINGER AND SECONDED BY MR. ANDERSON AND CARRIED BY A ROLL CALL VOTE TO APPROVE THE ADJUSTMENTS OF THE PRIVATE MARKET MANAGERS, PENDING LEGAL REVIEW AND DIRECT STAFF TO REPORT BACK AT A FUTURE COMMITTEE MEETING.

AYES: MR. ANDERSON, MR. CHIN, COMMISSIONER HERINGER, DR. SIMLAI, AND TREASURER BEADLE

NAYS: NONE

ABSENT: MR. JAHNER

MOTION CARRIED

IT WAS MOVED BY COMMISSIONER HERINGER AND SECONDED BY DR. SIMLAI AND CARRIED BY A ROLL CALL VOTE TO APPROVE STAFF TO PROCEED WITH THE RECOMMENDED MANAGER CHANGES, PENDING LEGAL REVIEW.

AYES: MR. CHIN, DR. SIMLAI, MR. ANDERSON, COMMISSIONER HERINGER, AND TREASURER BEADLE

NAYS: NONE

ABSENT: MR. JAHNER

MOTION CARRIED

MANAGER UPDATE

Mr. Collins and Mr. Zietlow announced that an additional \$150 million was committed for the In-State Investment program mandate to 50 South.

DISCUSSION

Treasurer Beadle discussed the impact of tariffs on the economy and market, reinforcing that the funds in the SIB's care are designed with mostly long-term investment strategies that expect market ups and downs.

ADJOURNMENT

With no further business to come before the Investment Committee, Treasurer Beadle adjourned the meeting at 2:33 p.m.

Prepared by:

Jennifer Ferderer, Assistant to the Board

INTERNAL INVESTMENT MANAGEMENT UPDATE

Chirag Gandhi, CFA – Portfolio Manager, Internal Fixed Income
George Moss – Portfolio Manager, Internal Equity
April 17, 2025

NORTH
Dakota
Be Legendary.

Retirement & Investment

UPDATE: OEMS, TRADING, & STAFFING

- Successful onboarding of Aladdin Order and Execution (OEMS)
- Hyper-care phase of Aladdin implemented to ensure that system is working in Live environment
- Pilot program was funded with \$285 million
 - \$275 million in Fixed Income and Equity strategies
 - \$10million in Cash Overlay strategies
- Staffing update:
 - Fixed Income Analyst position successfully filled
 - Public Markets Analyst position was posted, and candidates currently being reviewed

Trade Error Identification and Resolution Procedure

The Trade Error Identification and Resolution Standard Operating Procedure outlines the process for identifying and addressing various types of trade errors that may occur during investment operations. By defining specific examples of trade errors and detailing the approach to rectifying them, this standard operating procedure aims to ensure timely detection, correction, and mitigation of errors to safeguard investment portfolios. In case of a trade error, Portfolio Managers will collaborate with the Chief Investment Officer, and Chief Financial Officer to determine the following within 48 hours of identifying the error:

1. Explanation of the error's source.
2. Estimate of the cost/benefit impact.
3. Evaluation of the occurrence and suggestions for process improvements to reduce error recurrence.

Examples of trade errors include:

- Excessive orders placed
- Incorrect buy/sell actions
- Trading wrong securities
- Contrary to regulations/guidelines
- Allocation mistakes
- Client guideline breaches
- Keystroke errors in trading systems
- Typographical/drafting errors

Errors are to be corrected promptly upon discovery. A written explanation to the Chief Investment Officer should follow, detailing the error's nature, personnel involved, total dollar amount, and how the error was discovered. All error calculations must be reviewed by the Chief Financial Officer. If an error is caused by a counterparty, such as a broker-dealer, NDRIO will seek to recover any associated losses from the counterparty. For errors exceeding 1bps of the total fund size or occurring more than twice per quarter, the explanation will be escalated to the Executive Director and the Investment Committee by the Chief Investment Officer. Additionally, errors exceeding 3bps of the total fund size or occurring more than twice per month will be escalated to the State Investment Board by the Investment Committee.

INVESTMENT PERFORMANCE

Scott M. Anderson, CFA – Chief Investment Officer

April 17, 2025

NORTH
Dakota
Be Legendary.

Retirement & Investment

THE MARKET

NORTH
Dakota
Be Legendary.

Retirement & Investment

PERFORMANCE – BENCHMARK INDICES

Summary of Returns December 31, 2024					
Benchmark Indices (% change, annualized)	YTD	1 Yr	5 Yr	10 Yr	10 Yr Volatility
Russell 1000	24.5%	24.4%	14.3%	12.9%	18.0%
Russell 2000	11.5%	11.5%	7.4%	7.8%	22.9%
S&P 500	25.0%	24.9%	14.5%	13.1%	17.8%
MSCI ACWI IMI Net	16.4%	16.3%	9.7%	9.0%	14.4%
MSCI World ex US	4.7%	4.7%	5.1%	5.3%	14.5%
MSCI Emerging Markets	7.5%	7.5%	1.7%	3.6%	15.8%
Bloomberg Aggregate	1.3%	1.2%	-0.3%	1.3%	4.8%
Bloomberg Gov/Credit	1.2%	1.2%	-0.2%	1.5%	5.1%
Bloomberg US High Yield	8.2%	8.2%	4.2%	5.2%	5.2%
NCREIF Property Index (12/31/2024)	0.4%	0.4%	3.1%	5.7%	4.1%

Source: Bloomberg

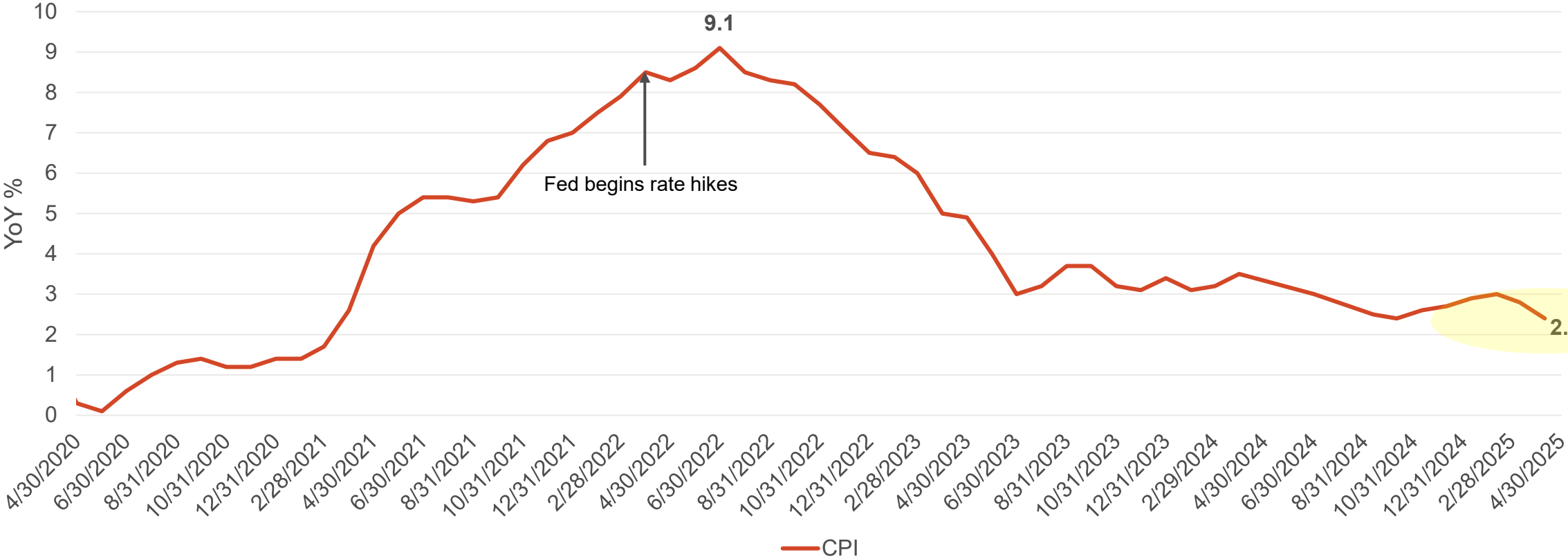
PERFORMANCE – BENCHMARK INDICES

Summary of Returns April 11, 2025					
Benchmark Indices (% change, annualized)	YTD	1 Yr	5 Yr	10 Yr	10 Yr Volatility
Russell 1000	-8.8%	4.1%	15.6%	11.5%	18.5%
Russell 2000	-16.3%	-7.7%	9.8%	5.4%	23.3%
S&P 500	-8.5%	4.6%	15.7%	11.8%	18.3%
MSCI ACWI IMI Net	-6.0%	2.8%	12.6%	7.8%	14.7%
MSCI World ex US	2.1%	3.3%	10.5%	4.8%	14.8%
MSCI Emerging Markets	-2.2%	1.5%	5.9%	2.6%	16.1%
Bloomberg Aggregate	1.1%	5.3%	-0.9%	1.3%	4.8%
Bloomberg Gov/Credit	1.0%	5.0%	-0.9%	1.4%	5.1%
Bloomberg US High Yield	-1.4%	6.1%	6.1%	4.7%	5.2%
NCREIF Property Index (12/31/2024)	0.4%	0.4%	3.1%	5.7%	4.1%

Source: Bloomberg

INFLATION PAST 5 YEARS

Annual Inflation Rate



— CPI

COMPETING NARRATIVES

	LOW GROWTH	HIGHER GROWTH
HIGH INFLATION	<p>(Hard Landing)</p> <ul style="list-style-type: none"> ▪ High Levels of Debt – Higher Interest Rates ▪ Tight Labor Market/Labor Force Growth ▪ Consumer Savings Are Running Out ▪ Higher Energy Prices From Policy ▪ Political Risk ▪ Student Loan Payments Restart Reducing Retail Spending 	<p>(No Landing)</p> <ul style="list-style-type: none"> ▪ Continued Government Spending ▪ Tight Labor Market/Labor Force Growth ▪ Inflation Psychology ▪ Higher Energy Prices From Policy ▪ Millennials in Peak Spending Years ▪ Housing Shortage/Higher Prices ▪ Real Consumer Income Growth
LOW INFLATION	<p>(Soft Landing)</p> <ul style="list-style-type: none"> ▪ Housing Inflation Abates ▪ Lower Interest Rates ▪ Lower Growth/Lower Energy Prices ▪ Student Loan Payments Restart Reducing Retail Spending ▪ Reduced Government Spending ▪ Political Risk Diminish 	<p>(Goldilocks)</p> <ul style="list-style-type: none"> ▪ Low Unemployment Buys Economy ▪ Lower Interest Rates ▪ Millennials in Peak Spending Years ▪ Reduced Government Spending ▪ Global Political Risks Are Resolved/ Peace Dividend ▪ Productivity Boom From AI

GOOD NEWS¹

BLOOMBERG AGG YIELD¹: 4.86%



**BEST GUESS FOR
FUTURE BOND
RETURN!**

1. Fixed income benchmark; yields are the best estimate of future bond returns.

Tariffs – IC Musings

SHORT

Economic Uncertainty
Build Up of Buffer Inventories
Lower Capital Market Prices
Pause on Custom Clearances
Pause on Capital Spending
Higher Credit Risks
Skilled Labor Shortage
Lower Business and Consumer Confidence
Less Bank Lending

MEDIUM

Higher Prices of Imports/US Labor
Higher Costs of Operations
Political Conflict
Lower Demand For Dollar?
Lower Demand For US Treasuries?
More FDI in US?
More Capital Spending?
Change of Supply Routes
Change of Manufacturing Location
Massive Industrial Education Program?

LONG

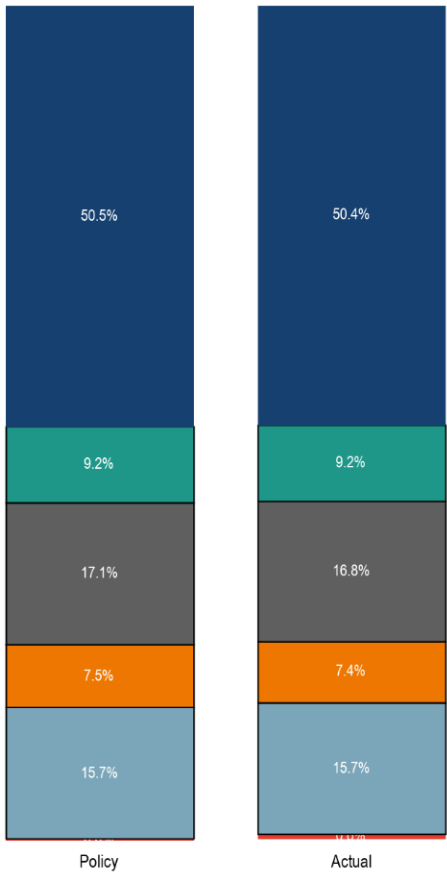
Lower China Concentration
Automation of Industry
Production Near Demand
Federated Trading System
Lower US Budget Deficits?
More Resilient Supply Chains
Strategic Industry Onshoring
More Economic Equality?
More US Infrastructure Spend?
Melding of the Virtual and Physical

PERFORMANCE

NORTH
Dakota
Be Legendary.

Retirement & Investment

PERS ASSET ALLOCATION



	Current Balance (\$)	Current Allocation (%)	Policy Allocation (%)	Differences (\$)
Global Public Equity	2,290,357,819	50.4	50.5	-4,853,022
Private Equity	417,486,921	9.2	9.2	-22,601
Investment Grade Fixed Income	762,989,637	16.8	17.1	-16,725,313
Below Investment Grade	335,011,940	7.4	7.5	-6,136,091
Diversified Real Assets	714,438,206	15.7	15.7	-12,456
Cash and Equivalents	27,749,483	0.6	0.0	27,749,483
Total	4,548,034,006	100.0	100.0	

1. December 2025 values – Verus

PERS PERFORMANCE

As of January 31, 2025
 PERS \$4.6 Billion

Total Fund Return - Net

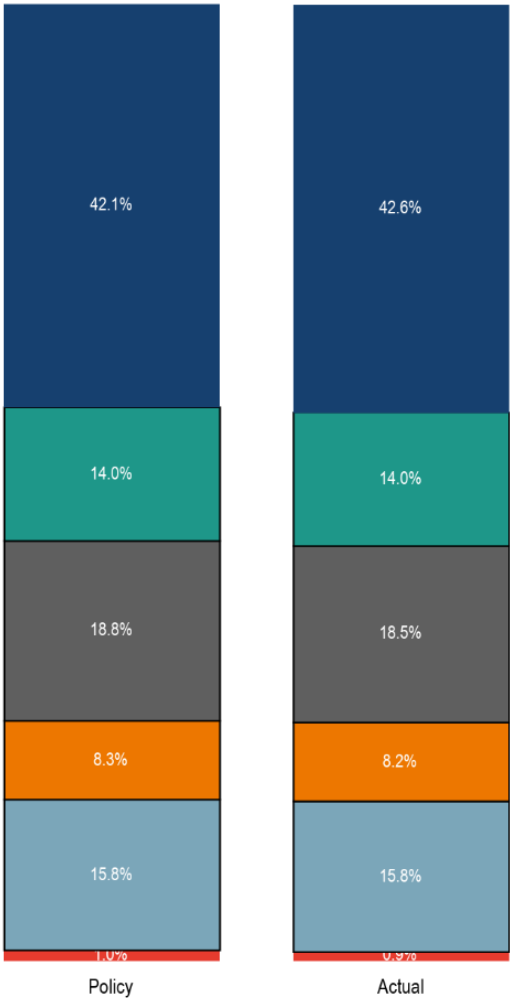
Policy Benchmark Return

Total Relative Return¹

Year to Date	1 Year	3 year	5 Year	10 Year	Risk (5 Year)
11.3%	11.3%	4.3%	7.6%	7.5%	9.9%
11.4%	11.4%	4.2%	7.2%	7.1%	10.4%
-0.1%	-0.1%	0.1%	0.4%	0.4%	

Small Cap Managers
 and
 Real Estate Managers

TFFR ASSET ALLOCATION



	Current Balance (\$)	Current Allocation (%)	Policy Allocation (%)	Differences (\$)
Global Public Equity	1,436,205,569	42.6	42.1	18,090,658
Private Equity	473,434,016	14.0	14.0	-12,611
Investment Grade Fixed Income	623,622,073	18.5	18.8	-9,112,173
Below Investment Grade	277,306,892	8.2	8.3	-3,915,820
Diversified Real Assets	531,933,819	15.8	15.8	-2,547
Cash and Equivalents	28,664,158	0.9	1.0	-5,047,507
Total	3,371,166,527	100.0	100.0	

1. December 2025 values – Versus

TFFR PERFORMANCE

As of January 31, 2025

TFFR \$3.4 Billion

Total Fund Return - Net

Policy Benchmark Return

Total Relative Return¹

**Year to
Date**

1 Year

3 year

5 Year

10 Year

**Risk
(5 Year)**

10.4%

10.4%

3.9%

7.3%

7.3%

9.4%

10.3%

10.3%

3.7%

6.9%

6.9%

9.8%

0.1%

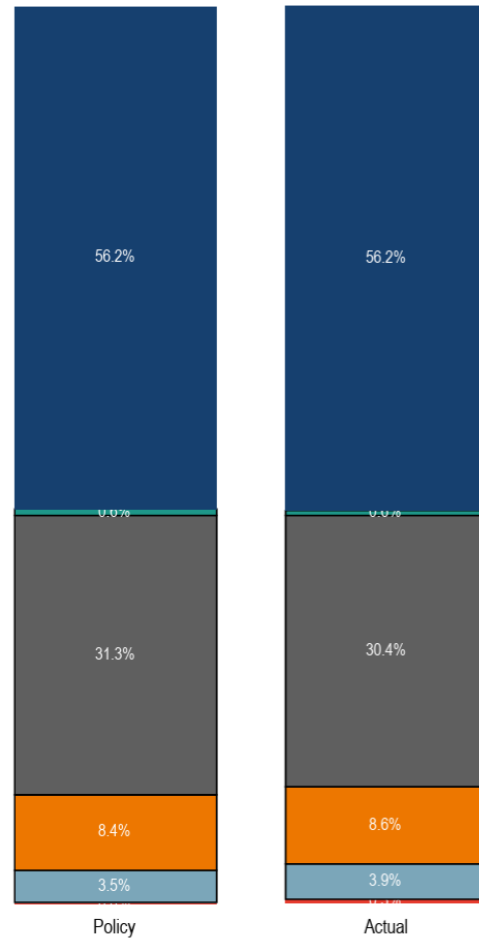
0.1%

0.2%

0.4%

0.4%

LEGACY ASSET ALLOCATION



	Current Balance (\$)	Current Allocation (%)	Policy Allocation (%)	Differences (\$)
Global Public Equity	6,573,033,423	56.2	56.2	810,590
Private Equity	74,617,214	0.6	0.6	5,011,080
Global Fixed Income	3,550,601,403	30.4	31.3	-111,032,179
Diversified Real Assets	1,000,970,121	8.6	8.4	19,699,115
In-State Investments	459,543,591	3.9	3.5	45,767,298
Cash and Equivalents	39,744,096	0.3	0.0	39,744,096
Total	11,698,509,849	100.0	100.0	

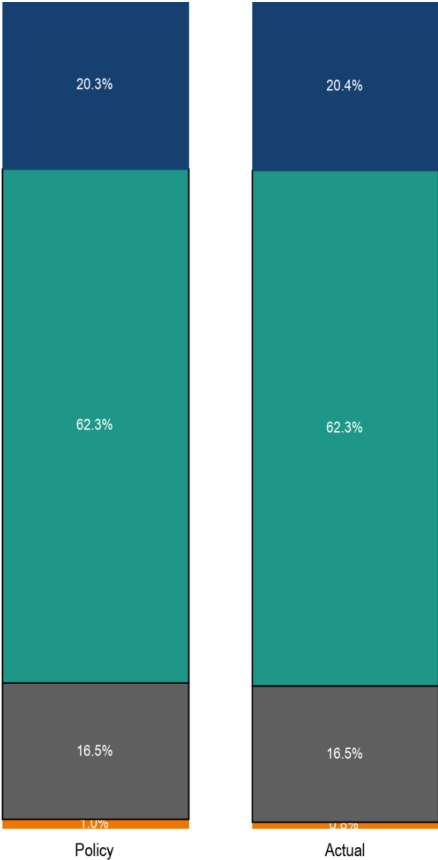
1. December 2025 values – Verus

LEGACY PERFORMANCE

As of January 31, 2025
Legacy Fund \$11.7 Billion

	Year to Date	1 Year	3 year	5 Year	10 Year	Risk (5 Year)
Total Fund Return - Net	12.1%	12.1%	4.6%	6.7%	6.8%	10.7%
Policy Benchmark Return	11.8%	11.8%	3.8%	5.9%	6.1%	10.6%
Total Relative Return¹	0.3%	0.3%	0.8%	0.8%	0.7%	

WSI ASSET ALLOCATION



	Current Balance (\$)	Current Allocation (%)	Policy Allocation (%)	Differences (\$)
Global Public Equity	440,304,815	20.4	20.3	3,250,697
Domestic Fixed Income	1,344,801,721	62.3	62.3	1,733,985
Diversified Real Assets	354,867,375	16.5	16.5	-665,148
Cash and Equivalents	17,252,732	0.8	1.0	-4,319,535
Total	2,157,226,644	100.0	100.0	

1. December 2025 values – Verus

WSI PERFORMANCE

As of January 31, 2025

WSI \$2.2 Billion

Total Fund Return - Net

Policy Benchmark Return

Total Relative Return¹

**Year to
Date**

1 Year

3 year

5 Year

10 Year

**Risk
(5 Year)**

6.1%

6.1%

1.1%

2.9%

4.5%

7.5%

5.1%

5.1%

1.1%

2.3%

3.5%

7.0%

1.0%

1.0%

0.0%

0.6%

1.0%



RISK ALLOCATION AND MANAGEMENT

Risk Allocation and Management Team
April 17, 2025

NORTH
Dakota
Be Legendary.

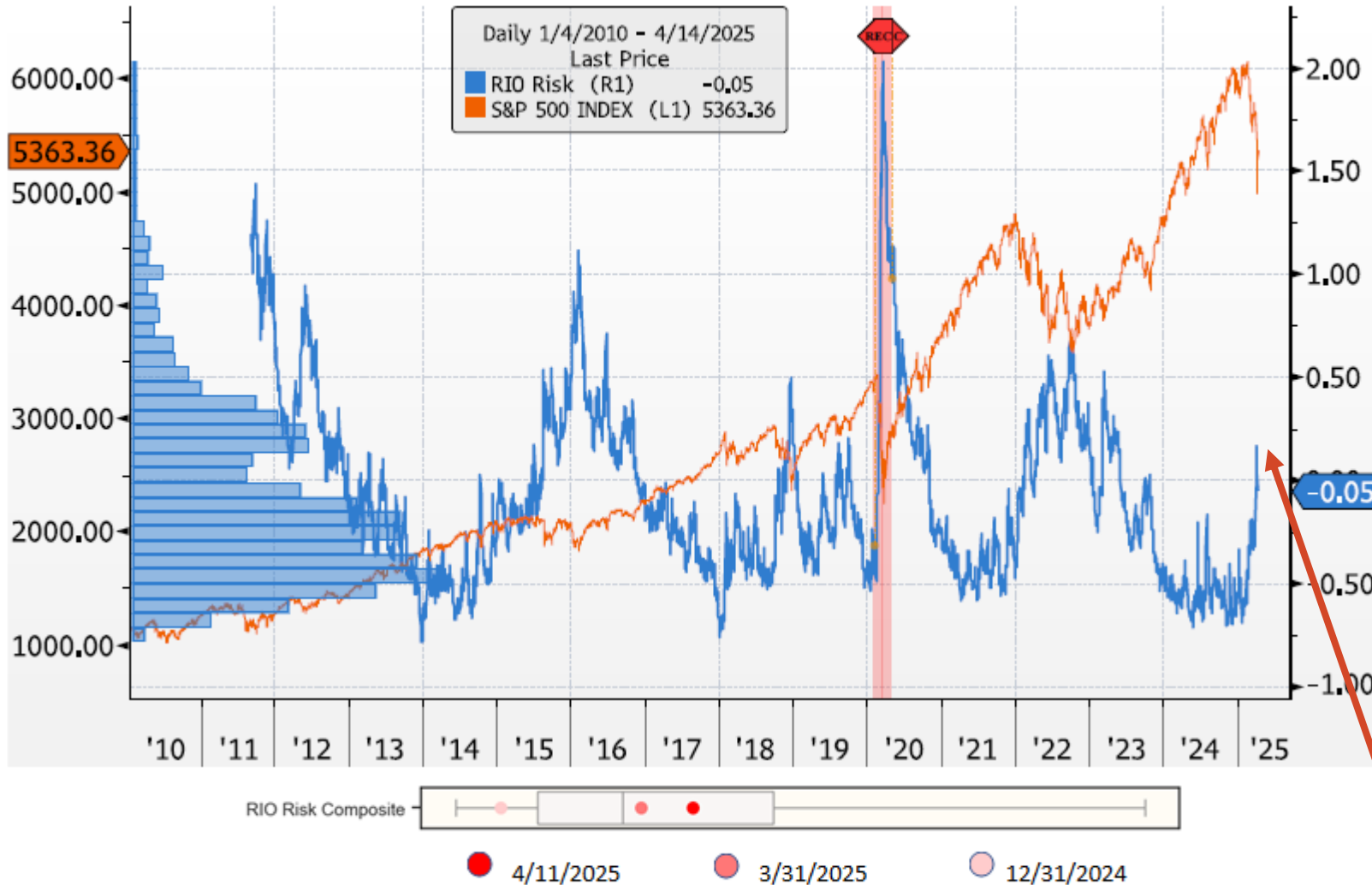
Retirement & Investment

AGENDA

- Market Risk Monitor
- Portfolio Risk Exposures
- IT Platform Update

MARKET RISK MONITOR

RIO Composite Risk Indicator

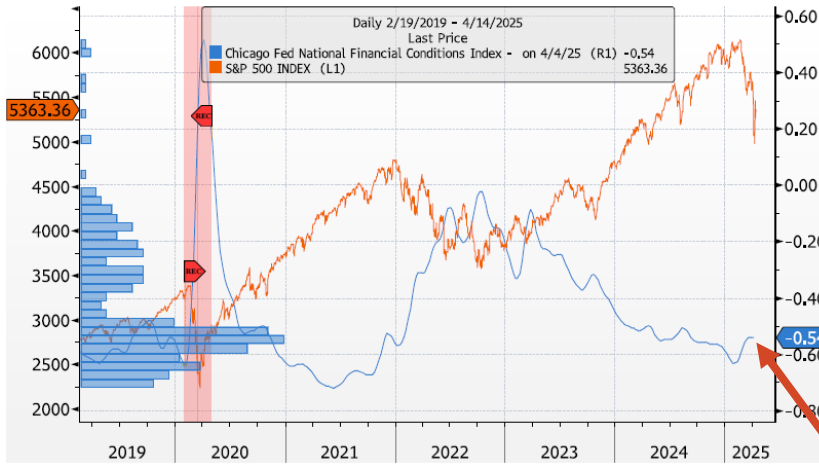


- **Despite spike in recent value of the composite due to large moves in some underlying indicators, it remains well below prior peaks.**
- Composite of Individual Market Risk Indicators.
- Weighted as below:
 - Macro-Economic indicators – 30%
 - Systemic Financial Risk indicators – 50%
 - Capital Market Dynamics indicators – 10%
 - Sentiment indicators – 10%
- More correlated with the past than with the future.
- Yet, has a marginal negative correlation with SPX future performance.

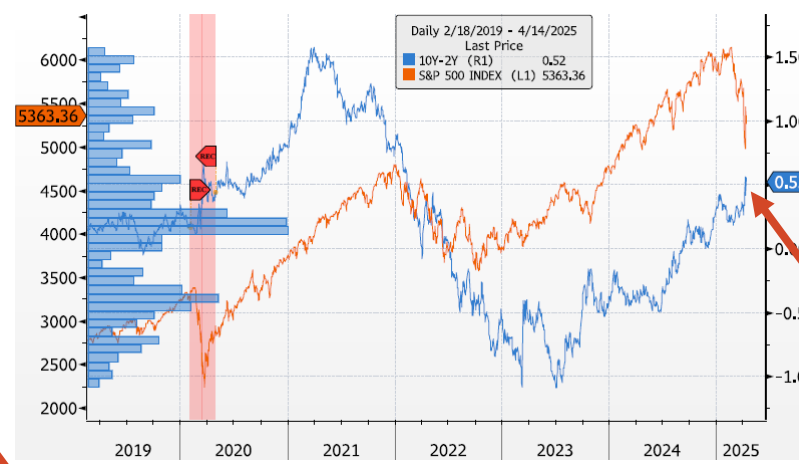
MARKET RISK MONITOR

Risk Indicator Details: Macro-Economic Indicators

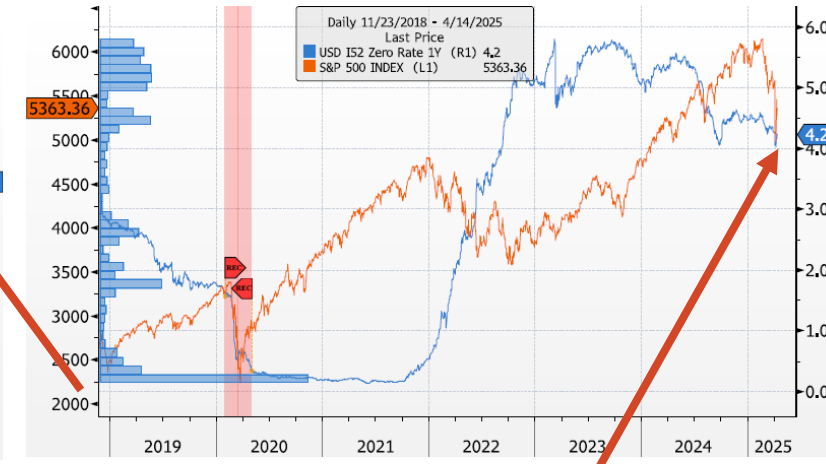
Chicago Fed Financial Conditions Index



2-10 Yield Curve



FX Change Forecast

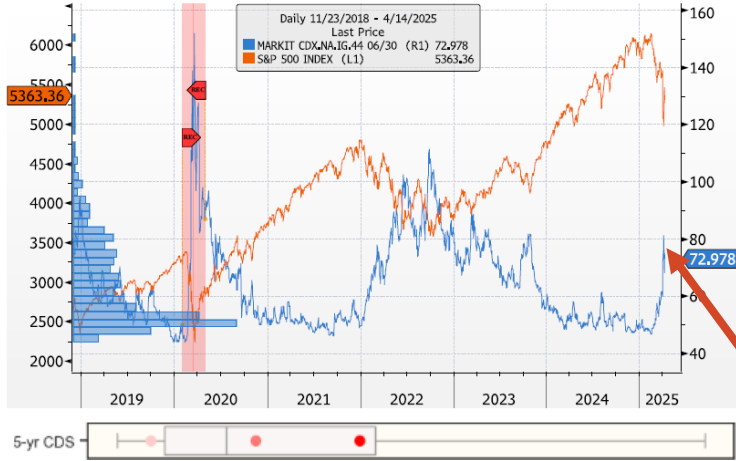


- Financial Conditions indicator has barely moved in the past 1-yr and remains benign.
- After yield curve inversion reached historic levels, the inversion narrowed through 2024 before turning positive and now continues to steepen.
- Dollar declined some but has remained range bound for past few quarters.
- **Together, these continued to indicate benign perception of the macro-economic environment.**

MARKET RISK MONITOR

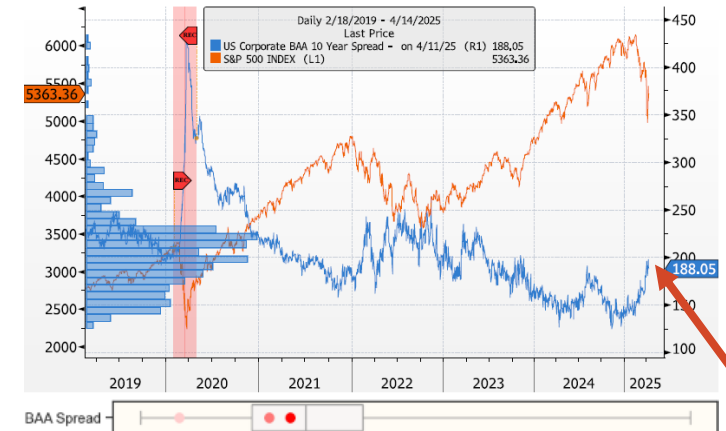
Risk Indicator Details: Systemic Financial Risk Indicators

5-yr Credit Default Swaps

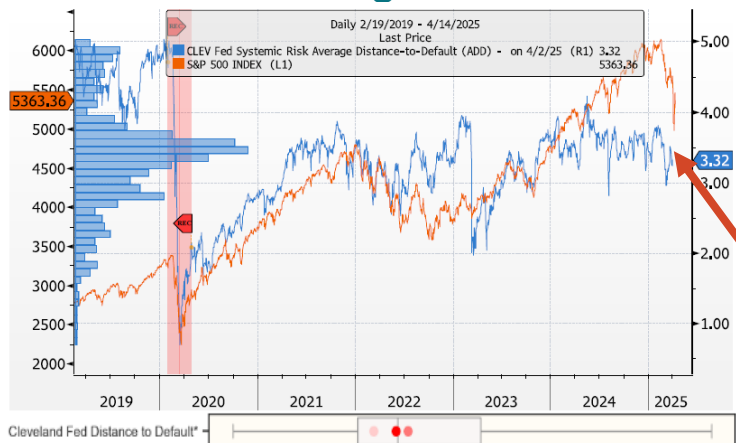


- **Systemic Financial Risk Indicators are at moderate levels despite some recent deterioration.**
- Credit default swaps have spiked but within normal range.
- Credit spreads have widened meaningfully but remain moderate.
- Liquidity has worsened some but remains at a relatively low level.
- Average distance to default has remained range bound.

BAA 10-yr Spread



Cleveland Fed Avg Distance to Default



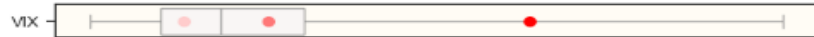
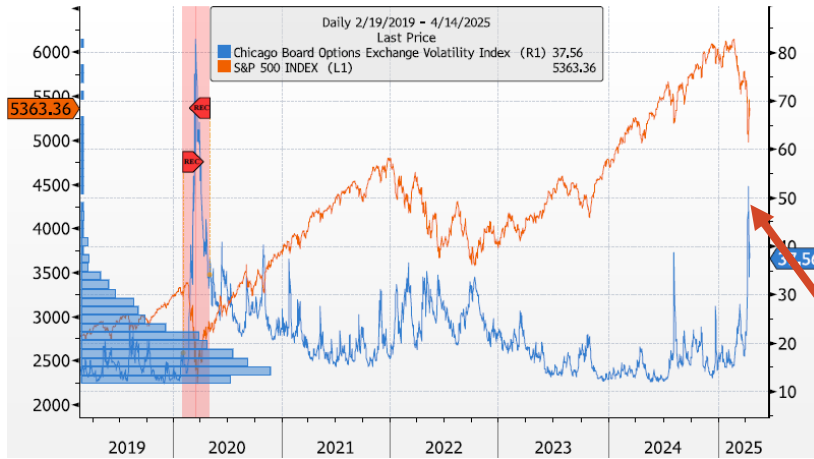
BofA GFSI Liquidity Risk



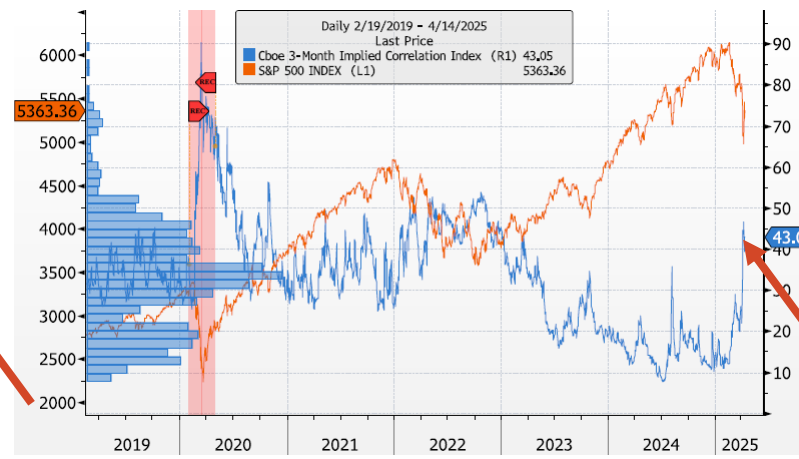
MARKET RISK MONITOR

Risk Indicator Details: Capital Market Dynamics Indicators

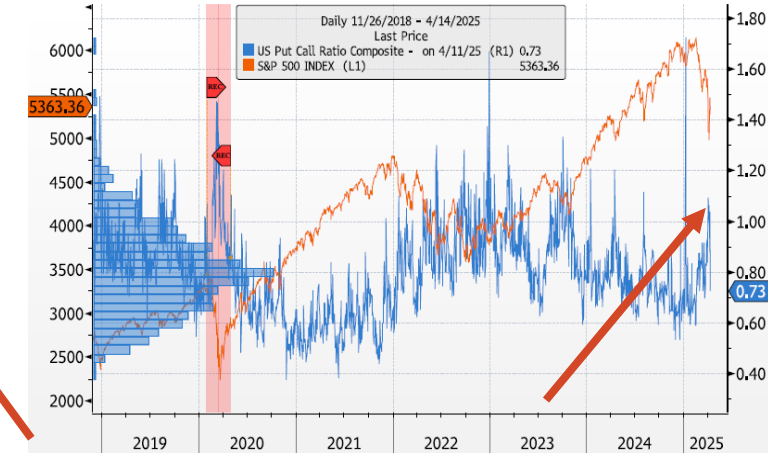
CBOE VIX (Volatility) Index



CBOE 3-mo Implied Correlation Index



US Put Call Ratio Composite

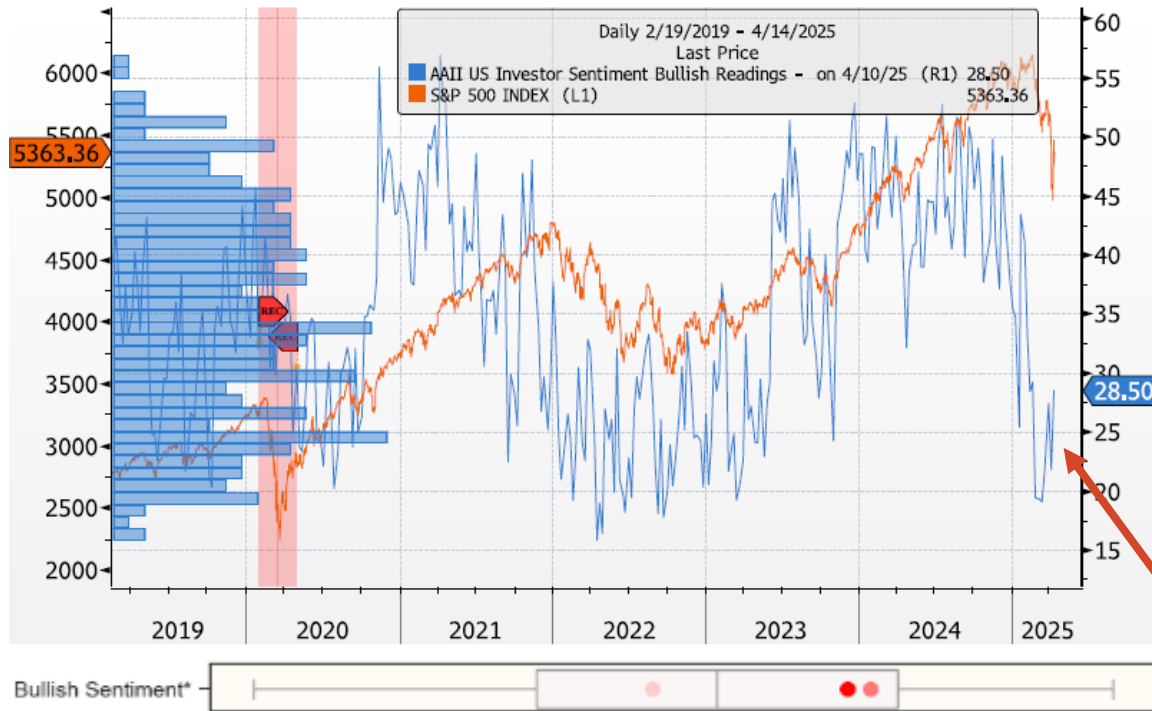


- VIX index has seen a large spike last week to highest levels since COVID.
- Security correlations have spiked up in the past few weeks.
- Put call ratios have also spiked up in recent weeks but have seen a decline last week.
- **Together, capital market dynamics indicators are showing a heightened perception of risk.**

MARKET RISK MONITOR

Risk Indicator Details: Sentiment Indicators

AAII US Investor Sentiment



High Short Interest Ratio



- Investor sentiment is volatile and has recovered some after drop to near historically low levels.
- After having been mostly range bound for the past 3 years, short interest ratio has spiked up to high levels.
- **Together, these are now indicative of a higher perception of risk.**

MARKET RISK MONITOR

Summary of all Indicators

Meaningful Moves



RIO Risk Composite

Macro-Economic indicators (30%)

- Chicago Fed Financial Conditions Index
- 2-10 Yield Curve
- FX Change Forecast

Systemic Financial Risk indicators (50%)

- 5-yr Credit Default Swaps
- Bank of America GFSI Liquidity Risk
- BAA 10-yr Spread
- Cleveland Fed Average Distance to Default

Capital Market Dynamics indicators (10%)

- CBOE VIX (Volatility) Index
- US Composite Put/Call Ratio
- CBOE 3-mo Correlation

Sentiment indicators (10%)

- AAll Bullish Sentiment
- Short Interest/Float %

AGENDA

- Market Risk Monitor
- Portfolio Risk Exposures
- IT Platform Update

INVESTMENTS: RISK ALLOCATION AND MANAGEMENT

Risk Statistics

Legacy Fund			
		Fund	Index
Beta		1.0	1.0
Standard Deviation		10.7	10.6
Tracking Error		1.3	0.0

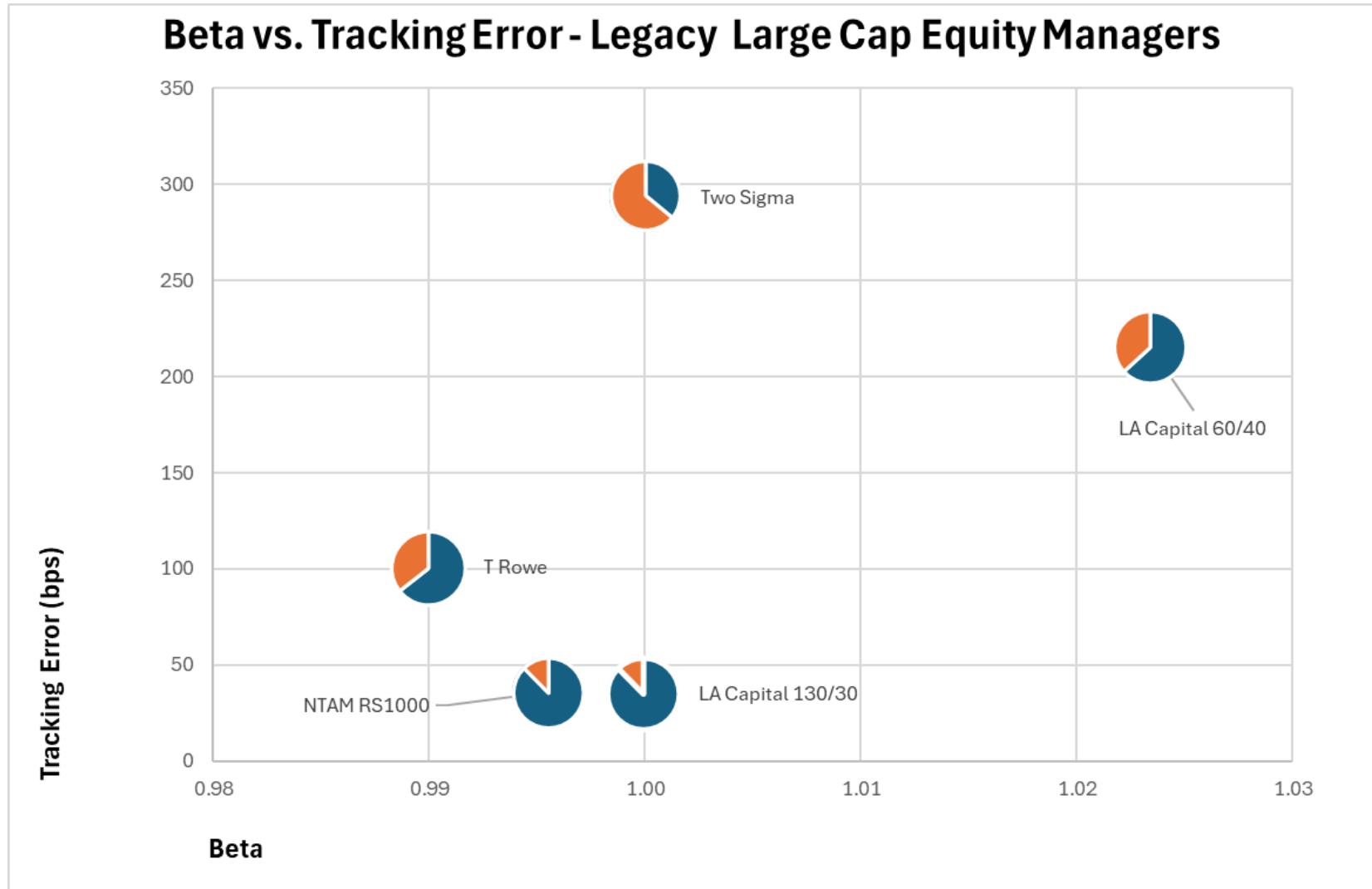
Pension Trust			
		Fund	Index
Consolidated			
Beta		0.9	1.0
Standard Deviation		9.6	10.1
Tracking Error		1.1	0.0
PERS			
Beta		1.0	1.0
Standard Deviation		9.9	10.3
Tracking Error		1.2	0.0
TFFR			
Beta		0.9	1.0
Standard Deviation		9.4	9.9
Tracking Error		1.1	0.0

Insurance Trust			
		Fund	Index
Consolidated			
Beta		1.1	1.0
Standard Deviation		6.2	5.7
Tracking Error		1.7	0.0
WSI			
Beta		1.0	1.0
Standard Deviation		7.7	7.2
Tracking Error		1.5	0.0

Note: Beta, TE is vs. their respective policy indices for 5-years ending 2024

INVESTMENTS: RISK ALLOCATION AND MANAGEMENT

High Level Manager Risk Comparison (Select)



INVESTMENTS: RISK ALLOCATION AND MANAGEMENT

Portfolio Risk Exposure Reports

LEGACY TOTAL PORTFOLIO BY FACTOR DRIVERS OF RISK

Title	Factor Exposure			Beta Contribution	Standalone Risk			Risk Contribution			Active Risk Contribution %
	Portfolio	Benchmark	Active		Portfolio (bp)	Benchmark (bp)	Active (bp)	Portfolio (bp)	Benchmark (bp)	Active (bp)	
NDRIO_LEG				0.92	745.91	802.83	131.15	745.91	802.83	131.15	100.0%
Systematic				0.91	742.48	794.86	101.92	739.22	786.98	79.09	60.3%
Equity				0.68	577.91	661.70	107.41	540.29	627.80	74.53	56.8%
BFRE Country	50.97	53.50	-2.53	0.04	80.54	162.53	93.80	27.80	79.04	46.63	35.6%
United States	24.51	33.67	-9.16	0.11	171.30	235.33	64.03	80.65	122.84	33.14	25.3%
Japan	5.13	2.96	2.17	-0.01	50.35	29.03	21.32	-7.47	-4.89	3.98	3.0%
BFRE Characteristics	0.89	0.97	-0.07	0.63	544.79	587.63	63.00	509.34	545.99	23.97	18.3%
Size	0.37	0.59	-0.22	0.01	85.11	134.56	49.45	7.38	15.65	10.84	8.3%
Market	0.51	0.53	-0.03	0.63	544.97	572.01	27.04	511.24	532.44	9.80	7.5%
Dividend Yield	-0.06	-0.14	0.07	0.00	8.59	18.41	9.82	1.98	4.98	3.41	2.6%
BFRE Industry	50.97	53.50	-2.53	0.01	36.94	52.55	21.82	3.15	2.77	3.92	3.0%
Alternatives	18.46	5.21	13.24	0.07	66.88	70.80	36.04	54.17	50.85	4.54	3.5%
Index	18.46	5.21	13.24	0.07	66.88	70.80	36.04	54.17	50.85	4.54	3.5%
US RE Public	0.21	2.32	-2.11	0.00	3.26	36.28	33.03	2.29	25.55	10.42	7.9%
World Equity	0.66		0.66	0.01	7.76		7.76	6.88		-4.03	-3.1%
Fixed Income				0.10	137.29	104.44	33.20	86.18	61.50	0.10	0.1%
KRD	1.59	1.18	0.40	0.07	140.85	105.69	35.18	65.06	44.18	2.95	2.2%
Spread Duration				0.03	36.32	28.19	9.26	19.27	15.86	-2.82	-2.2%
Idiosyncratic				0.01	69.88	112.78	82.73	6.55	15.84	52.18	39.8%
Alternatives				0.00	23.26	72.87	73.56	0.73	6.61	41.26	31.5%
Equity	0.01	0.01	0.00	0.01	65.84	86.02	37.76	5.81	9.22	10.87	8.3%
Other				0.00	0.35	0.09	0.35	0.15	0.01	-0.12	-0.1%

TE

INVESTMENTS: RISK ALLOCATION AND MANAGEMENT

Portfolio Risk Exposure Reports (Select)

LEGACY FIXED INCOME PORTFOLIO BY FACTOR DRIVERS OF RISK

Title	Factor Exposure			Beta Contribution	Standalone Risk			Risk Contribution			Active Risk Contribution %
	Portfolio	Benchmark	Active		Portfolio (bp)	Benchmark (bp)	Active (bp)	Portfolio (bp)	Benchmark (bp)	Active (bp)	
L_GLB_FI				0.84	465.61	548.52	115.50	465.61	548.52	115.50	100.0%
Systematic				0.84	465.40	548.54	114.80	465.34	548.54	114.55	99.2%
Fixed Income				0.84	465.60	548.54	114.39	465.53	548.54	114.12	98.8%
Spread Duration				-0.04	116.23	58.26	78.49	-6.39	6.96	68.23	59.1%
KRD	5.36	6.00	-0.64	0.87	478.59	538.86	61.72	463.42	535.33	47.42	41.1%
Tsy 10Y	0.57	0.83	-0.26	0.10	55.05	80.03	24.99	53.39	79.31	19.89	17.2%
Tsy 20Y	0.58	0.73	-0.15	0.09	52.12	65.48	13.36	49.98	63.55	9.93	8.6%
Tsy 15Y	0.71	0.83	-0.13	0.13	70.16	82.82	12.66	67.69	81.07	9.62	8.3%
Tsy 30Y	0.20	0.31	-0.11	0.03	17.78	27.99	10.21	16.27	26.00	7.37	6.4%
Tsy 7Y	0.77	0.85	-0.08	0.14	75.23	83.00	7.77	72.23	81.92	6.35	5.5%
Tsy 5Y	0.88	0.82	0.07	0.15	86.04	79.43	6.61	80.50	76.91	-5.47	-4.7%
Idiosyncratic				0.00	7.70	2.22	7.46	0.13	0.01	0.48	0.4%
Other				0.00	1.20	0.14	1.15	0.14	-0.02	0.47	0.4%

Largest Contributor

INVESTMENTS: RISK ALLOCATION AND MANAGEMENT

Portfolio Risk Exposure Reports (Select)

LEGACY FIXED INCOME PORTFOLIO BY UNDERLYING FUNDS

Portfolio	NAV (mm)	Port Group NAV %	Risk			Port Group Risk Contribution			Active Port Group Risk Contribution %
			Portfolio	Benchmark	Active	Portfolio	Benchmark	Active	
L_GLB_FI	3,050	100.0%	465.61	548.52	115.50	465.61	548.52	115.50	100.00%
L_FI_NIG	733	24.0%	326.51	548.52	424.98	58.51	131.76	101.25	87.66%
Nomura HY-Legacy	367	12.0%	317.17	548.52	412.21	29.47	65.95	48.98	42.41%
PineBridge HY-Legacy	366	12.0%	338.12	548.52	439.33	29.04	65.80	52.27	45.25%
Investment Grade Fixed Income	2,318	76.0%	540.19	548.52	25.37	407.10	416.77	14.25	12.34%
Core Fixed Income	1,695	55.6%	584.08	548.52	41.39	321.26	304.72	-10.52	-9.11%
PIMCO Core Plus Constrained	612	20.1%	653.48	548.52	111.46	129.34	110.12	-15.74	-13.63%
WAMCO US Core Fixed Income - Legacy	469	15.4%	509.24	548.52	51.93	77.75	84.33	7.23	6.26%
IG Credit	272	8.9%	556.03	548.52	100.67	49.25	48.97	4.35	3.77%
State Street Credit Index-Legacy	83	2.7%	240.83	548.52	310.70	6.35	14.94	6.17	5.34%
IG Gov	351	11.5%	329.52	548.52	238.24	36.59	63.08	20.42	17.68%
State Street Gov Index-Legacy	301	9.9%	287.75	548.52	280.05	27.05	54.16	20.19	17.48%

Largest Contributor

Change of Credit and Treasury Yields Drive Risk

- All of the Core funds are more sensitive to changes in credit spread as indicated by spread duration
- These Core funds in general have longer duration, and are consequently exposed to higher absolute risks; these are more sensitive to changes in treasury rates
- High Yield funds are very consistent with the High Yield index in both duration and spread duration

Description	Credit Rating	Duration	Key Rate Duration			Yield	OAS	Spread Duration	Absolute Risk	Active Risk
			Short	Medium	Long					
BBG U.S. Aggregate Index	AA	6.0	0.1	2.6	3.3	3.8	35.7	3.4	551	-
PIMCO Core Plus Constrained	AA-	1.4	0.1	1.1	0.2	(0.3)	49.6	1.2	653	111
Prudential Core Fixed Income	AA-	0	0	0	0	0.6	85.6	0.8	573	32
WAMCO US Core Fixed Income	A+	(0.3)	0	(0.1)	(0.3)	0.8	47.9	0.7	509	52
Allspring Capital Medium Quality Credit	BBB	2.1	0	0.5	1.6	1.5	104.5	3.6	699	203
BBG US Corp High Yield 2% Issuer Capped Index	B+	3.2	0.2	2.8	0.2	6.8	338.9	3.2	330	-
Nomura	BB-	0	0	(0.1)	0.1	(0.2)	(24.4)	0	317	23
PineBridge	BB-	0	0	0.2	(0.1)	(0.2)	25.9	0	338	48

Risk Exposures Reports

- A high level view of risk for pools and their managers
- Use the Legacy fund as representative portfolio
- Two reports each for Legacy fund, Legacy fund equities and Legacy fund fixed income portfolios. The purpose is to view these from two different lenses.
- One report shows the risk factor drivers for each of three portfolios
- The other report shows the underlying fund drivers of risk
- On each report, the active risk contribution is the most significant metric.
- Collectively, these provide a more holistic view of risk in the portfolios

AGENDA

- Market Risk Monitor
- Portfolio Risk Exposures
- IT Platform Update

Program Initiated to Acquire These Platforms

Order Execution Management System

- Transaction Execution
- Market Data
- Post Trade Actions
- Compliance Monitoring
- Realtime IBOR
- Transaction Reporting
- Commission Reporting
- Real time portfolio monitoring

Portfolio & Treasury Management System

- Portfolio modeling and construction
- Risk management, stress testing and scenario analysis
- Performance attribution
- Cash management
- Collateral management
- Securities lending

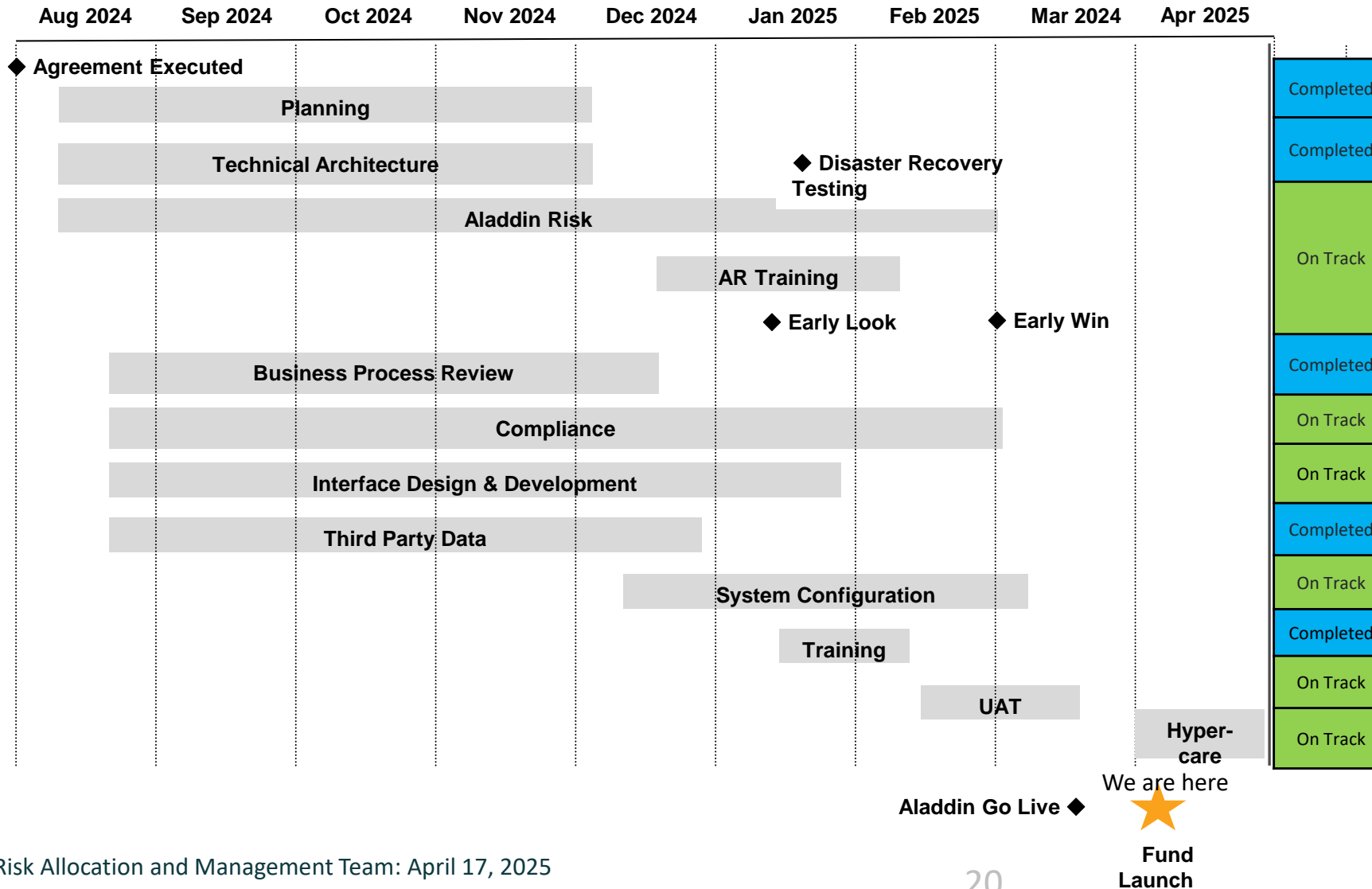
Data Warehouse + Data Exchange

- Central repository
- Integrated portfolio data and analytics
- AI, Machine Learning & Advanced Analytics
- Analysis and reporting overlays
- Dashboard

OEMS/PMS Acquisition Progress Summary

- Strategy approval obtained in September 2023 followed by initiation of acquisition of OEMS and PMS platforms.
- Engaged with IT and Procurement. Categorized as a 'Large IT Project'.
- Limited procurement using third party research (Gartner) and peer references.
- Blackrock chosen as our vendor and agreement negotiated. Implementation of Aladdin OEMS/PMS kicked-off August 2024.
- Implementation process included review of business processes, system configuration, interface development, training and user acceptance.
- Production platform launched March 10, 2025
- Live trading commenced April 1, 2025
- Outstanding issues being addressed during the hyper-care period with Blackrock

TIMELINE AND MILESTONES



Remaining Activities

- On Track –
- SWIFT tested, final activation awaited.
 - FCM/CTM Connectivity Testing
 - Traiana delayed – agreement with Morgan Stanley for Bloomberg as interim workaround
 - Compliance testing continues
 - Custodian source data integration – interim workaround in place.
 - Ongoing issues with Explore include mapping commingled funds, private funds, data validation among others

Post Fund Launch

- Initiate acquisition of Data Warehouse and Exchange
- Initial meeting scheduled for end of April

AFM MANAGER UPDATE

AFM Team
April 17th, 2025

NORTH
Dakota Be Legendary.

EQUITY 2.0 MANAGER UPDATE

WorldQuant Millennium Institutional Advisors US LLC (WMA)

- WMA onboarded: ~\$305 million (Pension \$112 million, Legacy \$180 million , Insurance \$13 million)
- Quantitative U.S. Large Cap Equity Manager

INVESTMENT SERVICE CONTRACTS

Vendor	Execution Date	Description	Cost
MarketAxess	12/6/2024*	Investment Transactions - Internal FI Trading	None
SWIFT	1/21/2025	SWIFT secure messaging	Transactional; approx \$12000/year
Northern Trust Securities Inc.	1/23/2025	Integrated Trading Agreement	Per share/BPS
Morgan Stanley	2/5/2025	Commodity Futures Account Documents	Transactional
Broadridge	2/7/2025	NYFIX Services - FX Connections	None
Bloomberg	2/10/2025	Index Replication Licensing - Gov/Credit, TIPS	AUM based
NCREIF	2/14/2025	Membership Application - Index Data Licensing	\$2,700/year
Bloomberg	2/19/2025	Bloomberg Anywhere - 2 additional users	\$2,360/month/user
Bloomberg	2/27/2025	Bloomberg Anywhere - 1 additional user	\$2,360/month/user
Bloomberg	3/5/2025	Electronic Trading Agreement	none
DTCC	3/6/2025	Investment Transactions - Internal EQ Trading	up to \$5,000 one time; transactional
Northern Trust Securities Inc	3/18/2025	Brokerage Services	Transactional
OSTRAA	3/27/2025	Traiana Harmony ETD Services - FX Connections	\$14,000 one time; \$12,000/year + transactional

*Not previously reported; countersigned agreement received after 1/1/25.

Report provided pursuant to Section IV Exhibit 2 of the SIB Governance Manual