

## MEETING WILL BE HELD VIA MICROSOFT TEAMS ONLY

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Phone Conference ID: 386 857 246#

Meeting Coordinators: Catelin Newell - Director Admin Services & IT, Kate Schirado – Executive Assistant

### ➤ = **Board Action Requested**

1. **Approval of Meeting Minutes – Joseph Heringer, Commissioner**

Consideration of Approval of Land Board Meeting Minutes by voice vote.

- A. [July 27, 2023](#) – minutes available via link

2. **Operations – Joseph Heringer, Commissioner**

A. Commissioner's Report – pg. 2

- B. Commissioner Performance & Compensation Committee Recommendation – pg. 3

3. **Division Reports – Joseph Heringer, Commissioner**

A. Surface – pg. 4

B. Minerals – pg. 6 – **Chris Suelzle, Minerals Director**

C. Unclaimed Property – pg. 11

D. Financials – pg. 13

E. Executive Summary of Assets – pg. 25

4. **Investments – Frank Mihail, CIO**

A. Investments Update – pg. 27

- B. Real Estate Review and Recommendation – pg. 30

- C. Public US Equities Recommendation – pg. 60

5. **Special Projects – Joseph Heringer, Commissioner**

- A. SIIF – Assigned Fund Balance – pg. 139

6. **Litigation – Joseph Heringer – pg. 140**

**Executive session under the authority of NDCC §§ 44-04-19.1 and 44-04-19.2 for attorney consultation with the Board's attorneys to discuss: - pg. 141**

- **Continental Resources, Inc. v. North Dakota Board of University and School Lands and the United States of America – Case No. 1:17-cv-014**
- **Oil Royalty Settlements**

**Next Meeting Date – FRIDAY September 29, 2023**

**RE: Commissioner's Report**  
(No Action Requested)

- Oil royalties deductions settlement achieved with major North Dakota operator; first since Newfield gas case finalized
- August 11 – attended State Investment Board - Investment Committee meeting as voting member
- August 25 - attended full State Investment Board meeting as voting member
- August 28 – CIO Frank Mihail and I attended first legislative ESG study meeting
- August 29 – admin rules public hearing held at state capitol

**HR Update**

- Annual goal setting season – meetings to establish department, division, and individual team member goals
- Two Minerals Officer positions filled with September 1, 2023 start dates
- New Investment Officer position filled with October 1, 2023 start date

**RE: Commissioner Performance & Compensation Committee**

During its June 2023 meeting, the Land Board voted to form a committee to study and provide recommendations to the Board regarding: 1) Land Commissioner performance review policy and 2) needed adjustments to the Land Commissioner's salary. The committee is to consist of two Land Board members, one HRMS representative, and one industry professional. Treasurer Beadle and Secretary Howe have agreed to serve as the two Land Board members. North Dakota Chief People Officer, Molly Harrington, has agreed to serve as the HRMS representative. North Dakota Retirement & Investment Office CFO/COO, Ryan Skor, has agreed to serve as the institutional investment professional.

For the industry professional, a North Dakota government industry representative was selected to avoid potential conflicts with private industry professionals that may do business with the Department. Mr. Skor has an excellent background for this Committee as the Retirement & Investment Office is extensively involved in institutional investment management, working with investment managers, analysts, and consultants throughout the country. Mr. Skor also serves as a resource for the State Investment Board Executive Review and Compensation Committee and has done extensive research in these areas.

**Recommendation: Appoint the following individuals to serve on the Commissioner Performance & Compensation Committee:**

- 1. Treasurer Beadle**
- 2. Secretary of State Howe**
- 3. Molly Harrington, Chief People Officer**
- 4. Ryan Skor, CFO/COO, Retirement & Investment Office**

Encumbrances issued by Commissioner during July 2023:

- 8 Right of Way Agreements generating \$16,045 in income for the Trusts.

Williams County 146-104-36 (August 2023)  
Photo Credit: Garret Hecker



## County Facts:

### Highest number of total acres:

McKenzie Co. (64,587 acres)

### Highest agricultural lease revenue:

Burleigh Co. (\$650,725)

### Highest amount of crop acres:

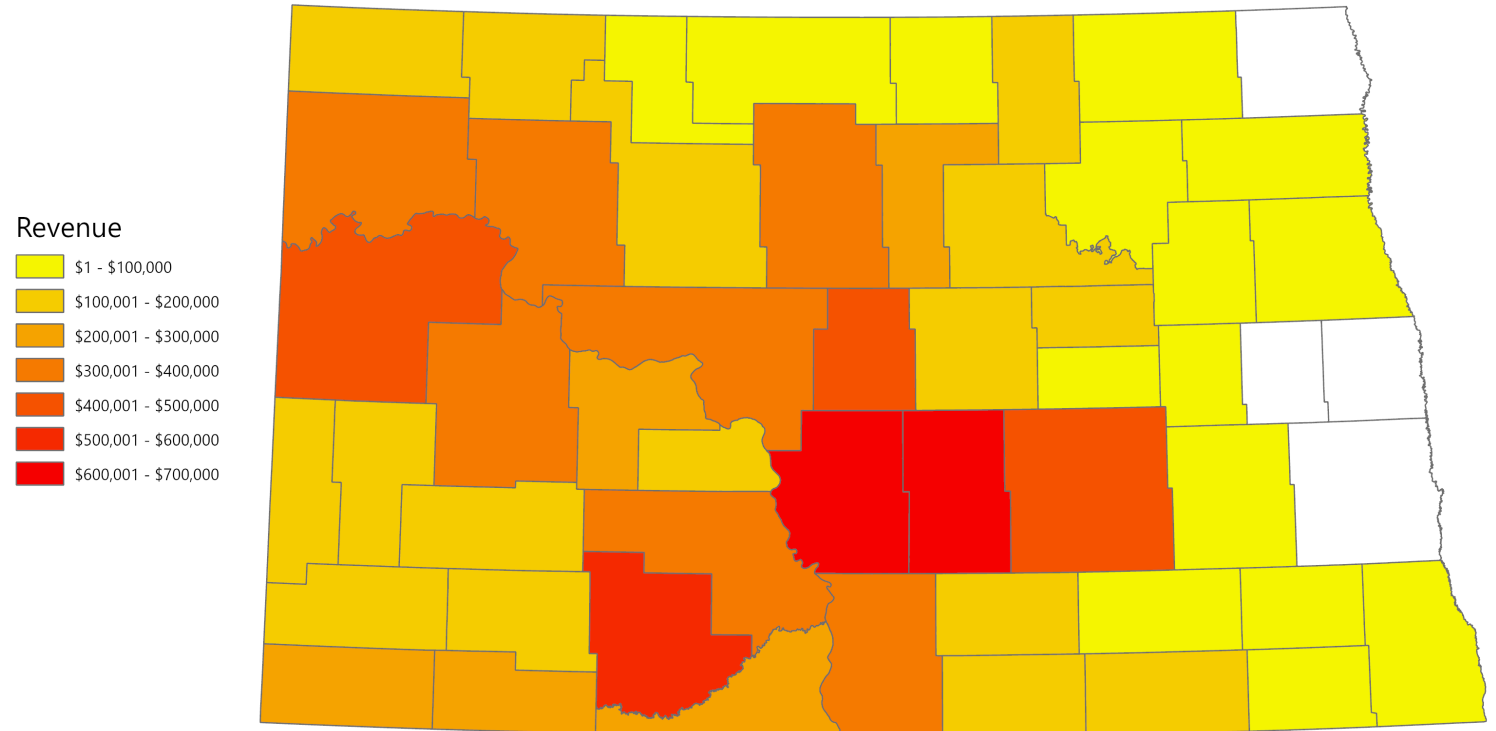
Towner Co. (1,381 acres)

### Highest percentage of county land base:

Golden Valley Co. (4.5%)

Total Revenue from Agricultural Leases in FY 2023 = \$9.9 Million

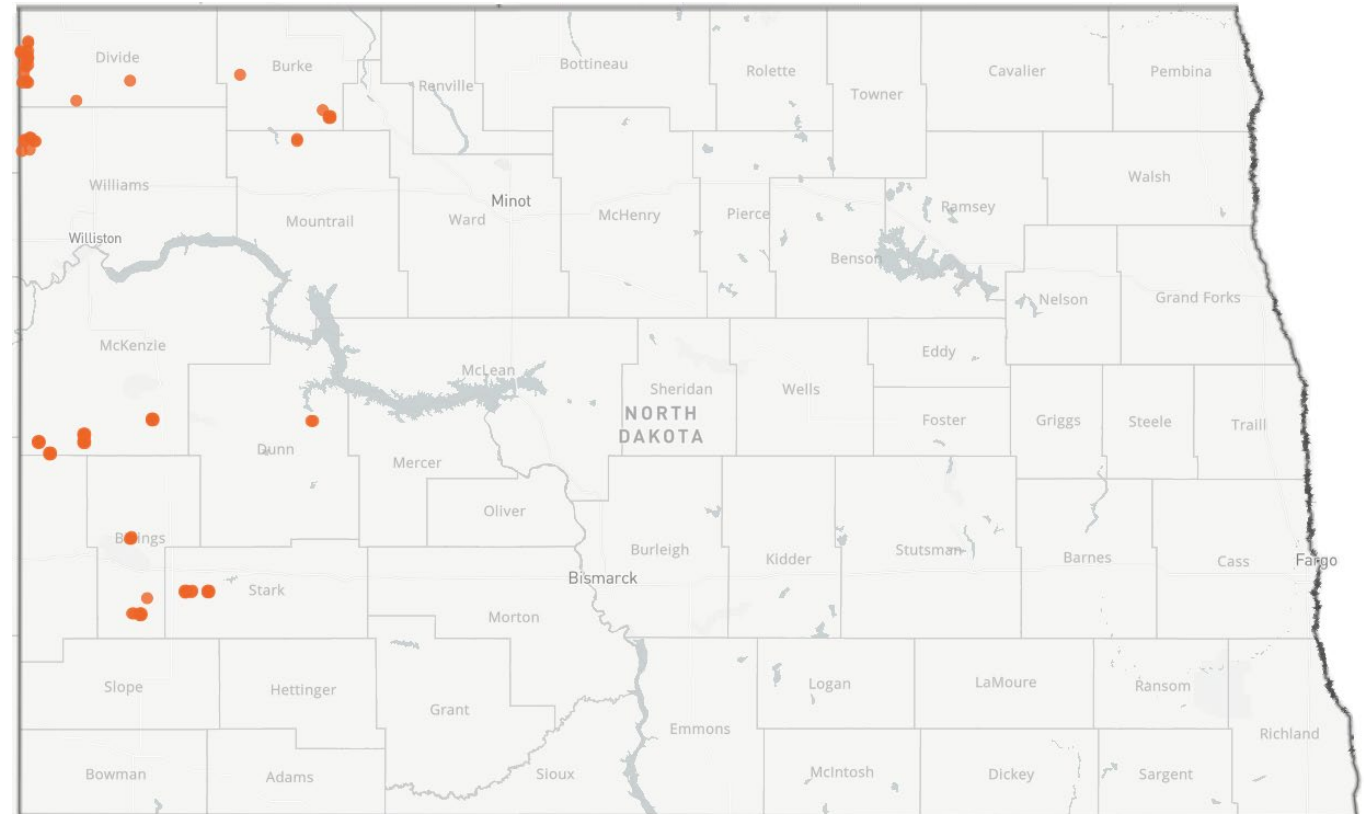
Total Yearly Agricultural Lease Revenue by County, FY 2023



# OIL & GAS LEASE AUCTION RESULTS

## 2023 Q3 (August) Online Oil & Gas Lease Auction Summary

Bidding Snapshots	
Total tracts	<b>78</b>
Total acres	<b>8,741.96</b>
Total tracts receiving bids	<b>78</b>
Total registered bidders	<b>36</b>
Total bidders who placed bid	<b>22</b>
Average unique bidders on tract with bid	<b>2.87</b>
Total bids	<b>711</b>
High bid per tract	<b>\$96,160.00</b>
High bid per acre	<b>\$1,970.00</b>
Total bonus received	<b>\$678,754.06</b>



# OIL & GAS LEASE AUCTION RESULTS

## 2023 Q3 Auction Summary, *continued*

County	# Tracts	Net Min Acres	Total Bonus	Average Bonus/Net Acre
Billings	10	1440	\$4,800.00	\$3.33
Burke	6	688	\$219,760.00	\$319.42
Divide	20	2000	\$100,040.00	\$50.02
Dunn	2	160	\$168,320.00	\$1,052.00
McKenzie	20	3199.36	\$61,914.88	\$19.35
Mountrail	2	34.6	\$67,439.18	\$1,949.11
Stark	10	820	\$14,400.00	\$17.56
Williams	8	400	\$42,080.00	\$105.20
<b>TOTAL</b>	<b>78</b>	<b>8741.96</b>	<b>\$678,754.06</b>	<b>\$77.64</b>

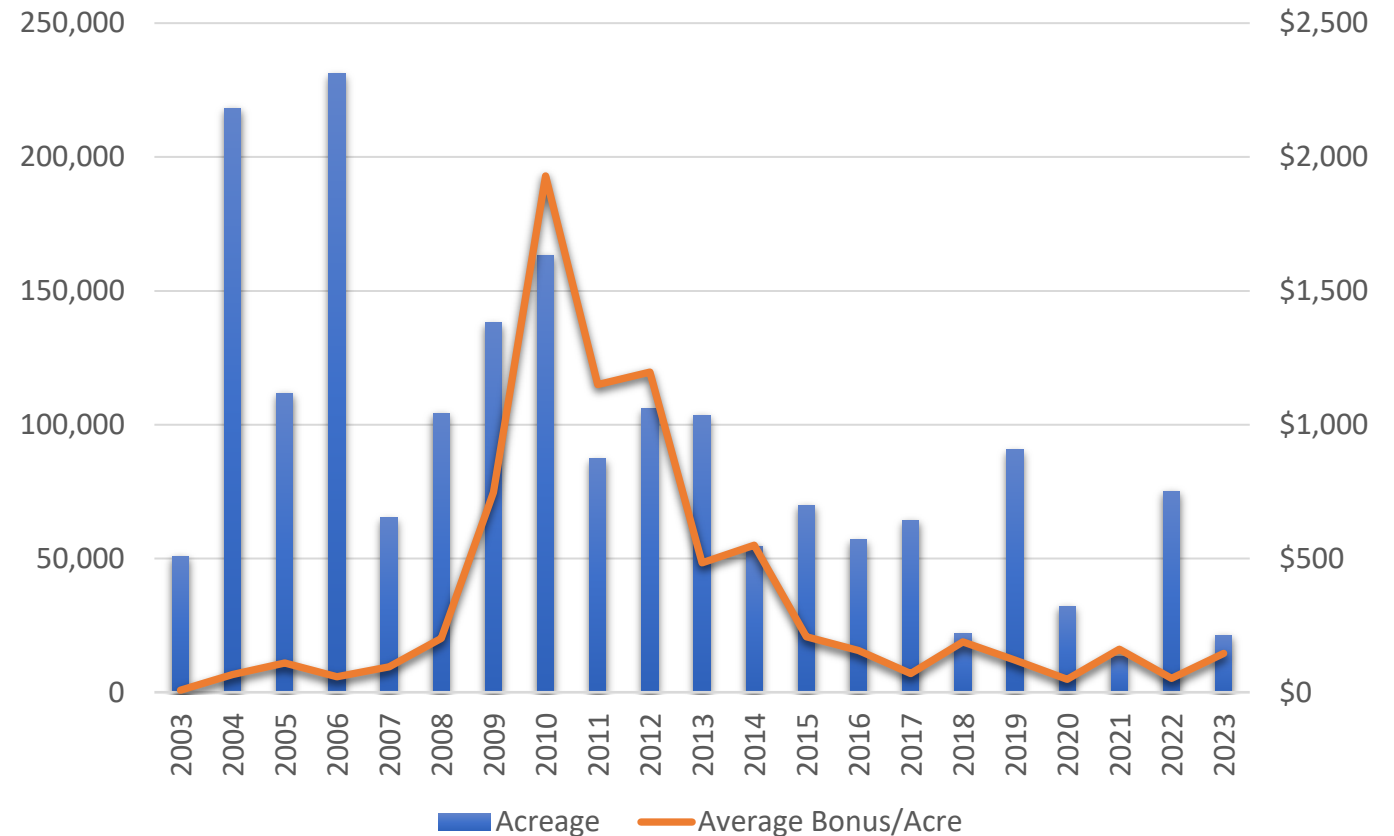
Trust/ Fund	Trust/Fund Name	# Tracts	Total Bonus
A	Common Schools	56	\$504,434.88
D	School for the Deaf	1	\$1,680.00
E	Ellendale State College	1	\$6,080.00
I	Youth Correctional Center	2	\$640.00
L	SIIF (Strategic Investment & Improvements Fund)	14	\$130,700.88
N	NDSU	1	\$34,258.30
V	Valley City State U	1	\$320.00
W	State College of Science	2	\$640.00
	<b>TOTAL</b>	<b>78</b>	<b>\$678,754.06</b>

# HISTORICAL AUCTION RESULTS

Year	Tracts	Acreage	Bonus	Average Bonus/Ac
2004	2,678	218,163.09	\$14,503,007.46	\$66.48
2005	1,350	111,808.20	\$12,309,350.04	\$110.09
2006	2,886	231,264.52	\$13,576,947.98	\$58.71
2007	829	65,134.94	\$6,211,340.61	\$95.36
2008	1,213	104,235.20	\$20,991,008.51	\$201.38
2009	1,735	138,109.87	\$103,212,375.99	\$747.32
2010	2,083	163,367.37	\$315,126,365.92	\$1,928.94
2011	1,132	87,432.04	\$100,553,811.94	\$1,150.08
2012	1,236	106,013.08	\$126,785,716.43	\$1,195.94
2013	1,267	103,586.18	\$50,109,863.59	\$483.75
2014	635	54,693.19	\$30,057,523.87	\$549.57
2015	779	69,987.56	\$14,522,817.52	\$207.51
2016	684	56,889.36	\$8,862,765.28	\$155.79
2017	720	64,291.10	\$4,496,748.14	\$69.94
2018	241	21,865.22	\$4,130,245.91	\$188.90
2019	1,065	90,698.40	\$10,876,517.31	\$119.92
2020	329	32,219.90	\$1,576,562.37	\$48.93
2021	151	13,525.98	\$2,175,579.72	\$160.84
2022	1,008	75,119.39	\$3,942,573.02	\$52.48
2023	207	21,268.01	\$3,090,459.52	\$145.31
<b>TOTALS</b>	<b>22,228</b>	<b>1,829,672.60</b>	<b>\$847,111,580.63</b>	<b>\$462.99</b>

## Acreage Leased & Average Bonus/Acre Received by Year

(Past 20 Years)

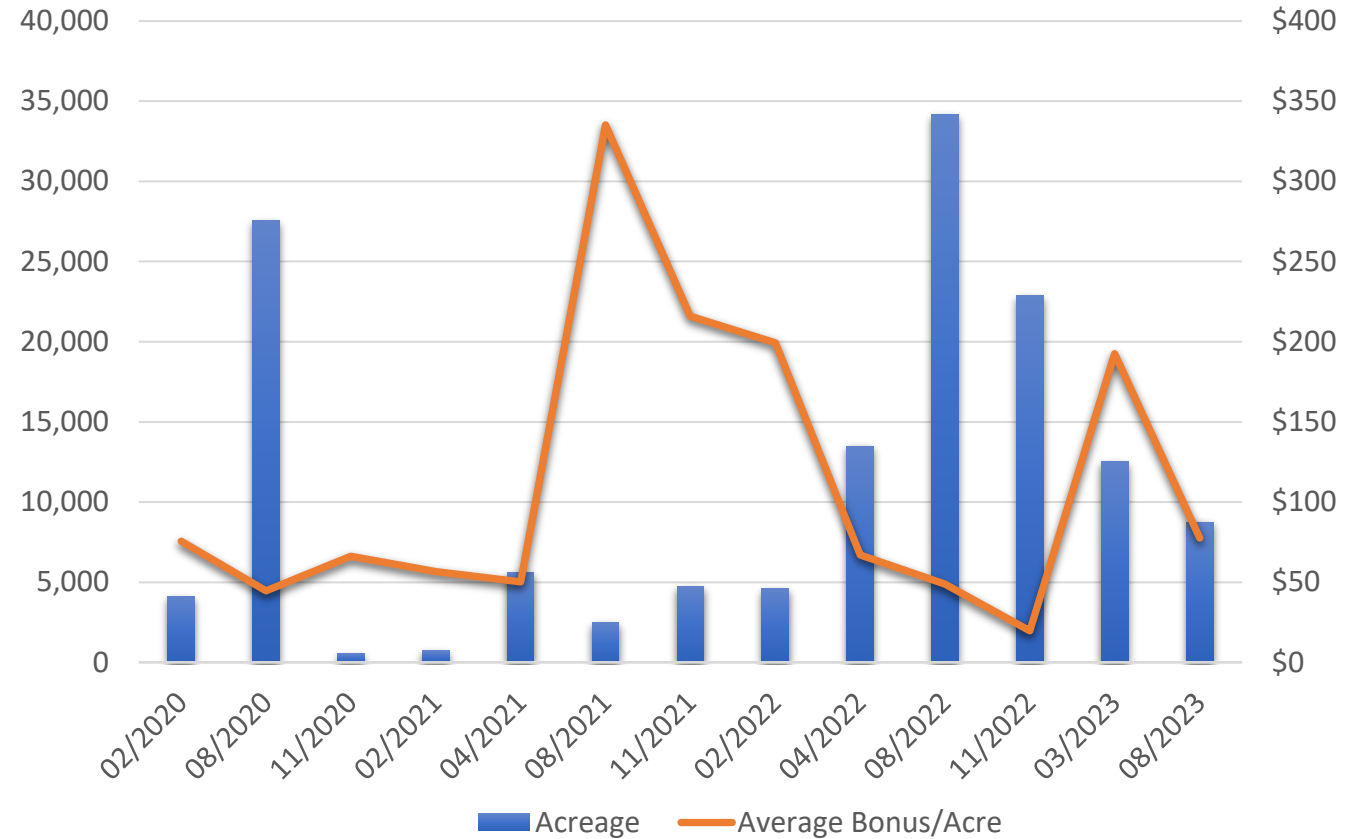




# HISTORICAL AUCTION RESULTS

Auction	Tracts	Acreage	Bonus	Average Bonus/Ac
02/2020	36	4089.36	\$308,874.33	\$75.53
08/2020	288	27,572.15	\$1,230,769.90	\$44.64
11/2020	5	558.39	\$36,918.14	\$66.12
02/2021	6	719.02	\$40,752.60	\$56.68
05/2021	63	5592.27	\$281,476.25	\$50.33
08/2021	23	2481.29	\$831,534.87	\$335.12
11/2021	59	4733.4	\$1,021,816.00	\$215.87
02/2022	57	4596.24	\$916,142.26	\$199.32
05/2022	177	13,492.13	\$904,093.74	\$67.01
08/2022	459	34,147.30	\$1,670,404.15	\$48.92
11/2022	315	22,883.72	\$451,932.87	\$19.75
03/2023	129	12,526.05	\$2,411,705.46	\$192.54
08/2023	78	8741.96	\$678,754.06	\$77.64
<b>TOTALS</b>	<b>1695</b>	<b>142,133.28</b>	<b>\$10,785,174.63</b>	<b>\$75.88</b>

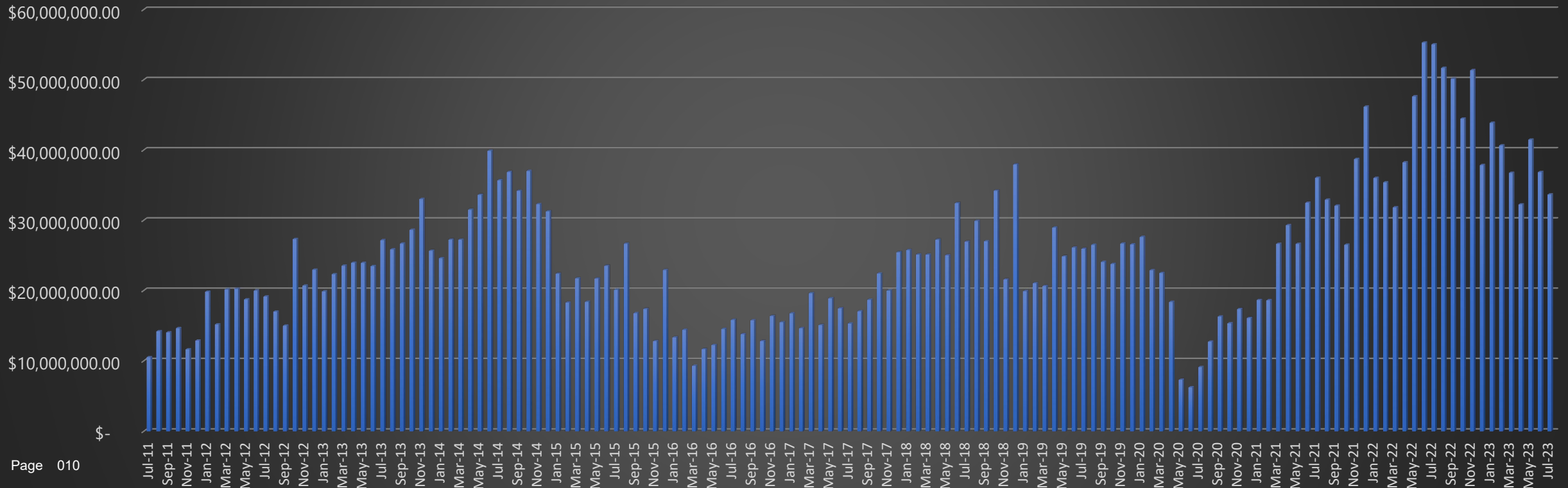
**Acreage Leased & Average Bonus/Acre Received by Auction**  
(2020 through 2023)



# FISCAL YTD O/G ROYALTIES

As of July 2023, for fiscal year 2023-24 the Department has received **\$33,669,470** in royalties as compared to **\$55,047,797** last fiscal year at this time. While production volume was similar, Bakken Crude was trading at over \$110/barrel in June of 2022 versus just over \$70/barrel in June of 2023.

## ROYALTIES - CASH COLLECTED

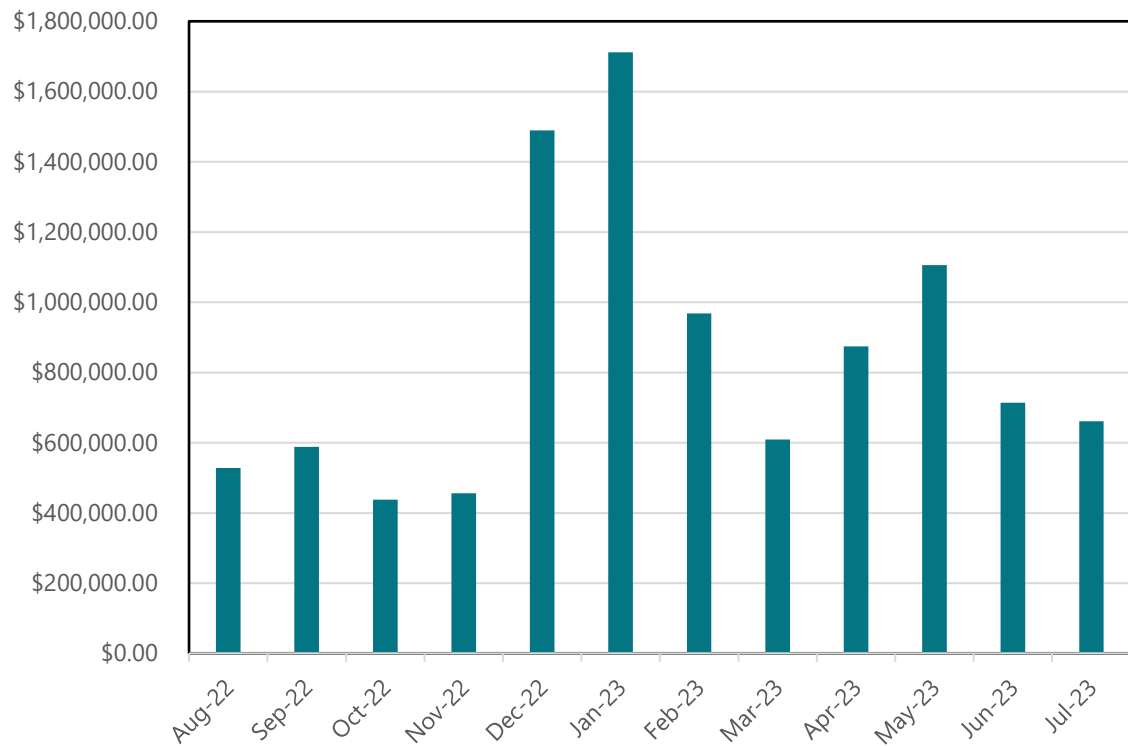


# UNCLAIMED PROPERTY DIVISION

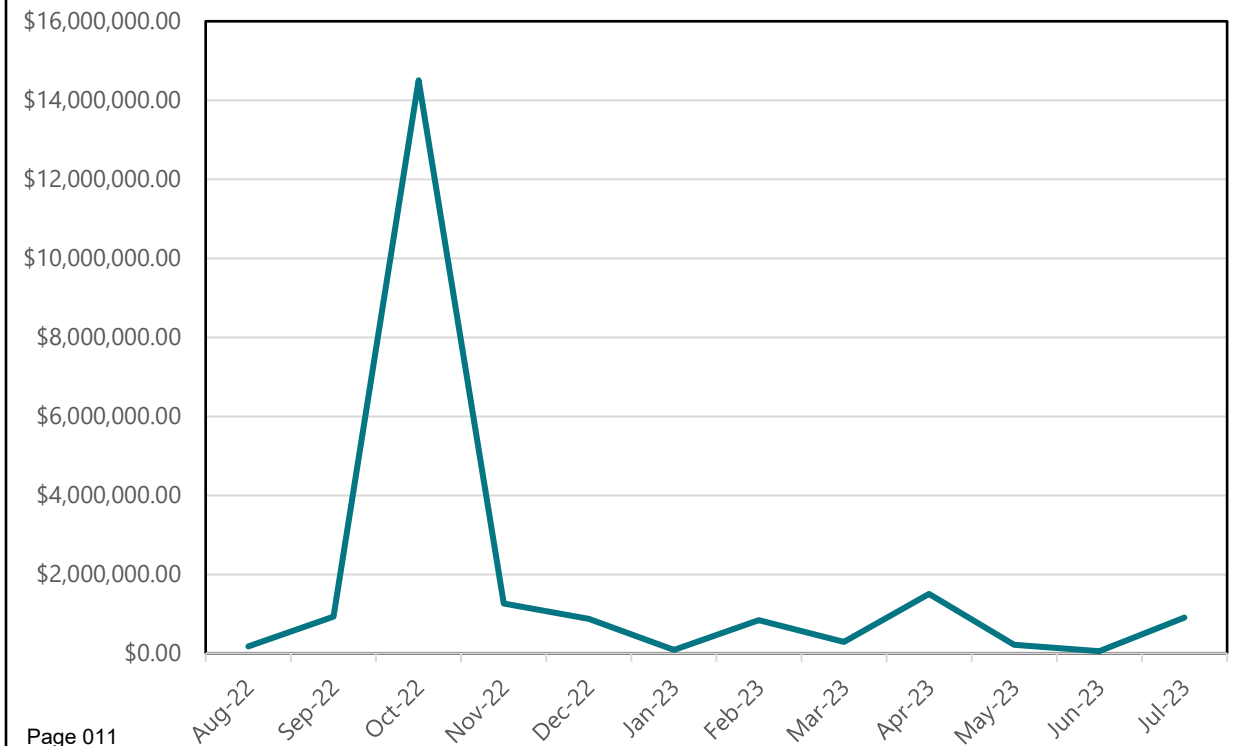
<https://unclaimedproperty.nd.gov/>

For the month of July 2023, the Division paid 476 claims with \$661,209.83 returned to rightful owners/heirs. It also received 122 holder reports with a dollar value of \$909,230.57.

### TOTAL DOLLAR VALUE OF CLAIMS PAID



### TOTAL VALUE OF PROPERTY REPORTED



# SURCH – States Unclaimed Retirement Clearing House



- A multi-state cooperative effort to facilitate state collection of unclaimed private sector retirement plan checks to overcome ERISA pre-emption of state laws
- Created through the National Association of State Treasurers (NAST) in conjunction with the National Association of Unclaimed Property Administrators (NAUPA) in collaboration with the US Department of Labor (DOL)
- These funds are currently not being reported by retirement plan administrators due to legal uncertainty and lack of a comprehensive system
- Reduces risk of further “federalization” of unclaimed property (states are already doing it)
- Designed NOT to place additional demands on state programs
- Contract fully executed on 8/10/2023

**RE: Financial Statements Position Report (Unaudited) for period ended May 31, 2023  
(No Action Requested)**

The following statements represent the unaudited financial position for the various trusts and funds managed by the Department of Trust Lands. The unaudited financial positions are two months delayed as a significant portion of the revenue for Commons Schools Trust, Strategic Investment and Improvements Fund, and Coal Development Trust includes gross production tax, oil extraction tax and coal severance tax distributions which are received two months after production date.

NORTH DAKOTA  
BOARD OF UNIVERSITY AND SCHOOL LANDS

Financial Position Report  
(Unaudited)

For period ended May 31, 2023



<b>Board of University and School Lands</b>		
<b>Comparative Financial Position (Unaudited)</b>		
<b>Schedule of Net Assets</b>		
<b>Assets by Trust:</b>	<u>May 31, 2023</u>	<u>May 31, 2022</u>
Common Schools	\$6,044,742,660	\$5,791,646,424
North Dakota State University	90,809,585	86,857,045
School for the Blind	15,602,567	15,195,287
School for the Deaf	23,620,837	23,612,391
State Hospital	15,408,637	15,733,081
Ellendale *	29,236,813	27,886,015
Valley City State University	15,902,228	15,198,037
Mayville State University	11,872,185	10,805,537
Youth Correctional Center	32,036,636	30,787,251
State College of Science	21,777,288	21,619,074
School of Mines **	27,551,717	26,682,470
Veterans Home	5,706,525	5,807,413
University of North Dakota	44,578,481	41,499,863
Capitol Building	7,111,755	6,027,256
Strategic Investment and Improvements	1,613,867,445	883,238,294
Coal Development	72,362,855	71,364,803
Indian Cultural Education Trust	1,337,971	1,377,238
Theodore Roosevelt Presidential Library	52,489,536	54,211,122
Total	<u><u>\$8,126,015,721</u></u>	<u><u>\$7,129,548,600</u></u>
<b>Assets by Type:</b>		
Cash	\$647,163,151	\$445,793,880
Receivables	8,964,511	7,088,925
Investments ***	7,265,742,372	6,439,253,689
Office Building (Net of Depreciation)	207,224	264,332
Farm Loans	2,454,601	4,622,630
Energy Development Impact Loans	8,257,590	9,064,736
School Construction Loans (Coal)	27,167,754	29,495,505
Due From Other Trusts and Agencies	166,058,518	193,964,903
Total	<u><u>\$8,126,015,721</u></u>	<u><u>\$7,129,548,600</u></u>

**\* Ellendale Trust**

The following entities are equal beneficiaries of the Ellendale Trust:

Dickinson State University	School for the Blind
Minot State University	Veterans Home
Dakota College at Bottineau	State Hospital
State College of Science - Wahpeton	

**\*\* School of Mines**

Benefits of the original grant to the School of Mines are distributed to the University of North Dakota.

**\*\*\* Investments**

Includes available cash available for loans, investments, abandoned stock and claimant liability.

## Board of University and School Lands

### Comparative Financial Position (Unaudited)

#### Common School Trust Fund

	May 31, 2023	May 31, 2022
<b>Balance Sheet</b>		
<b>Assets:</b>		
Cash	\$81,452,491	\$141,135,448
Interest Receivable	5,782,550	5,348,852
Investments	5,937,247,635	5,618,643,422
Farm Loans	2,260,572	4,257,776
Accounts Receivable	28	-
Due from Other Agencies	17,792,158	21,996,595
Office Building (Net of Depreciation)	207,224	264,332
Total Assets	\$6,044,742,658	\$5,791,646,425
<b>Liabilities:</b>		
Unclaimed Property Claimant Liability	\$22,357,233	\$16,461,434
Due to Other Funds	6,524	9,016
Accounts Payable	-	-
Total Liabilities	22,363,757	16,470,450
<b>Equity:</b>		
Fund Balance	5,655,342,237	5,736,576,918
Net Income/(Loss)	367,036,664	38,599,057
Total Liabilities and Equity	\$6,044,742,658	\$5,791,646,425
<b>Income Statement</b>		
<b>Income:</b>		
Investment Income	\$116,493,741	\$149,419,536
Realized Gain/(Loss)	(92,973,536)	125,333,205
Unrealized Gain/(Loss)	198,103,070	(350,058,186)
Royalties - Oil and Gas	218,862,570	203,589,364
Royalties - Coal	320,633	306,706
Royalties - Aggregate	337,583	125,342
Bonuses - Oil and Gas	2,825,120	2,080,639
Bonuses - Coal	-	-
Rents - Surface	12,141,783	13,067,796
Rents - Mineral	239,258	124,838
Rents - Coal	50,329	46,527
Rents - Office Building	83,327	71,982
Encumbrances - Surface	344,712	77,675
Sale of Capital Asset	-	644
Miscellaneous Income	-	9,700
Oil Extraction Tax Income	116,381,823	105,106,449
Unclaimed Property Income	15,260,307	11,234,903
Total Income	588,470,720	260,537,120
<b>Expenses and Transfers:</b>		
Investment Expense	6,618,896	7,194,117
In-Lieu and 5% County Payments	194,099	206,047
Administrative Expense	4,033,285	3,956,688
Operating Expense - Building	77,776	71,211
Transfers to Beneficiaries	210,510,000	210,510,000
Total Expense and Transfers	221,434,056	221,938,063
Net Income/(Loss)	\$367,036,664	\$38,599,057



**COMMON SCHOOL TRUST FUND****Monthly Income and Expenses****Unaudited Supplemental Information****March 2023                      April 2023                      May 2023**Income

Investment Income	\$15,322,669	\$6,543,443	\$5,659,734
Net increase(decrease) in fair value of investments	45,855,148	11,654,698	(51,336,617)
Loan Income - Farm Loan Pool	25,202	23,196	23,499
Bonus	1,639,271	-	-
Royalty	21,053,983	19,595,609	25,187,440
Rent	457,362	121,102	474,342
Miscellaneous	(20)	10	-
Tax Income - Oil Extraction	9,304,156	8,736,744	9,055,414
Capital Asset - Sale	-	-	-
Unclaimed Property Holder Receipts	223,534	1,350,968	674,264
	<u>\$93,881,305</u>	<u>\$48,025,770</u>	<u>(\$10,261,924)</u>

Expenses

Investment Expense	\$1,351,413	\$708,281	\$114,708
Salaries and Operating	288,879	388,581	359,689
Transfer to State Tuition Fund	23,390,000	23,390,000	-
In Lieu Property Tax & County Payments	194,099	-	-
Unclaimed Property Paid Claims	829,805	399,667	1,061,192
	<u>\$26,054,196</u>	<u>\$24,886,529</u>	<u>\$1,535,589</u>

ENDING NET ASSETS (year to date)

\$6,033,400,930                      \$6,056,540,171                      \$6,044,742,658

**Board of University and School Lands**

**Comparative Financial Position (Unaudited)**

**Combined - Other Permanent Trusts**

	May 31, 2023	May 31, 2022
<b>Balance Sheet</b>		
<b>Assets:</b>		
Cash	\$17,209,857	\$14,816,135
Interest Receivable	432,952	403,309
Investments	316,266,661	306,099,166
Farm Loans	194,029	364,854
Accounts Receivable	-	-
<b>Total Assets</b>	<b>\$334,103,499</b>	<b>\$321,683,464</b>
<b>Liabilities:</b>		
Due to Other Funds	558	772
Accounts Payable	-	-
<b>Total Liabilities</b>	<b>558</b>	<b>772</b>
<b>Equity:</b>		
Fund Balance	316,615,628	320,987,436
Net Income/(Loss)	17,487,313	695,256
<b>Total Liabilities and Equity</b>	<b>\$334,103,499</b>	<b>\$321,683,464</b>
<b>Income Statement</b>		
<b>Income:</b>		
Investment Income	\$6,862,713	\$8,231,536
Realized Gain/(Loss)	(5,403,373)	6,976,627
Unrealized Gain/(Loss)	11,040,866	(19,195,507)
Royalties - Oil and Gas	16,566,254	16,141,467
Royalties - Coal	9,496	16,259
Royalties - Aggregate	-	5,000
Bonuses - Oil and Gas	206,389	403,495
Bonuses - Coal	8,010	-
Rents - Surface	1,142,064	1,121,102
Rents - Mineral	15,502	6,915
Rents - Coal	801	400
Encumbrances - Surface	-	-
Sale of Capital Asset	-	-
Miscellaneous Income	-	4,950
<b>Total Income</b>	<b>30,448,722</b>	<b>13,712,244</b>
<b>Expenses and Transfers:</b>		
Investment Expense	362,812	392,617
In-Lieu and 5% County Payments	58,876	57,192
Administrative Expense	287,221	314,679
Transfers to Beneficiaries	12,252,500	12,252,500
<b>Total Expense and Transfers</b>	<b>12,961,409</b>	<b>13,016,988</b>
<b>Net Income/(Loss)</b>	<b>\$17,487,313</b>	<b>\$695,256</b>

## Board of University and School Lands

### Comparative Financial Position (Unaudited)

#### Coal Development Trust

	May 31, 2023	May 31, 2022
<b>Balance Sheet</b>		
<b>Assets:</b>		
Cash	\$1,352,822	\$332,307
Interest Receivable	375,004	526,184
Investments	35,002,632	31,739,595
Coal Impact Loans	8,257,590	9,064,736
School Construction Loans	27,167,754	29,495,505
Due from other Trusts and Agencies	207,053	206,476
Total Assets	\$72,362,855	\$71,364,803
<b>Liabilities:</b>		
Due to Other Trusts and Agencies	144,937	144,533
<b>Equity:</b>		
Fund Balance	70,463,180	71,117,671
Net Income	1,754,738	102,599
Total Liabilities and Equity	\$72,362,855	\$71,364,803
<b>Income Statement</b>		
<b>Income:</b>		
Investment Income	\$510,994	\$296,685
Interest on School Construction Loans	274,638	493,595
Realized Gain/(Loss)	354,362	35,963
Unrealized Gain/(Loss)	395,973	(1,002,970)
Coal Severance Tax Income	403,425	409,988
Total Income	1,939,392	233,261
<b>Expenses and Transfers:</b>		
Investment	15,630	20,756
Administrative	2,000	2,392
Transfers to General Fund	167,024	107,514
Total Expense and Transfers	184,654	130,662
Net Income/(Loss)	\$1,754,738	\$102,599

**Board of University and School Lands**

**Comparative Financial Position (Unaudited)**

**Capitol Building Trust**

	<u>May 31, 2023</u>	<u>May 31, 2022</u>
<b>Balance Sheet</b>		
<b>Assets:</b>		
Cash	\$2,131,284	\$2,320,603
Interest Receivable	36,489	21,087
Investments	4,943,982	3,685,565
Accounts Receivable	-	-
<b>Total Assets</b>	<b><u>\$7,111,755</u></b>	<b><u>\$6,027,255</u></b>
<b>Liabilities:</b>		
Due to Other Trusts and Agencies	-	-
Accounts Payable	-	-
<b>Total Liabilities</b>	<b><u>-</u></b>	<b><u>-</u></b>
<b>Equity:</b>		
Fund Balance	6,772,499	3,462,488
Net Income	339,256	2,564,767
<b>Total Liabilities and Equity</b>	<b><u>\$7,111,755</u></b>	<b><u>\$6,027,255</u></b>
<b>Income Statement</b>		
<b>Income:</b>		
Investment Income	\$165,846	\$32,248
Realized Gain(Loss)	95,855	3,482
Unrealized Gain/(Loss)	99,183	(105,173)
Royalties - Oil and Gas	2,137,987	2,964,096
Bonuses - Oil and Gas	38,563	-
Bonus - Coal	-	-
Rents - Surface	165,625	174,632
Rents - Mineral	1,593	802
Encumbrances - Surface	28,051	38,153
Royalties - Aggregate	-	-
<b>Total Income</b>	<b><u>2,732,703</u></b>	<b><u>3,108,240</u></b>
<b>Expenses and Transfers:</b>		
Investment Expense	3,685	(1,911)
In-Lieu and 5% County Payments	3,704	3,897
Administrative Expense	44,193	41,487
Transfers to Facility Management	2,341,865	500,000
Transfers to Legislative Council	-	-
Transfer to Supreme Court	-	-
<b>Total Expense and Transfers</b>	<b><u>2,393,447</u></b>	<b><u>543,473</u></b>
<b>Net Income/(Loss)</b>	<b><u>\$339,256</u></b>	<b><u>\$2,564,767</u></b>

## Board of University and School Lands

### Comparative Financial Position (Unaudited)

#### Strategic Investment and Improvements Fund

	May 31, 2023	May 31, 2022
<b>Balance Sheet</b>		
<b>Assets:</b>		
Cash	\$545,003,132	\$287,168,771
Accounts Receivable	17	-
Interest Receivable	2,406,598	857,466
Investments	918,398,391	423,450,224
Due from other Trusts or Agencies	148,059,307	171,761,831
Total Assets	\$1,613,867,445	\$883,238,292
<b>Liabilities:</b>		
Accounts Payable	\$0	\$0
<b>Equity:</b>		
Fund Balance	1,045,209,177	860,465,447
Net Income	568,658,268	22,772,845
Total Liabilities and Equity	\$1,613,867,445	\$883,238,292
<b>Income Statement</b>		
<b>Income:</b>		
Investment Income	\$8,031,078	\$3,169,800
Realized Gain/(Loss)	5,370,815	388,608
Unrealized Gain/(Loss)	7,187,170	(10,621,421)
Interest on Fuel Prod Facility	267,828	148,172
Interest - Miscellaneous	8,546,246	328,023
Interest and Penalty	1,023,590	1,316,422
Royalties - Oil and Gas	175,712,731	131,702,044
Bonuses - Oil and Gas	798,490	(19,139,667)
Royalties - Coal	79,410	135,202
Rents - Mineral	141,988	34,916
Tax Income - Oil Extraction & Production Distribution	611,336,512	191,918,618
Total Income	818,495,858	299,380,717
<b>Expenses and Transfers:</b>		
Administrative	1,935,751	1,672,862
Investment Expense	294,932	176,473
Transfer to Attorney General (HB 1003)	-	3,000,000
Transfer to Agriculture Department (HB 1009)	-	5,000,000
Transfer to ND Insurance Commissioner (SB 2287)	-	200,000
Transfer to Office of Management & Budget (HB 1015)	205,000,000	205,000,000
Transfer to Council on the Arts (HB 1015)	1,000,000	-
Transfer to Office of Management & Budget (HB 1015)	71,055	-
Transfer to North Dakota State University	225,000	-
Transfer to Office of the Adjutant General (HB 1016)	-	1,000,000
Transfer to Innovation Loan Fund (HB 1141)	-	15,000,000
Transfer to ND University System (SB 2003)	-	19,000,000
Transfer to Office of Management & Budget (SB 2014)	-	9,500,000
Transfer to Department of Commerce (SB 2018)	14,000,000	15,000,000
Transfer From Department of Commerce - Return	(2,632)	-
Transfer to Upper Great Plains Transportation (SB 2020)	-	2,073,000
Transfer from General Fund	-	(14,463)
Transfer to Office of Management & Budget (HB1015)	264,054	-
Transfer to University System (HB 1003)	68,491	-
Transfer to Commerce (HB 1018)	26,000,000	-
Transfer to Dept of Human Services	980,939	-
Total Expense and Transfers	249,837,590	276,607,872
Net Income/(Loss)	\$568,658,268	\$22,772,845

As of April 30, 2023 the SIIF had a fund balance of \$1,613,867,445. The fund balance is made up of two parts. The committed fund balance is that portion of the fund that has either been set aside until potential title disputes related to certain riverbed leases have been resolved or appropriated by the legislature. The uncommitted fund balance is the portion of the fund that is unencumbered, and is thus available to be spent or dedicate to other programs as the legislature deems appropriate. The uncommitted fund balance was \$1,500,236,857 as of May 31, 2023.

**Board of University and School Lands**

**Comparative Fiduciary Statements (Unaudited)**

**Indian Cultural Trust**

	May 31, 2023	May 31, 2022
<b><u>Fiduciary Net Position</u></b>		
<b>Assets:</b>		
Cash	\$2,798	\$422
Interest receivable	949	757
Investments	1,334,224	1,376,059
Total Assets	<u>\$1,337,971</u>	<u>\$1,377,238</u>
<b>Liabilities:</b>		
Accounts payable	-	-
Total Liabilities	-	-
<b>Net Position:</b>		
Net position restricted	1,337,971	1,377,238
Total Net Position	<u>\$1,337,971</u>	<u>\$1,377,238</u>
<b><u>Changes in Fiduciary Net Position</u></b>		
<b>Additions:</b>		
Contributions:		
Donations	-	-
Total Contributions	-	-
Investment Income:		
Net change in fair value of investments	25,180	(54,788)
Interest	29,360	37,429
Less investment expense	1,677	1,780
Net Investment Income	<u>52,863</u>	<u>(19,139)</u>
Miscellaneous Income	2,450	2,458
Total Additions	<u>55,313</u>	<u>(16,681)</u>
<b>Deductions:</b>		
Payments in accordance with Trust agreement	46,052	46,052
Administrative expenses	1,088	1,088
Total Deductions	<u>47,140</u>	<u>47,140</u>
Change in net position held in Trust for:		
Private-Purpose	8,173	(63,821)
Total Change in Net Position	<u>8,173</u>	<u>(63,821)</u>
Net Position - Beginning of Fiscal Year	1,329,798	1,441,059
Net Position - End of Month	<u>\$1,337,971</u>	<u>\$1,377,238</u>
Net Position - End of Fiscal Year		<u>\$1,329,798</u>

## Board of University and School Lands

### Comparative Fiduciary Statements (Unaudited)

#### Theodore Roosevelt Presidential Library

	<u>May 31, 2023</u>	<u>May 31, 2022</u>
<b>Fiduciary Net Position</b>		
<b>Assets:</b>		
Cash	\$10,767	\$20,194
Interest receivable	(70,076)	(68,730)
Investments	52,548,845	54,259,658
Total Assets	<u>\$52,489,536</u>	<u>\$54,211,122</u>
<b>Liabilities:</b>		
Accounts payable	-	-
Total Liabilities	-	-
<b>Net Position:</b>		
Net position restricted	52,489,536	54,211,122
Total Net Position	<u>\$52,489,536</u>	<u>\$54,211,122</u>
<b>Changes in Fiduciary Net Position</b>		
<b>Additions:</b>		
Contributions:		
Donations	-	\$17,500,000
Total Contributions	-	<u>17,500,000</u>
Investment Income:		
Net change in fair value of investments	938,847	(2,149,090)
Interest	655,768	1,458,574
Less investment expense	39,585	69,480
Net Investment Income	<u>1,555,030</u>	<u>(759,996)</u>
Miscellaneous Income	518	66
Total Additions	<u>1,555,548</u>	<u>16,740,070</u>
<b>Deductions:</b>		
Payments in accordance with Trust agreement	1,409,458	912,215
Administrative expenses	500	63,428
Total Deductions	<u>1,409,958</u>	<u>975,643</u>
Change in net position held in Trust for:		
Private-Purpose	145,590	15,764,427
Total Change in Net Position	<u>145,590</u>	<u>15,764,427</u>
Net Position - Beginning of Fiscal Year	<u>52,343,946</u>	<u>38,446,695</u>
Net Position - End of Month	<u>\$52,489,536</u>	<u>\$54,211,122</u>
Net Position - End of Fiscal Year		<u>\$52,343,946</u>



**RE: Executive Estimate of Board Assets  
(No Action Requested)**

EXECUTIVE ESTIMATE OF ASSETS  
NORTH DAKOTA DEPARTMENT OF TRUST LANDS  
As of July 31, 2023

	7/31/2023 Value	MOM\$ 6/30/2023 Value	MOM% Change	YOY\$ 7/31/2022 Value	YOY% Change
Cash	864,002,526	769,244,735		433,035,689	
Investments <sup>[1]</sup>	7,483,235,889	7,387,811,095		6,493,576,462	
Tax Receivables <sup>[2]</sup>	-	-		240,168,506	
Loans <sup>[3]</sup>	37,876,494	38,015,765		40,555,377	
Receivables <sup>[4]</sup>	7,755,851	10,805,125		13,418,297	
<b>Sub-Total Net Assets</b>	<b>\$8,392,870,761</b>	<b>8,205,876,719</b>	<b>2.28%</b>	<b>\$7,220,754,331</b>	<b>16.23%</b>
Mineral Rights <sup>[5]</sup>	2,813,480,347	2,813,480,347		2,813,480,347	
Surface Rights <sup>[6]</sup>	518,077,274	518,077,274		511,088,869	
Building Value <sup>[7]</sup>	1,015,196	1,015,196		-	
<b>Total Net Assets</b>	<b>\$11,725,443,578</b>	<b>\$11,538,449,536</b>	<b>1.62%</b>	<b>\$10,545,323,547</b>	<b>11.19%</b>

[1] Approximately 60% of the portfolio is publicly traded for which values are current to the as of date. The remaining 40% is private assets, the values of which are updated as the managers provide them, typically 30-60 days after the end of each quarter.

[2] Estimated value of production, extraction, and severance tax payments not yet received by the Department because they are not distributed until two months after production date.

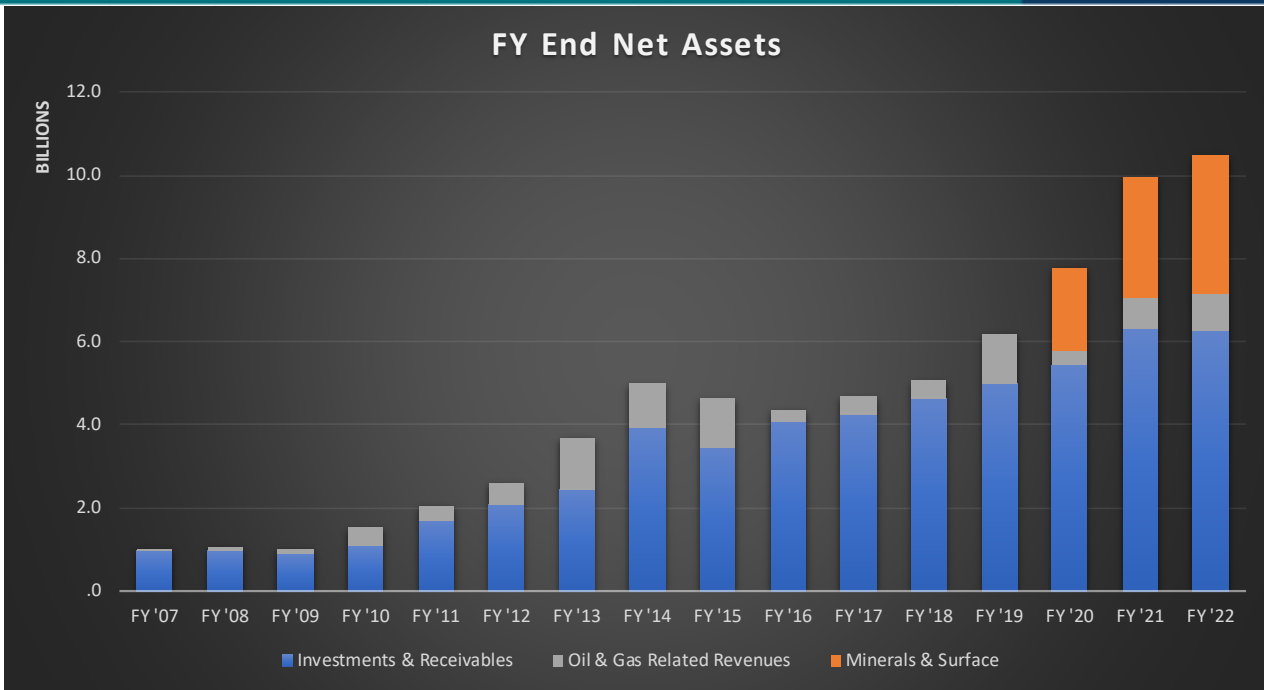
[3] Various loan programs funded with trust assets.

[4] Loans and investments interest accrued, but not yet paid.

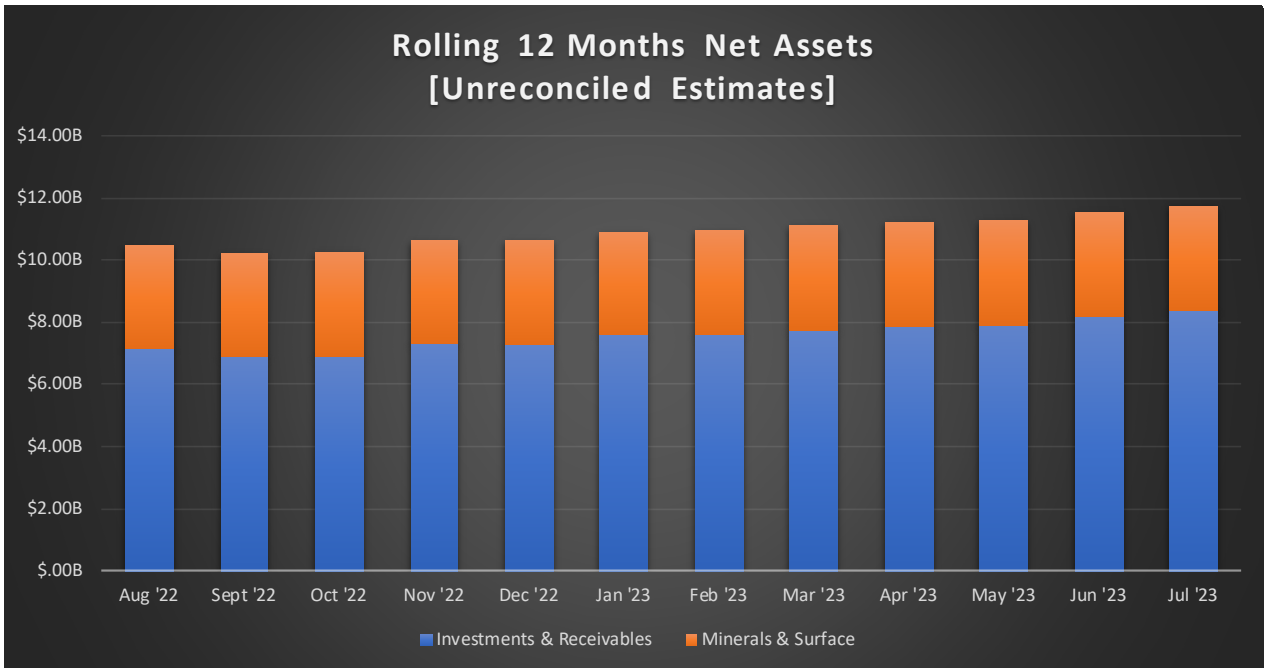
[5] Valued annually via contract with Mineral Tracker. Valuation as of December 31, 2021.

[6] Valued annually via Department fair market value policy. Valuation as of March 2023, based off agricultural values.

[7] Updated annually via broker price opinion. Valuation as of Sept. 15, 2022.



- [1] FY End 2020 - included initial Mineral valuations as of 12/31/19 amounting to \$1,449,002,408 and surface fair market value as of 12/31/19 amounting to \$538,179,773.
- [2] FY End 2021 - included new Mineral valuations as of 12/31/20 amounting to \$2,391,439,503. and surface fair market value as of 12/31/20 amounting to \$523,938,730.
- [3] FY End 2022 - included most recent Mineral valuations as of 12/31/21 amounting to \$2,813,480,347 and surface fair market value as of 12/31/21 amounting to \$511,088,869.



- [1] Dec 2021 includes mineral rights value of \$2,813,480,347
- [2] Sep 2022 includes appraised building value of \$1,015,196
- [3] Mar 2023 includes surface rights value of \$518,077,274

**RE: Investment Updates  
(No Action Requested)**

**Q3-Q4 Pipeline**

Private Credit: distressed credit manager recommendation  
Absolute Return: multi-strategy hedge fund recommendation

**Portfolio Rebalancing Updates**

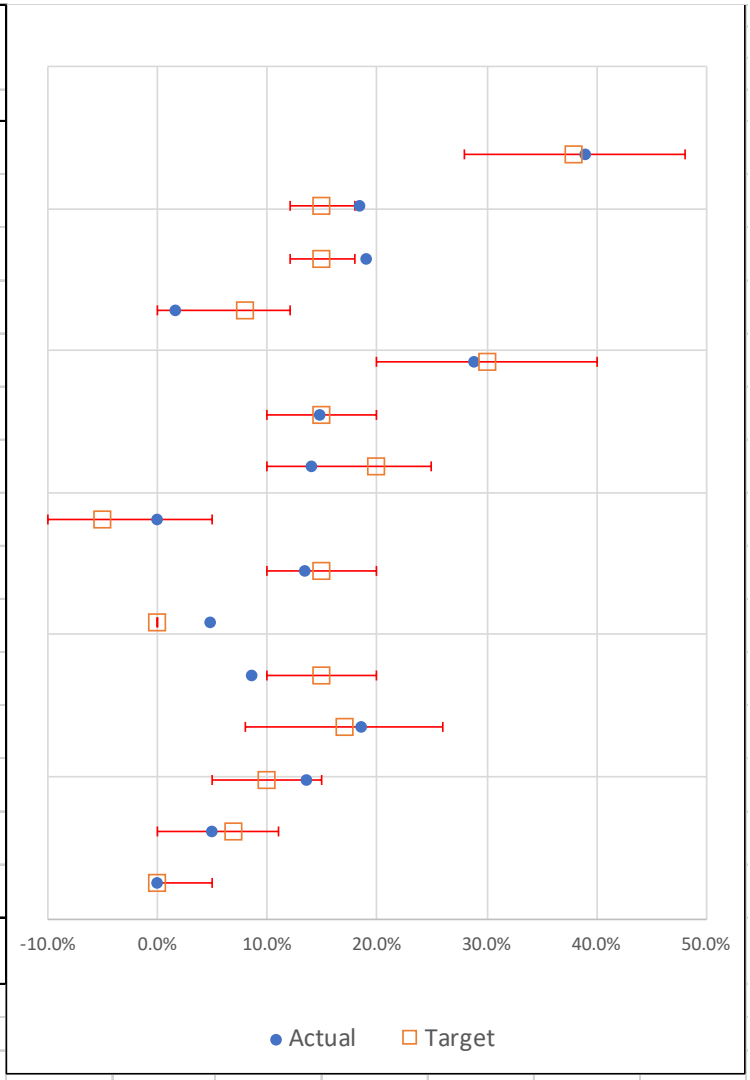
Capital Calls Funded and Pending:  
07/06 Owl Rock Diversified Lending \$7.5M  
07/25 Hamilton Lane Infrastructure Opportunities Fund \$1.5M

**Total Unfunded Commitments Remaining \$467.8M (as of July 31, 2023):**

1. Private Credit, \$97.5M
  - i. *Ares Pathfinder Fund, \$32M*
  - ii. *Owl Rock Diversified Lending, \$45M*
  - iii. *Varde Dislocation Fund, \$20.5M*
2. Private Equity, \$212M
  - i. *GCM Grosvenor Private Equity, \$94M*
  - ii. *GCM Grosvenor Secondary Opportunities Fund III, \$106.5M*
  - iii. *Morgan Stanley Ashbridge TS Fund II, \$11.5M*
3. Private Infrastructure, \$8.3M
  - i. *Hamilton Lane Infrastructure Opportunities Fund, \$8.3M*
4. Absolute Return, \$150M
  - i. *Millennium USA LP (Hedge Fund), \$150M*

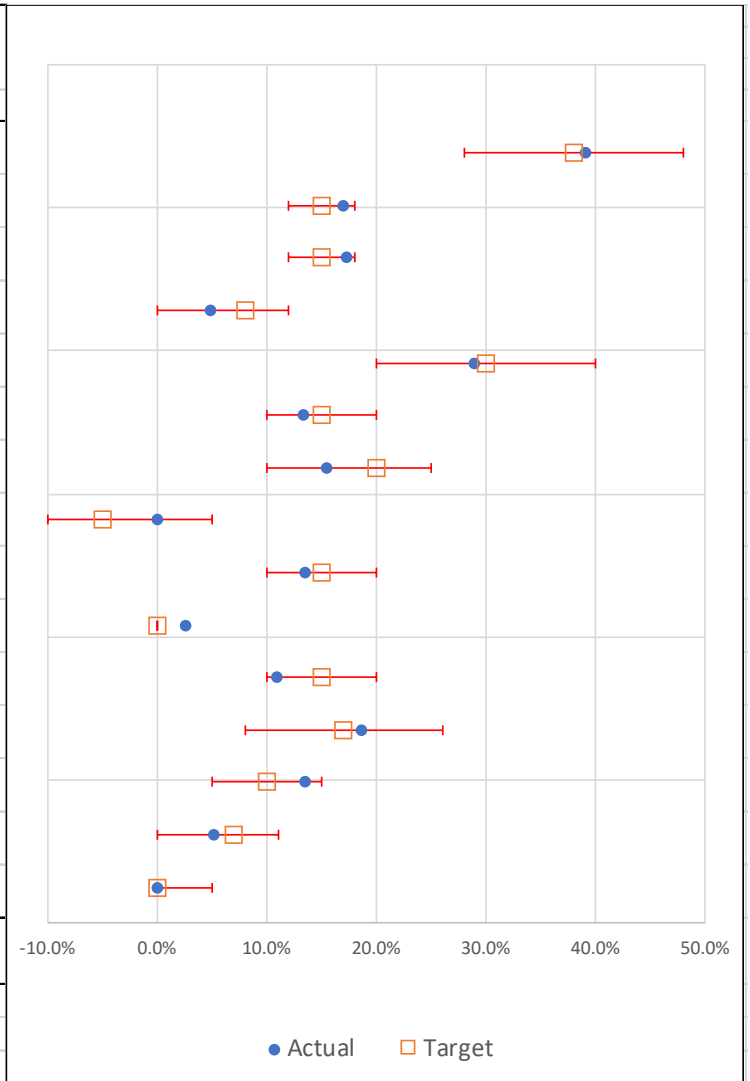
**Current Asset Allocation (unaudited)**

As of	Market Value	Actual	Target	Lower Range	Upper Range
July 31, 2023	\$	●	□	└	┘
<b>Equity</b>	<b>2,554,956,353</b>	<b>39.1%</b>	<b>38.0%</b>	<b>28.0%</b>	<b>48.0%</b>
<i>Broad US Equity</i>	1,203,124,642	18.4%	15.0%	12.0%	18.0%
<i>Broad Int'l Equity</i>	1,243,396,012	19.0%	15.0%	12.0%	18.0%
<i>Private Equity</i>	108,435,699	1.7%	8.0%	0.0%	12.0%
<b>Fixed Income</b>	<b>1,887,715,361</b>	<b>28.9%</b>	<b>30.0%</b>	<b>20.0%</b>	<b>40.0%</b>
<i>Public Credit</i>	971,090,035	14.8%	15.0%	10.0%	20.0%
<i>Private Credit</i>	916,625,326	14.0%	20.0%	10.0%	25.0%
<i>Cash / (Implied Leverage)</i>	-	0.0%	-5.0%	-10.0%	5.0%
<b>Absolute Return</b>	<b>881,088,935</b>	<b>13.5%</b>	<b>15.0%</b>	<b>10.0%</b>	<b>20.0%</b>
<i>Global Tactical Asset Allocation</i>	318,010,527	4.9%	0.0%	0.0%	0.0%
<i>Multi-Strategy Hedge Fund</i>	563,078,408	8.6%	15.0%	10.0%	20.0%
<b>Real Assets</b>	<b>1,216,028,105</b>	<b>18.6%</b>	<b>17.0%</b>	<b>8.0%</b>	<b>26.0%</b>
<i>Real Estate</i>	889,074,292	13.6%	10.0%	5.0%	15.0%
<i>Private Infrastructure</i>	326,953,813	5.0%	7.0%	0.0%	11.0%
<b>Opportunistic Investments</b>	<b>-</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>5.0%</b>
<b>Portfolio Total</b>	<b>6,539,788,755</b>	<b>100.0%</b>			



**Hypothetical Asset Allocation (after funding all commitments)**

As of	Market Value \$	Actual	Target	Lower Range	Upper Range
July 31, 2023		●	□	└	┘
<b>Equity</b>	2,554,956,353	39.1%	38.0%	28.0%	48.0%
<i>Broad US Equity</i>	1,109,124,642	17.0%	15.0%	12.0%	18.0%
<i>Broad Int'l Equity</i>	1,125,396,012	17.2%	15.0%	12.0%	18.0%
<i>Private Equity</i>	320,435,699	4.9%	8.0%	0.0%	12.0%
<b>Fixed Income</b>	1,887,715,361	28.9%	30.0%	20.0%	40.0%
<i>Public Credit</i>	873,590,035	13.4%	15.0%	10.0%	20.0%
<i>Private Credit</i>	1,014,125,326	15.5%	20.0%	10.0%	25.0%
<i>Cash / (Implied Leverage)</i>	-	0.0%	-5.0%	-10.0%	5.0%
<b>Absolute Return</b>	881,088,935	13.5%	15.0%	10.0%	20.0%
<i>Global Tactical Asset Allocation</i>	168,010,527	2.6%	0.0%	0.0%	0.0%
<i>Multi-Strategy Hedge Fund</i>	713,078,408	10.9%	15.0%	10.0%	20.0%
<b>Real Assets</b>	1,216,028,105	18.6%	17.0%	8.0%	26.0%
<i>Real Estate</i>	880,774,292	13.5%	10.0%	5.0%	15.0%
<i>Private Infrastructure</i>	335,253,813	5.1%	7.0%	0.0%	11.0%
<b>Opportunistic Investments</b>	-	0.0%	0.0%	0.0%	5.0%
<b>Portfolio Total</b>	6,539,788,755	100.0%			



Assumptions: No other new cash is expected to fund calls. No redemption proceeds or distributions were received. All capital calls came in at the same time.

**MEMORANDUM TO THE BOARD OF UNIVERSITY AND SCHOOL LANDS**  
 September 1, 2023

**RE: Real Estate – Portfolio Restructuring**

The current real estate allocation sits at 13.6%, which represents a \$235 million overweight to the 10% long term Strategic Asset Allocation (SAA) target. The goal of this proposal is twofold: (1) diversify the portfolio and (2) speed up liquidity without sacrificing value in the secondary markets.

Staff recommends building a core-satellite portfolio targeting a core mandate to track our real estate benchmark (NFI-ODCE Index) and 2-3 satellite managers to drive excess returns through a geographic or industry focus. To accomplish this, staff recommends the following changes:

- **Hire IDR Investment Management (~\$413M).** Staff and RVK recommend hiring IDR Investment Management to manage the core real estate portfolio. IDR has made our real estate benchmark (NFI-ODCE Index) investable with initial funding from a group of large US pension plans. The firm manages \$5B in assets across 75 institutional client accounts. Advantages of moving into the investable index include reduced fees and increased liquidity. IDR achieves favorable fee breakpoints because of its size. This creates enough fee savings where IDR earns a management fee and the Board benefits from fee savings. IDR receives favorable pro rata liquidity based on size which can benefit the Board’s goal of speeding up liquidity. The index is invested across 21 manager names, which reduces single name risk in the portfolio.
- **Transfer Morgan Stanley Prime to IDR (~\$273M).** As a component of the index, Morgan Stanley Prime can be transitioned into the investable index and diversified across 21 manager names.
- **Transfer UBS Trumbull to IDR (~\$140M).** As a component of the index, UBS Trumbull can be transitioned into the investable index fund and diversified across 21 manager names.
- **Full Redemption JPM Income & Growth (~\$164M).** As a diversified strategy not included in the index, JPM Income & Growth is misplaced in a core-satellite approach as it does not fit within the core or the satellite buckets.
- **Full Redemption State Street US REIT Index (~\$21M).** This account acts as a liquid placeholder and transition account for hiring/firing active managers. IDR serves as a replacement for this need.

**Recommendation: The Board approve (1) full redemption of JP Morgan Income & Growth (2) full redemption of State Street US REIT Index (3) in-kind transfer of Morgan Stanley PRIME to IDR and (4) in-kind transfer of UBS Trumbull to IDR, subject to standard legal review/documentation.**

Attachments: RVK Executive Summary, IDR Presentation

Action Record	Motion	Second	Aye	Nay	Absent
Secretary Howe					
Superintendent Baesler					
Treasurer Beadle					
Attorney General Wrigley					
Governor Burgum					

# **REAL ESTATE PORTFOLIO REVIEW & RECOMMENDATION**

# PERFORMANCE UPDATES

## As of June 30, 2023

Manager	Inception	Commit	DPI	NAV	Gains	IRR
Morgan Stanley	Jul 2015	(\$150M)		\$273M	\$123M	7.87%
UBS Trumbull	Jul 2015	(\$150M)	\$46M	\$144M	\$40M	2.97%
Jamestown	Jul 2015	(\$75M)	\$27M	\$33M	(\$15M)	-5.18%
JP Morgan	Jul 2016	(\$113M)		\$162M	\$49M	5.56%
ProLogis	Apr 2016	(\$75M)		\$240M	\$165M	17.42%
Harrison Street	Feb 2022	(\$130M)		\$139M	\$9M	6.95%



# REDEMPTION UPDATES

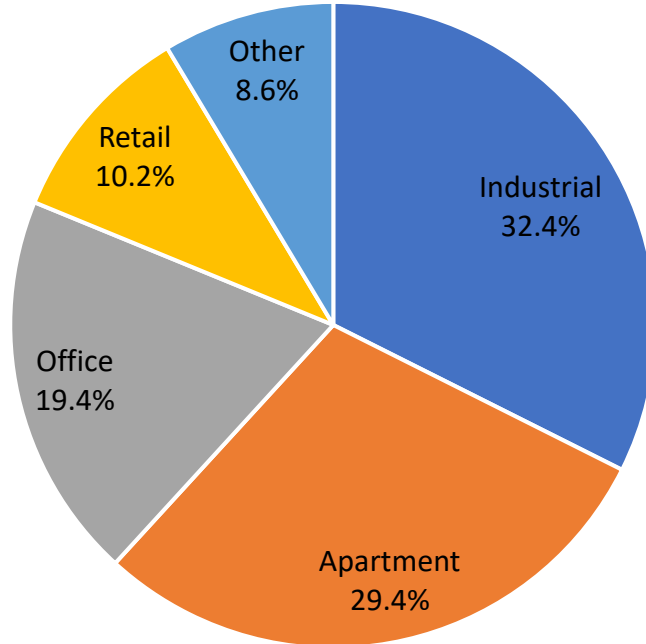
## As of August 4, 2023

Manager	Requested	Reasoning	Amount	Received	Remaining
UBS Trumbull	10/29/2021	Loss of manager conviction	Full	\$42M	\$140M
Jamestown	5/23/2022	Loss of manager conviction	Full		\$33M
ProLogis	12/28/2022	Rebalance industrial overweight	Partial \$125M	\$122M	None

Manager Constituent List	(continued)
AEW Core Property Trust	Intercontinental US Real Estate Investment Fund
American Realty Advisors Core Property Fund	Invesco Core Real Estate – USA
ASB Allegiance Real Estate Fund	JP Morgan Strategic Property Fund
Bailard Real Estate Investment Trust	LaSalle US Property Fund
Barings Core Property Fund	MetLife Core Property Fund
BentallGreenOak Diversified US Property Fund	Morgan Stanley Prime Property Fund
Blackrock US Core Property Fund	New York Life Madison Core Property Fund
CBRE US Core Partners	Prudential PRISA
CIM Urban Income Investments	Principal US Property Account
Clarion Lion Properties Fund	Stockbridge Smart Market Fund
DWS RREEF America II Aggregator	TA Realty Core Property Fund
EverWest GWL US Property Fund	UBS Trumbull Property Fund
Heitman America Real Estate Trust	

# SECTOR ALLOCATIONS

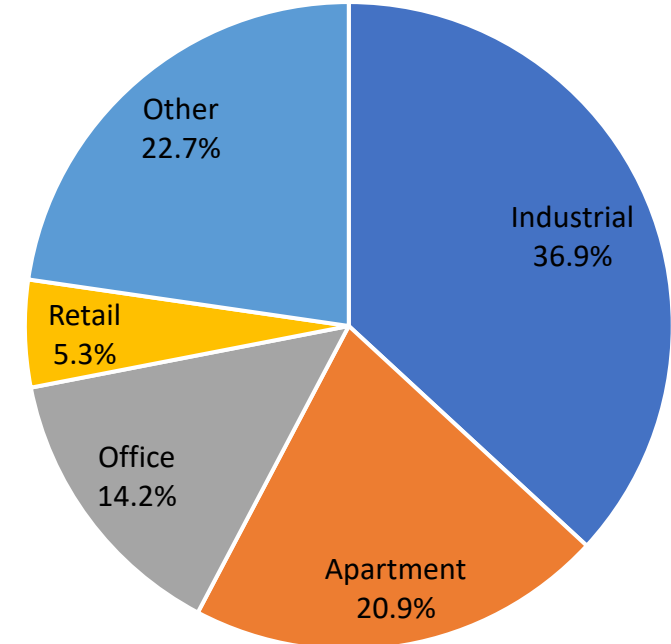
**ODCE**



Intentional tilts:  
Overweight industrial  
Overweight other  
Underweight office  
Underweight retail

Other category:  
Self Storage  
Student Housing  
Senior Housing  
Life Sciences  
Medical Office

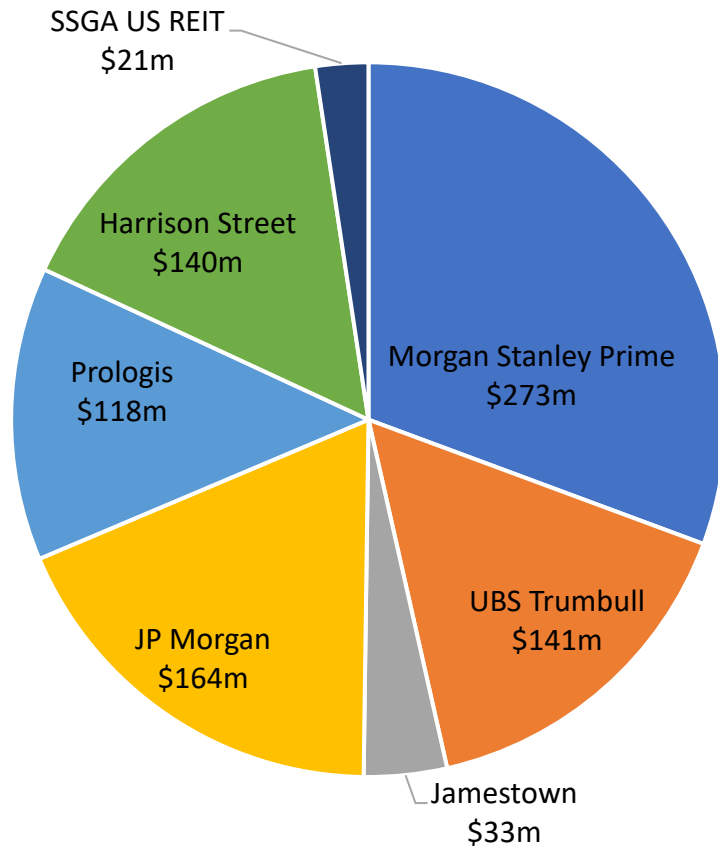
**North Dakota BUSL**



# TRANSITION (Day 1)

## Current Portfolio (as of July 31, 2023)

\$889 million (13.6%)



## In-Kind Transfer/Rebalance to IDR:

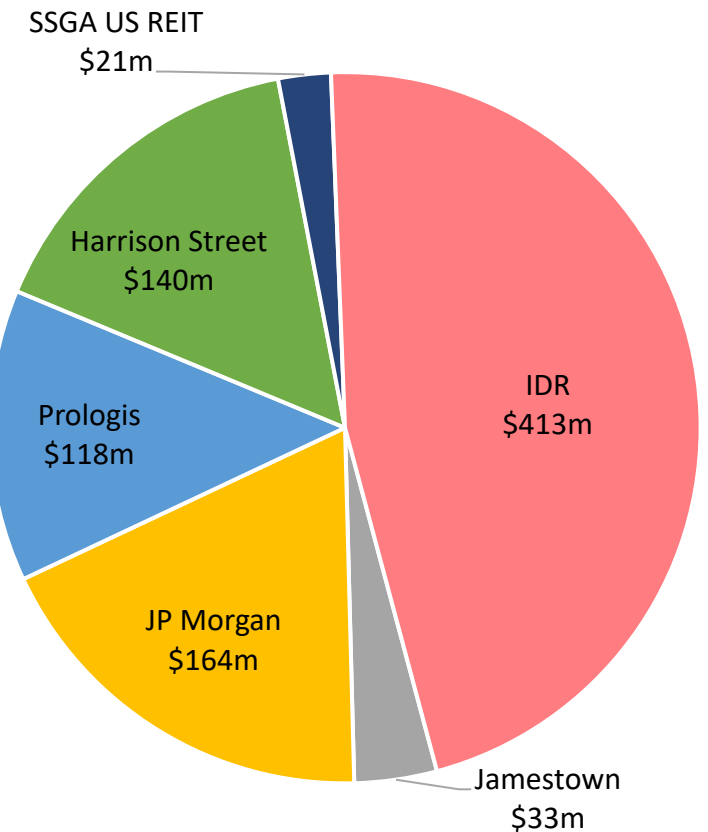
Morgan Stanley Prime (~1 year)

UBS Trumbull (~1 year)



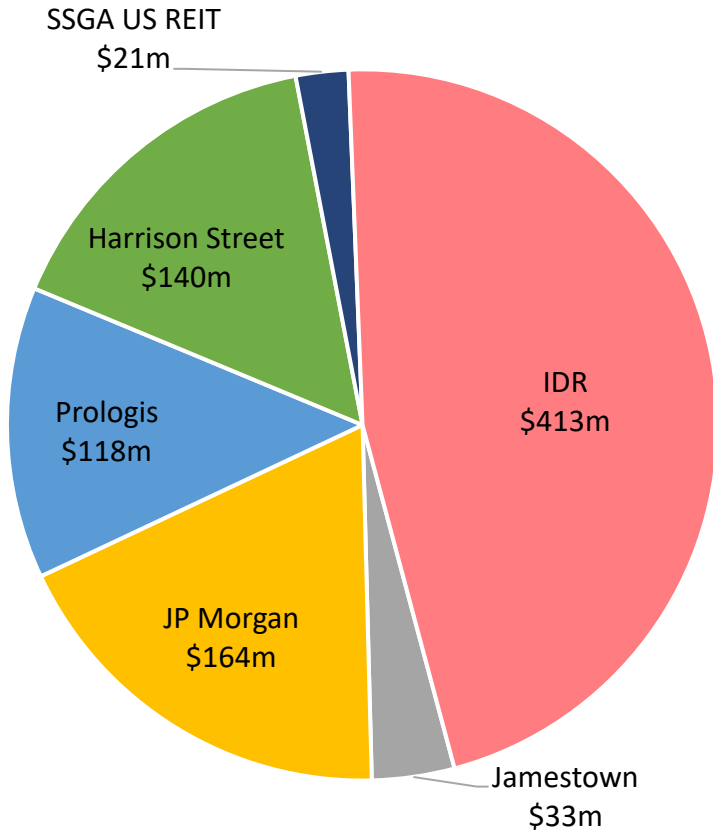
## Transition (Day 1)

\$889 million (13.6%)



# TARGET PORTFOLIO

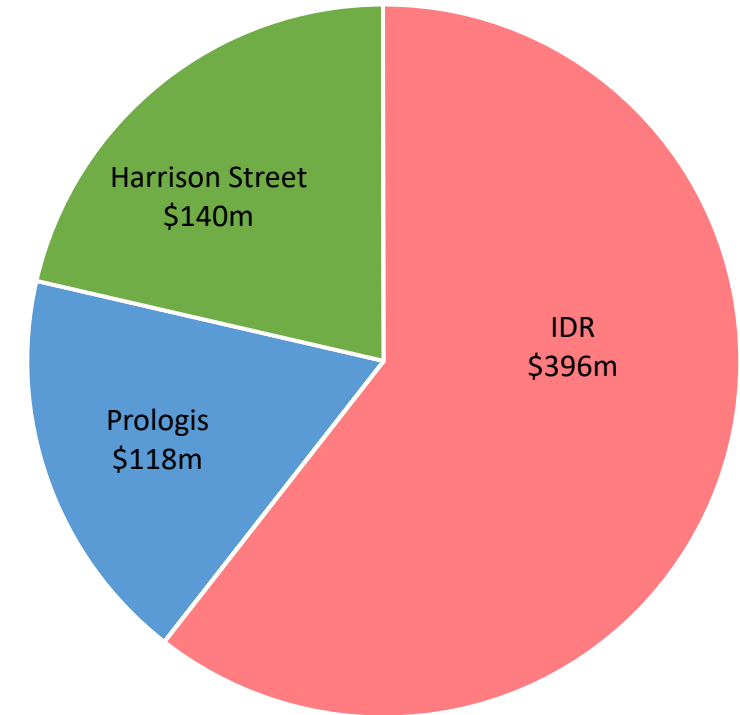
**Transition (Day 1)**  
\$889 million (13.6%)



Full redemption requests:  
Jamestown (~1 year)  
JPM Income & Growth (~1 year)  
SSGA US REIT Index (~3 days)



**Target Portfolio**  
\$654 million (10%)





## Memorandum

To	North Dakota Board of University and School Lands
From	RVK, Inc. (“RVK”) Investment Manager Research
Subject	IDR Core Property Index Fund Recommendation & Portfolio
Date	August, 2023

### Summary of Opportunity and Scope of Work

The following is a review of the potential investment opportunity offered by IDR Investment Management, LLC (the “Manager,” or “IDR”). The IDR Core Property Index Fund (the “Fund” or “Index Fund”) is professionally managed by IDR to pursue a passive index replication strategy of the NCRIF Fund Index Open-Ended Diversified Core Equity Index (“NFI-ODCE,” “ODCE” or the “Index”) by investing directly into the underlying funds (“Component Funds”) that are included in the Index within a low tracking error target.

RVK has conducted a thorough analysis and due diligence to deliver an independent assessment of IDR and the IDR Core Property Index Fund, including an analysis of the Firm’s organization, investment team, strategy, investment track record, decision-making processes, monitoring process, and key terms and conditions for the Fund.

Based on an ongoing review of the North Dakota Board of University and School Lands’ (“NDBUSL”) real estate portfolio (the “Plan”) and in efforts to maintain the Plan’s Strategic Asset Allocation (SAA) target allocation of 10% to private real estate, RVK engaged with Staff in multiple discussions on the portfolio’s incumbent managers, market structure, current investment environment and the level of complexity required to move towards a core-satellite approach within the Plan. In these discussions were the evaluation of available options such as the application of and whether it is appropriate and prudent path forward to restructure the core open-ended portfolio roster of investment managers or reduce the existing invested capital with the incumbents and rebalance into others over time.

Given the stated goals of reducing core open-ended real estate, improving on cost savings, and reducing implementation complexity, RVK and Staff believe the core-satellite approach offers the appropriate balance to achieve these objectives.

### RVK Review and Evaluation

The RVK Investment Manager Research team maintains working relationships with many institutional-quality real estate asset managers. Leveraging this knowledge and experience, RVK’s real estate research team had in-depth discussions with Staff on NDBUSL’s incumbent managers’ strengths and weaknesses, what the long-term goals are of the real estate allocation and available institutionally managed options in the marketplace while not losing sight of costs



and operational burdens for implementation of rebalancing.

After a series of discussions and interviews with IDR, RVK and Staff discussed the strategy's overall diversification benefits to the real estate portfolio, the difference in return drivers for each strategy and the different levels of leverage utilization. Both RVK and Staff agree that the IDR Core Property Index Fund offered the purest diversification benefits associated with core private real estate and the Plan's long-term goals.

## Firm

IDR was founded in 2006 and has a 12-year track record managing private equity real estate investments on behalf of institutional investors. Since inception, the Firm has operated an open architecture investment platform that provides institutional investors with customized, well-defined strategies based on investor needs. IDR is focused on raising capital and managing the Core Property Index Fund and believes the fund could grow to \$7-10 billion in AUM over the next 3-5 years. The Index Fund is a perpetual life open-ended vehicle and does not have any size restrictions.

In January 2017, IDR entered into a strategic relationship with Affinius Capital ("Affinius Capital", formerly known as USAA Real Estate Company, LLC), pursuant to which Affinius Capital owned a 65% interest in IDR Investment Management, LLC ("IDR" or the "Manager"). Affinius Capital subsequently transferred its 65% interest into Emphasis Capital LLC ("Emphasis Capital") in connection with the spin-out of Emphasis Capital from its former parent, Affinius Capital on April 18, 2023. The restructuring did not result in any changes in the personnel, operations, or day-to-day management of IDR. The ownership of Emphasis is primarily the same ownership group of Affinius Capital. Additionally, IDR and Affinius Capital maintain a shared services agreement for certain research and back office functions.

IDR Investment Management, LLC is owned by its key Investment Professionals and Emphasis Capital. IDR Investment Management, LLC is a Limited Liability Company headquartered in Independence, OH and incorporated under the laws of the state of Delaware. IDR is a registered investment adviser ("RIA") with the Securities and Exchange Commission ("SEC").

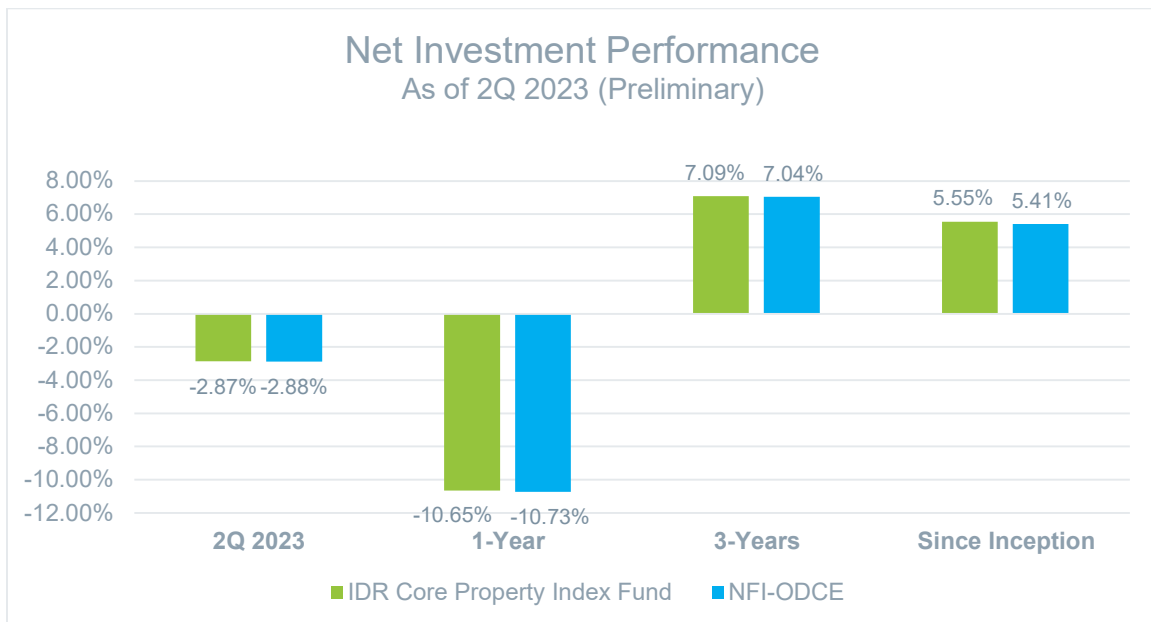
Entity or Individual	% Ownership of the Firm
Emphasis Capital	65%
IDR Professionals*	35%

\*Gary Zdolshek, Roger Rankin, Mark Thompson, Robert Ashmun, Garrett Zdolshek and Brian Thomas

## Investment Overview

The Fund is structured to operate as an open-ended, perpetual life vehicle. As noted previously, the Fund targets the return of the Index within a narrow tracking error range. The Fund does not seek to outperform the Index by utilizing additional leverage or tactical sector or regional weights based on IDR’s and Affinius’ in-house research view. It is important to highlight that on a total net of fee basis, the Fund has outperformed the Index over all measurement periods through 2Q 2023.

One of the key pillars of the IDR Core Property Index Fund’s approach is a low tracking error as measured by overall net of total fee performance returns. The Fund’s strategy focuses on a methodical rebalancing approach to minimize return volatility. The below chart highlights the strengths of IDR’s process and internal controls along with the breadth of the Fund’s scale to deliver a passive index replication strategy.



## Recommendation

Based on the recommendation set forth to restructure the open-ended core real estate portfolio from a multi-manager approach towards a “core-satellite” structure, Staff and RVK recommend the Board move forward with Staff’s proposal of hiring IDR to manage the core allocation of





NDBUSL's real estate portfolio by transferring "In-Kind" both investments in Morgan Stanley Prime Property Fund and UBS Trumbull Property Fund and commence with the rebalancing program thereto.

While this recommendation focuses on the IDR Core Property Index Fund, there are additional steps required to restructure the portfolio into a core-satellite structure. These include, terminating the JP Morgan Income & Growth Strategy and selling down shares in the State Street US REIT from ND's real estate holdings. These two legacy positions are not strategic in moving forward with the core-satellite structure.

## **Conclusion**

RVK believes the IDR-ODCE Index Fund represents an attractive opportunity to capitalize on the Firm's unique position as the market's only "passive" professionally managed core private real estate platform. The restructuring of existing open-end fund investments as previously outlined affords the North Dakota core real estate allocation the potential to benefit from reduced management fees, enhanced liquidity, and the ability to deploy a core-satellite strategy. While there are risks factors with this approach, given NDBUSL's current overweight allocation to real estate, this restructuring approach increases the opportunity for improved liquidity in today's illiquid environment through a prudent multi-step implementation approach.



# IDR ODCE INDEX FUND

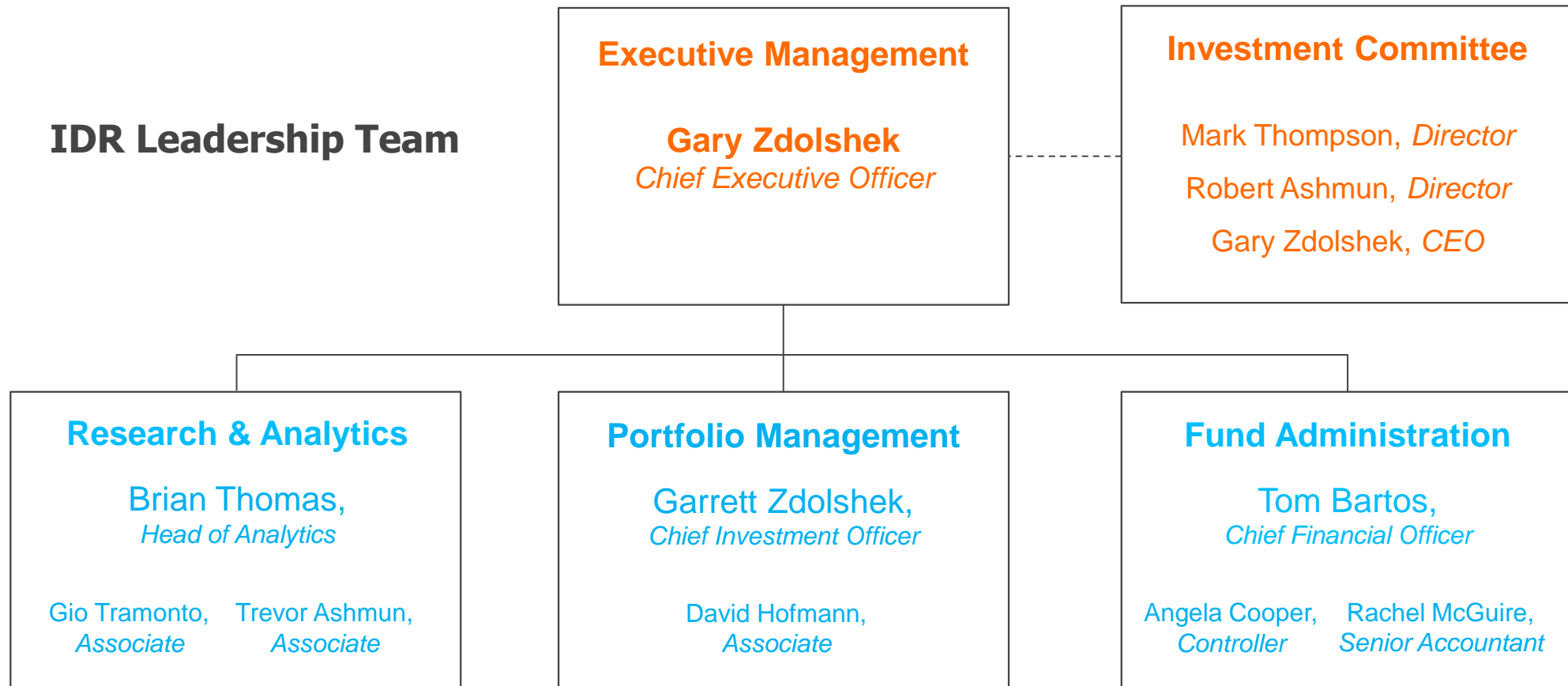
September 1, 2023



- First & Only Index Fund for PERE Asset Class
- 12 Year Track Record Managing ODCE Investments
- SEC Registered Investment Adviser
- \$5.4 Billion Firm AUM

# Organization

Owned by Senior Professionals & Emphasis Capital (Same Ownership Group as USAA Real Estate)



# PROVEN PORTFOLIO TOOL



**Consistently Track the Benchmark**



**Reduce Portfolio Risk**



**Lowering Costs**



**Enhanced Liquidity**

# NFI-ODCE Benchmark

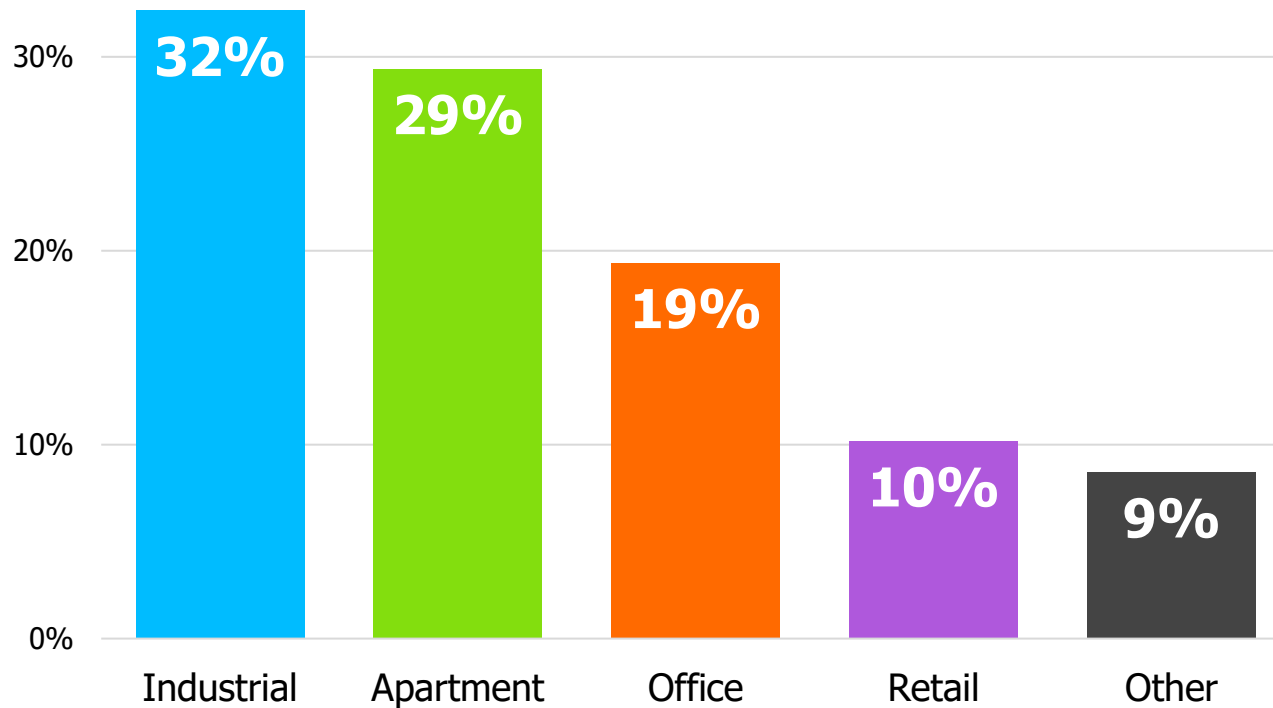
**25**  
Funds

**3,494**  
Properties

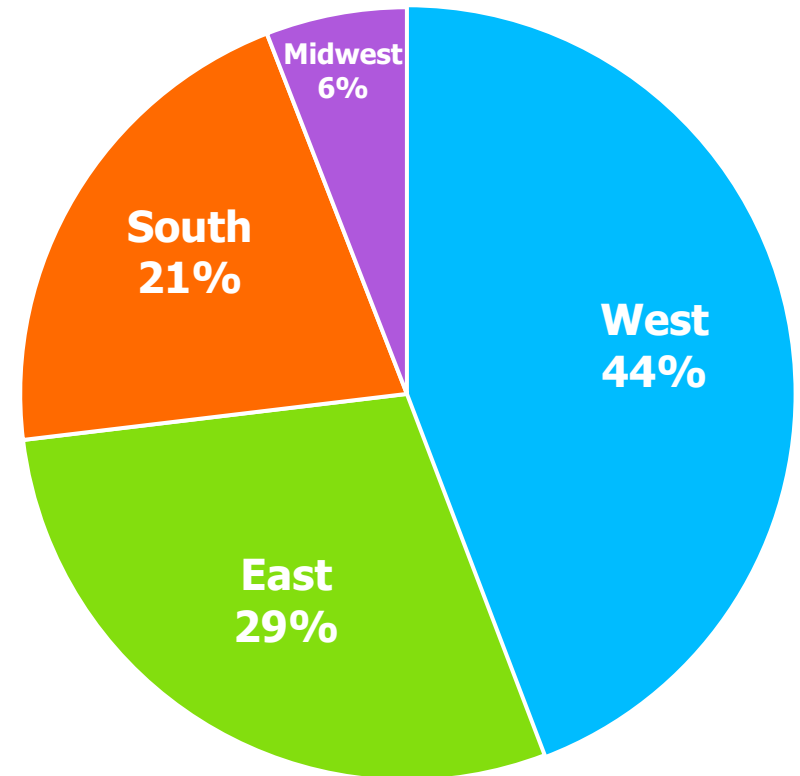
**93%**  
Occupancy

**25%**  
Leverage

## Property Type Diversification



## Geographic Diversification

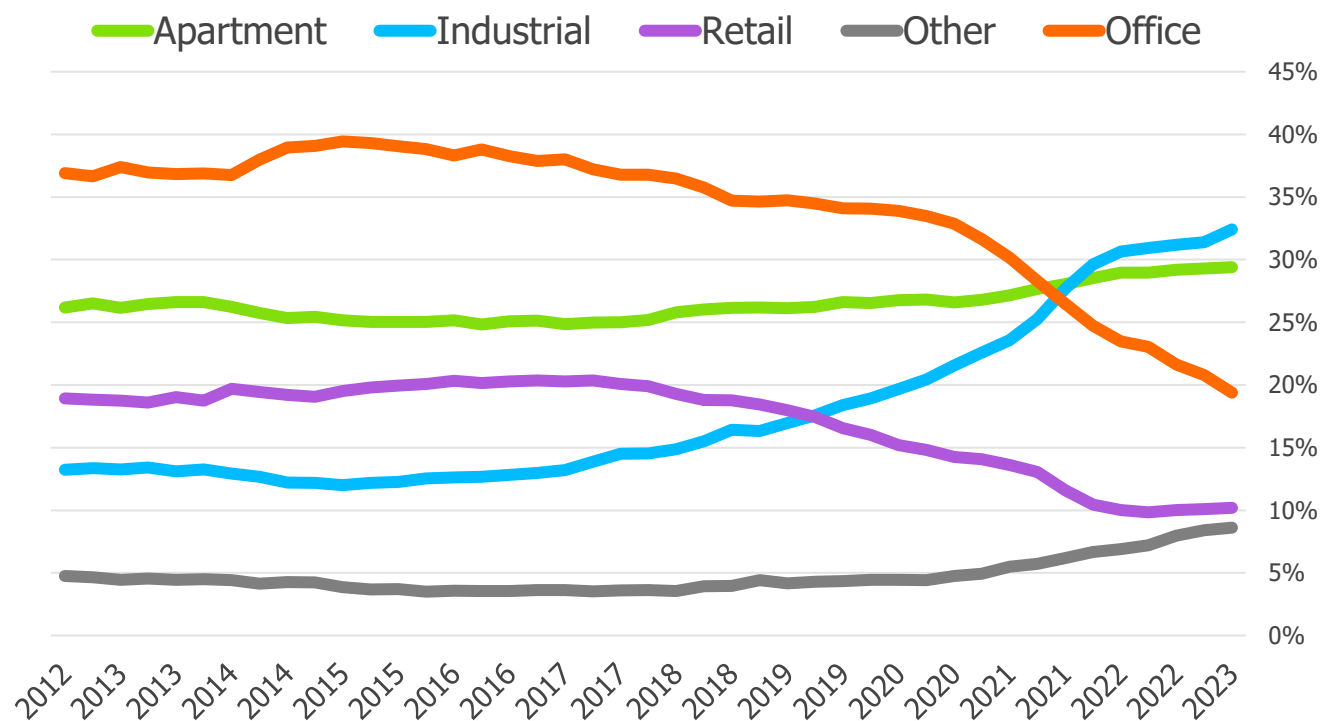


# ODCE Evolution

## Exposure

	2000	2023
Gross Market Value	\$22 B	\$318 B
# of Investments	831	3,494
Component Funds	11	25

## Property Type



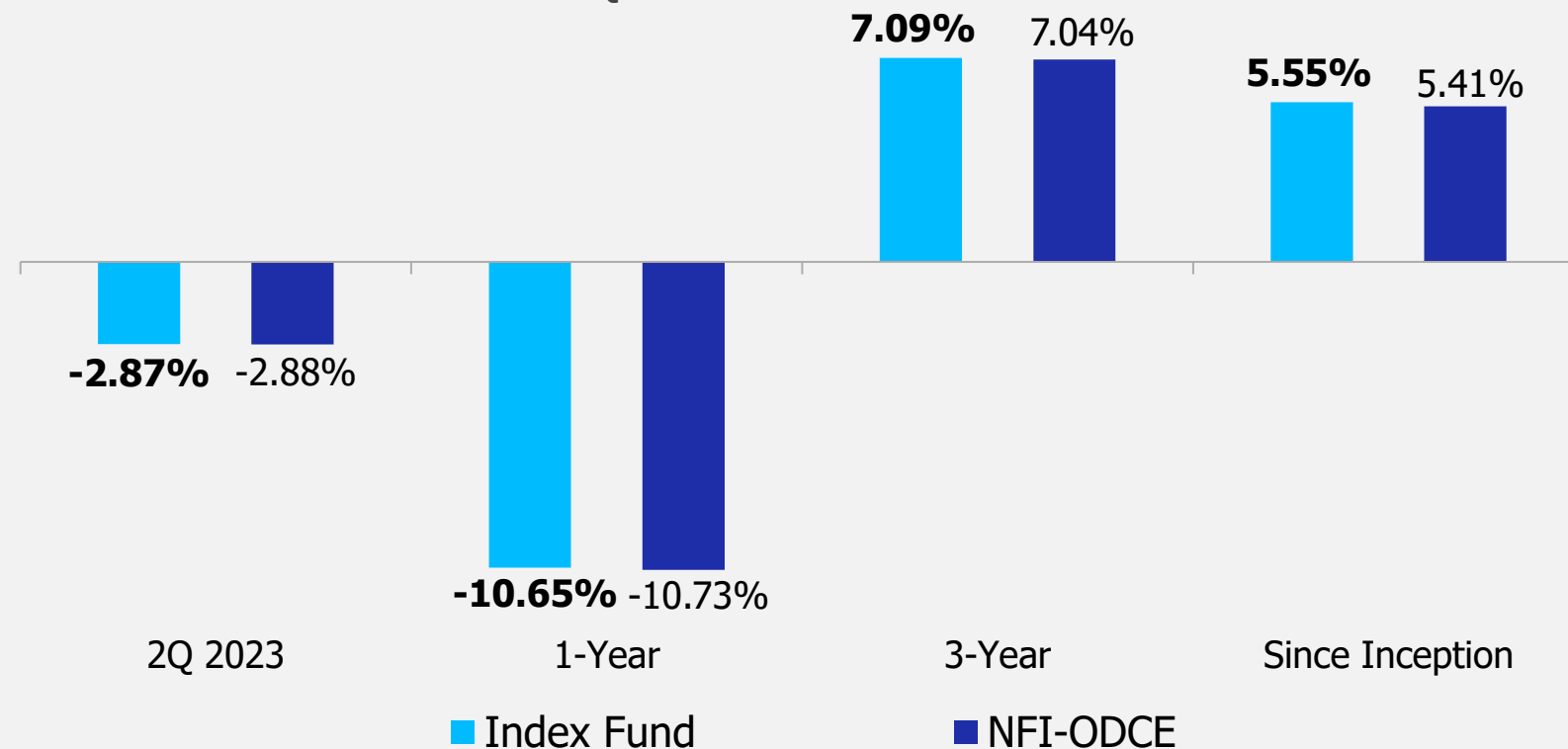
# Index Fund Performance

**\$5.4B**  
Firm AUM

Index return with  
**<12 BPS**  
of Tracking Error

## IDR ODCE Index Fund

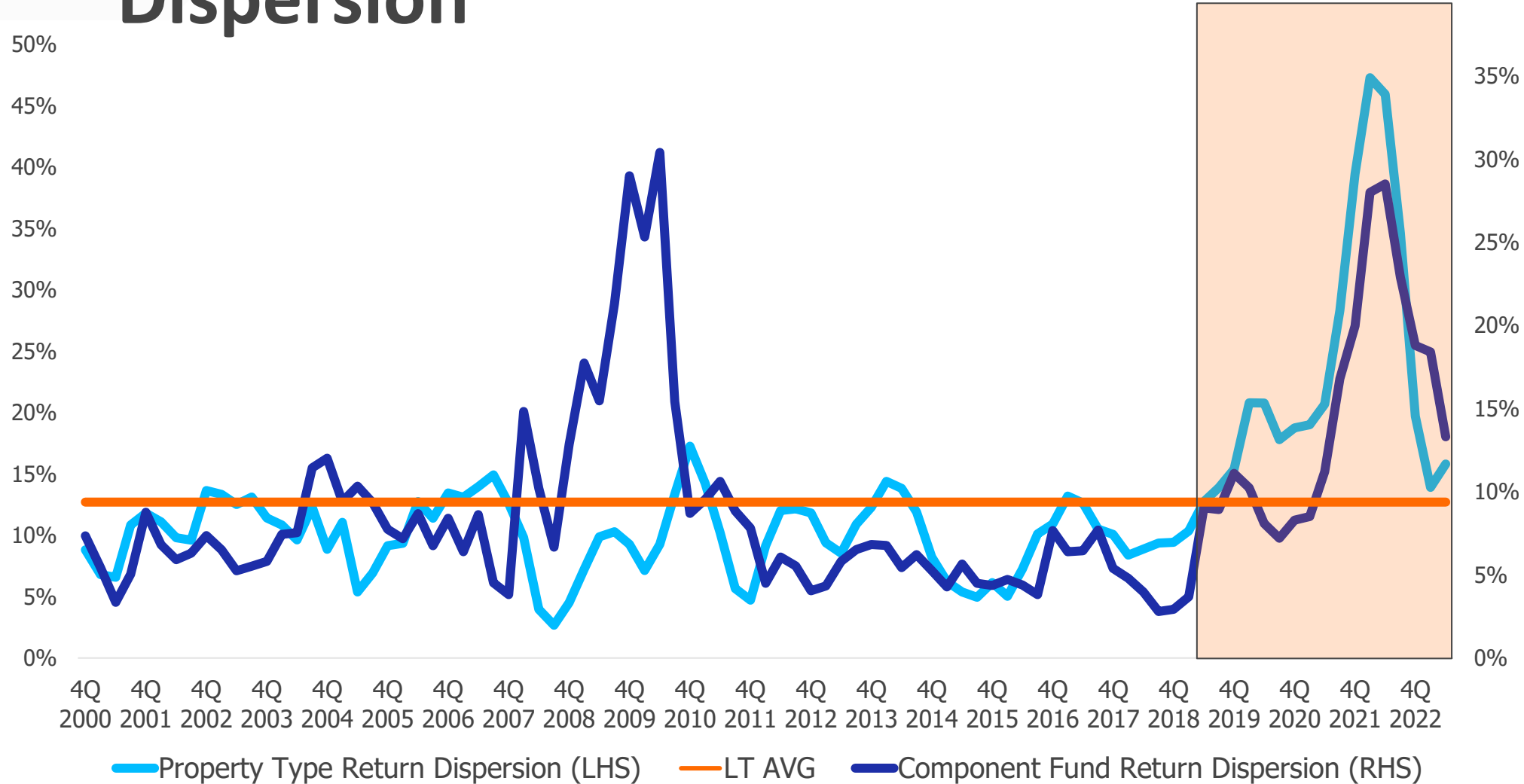
Net Investment Performance as of 2Q 2023



Performance Note: Preliminary actual net total returns of the Core Property Index Trust as of June 30, 2023. Returns may not be reflective of the actual performance experienced by any one investor. Preliminary hypothetical net total returns of the highest fee-paying investor are 2Q 2023: -3.0%, 1-Yr: -10.9%, 3-Yr: 6.8% and SI: 5.2%. The sum of annualized returns may not equal the total return due to the methodology of time-weighted calculations. This performance information is considered to be supplemental information. Past performance is not a guarantee of future results. The Fund's since inception performance date is January 1, 2019. The Fund's tracking error start date is July 1, 2019. NFI-ODCE Index historical returns shown net of fees as of 2Q 2023. Fund track record inception date January 1, 2019. Preliminary assets under management figure depicted represents the assets attributable to the Index Fund as of June 30, 2023. Preliminary assets under management including non-indexing strategy related assets totals \$5.4 billion as of June 30, 2023.

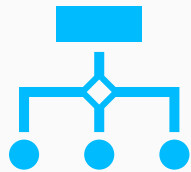


# Component Fund & Property Type Return Dispersion



**Index Fund Tracking Error <12 bps Since Inception**

# INVESTMENT PROCESS



Value Weighted  
Allocation Model

**RADAR** by **IDR**  
Real Assets • Data • Analytics • Reporting

Patented Investment  
Method



Enhanced  
Liquidity\*

- 1. Index Fund Level**
- 2. Component Fund Level**
- 3. Diversification Level**

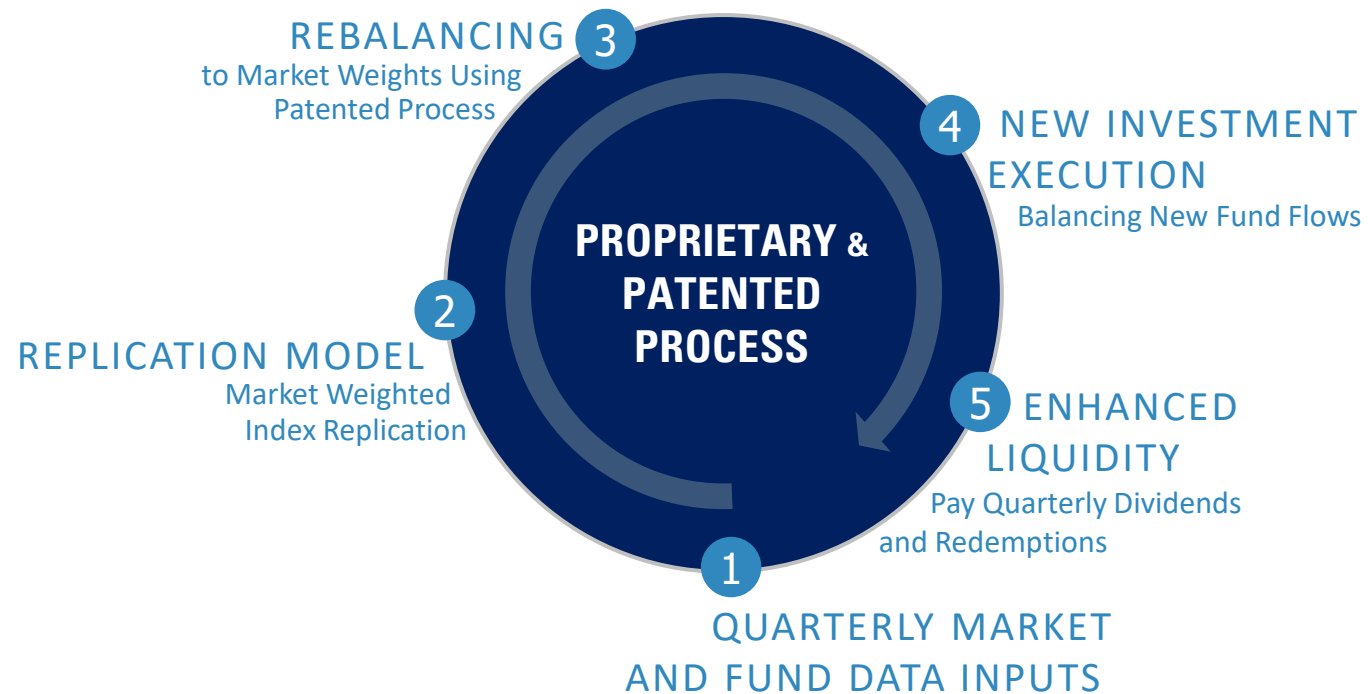
# Rules Based Allocation Model

Market Weighted (>98% exposure to Index)

JPMorgan Strategic Property Fund – 14%	ARA Core Realty Fund – 3%
PGIM PRISA LP (Prudential) – 11%	UBS Trumbull Property Fund – 5%
Morgan Stanley Prime Property Fund – 14%	LaSalle Property Fund – 3%
DWS RREEF America REIT II – 6%	MetLife Core Property Fund – 2%
Invesco Core Real Estate-U.S.A. – 5%	BlackRock US Core Property Fund – 1%
Clarion Lion Property Fund – 6%	Stockbridge Smart Markets Fund – 2%
Heitman America Real Estate Trust – 4%	CBRE U.S. Core Partners – 4%
Barings Core Property Fund – 1%	Intercontinental US Real Estate Fund – 4%
BentallGreenOak Diversified US Property Fund – 3%	Principal US Property Account – 4%
ASB Allegiance Real Estate Fund – 2%	TA Realty Core Property Fund – 3%
AEW Core Property (U.S.) LP – 3%	
The Index Fund currently excludes four Component Funds that comprise less than 2% of the Index	

# INVESTMENT MODEL

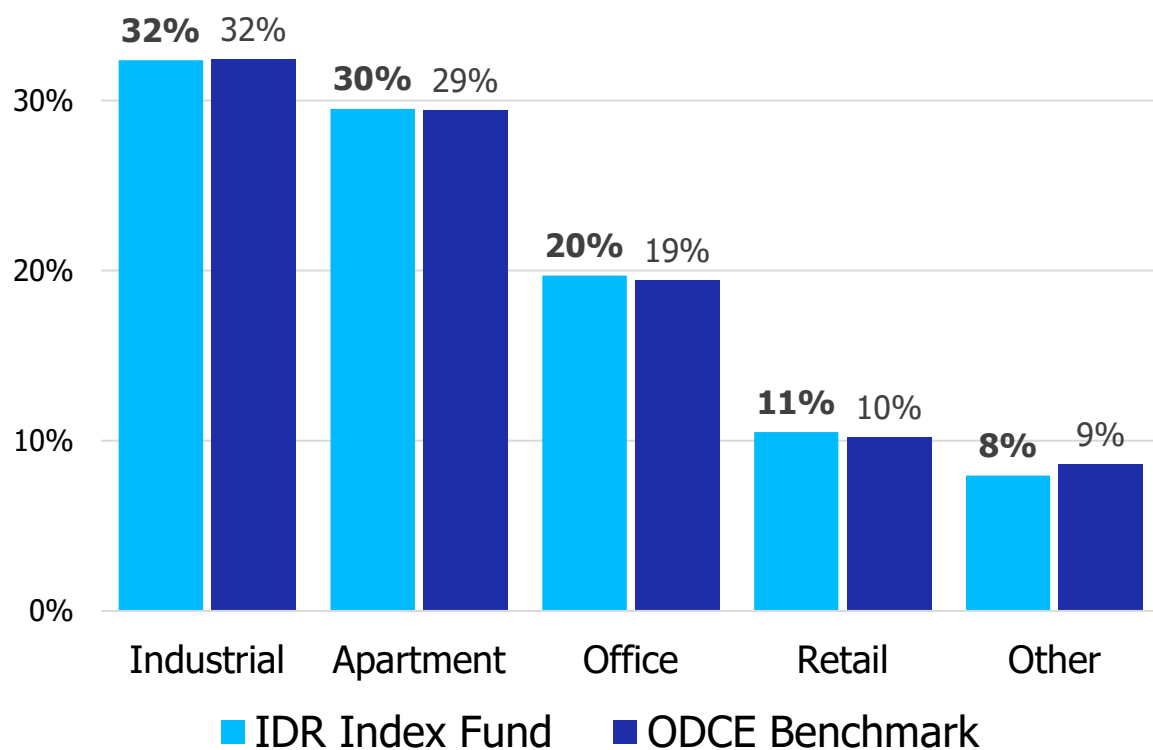
## **RADAR** by **IDR** Real Assets • Data • Analytics • Reporting



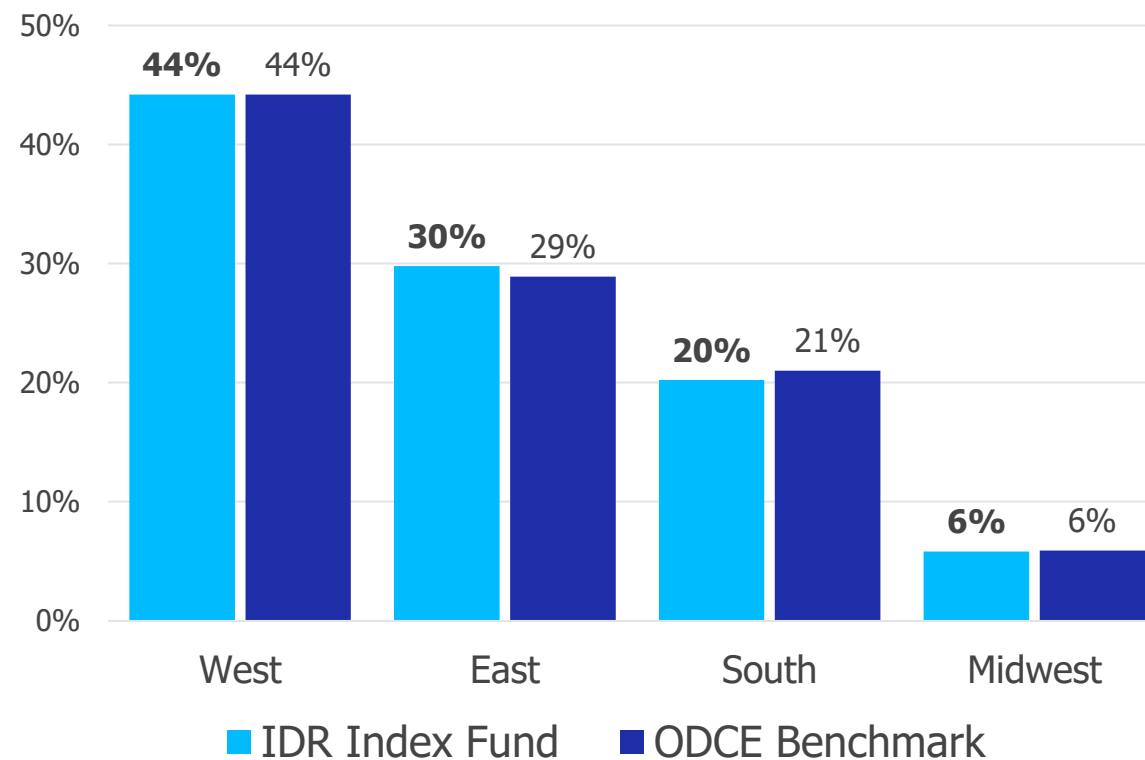
# IDR Index Fund Compared to ODCE Benchmark

	# of Funds	GAV Exposure	Occupancy	Leverage
<b>IDR Index Fund</b>	<b>21</b>	<b>\$312B</b>	<b>93%</b>	<b>25%</b>
ODCE Benchmark	25	\$318B	93%	25%

Property Type Diversification



Geographic Diversification

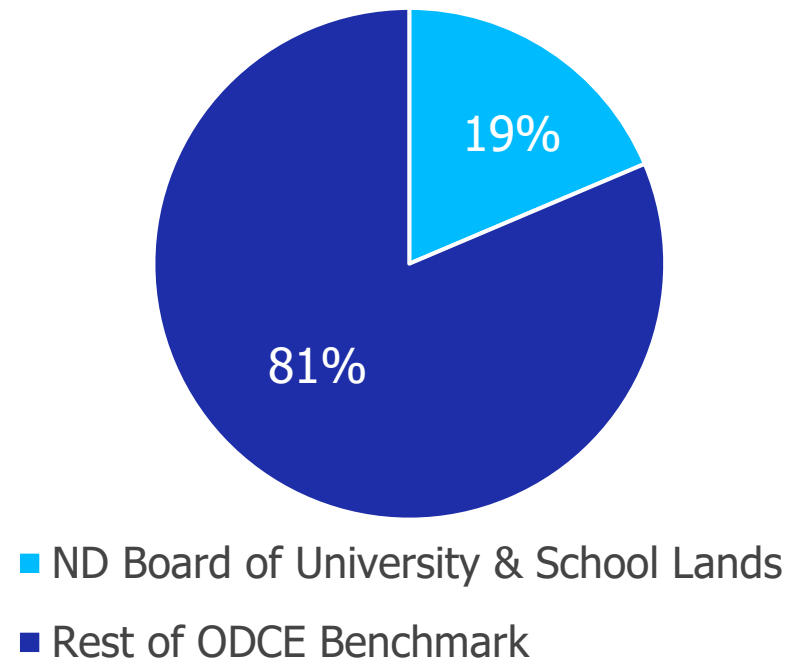


# NORTH DAKOTA BOARD OF UNIVERSITY & SCHOOL LANDS

## CURRENT EXPOSURE & TRANSITION PLAN

- Invested in 2 of 25 Component Funds
- 19% exposure to benchmark

% Exposure to ODCE Benchmark



- Short-Term Efficiency:
  - Transfer discretion to IDR
  - IDR executes all rebalancing
- Long-Term Benefits:
  - Receive consistent performance to benchmark
  - Focus resources on other parts of the portfolio for higher alpha opportunities

# BENEFITS OF IDR MANAGING TRANSITION PORTFOLIO



**Lower Cost**



**Faster Liquidity**



**Easier Execution**

# Summary of Terms

<b>INVESTMENT ADVISER</b>	<b>IDR Investment Management, LLC</b>
<b>TERM</b>	Open ended quarterly, subject to Component Fund queues
<b>LOCK-UP PERIOD</b>	None
<b>RETURN OBJECTIVE</b>	NFI-ODCE Index with tracking error of 0.12% or less
<b>MANAGEMENT FEE</b>	Based on investor commitment amount: Less than \$25mm: 0.40% \$25mm - \$99.9mm: 0.30% <b>Greater than \$100mm: 0.20%</b> Annual management fee on invested NAV only, calculated and paid quarterly



# Disclaimer

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Past or projected performance is not necessarily indicative of future results. There can be no assurance that the Fund will achieve comparable results, that targeted returns, diversification or asset allocations will be met or that the Fund will be able to implement its investment strategy and investment approach or achieve its investment objective. Actual returns on unrealized investments will depend on, among other factors, future operating results, the value of the assets and market conditions at the time of disposition, legal and contractual restrictions on transfer that may limit liquidity, any related transaction costs and the timing and manner of sale, all of which may differ from the assumptions and circumstances on which the valuations used in the prior performance data contained herein are based. Accordingly, actual returns may differ materially from the returns indicated herein.

Statements contained in this Presentation that are not historical facts are based on current expectations, estimates, projections, opinions and beliefs of the Fund's sponsor. Such statements involve known and unknown risks, uncertainties and other factors, and undue reliance should not be placed thereon. Additionally, this Presentation contains "forward-looking statements." Actual events or results or the actual performance of the Fund may differ materially from those reflected or contemplated in such forward-looking statements. Certain economic and market information contained herein has been obtained from published sources prepared by third parties and in certain cases has not been updated through the date hereof. None of IDR IM, the Fund, its general partner nor their respective affiliates nor any of their respective employees or agents (collectively, "IDR IM") assumes any responsibility for the accuracy or completeness of such information.

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IDR IM consummated a transaction creating a strategic relationship with Emphasis Capital ("Emphasis"). Major decisions with respect to the business of IDR IM are subject to the approval of IDR IM Board of Directors, which includes representatives of Emphasis. Furthermore, Emphasis does not control the investment vehicles sponsored by IDR IM. Investments in the Partnership are not deposits or obligations of, or guaranteed or endorsed in any way by, IDR IM, Emphasis or any bank and are not insured by the Federal Deposit Insurance Corporation, the Board of Governors of the Federal Reserve System or any other governmental agency or instrumentality.

The outbreak of COVID-19 has negatively affected the worldwide economy, individual countries, individual companies and the market in general. The future impact of COVID-19 is currently unknown, and it may exacerbate other risks that apply to the Fund.

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The information contained in this document is provided to you at your request for informational purposes only and is not, and may not be relied on in any manner, as legal, tax or investment advice, or as an offer to sell, or a solicitation of an offer to buy, an interest ("Interest"), in a fund (as applicable, the "Fund") sponsored by IDR IM. A private offering of Interests in the Fund will only be made pursuant to a confidential Private Placement Memorandum (the "Memorandum"), the Fund's Limited Partnership Agreement and the Fund's Subscription Documents, all of which will be furnished to qualified investors, on a confidential basis, at their request, for their consideration in connection with such offering. Prospective investors should ask questions of and obtain answers from IDR concerning the Fund, and any additional information they consider necessary or appropriate to make an informed decision whether to invest in the Fund. This document provides details of an indicative proposal only, and is subject to further elaboration and change, and should not be considered to be a recommendation by any person, that the possible investment opportunity described would be suitable. The information contained herein will be superseded and is qualified in its entirety by the Memorandum.

This presentation identifies a number of benefits inherent in IDR IM services and operations on behalf of the Fund, although the Fund is also subject to a number of material risks associated with these benefits, as further identified in the Fund's Governing Documents. For additional information regarding risks and potential conflicts of interest regarding an investment in the Fund, please see the risk factors in the Memorandum.

**Forward Looking Information.** This document may contain forward-looking statements that include statements, express or implied, regarding current expectations, estimates, projections, opinions and beliefs of the sponsor of the Fund, as well as the assumptions on which those statements are based. Words such as "believes", "expects", "endeavors", "anticipates", "intends", "plans", "estimates", "projects", "assumes", "potential," "should" and "objective" and variations of such words and similar words also identify forward looking statements. Such statements are forward-looking in nature and involve a number of known and unknown risks, uncertainties and other factors, including those described in this document, and accordingly, actual results may differ materially, and no assurance can be given that the Fund will achieve the returns from its investments that it is targeting. Investors and prospective Investors are cautioned not to place undue reliance on any forward-looking statements or examples included in this document, and the general partner of the Fund does not assume any obligation to update any forward-looking statements as a result of new information, subsequent events or any other circumstances. Such statements speak only as of the date that they were originally made.

Forward-looking statements and discussions of the business environment and investment strategy of the Fund included herein (e.g., with respect to financial markets, business opportunities, demand, investment pipeline and other conditions) are subject to the ongoing novel coronavirus outbreak ("COVID-19"). The full impact of COVID-19 is particularly uncertain and difficult to predict; therefore, forward-looking statements do not reflect its ultimate potential effects, which may substantially and adversely impact the Fund's execution of its investment strategy.

**Target Returns.** Target returns are derived by IDR IM from analyses based upon (i) the expected cumulative returns generated by a series of real estate investments across a multi-year investment period, (ii) market experience, including, but not limited to, data related to operating expenses, market expectations and historical averages related to the risk/return profile and generally accepted criteria for making investments in the type of anticipated investments and (iii) subjective estimates and assumptions about circumstances and events that may not yet have taken place and may never take place. Target returns are also based on certain assumptions including, but not limited to, anticipated hold period, market conditions, default rates, tenant credit stability and turnover, exit strategies and availability and cost of financing. If any of the assumptions used do not prove to be true, results may vary substantially from the estimated returns set forth herein.

Actual gross and net returns for the Fund may vary significantly from the targeted returns set forth herein. The Fund's target returns are expected to be realized from the disposition of investments, future cash flows, distributions and proceeds from borrowing, using leverage where the General Partner believes it appropriate. The target returns stated herein are based on the General Partner's belief about what returns may be achievable on the types of investments that the General Partner intends to pursue in light of the General Partner's experience with similar transactions. Further, the target returns stated herein are based on an assumption that economic, market and other conditions will not deteriorate and, in some cases, will improve. Actual realized returns on the Fund's investments will depend on, among other factors, the ability to consummate attractive investments, future cash flows, the value of the assets and market conditions at the time of disposition, any related transaction costs and the timing and manner of sale, all of which may differ from the assumptions and circumstances on which the targeted returns are based.

**Projected Returns.** Any estimated future returns for any investment or group of investments set forth herein (the "Projections") are hypothetical, have been prepared and are set out for illustrative purposes only, and do not constitute a forecast. They have been prepared based on IDR IM's current view in relation to future events and various estimations and assumptions made by IDR IM or its affiliates, including estimations and assumptions about events that have not yet occurred. Such estimations and assumptions may require modification as additional information becomes available and as economic and market developments warrant. Any such modification could be either favorable or adverse. Industry experts may disagree with the estimations and assumptions used in preparing the Projections.

The Projections contained herein are estimated, unaudited and is subject to significant change. These are projected returns which have not been achieved as of date of presentation and are derived by IDR IM from analyses based upon (i) the expected cumulative returns generated by a series of real estate investments across a multi-year investment period, (ii) market experience, including, but not limited to, data related to operating expenses, market expectations and historical averages related to the risk/return profile and generally accepted criteria for making investments in the type of anticipated investments and (iii) subjective estimates and assumptions about circumstances and events that may not yet have taken place and may never take place. Target returns are also based on certain assumptions including, but not limited to, anticipated hold period, market conditions, default rates, tenant credit stability and turnover, exit strategies and availability and cost of financing. Further, the projected returns are based on an assumption that economic, market and other conditions will not deteriorate, and in some cases, improve. If any of the assumptions used do not prove to be true, results may vary substantially from the estimated returns. The actual realized returns could differ materially from those shown. Unless otherwise indicated, all return figures are net of management fees; carried interest, if any; developer incentive compensation for affiliated and unaffiliated developers; and effects of leverage.

# Important Disclosures (Continued)

**Investments and Market Risk.** Investment in the Fund involves significant risks, including risk of loss of the entire investment. Prospective investors should consult their own legal, tax and financial advisors as to the consequences of an investment in the Fund. Leveraged investments may present additional risks to the investor, including, capital structure risk. Dependence by the Fund on key personnel may result in operational risk. An investment in the Fund is intended to be a long-term investment. The Interests are highly illiquid, and an investor may not be able to transfer or redeem its Interest (or any part thereof), because of restrictions on transferability or redemption of the Interests.

Many factors may affect actual performance, including changes in market conditions and interest rates and changes in response to other economic, political or financial developments. Therefore, projections set forth in this presentation may not be meaningful. The information underlying any projections or other forecasts has been obtained from or is based upon sources believed to be reliable, but IDR IM does not assume any responsibility for, and makes no representation or warranty, express or implied as to the adequacy, accuracy or completeness of, any such information. Please contact us if you would like more information about our calculation methodologies.

Past performance is historical and not a guarantee of future results. In considering the performance information, recipients should bear in mind that past performance is not necessarily indicative of future results, and there can be no assurance that the Fund will achieve comparable results or that return objectives or asset allocations will be met. Actual realized returns or unrealized investments will depend on, among other factors, future operating results, the value of the assets and market conditions at the time of disposition, any related transaction costs, and the timing and manner of sale, all of which may differ from the assumptions and circumstances on which the valuations used in the performance data contained herein are based. Accordingly, the actual realized returns on these unrealized investments may differ materially from the returns indicated herein.

**Third-Party Data.** Certain information contained in this document has been obtained from published and non-published sources. Prospective Investors should understand that any such information may not have been independently verified by the Fund or its general partner. Except where otherwise indicated herein, the information provided herein is based on matters as they exist as of the date of preparation and not as of any future date and will not be updated or otherwise revised to reflect information that subsequently becomes available, or circumstances existing or changes occurring after the date hereof.

There is no public market for interests in the Fund, and none is expected or intended to develop. Any mortgage debt obligations assumed by the Fund in the properties it holds, may expose the Fund to increased risk of property losses, which could harm the Fund's financial condition, cash flow and ability to satisfy its other debt obligations, make distributions to Investors, and have the financial capacity to redeem Investors. Illiquidity of real estate investments could significantly impede the Fund's ability to respond to adverse changes in the performance of its properties and harm its financial condition. It may be difficult for the Fund to realize, sell or dispose of an investment at an attractive price, or to achieve a favorable exit strategy. The Fund's overall investment performance may be adversely affected by the poor performance of one or more of its investments, even if those properties constitute an overall low percentage of all the investments held by the Fund at any time. By investing in a Fund, Investors will not acquire a direct interest in any property, including the properties pictured in this presentation.

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Unless otherwise noted, "\$" means United States dollars. Be aware of currency risk. You may be investing in a different currency than the official where you are located, the fund return may increase or decrease depending on the exchange rate between the two currencies and any fluctuation

**No action has been taken in any jurisdiction outside the United States that would permit an offering of interests in the Fund ("Interests"), or distribution of offering materials in connection with such Interests, in any country or jurisdiction where action for that purpose is required. IDR, its affiliates or subsidiaries is not making any representation with respect to the eligibility of the recipients of this Presentation to acquire Interests under the laws of the any jurisdiction outside the United States.**

**The Interests have not been registered in any jurisdiction for private or public offering, and none of the Interests may be offered, sold or delivered, or offered or sold to any person for re-offering or resale, directly or indirectly, except pursuant to applicable laws and regulations.**

**MEMORANDUM TO THE BOARD OF UNIVERSITY AND SCHOOL LANDS**  
 September 1, 2023

**RE: Broad US Equity – Extended Equities (130-30)**

The US Equity portfolio is currently at \$1.2 billion with a 15% long term target and is comprised of three building blocks – large cap, mid cap and small cap. The goal of this proposal is to drive excess returns in the US Equity portfolio.

Staff recommends introducing long-short active management in the US Equity portfolio. By relaxing the short constraint, extended equity strategies give our investment managers the tools to profit when the market moves in either direction. Staff and RVK began a manager search by reaching out to 8 well-known extended equity managers. After interviewing and conducting due diligence on potential extended equity managers, Staff and RVK recommend the following:

- **Hire Arrowstreet US Equity Small Cap 130-30-20 (Russell 2000) (10% of US Equity ~\$120M).** Arrowstreet was founded in 1999 and is headquartered in Boston. They have over \$160 billion in assets under management across 296 client relationships and a team of over 100 investment professionals. Staff and RVK know Arrowstreet’s firm and investment process well as they are a current manager in good standing. US small cap is a sub asset class with less efficient markets, creating the opportunity to deliver excess returns and Arrowstreet has a 5-year track record of delivering excess returns in this strategy.

- **Hire Jacobs Levy 130-30 Large Cap (Russell 1000) (40% of US Equity ~\$480M).** Jacobs Levy was founded in 1986 and is headquartered in New Jersey. They have over \$18 billion in assets under management across 46 institutional relationships and a 60-person team. Jacobs Levy has a 16-year track record in 130-30 strategies, one of the longest in the space. The US large cap strategy has a 14-year track record of delivering excess returns.

- **Full Redemption Northern Trust Small Cap Core (~\$185M).** Small cap long-only active management will no longer be needed. Proceeds will be used to fund the small cap extended equity strategy.

- **Full Redemption State Street Russell Mid Cap Index (~\$111M).** A passive tilt toward mid cap will no longer be needed. Proceeds will be used to rebalance into the Russell 1000 index, which his comprised of both large cap and mid cap names.

Recommendation: **The Board approve (1) full redemption of Northern Trust Small Cap Core (2) full redemption of State Street Russell Mid Cap Index (3) investment with Arrowstreet US Equity Small Cap 130-30-20 and (4) investment with Jacobs Levy 130-30 Large Cap, subject to standard legal review/documentation.**

Attachments: RVK US Equity Structure & Manager Recommendations, Arrowstreet Presentation, Jacobs Levy Presentation

Action Record	Motion	Second	Aye	Nay	Absent
Secretary Howe					
Superintendent Baesler					
Treasurer Beadle					
Attorney General Wrigley					
Governor Burgum					



# US Equity Structure & Manager Recommendations

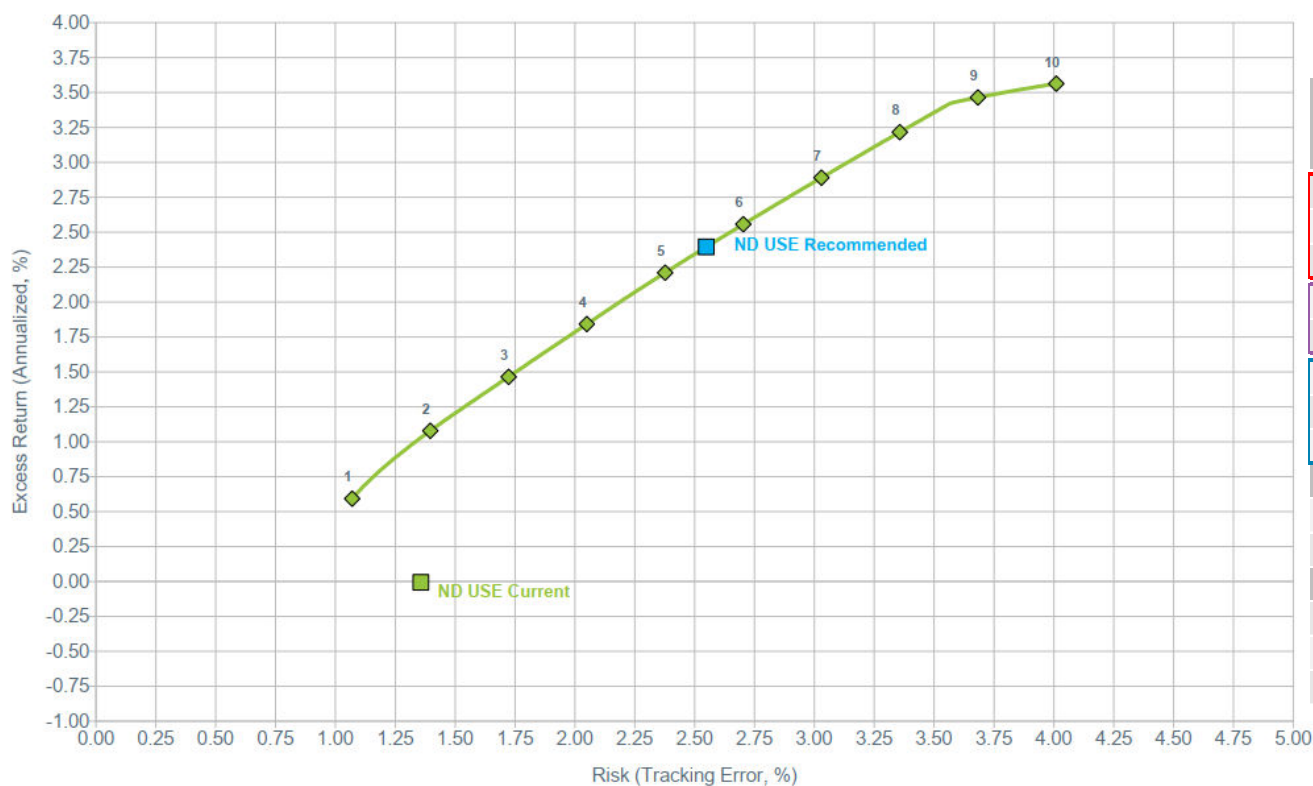
September 1, 2023



# Summary of Recommendation

The Recommended structure is detailed in the table. It retains half of the US equity portfolio in low-cost passive management, while adding two new high conviction active “extended equity” managers.

Based on RVK’s optimization and modeling of the expected returns (measured as excess returns relative to the policy index) and risk (measured as tracking error relative to the policy index), we expect the recommended portfolio to provide materially higher expected returns with moderately higher tracking error.



	ND USE Current	ND USE Recommended
<b>Large Cap</b>		
*SSgA Russell 1000	75	50
*Jacobs Levy R1000 130/30	0	40
<b>Mid Cap</b>		
SSgA Russell Mid	9	0
<b>Small Cap</b>		
NT Small Cap Core	16	0
Arrowstreet US Small Proxy	0	10
Large/Mid Cap, %	84	90
Small Cap, %	16	10
Excess Return	-0.01	2.39
Tracking Error	1.36	2.55
Information Ratio	0.00	0.94

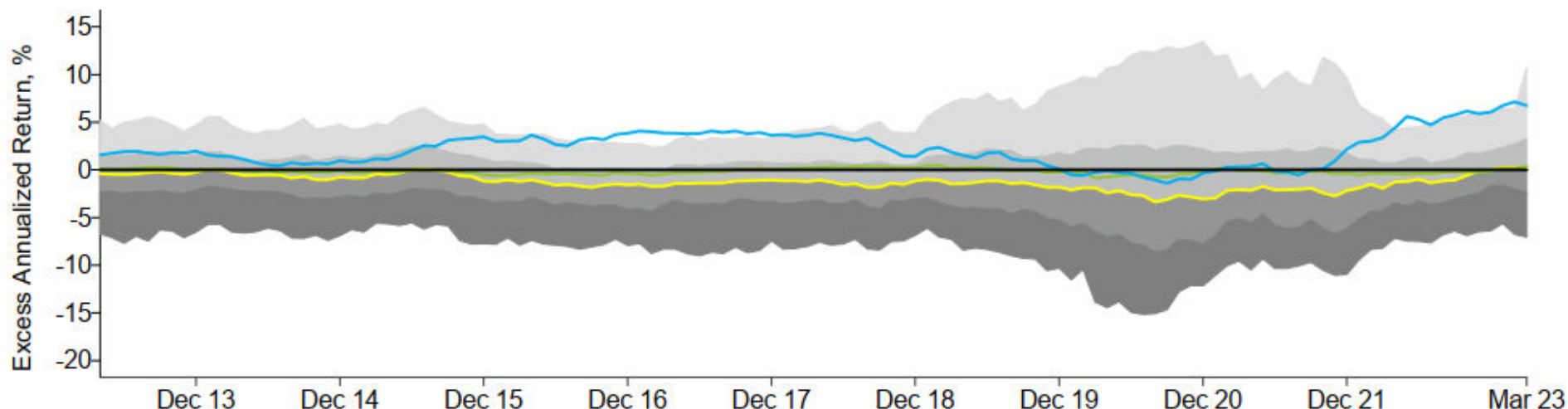
\*Funds include both large and mid cap stocks.

# Persistency of Excess Returns

We also examined the historical risk and returns of various potential portfolio mixes with an emphasis on portfolio combinations that have provided a high degree of persistency in outperforming the index. The table below shows historical rolling 3-year excess returns for the recommended and current structures relative to the policy index, set against a backdrop of active manager peer universe results.

As of March 2023      Benchmark: Russell 3000

## Excess Returns: 3 Year Rolling



■ eA All Cap Median     
 ■ ND USE Current     
 ■ ND USE Recommended     
 ■ Russell 3000

Excess Return Consistency	Consistency of Positive 3 Year Rolling Excess Returns	Current 3 Year Excess Return, %	Average 3 Year Rolling Excess Returns, %	Maximum 3 Year Rolling Excess Return, %	Minimum 3 Year Rolling Excess Return, %	Total Periods of 3 Year Excess Returns, %
ND USE Current	0.0%	0.37	-0.15	0.48	-0.85	120
ND USE Recommended	69.2%	6.75	2.21	7.15	-1.42	120
<b>eA All Cap Median</b>	<b>0.0%</b>	<b>0.11</b>	<b>-1.27</b>	<b>0.29</b>	<b>-3.38</b>	<b>120</b>

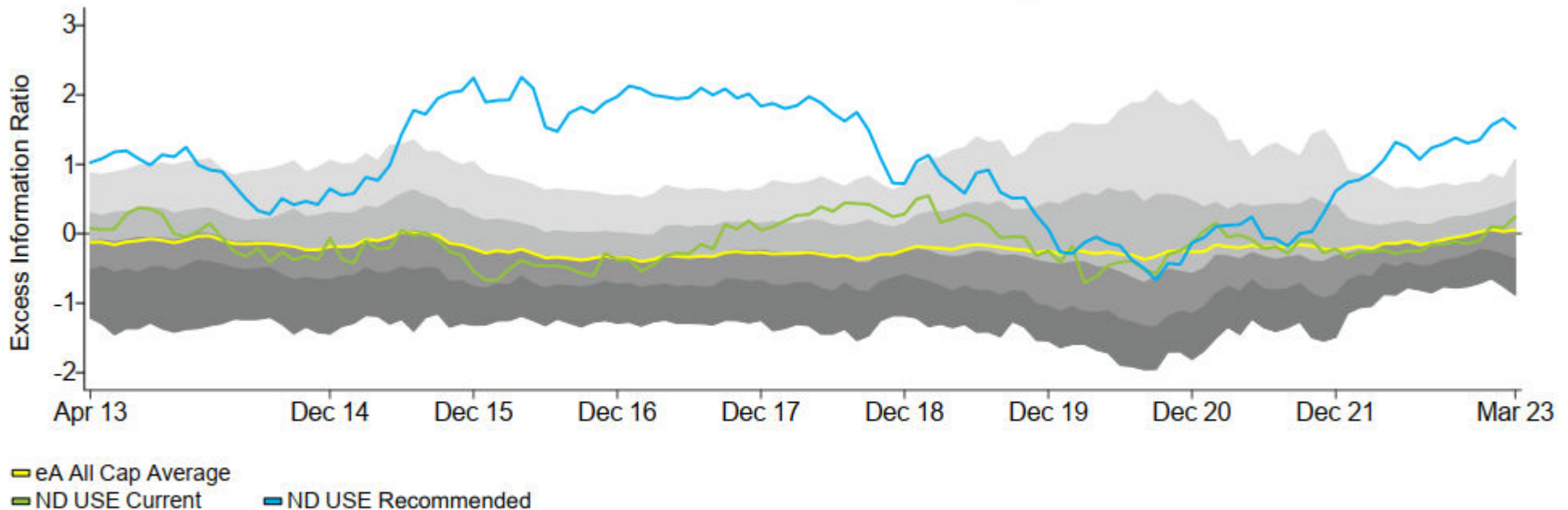
Performance is gross of fees. The peer group median is not indicative of an expected investor experience. It is a hypothetical return stream calculated using the returns for the median manager in each time period and does not represent an actual management strategy.

# Information Ratio Analysis

Information Ratio (excess returns / tracking error) helps measure the efficiency of active management (the degree of reward for each unit of active risk). The recommended portfolio ranks above median at a significantly higher percentage compared to the current portfolio. The recommended portfolio has a much higher information ratio across almost all time periods measured below.

As of March 2023    Benchmark: Russell 3000    Universe: eA All Cap    Universe Size: 748

## Information Ratio: 3 Year Rolling



Information Ratio Rank Consistency	How often has the Information Ratio ranked above median over past 3 year time periods?	Average 3 Year Rolling Information Ratio Rank	Total Periods of 3 Year Performance
ND USE Current	63.3%	45	120
ND USE Recommended	99.2%	13	120



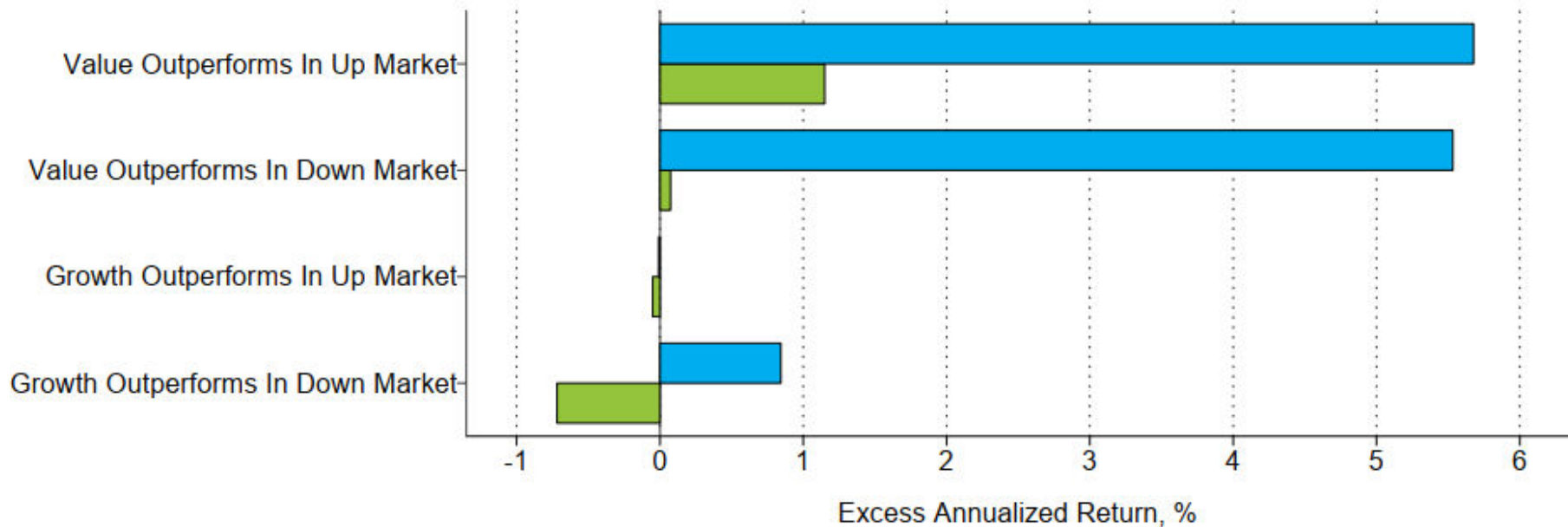
# Excess Returns in Value/Growth Led Markets

The recommended portfolio has performed materially better in value led markets, and moderately better in growth led markets.

As of March 2023

Benchmark: Russell 3000

**Annualized Excess Returns in Past Style Led Months (Grouped by Up/Down Market Returns)**



■ ND USE Current    ■ ND USE Recommended

	Annualized Excess Returns				# of Months of Style Leadership			
	Growth Outperforms In Down Market	Growth Outperforms In Up Market	Value Outperforms In Down Market	Value Outperforms In Up Market	Growth Outperforms In Down Market	Growth Outperforms In Up Market	Value Outperforms In Down Market	Value Outperforms In Up Market
ND USE Current	-0.72	-0.05	0.07	1.15	32	74	27	47
ND USE Recommended	0.84	-0.01	5.53	5.68	31	71	23	46

Excess Returns of the managers in both value-led and growth-led months are grouped together and then separated by whether the general market had positive or negative returns for a given month. The monthly returns within the four groups are annualized to illustrate the performance of each strategy in past style regimes.

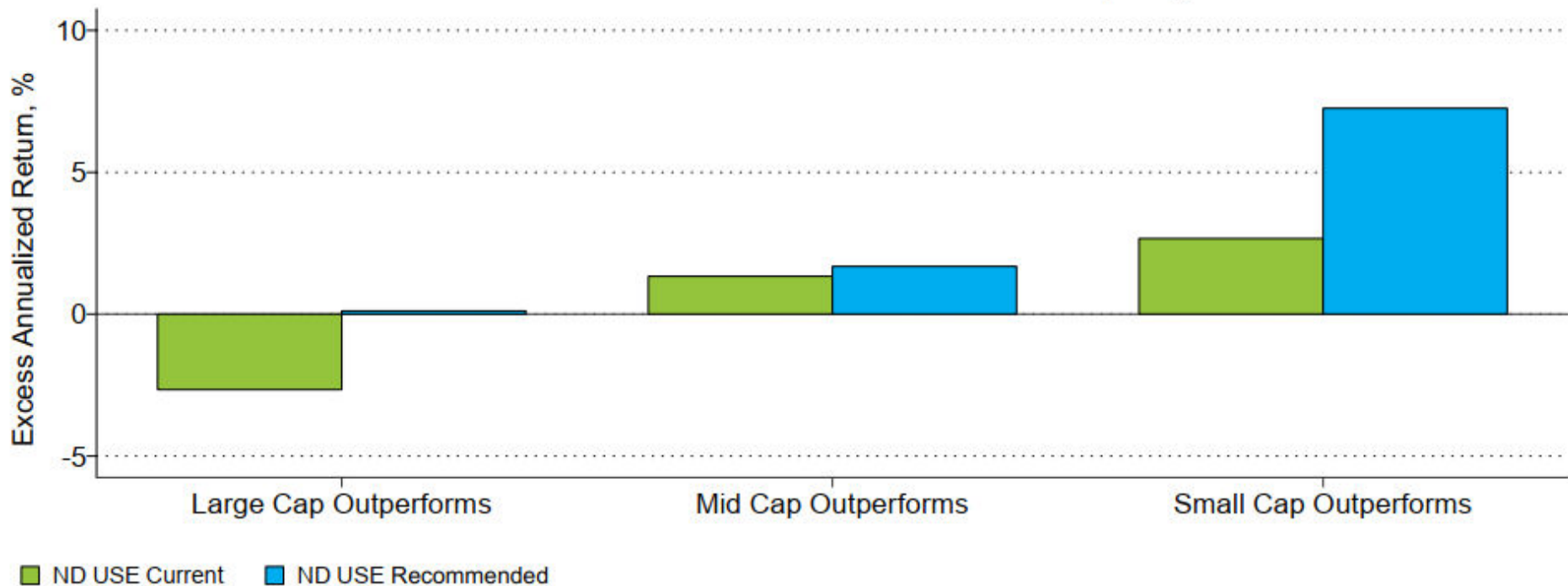
# Excess Returns During Past Market Cap Regimes

The recommended portfolio has provided higher excess annualized returns across different market cap regimes (periods of time where either large, medium, or small sized companies are outperforming the rest of the market).

As of March 2023

Benchmark: Russell 3000

**Annualized Excess Returns in Past Market Cap Regimes**



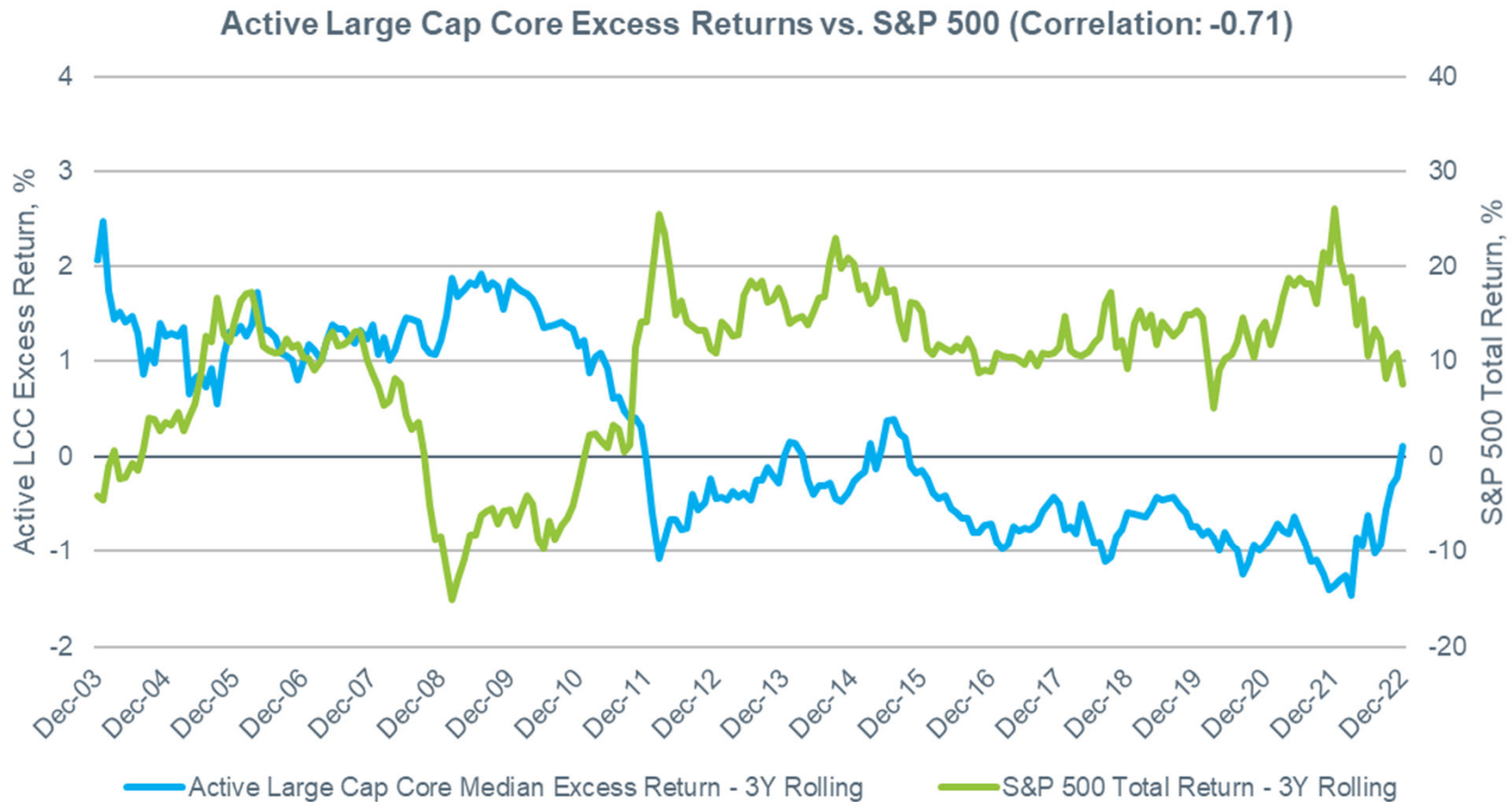
	Annualized Returns			# of Months of Implied Volatility Conditions		
	Large Cap Outperforms	Mid Cap Outperforms	Small Cap Outperforms	Large Cap Outperforms	Mid Cap Outperforms	Small Cap Outperforms
ND USE Current	-2.66	1.34	2.67	69	38	73
ND USE Recommended	0.11	1.68	7.26	67	37	67

Excess Returns of the managers in months where large cap (Russell Top 200), mid cap (Russell Mid Cap) or small cap (Russell 2000) returns are highest are grouped and annualized to illustrate the performance of each strategy in past style regimes.



# Correlations with Market Cycles

We have also observed historically that active management success tends to be higher in periods of weaker overall market performance. While a largely passive approach has served the portfolio very well in the past several years, active management may become more valuable if we enter a period of weaker market performance.



PORTLAND

BOISE

CHICAGO

NEW YORK

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## Memorandum

To	North Dakota Board of University and School Lands (NDBUSL)
From	RVK, Inc. (RVK)
Subject	US Equity Active Management Recommendation
Date	September 1, 2023

### Summary

Staff and RVK conducted due diligence of potential firms and strategies within the extended equity space for the US Equity asset class. These strategies provide approximately 130% long exposure to their positively rated stocks. The additional exposure (above 100%) is funded through selling short negatively rated stocks. This approach is commonly referred to as a “130/30” or “Extended Equity” structure. The intent is to gain greater exposure to the manager’s stock picking ability without significantly increasing volatility or market sensitivity.

In our review we identified two managers as top-tier options within the space based on performance, history of managing these types of strategies, depth of investment team and risk management practices. Both firms are focused on the institutional client marketplace. Interviews with firm leadership, review of operational practices and past onsite visits informed the manager selection process.

As a result of this process, the following two firms and strategies are recommended for inclusion in the US Equity portfolio. Arrowstreet is a current manager used for the emerging markets asset class.

Arrowstreet Capital, Limited Partnership (US Small Cap)

Jacobs Levy Equity Management (US Large Cap)

The addition of these managers would lead to a new structure within the US Equity asset class. The existing passive exposure to the Russell 1000 Index (US Large Cap) would be maintained at a 50% allocation. The assets currently invested passive Russell Mid Cap Index exposure and Northern Trust Small Cap portfolio would be redeemed.

We further recommend that Jacobs Levy be allocated 40% and Arrowstreet be allocated 10% within the US Equity composite. This structure would result in a market cap and style neutral portfolio structure relative to the policy benchmark, the Russell 3000 Index – similar to the current structure. The recommended hiring decisions and structure are intended to result in higher alpha potential, higher active share and active fees being aligned with client results through performance-based fee arrangements. These objectives are expected to be met without taking excessive absolute or uncompensated relative risks.



## Performance and Peer Comparison

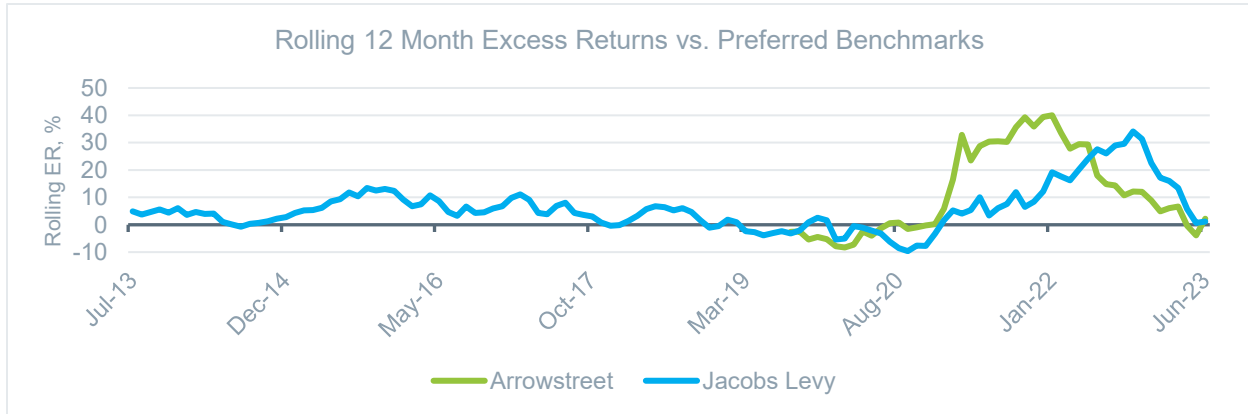
The following tables display the 10-year results for Jacobs Levy. The Arrowstreet strategy was inceptioned in September 2018, the table includes 3-year results for that strategy. However, Arrowstreet has managed US equity assets within their Global Equity strategies since the founding of the firm.

The results show that each strategy has been able to generate attractive excess returns with better risk/reward ratios (Information Ratio and Sharpe Ratio) than many peers. The excess returns have been generated in both upside and downside market conditions without a level of market sensitivity lower than their benchmarks. Notably, the active share of each portfolio (% of differentiation versus each benchmark) is higher than peer group levels. Thus far, Arrowstreet and Jacobs Levy have outpaced the excess return targets expected by RVK given the tracking error levels of each portfolio. While some moderation in results can be anticipated, performance is expected to be well ranked versus peers over the long run.

10 Year Statistics versus Russell 1000 Index	Excess Returns, %	Tracking Error, %	Information Ratio	Sharpe Ratio	Upside Market Capture, %	Downside Market Capture, %	Beta	Active Share, %
Jacobs Levy	5.66	6.13	0.92	1.15	104.34	78.35	0.91	110.00
eVestment US Large Cap Median	-0.15	3.92	-0.04	0.73	98.04	98.44	0.99	71.45

3 Year Statistics versus Russell 2000 Index	Excess Returns, %	Tracking Error, %	Information Ratio	Sharpe Ratio	Upside Market Capture, %	Downside Market Capture, %	Beta	Active Share, %
Arrowstreet Capital	16.14	8.19	1.97	1.15	134.57	83.28	0.95	125.21
eVestment US Small Cap Median	3.07	6.87	0.47	0.66	100.50	91.45	0.92	92.69

While the higher activity level within these strategies has generated attractive results, it is important to note that the higher relative risk will incur larger deviations between strategy performance and benchmark performance. The chart below showcases the cyclical nature of excess returns for these strategies in recent years through rolling 12-month excess returns. Holding the strategies during the negative periods of relative performance will be necessary to benefit from the long-term potential of these approaches.



### Management Fees

Arrowstreet and Jacobs Levy have proposed performance-based fees. These arrangements would result in fees below the 25<sup>th</sup> percentile of their respective peer groups – unless excess returns are generated by their strategies. RVK views the proposed arrangements favorably given the further alignment it provides with client performance.

### Recommendation

RVK recommends that NDBUSL approve the hiring of Arrowstreet for active US Small Cap management and Jacobs Levy for active US Large Cap management. The recommended structure would include a 50% allocation to the existing passive Russell 1000 Index strategy, 40% to Jacobs Levy and 10% to Arrowstreet.



## Manager Summary – Arrowstreet

### **Firm and Team**

Boston-based firm founded in 1999 by Bruce Clarke, Peter Rathjens, and John Campbell. The firm primarily operates out of its Boston headquarters with other offices focused mainly on client service. The firm is 100% owned by senior employees and directors at the firm. Arrowstreet uses a quantitative model to implement strategies in global, international and US equity, and the firm currently manages approximately \$160 billion.

The firm's investment team consists of 36 members who serve different roles across the research, portfolio management and risk management. The team averages 18 years of industry experience and 13 years of firm tenure.

### **Philosophy and Process:**

The quantitative model attempts to incorporate indirect effects—links between securities including commercial relationships, locality, and historical correlations. In all, there are four components that are included in the overall stock forecast: country, sector, basket, and stock-specific information. The strategy incorporates value, quality, momentum, and various other factor signals from connected companies to develop forecasts for each security. The intended competitive advantage is a full understanding of and ability to act on the effects of new information on stocks where the connection is not immediately obvious to the rest of the market.

The proprietary risk model has a number of inputs, including estimated beta, country, and sector membership, exposure to forecast model signals, and market capitalization. Portfolio risk levels are dynamically adjusted to reflect the trade-offs of risk and return in the marketplace. The strategy has explicit limits on portfolio weights: stocks +/- 3% and sectors +/- 10%. The portfolio generally holds long exposure to approximately 825 stocks and short exposure to approximately 175 stocks with annual turnover of 100-225%. An evaluation of liquidity and transaction costs is an integral part of the process to allow the model to generate alpha efficiently while limiting market impact and trading expenses. While the long-term expectation is for the portfolio beta (market sensitivity) to be similar to the market, the model will adjust the short-term beta level between 80% and 120% when there is a higher expected return for a higher or lower beta level.





## Manager Summary – Jacobs Levy

### **Firm and Team**

Jacobs Levy was founded in 1986 and is headquartered in Florham Park, New Jersey. The firm is 100% employee owned by the two founders and co-CIOs Bruce Jacobs and Kenneth Levy. The firm consists of 60 employees, currently managing over \$18 billion and focusing exclusively on managing US equity portfolios for institutional clients.

The investment team at Jacobs Levy consists of fifteen individuals, inclusive of the two co-CIOs. The team is also supported by ten investment technology engineers, dedicated to model research and development, and nine portfolio engineering analysts and traders. The two portfolio managers are lead PMs on all strategies and heads of research. Both Bruce Jacobs and Kenneth Levy have worked in the investment industry since 1982.

### **Philosophy and Process Overview**

The strategy exploits market inefficiencies with intensive modeling using 90 proprietary factors. Research and model development is conducted by a team of quantitative research analysts, the Chief Technology Officer, and quantitative engineers, constantly improving current models and developing new models.

The stock selection process entails modeling of a large number of stocks using proprietary factors and internally scrubbed data including financial statements, security analyst forecasts, corporate management signals, economic releases, and security pricing. The result is a fund with a similar risk profile to the Russell 1000 Index and broad diversification across stocks, market inefficiencies, industries, and sectors.

An essential part of the investment process is the measurement of the true impact and risk contribution of each investment signal. The quantitative techniques used by the model allow for portfolio risk and return to be driven primarily by stock selection, rather than common risk factors. The firm's proprietary optimizer produces a list of recommended trades, as well as continuously monitors risk. The portfolio generally holds long exposure to approximately 175 stocks and short exposure to approximately 75 stocks. Turnover is normally in the 125-255% range each year.



ARROWSTREET  
CAPITAL

# North Dakota Board of University and School Lands

September 1, 2023

# Arrowstreet Attendees

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**Harry Gakidis, PhD**  
**Senior Director, Portfolio Management**

Harry is in the portfolio construction group, where his responsibilities include the management of various market frictions such as fund flows and transitions. In addition, he contributes to research efforts and represents the PM group externally in portfolio review meetings and in business development efforts.

Prior to joining Arrowstreet, Harry was the Lead Portfolio Manager for approximately \$80 billion in active beta-one strategies at Acadian Asset Management. From 2009 to 2014, he was a Senior Quantitative Strategist at Loomis Sayles, where he set up the quantitative Strategy Lab and launched a novel liquid equities strategy. From 2003 to 2009, Harry was a Fixed Income Specialist at Putnam Investments, where he developed risk models and managed a multi-billion dollar book of corporate bonds and derivatives during the Global Financial Crisis. Prior to 2003, Harry consulted on linked data analysis and re-insurance derivatives after starting his career as a Visiting Assistant Professor at Boston College.

Harry received his A.B. in economics from Harvard University in 1993 and his Ph.D. in economics from M.I.T. in 1998. He focused on econometrics, macroeconomics, finance, numerical methods and computer science.



**Tony Troilo**  
**Director, Relationship Management**

Tony is a member of the Client Relationship Management team responsible for Arrowstreet's client servicing efforts.

Prior to joining Arrowstreet, Tony was a member of the Client Implementation Group at State Street Global Advisors. There, he oversaw the planning, coordination, and execution of all client on-boarding events. From 2001 to 2009, Tony was with PanAgora Asset Management. During his time at PanAgora, Tony served as a Portfolio Manager in the Macro Strategies team from 2007 through 2009. In that role he was responsible for portfolio optimizations, portfolio construction, and trading. Tony also served as Investment Operations Manager at PanAgora from 2001 to 2007. In this role he managed associates in the areas of equity, asset allocation and fixed income, and served on the firm's Risk Management Committee. His past experience also includes five years with State Street Bank serving in the roles of Account Manager, Trade Support, Custody Specialist, and Portfolio Administrator.

Tony graduated from Providence College with a BS in Management in 1996 and an MBA in 2001.



# Table of Contents

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## Section 1 Firm Overview

## Section 2 Strategy

## Exhibits Supporting Materials

The information set forth herein are being provided by Arrowstreet Capital, Limited Partnership ("we," us," "our," or "Arrowstreet"), or on its behalf by Arrowstreet Capital Europe Limited, solely for the benefit of select, qualified institutional investors for educational, informational and discussion purposes only. These materials are being provided on a confidential basis and are not intended for public use or distribution. All information contained herein is proprietary and confidential. Any reproduction or distribution of these materials, in whole or in part, or the disclosure of its contents, without Arrowstreet's prior written consent, is prohibited. Please see Important Information and Legal Disclosures at the end of these materials.

# Firm Overview

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**Specialist Global Equities Manager**



**Commitment to Ongoing Research Program**



**Privately Owned**

# Senior Investment Team

**Peter Rathjens, PhD – Partner, CIO**  
**Co-Founded ASC: 1999**

Research	Investment Processes	Investment Services	Investment Analytics	Portfolio Management
<b>John Campbell, PhD</b> <i>Partner, Co-Head of Research</i> 1999	<b>Sam Thompson, PhD</b> <i>Partner, Head of Investment Processes</i> 2005	<b>Katie McHardy</b> <i>Partner, Head of Investment Services</i> 2010	<b>Rachel Xiao</b> <i>Senior Director, Head of Investment Analytics</i> 2016	<b>Manolis Liodakis, PhD</b> <i>Partner, Head of Portfolio Management</i> 2012
<b>Derek Vance, CFA</b> <i>Partner, Co-Head of Research</i> 2008	<b>Marta Campillo, PhD</b> <i>Partner</i> 1999	<b>Joe Tiano</b> <i>Partner</i> 2014		<b>Brandon Berger</b> <i>Partner</i> 2013
<b>James Bothwick, CFA</b> <i>Partner</i> 2015	<b>Hui Wang, PhD</b> <i>Partner</i> 2012			<b>John Capeci, PhD</b> <i>Partner</i> 1999
<b>Naveen Kartik C. K., CFA</b> <i>Partner</i> 2013				<b>Harry Gakidis, PhD</b> <i>Senior Director</i> 2022
<b>Yosef Klein</b> <i>Partner</i> 2012				<b>Anne Luisi</b> <i>Senior Director</i> 2014
<b>Jonathan Kluberg, PhD</b> <i>Partner</i> 2015				<b>Jonathan Noel</b> <i>Partner</i> 2015
<b>Tom Knox, PhD</b> <i>Partner</i> 2016				<b>George Pararas-Carayannis, CFA</b> <i>Partner</i> 2002
<b>Jeff Li, CFA</b> <i>Partner</i> 2010				<b>Alex Rodin, CFA</b> <i>Senior Director</i> 2016
<b>Christopher Malloy, PhD</b> <i>Partner</i> 2019				<b>Zach Vernon, CFA</b> <i>Partner</i> 2008
<b>April Rathe</b> <i>Partner</i> 2020				<b>Michael Zervas, CFA</b> <i>Partner</i> 2004
<b>Julia Yuan, CFA</b> <i>Partner</i> 2012				
<b>Yijie Zhang, PhD</b> <i>Partner</i> 2006				

**Average Industry Experience: 19 Years**

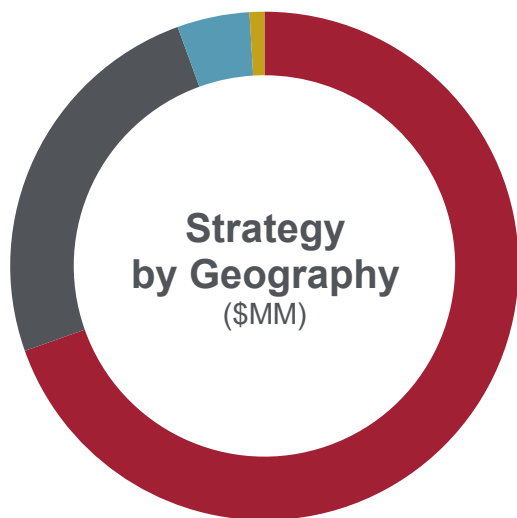
**Average Tenure with Arrowstreet: 13 Years**

**Supported by 83 Additional Investment Team Members**

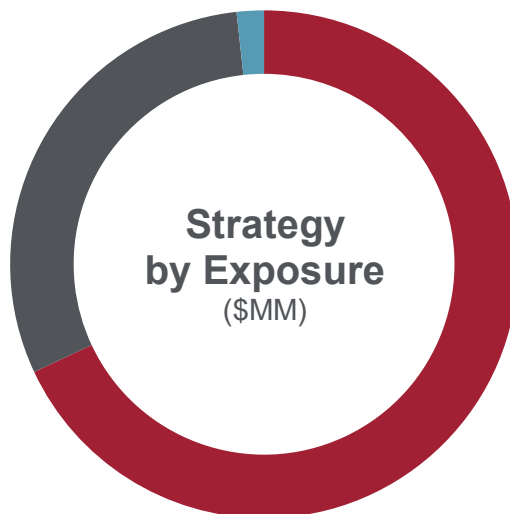
Note: Year denotes when team member started at Arrowstreet.  
 As of June 30, 2023.

# Assets Under Management

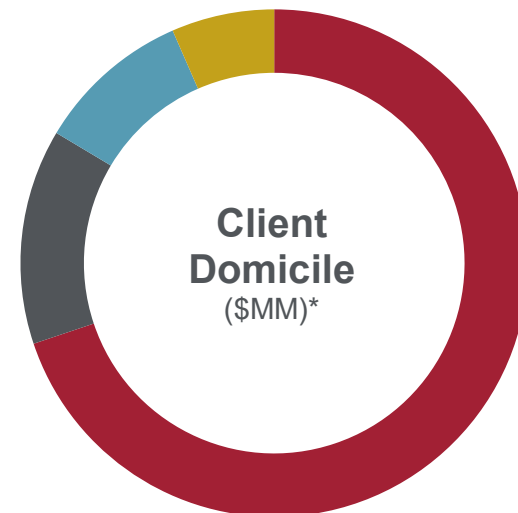
— \$160,393 MM —



- \$111,597 ■ Global Equities
- \$39,902 ■ Non-US Equities
- \$7,384 ■ Emerging Markets
- \$1,510 ■ US Equity



- \$109,109 ■ Long-Only Equities
- \$48,509 ■ Alpha Extension
- \$2,775 ■ Beta Neutral Equities



- \$111,976 ■ United States
- \$21,990 ■ EMEA
- \$15,827 ■ Asia-Pacific
- \$10,506 ■ Canada

Data as of June 30, 2023.  
\*Top four Client Domiciles by AUM.  
Figures presented above are in USD.  
Source: Arrowstreet Internal Databases.

# Representative Clients – By Type



## Corporations

American Honda  
Boeing  
Caterpillar  
Eastman Kodak  
Hewlett-Packard  
Lumen  
Raytheon Technologies  
Southern Company  
Trans-Canada Capital



## Endowments & Foundations

Calgary Foundation  
Casey Family Programs  
Iowa University Board of Regents  
Nuffield Foundation  
University of Washington  
The University of Texas/Texas A&M Investment Management Company (UTIMCO)



## Financial Services

Annuitas Management  
Blue Sky Group  
Macquarie Bank



## Health Systems

BCBS of Michigan  
CommonSpirit Health  
Elevance Health  
Kaiser Permanente  
Prisma Health



## Public Plans

CalPERS  
Illinois Municipal Retirement Fund  
Indiana Public Retirement System  
Missouri Education Pension  
New York State Teachers' Retirement System  
Ohio Public Employees Retirement System  
Oregon State Treasury  
Sonoma County Employees' Retirement Association  
State Teachers Retirement System of Ohio  
Teacher Retirement System of Texas  
Virginia Retirement System



# Investment Strategies Overview

Strategy Preferred Benchmark <sup>8</sup>	Inception Date	Strategy AUM (\$mil)	Target Value Add <sup>10</sup> (Gross)	Target Value Add <sup>10</sup> (Net)	Tracking Error <sup>11</sup>	Info Ratio <sup>11</sup>
<b>Global Equity</b>						
<b>Long-Only</b>						
ACWI MSCI ACWI IMI	Feb-06	\$51,079	3%	2.25%	3-7%	0.55
World MSCI World IMI	Aug-01	\$14,856	3%	2.25%	3-7%	0.55
World Futures Beta Management MSCI World IMI	Apr-14	\$542	3.5%	2.75%	3.5-7.5%	0.58
ACWI Minimum Volatility MSCI ACWI Min Vol	Dec-09	\$1,466	3%	2.35%	3-7%	0.55
ACWI Low Active Risk MSCI ACWI IMI	Nov-22	\$1,529	1%	0.76%	1-3%	0.67
World Minimum Volatility MSCI World Min Vol	Aug-22	\$517	3%	2.35%	3-7%	0.55
World Low Carbon MSCI World Low Carbon Target	Oct-22	\$1,150	3%	2.25%	3-7%	0.55
ACWI Universal MSCI ACWI ESG Universal	Feb-23	\$72	3%	2.25%	3-7%	0.55
Small Cap ACWI MSCI ACWI Small Cap	Feb-09	\$825	4%	3.10%	3.5-7.5%	0.67
Small Cap World MSCI World Small Cap	Apr-06	\$1,278	4%	3.10%	3.5-7.5%	0.67
Small Cap World FBM MSCI World Small Cap	May-18	\$262	4.5%	3.60%	4-8%	0.69
<b>Alpha Extension</b>						
ACWI Alpha Ext MSCI ACWI IMI	Jul-12	\$29,583	5.5-8%	4.12-6.04%	4.5-11%	0.79-0.84
ACWI Min Vol Alpha Ext MSCI ACWI Min Vol	Sep-19	\$383	5.5%	4.12%	4.5-8.5%	0.79
ACWI Reduced Carbon Alpha Ext MSCI ACWI Climate Paris Aligned	Jun-21	\$511	5.5%	4.12%	4.5-8.5%	0.79
World Alpha Ext MSCI World IMI	May-08	\$3,651	5.5%	4.12%	4.5-8.5%	0.79
World ESG Min Vol Alpha Ext MSCI World Min Vol ESG Reduced Carbon Target	Sep-21	\$343	5.5%	4.12%	4.5-8.5%	0.79
Small Cap World Alpha Ext MSCI World Small Cap	Mar-17	\$775	7%	5.32%	5-9%	0.93
<b>Beta Neutral</b>						
Beta Neutral FTSE 3-Month Treasury Bill	Jun-04	\$2,588	9%	6.24%	7-11%	1.00
ESG Beta Neutral FTSE 3-Month Treasury Bill	Jun-19	\$187	9%	6.24%	7-11%	1.00

Strategy Preferred Benchmark <sup>8</sup>	Inception Date	Strategy AUM (\$mil)	Target Value Add <sup>10</sup> (Gross)	Target Value Add <sup>10</sup> (Net)	Tracking Error <sup>11</sup>	Info Ratio <sup>11</sup>
<b>Non-US Equity</b>						
<b>Long-Only</b>						
ACWI ex US MSCI ACWI ex USA IMI	Jun-00	\$21,128	3%	2.25%	3-7%	0.55
EAFE MSCI EAFE IMI	Nov-99	\$9,545	3%	2.25%	3-7%	0.55
<b>Alpha Extension</b>						
ACWI ex US Alpha Ext MSCI ACWI ex USA IMI	May-15	\$3,985	5-5.5%	3.72-4.12%	4-8.5%	0.77-0.79
EAFE Alpha Ext MSCI EAFE IMI	Sep-08	\$4,396	5.5%	4.12%	4.5-8.5%	0.79
EAFE + Canada Alpha Ext MSCI EAFE + Canada IMI	Dec-22	\$848	6%	4.48%	5-9%	0.80
<b>US Equity</b>						
<b>Long-Only</b>						
US Equity Russell 3000	Sep-17	\$594	2%	1.60%	2.5-6.5%	0.40
<b>Alpha Extension</b>						
US Equity Alpha Ext Russell 3000	Sep-18	\$454	3.5%	2.60%	3.5-7.5%	0.58
US Equity Small Cap Alpha Extension Russell 2000	Sep-18	\$221	3.5%	2.56%	3.5-7.5%	0.58
US Equity 250/150 S&P 500	Sep-22	\$241	8.0%	5.44%	6.5-10.5%	0.94
<b>Emerging Markets</b>						
<b>Long-Only</b>						
Emerging Markets Equity MSCI Emerging Markets IMI	May-01	\$4,266	4%	3.15%	3-9%	0.67
<b>Alpha Extension</b>						
Emerging Markets Alpha Ext MSCI Emerging Markets IMI	Feb-19	\$3,118	9.5%	7.20%	9.5-13.5%	0.79

Data as of June 30, 2023.

Please see the Performance Disclosures at the end of this presentation for important disclosures to be read in conjunction with the performance results presented herein, including disclosures with respect to Target Value Add and hypothetical performance. There can be no assurance any target will be achieved. Actual results may vary.

Figures presented above are in USD. Source: Arrowstreet Internal Databases.



# US Equity – Small Cap Alpha Extension

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# Strategy Objectives

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## Consistently Outperform Broad International Indices<sup>10</sup>

Target Value Add (Gross of Fees): 3.5% Per Year Over a Full Market Cycle

Target Value Add (Net of Fees): 2.56% Per Year Over a Full Market Cycle

(Full Market Cycle defined here for this purpose as 5 to 7 years)

Target Tracking Error<sup>11</sup>: 3.5% – 7.5% Per Year



## Core Investment Style

Style Neutral Over Long Periods

Risk Controlled

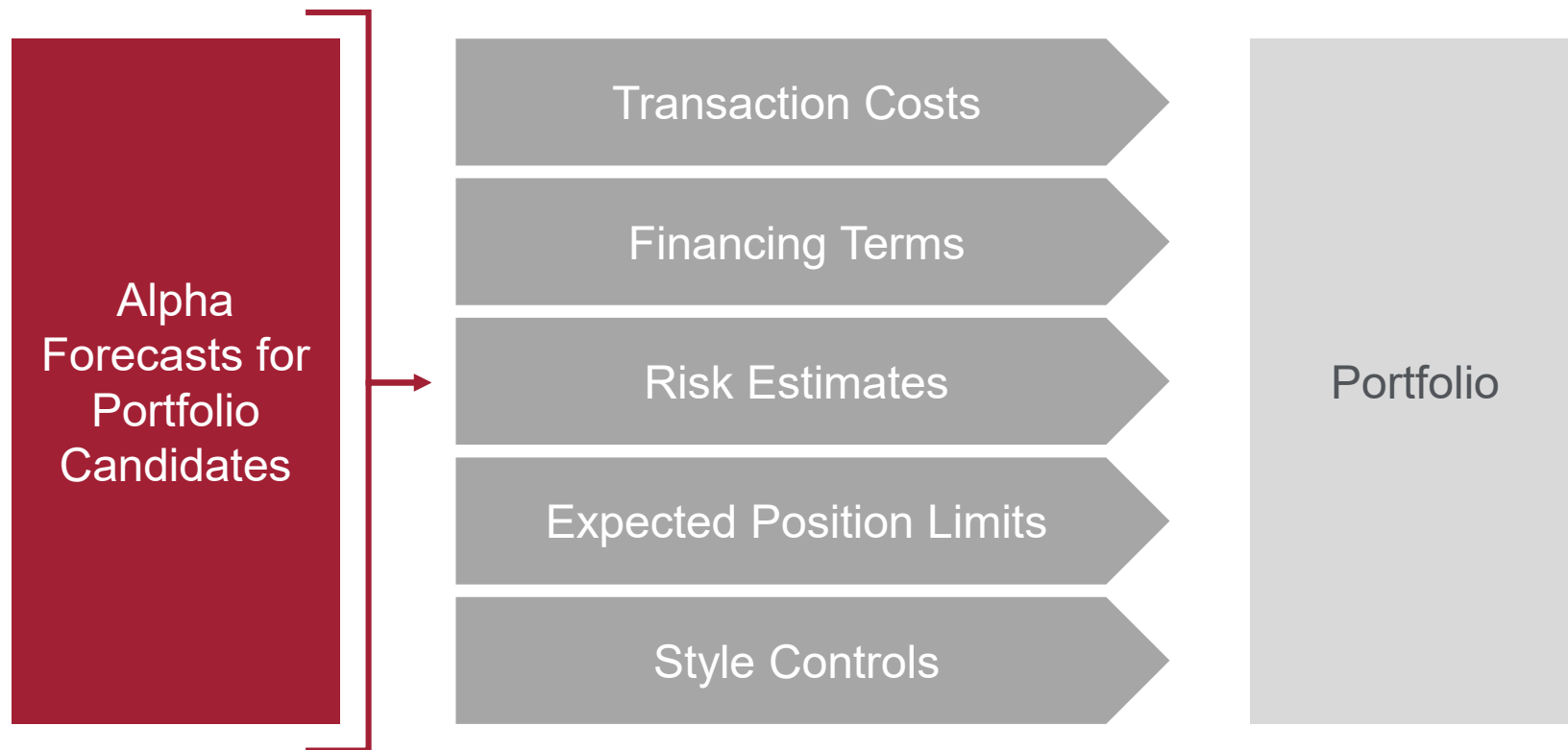
Outperform During a Broad Range of Market Environments



## Diversification from Other Managers

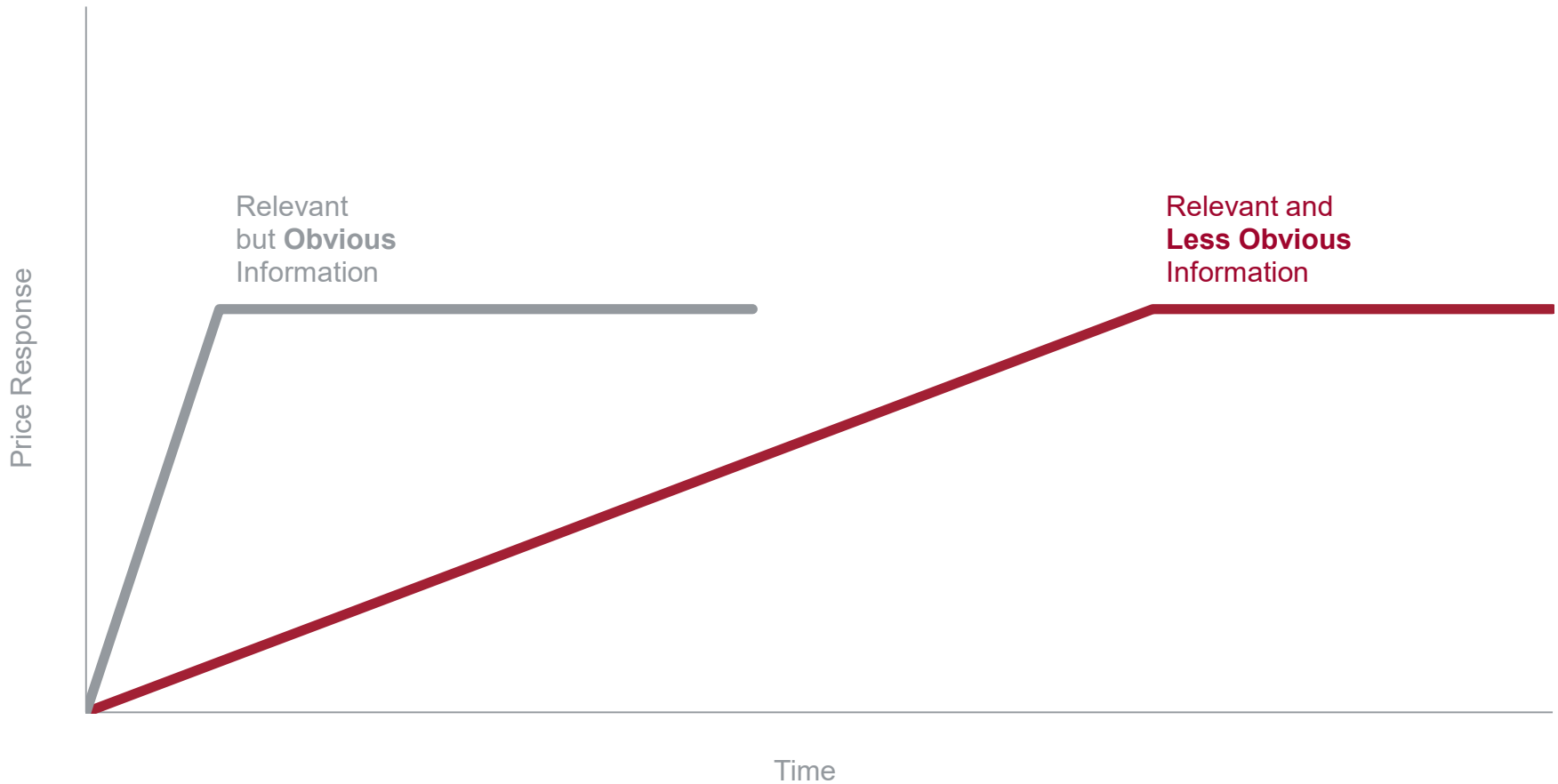
# Portfolio Construction

Client Portfolios Built Considering Forecasts, Transaction Costs, and Risks



# Investment Philosophy

Adding Value by Identifying Investment Signals that are  
**Relevant to Price & Less Obvious to Investors**



# Defining Direct Effects

## Influence of Stock Information

### Signal Groups

- > Catalysts
- > Extreme Sentiment
- > High Frequency
- > Momentum
- > Quality
- > Value

		Consumer Staples	Comms	Consumer Disc	Energy	Financials	Materials	Health Care	Industrials	Info Tech	Real Estate	Utilities
ASIA-PACIFIC	Australia											
	Korea											
	Other											
AMERICAS	Canada											
	<b>United States</b>											
	Other											
EUROPE	Germany											
	France											
	Other											

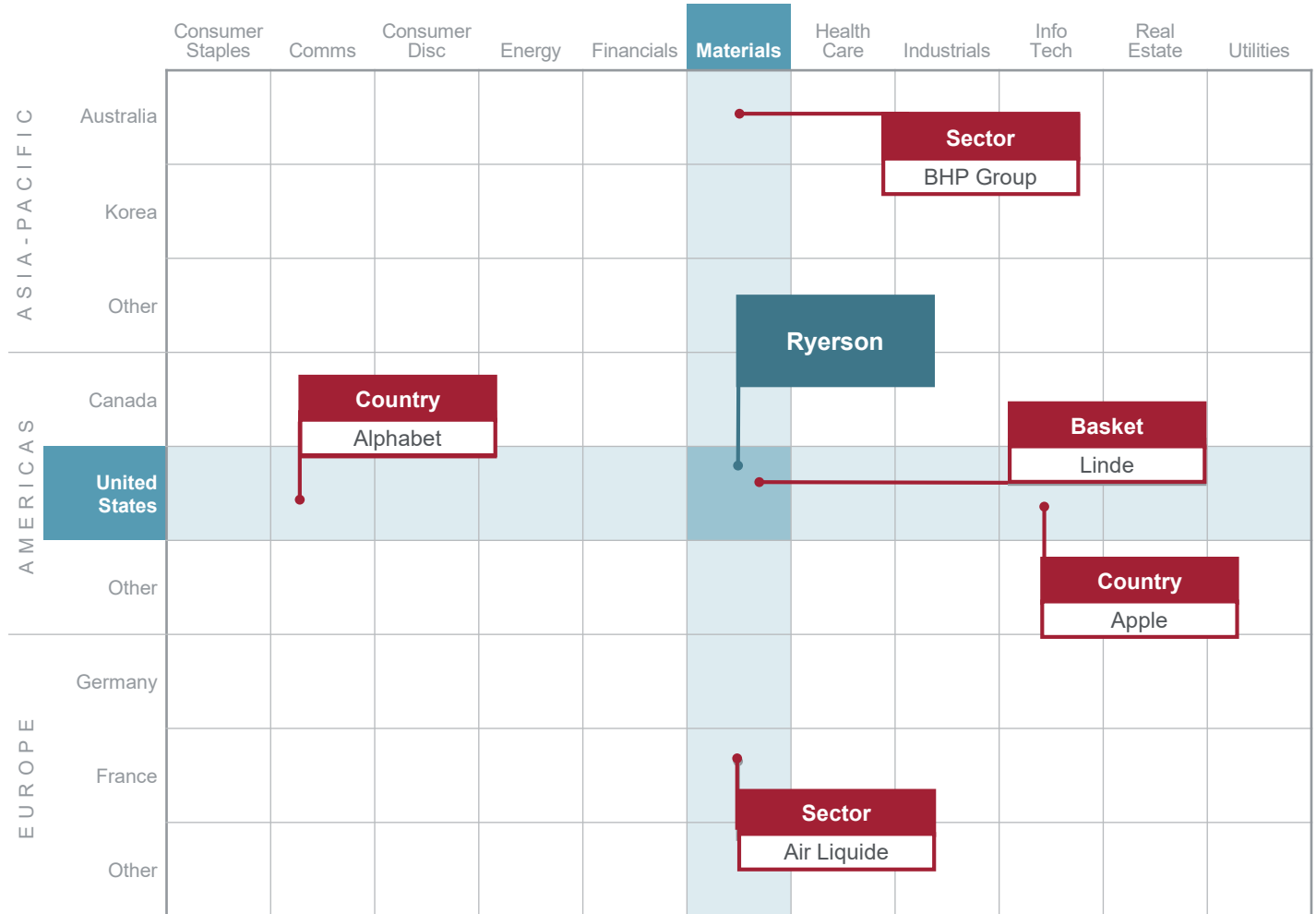
Example Stock  
Ryerson

# Defining Indirect Effects

## Influence of Sector, Country & Basket Information

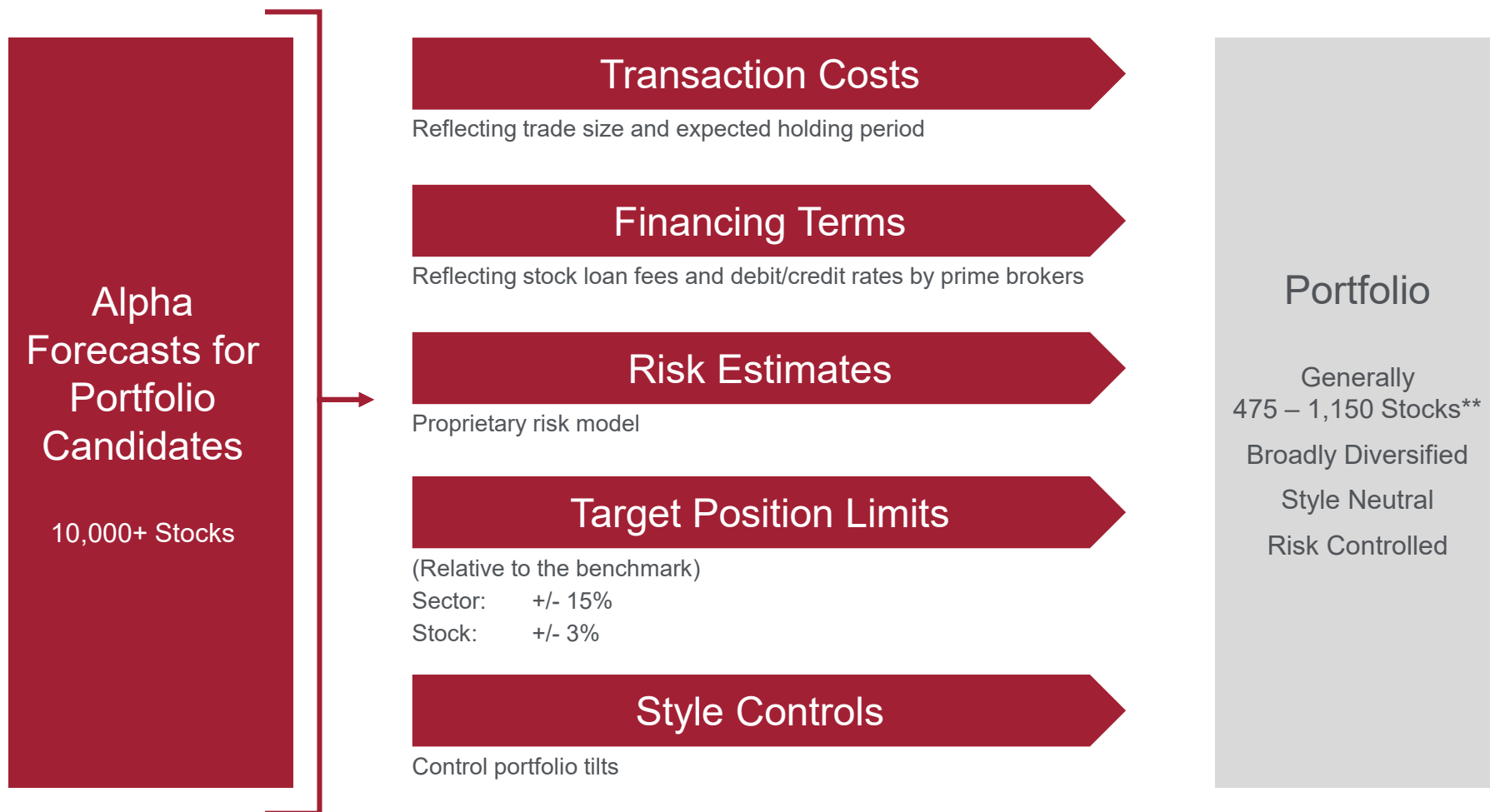
### Signal Groups

- > Catalysts
- > Extreme Sentiment
- > High Frequency
- > Momentum
- > Quality
- > Value



# Portfolio Construction

Client Portfolios Built Considering Forecasts, Transaction Costs, and Risks\*



\* Portfolio construction as of the reporting period end date

\*\* Based on a portfolio of \$500M USD.



# Short Sale Considerations

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## > **Evaluation and Selection of Prime Brokers**

Key components of prime broker selection process include the following factors: stock loan pricing, debit finance rates, breadth and depth of stock loan availability and technological capabilities

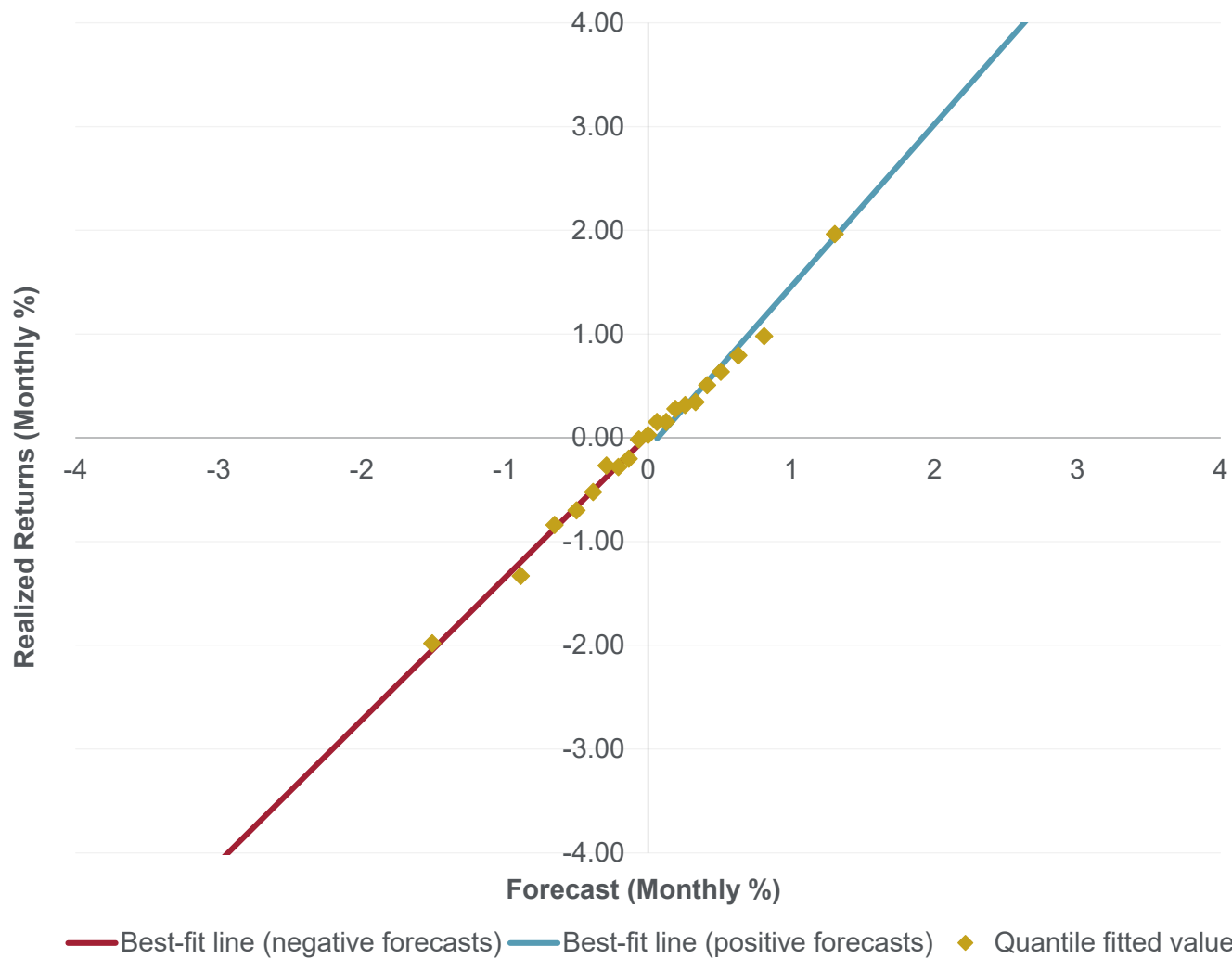
## > **Selecting Short Sell Candidates**

Shorting candidates are determined based on a number of factors including: short- and long-term alpha forecasts, portfolio risk and transaction costs inclusive of stock loan fees

## > **Obtaining an Official Locate**

Before trades are executed, official locates are obtained for delivery of stock

# Symmetry of Forecasting Success



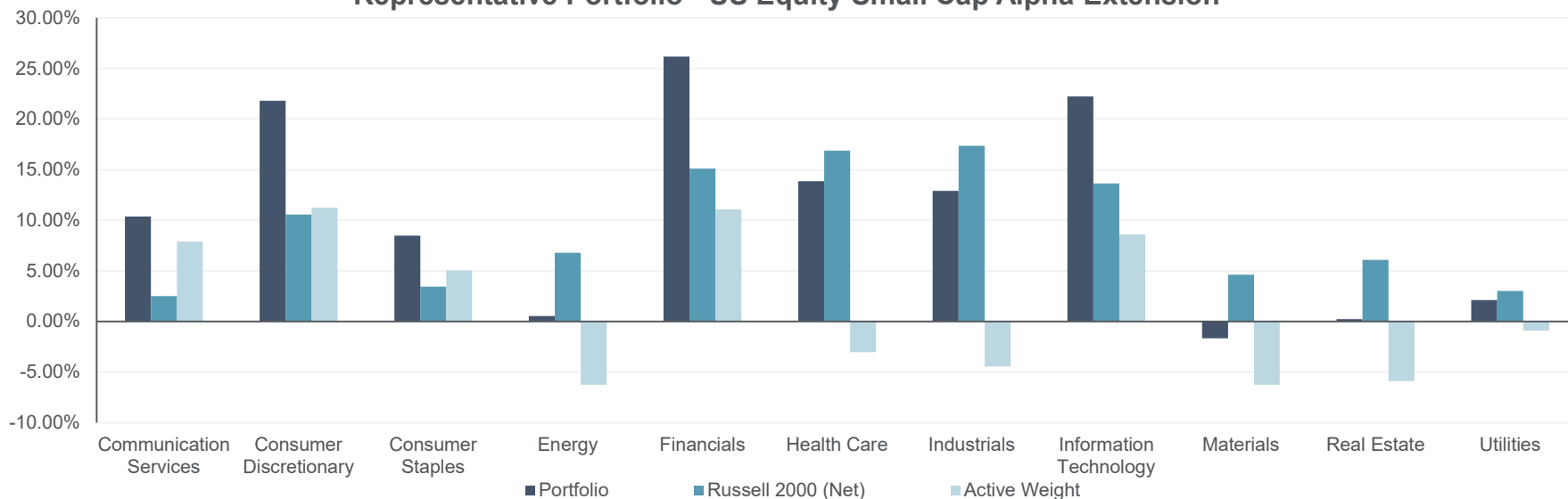
Our forecasting models display symmetric power in generating successful positive and negative forecasts.\*

\*Please refer to Risk Disclosures included herein.

Source: Arrowstreet Internal Databases. Represents current model integrated forecasts (our forecasts for returns of stocks relative to their country-sector basket plus our forecasts for returns of baskets relative to global stock market, hedged) for the MSCI IMI universe, January 31, 1996 to November 30, 2022.

# Active (Benchmark Relative) Net Portfolio Weights

Representative Portfolio - US Equity Small Cap Alpha Extension<sup>12</sup>



	Communication Services	Consumer Discretionary	Consumer Staples	Energy	Financials	Health Care	Industrials	Information Technology	Materials	Real Estate	Utilities
Portfolio	10.37%	21.80%	8.49%	0.54%	26.18%	13.85%	12.91%	22.23%	-1.65%	0.21%	2.12%
Russell 2000 <sup>8</sup>	2.50%	10.56%	3.44%	6.79%	15.10%	16.89%	17.36%	13.63%	4.62%	6.09%	3.02%
Active Weight	7.88%	11.24%	5.05%	-6.26%	11.08%	-3.04%	-4.45%	8.59%	-6.27%	-5.88%	-0.90%

Note: Information presented above is based on the representative account in the US Equity Small Cap 130/30/20 Composite as of June 30, 2023.

The information presented above is not an endorsement of any particular region, sector, or stock.

Portfolio weights are measured at the end of the calendar period indicated. Weights may temporarily drift beyond position limits in between trading sessions because of price movements.

Source: Arrowstreet Internal Databases.

# Why Arrowstreet Capital?

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- > Dedicated, experienced investors using quantitative tools to exploit investment insights in global markets
- > Continuous re-investment in research to maintain competitive advantage
- > Demonstrated ability to deliver sustainable risk-adjusted alpha across different market environments
- > Alignment of firm and client interests
- > Institutional business focus and private ownership reinforce stability and continuity



## Exhibits

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# Alpha Extension: Select Implementation Options

	Global/ International 130/30/20	Global/ International 130/30/40	Global/ International 150/50/60	Global Small Cap 130/30/20	Global Reduced Carbon 130/30/20	US Equity 130/30/20	Emerging Markets 150/50/60
<b>Gross Equity Exposure</b>	160%–180%	160%–200%	200%–260%	160%–180%	160-180%	160%–180%	200%–260%
<b>Net Equity Exposure</b>	80%–120%	60%–140%	40%–160%	80%–120%	80-120%	80%–120%	40%–160%
<b>Target Value Add (Gross)<sup>10</sup></b>	5.50%	6.00%	8.00%	7.00%	5.50%	3.50%	9.50%
<b>Target Value Add (Net)<sup>10</sup></b>	4.12%	4.52%	6.04%	5.32%	4.12%	2.60%	7.20%
<b>Tracking Error Target<sup>11</sup></b>	4.50% – 8.50%	5.00% – 9.00%	7.00% – 11.00%	5.00% – 9.00%	4.50% – 8.50%	3.50% – 7.50%	9.50% – 13.50%
<b>Active Long-Term Market Beta</b>	Close to 0						
<b>Long-Term Style Tilts</b>	Neutral						

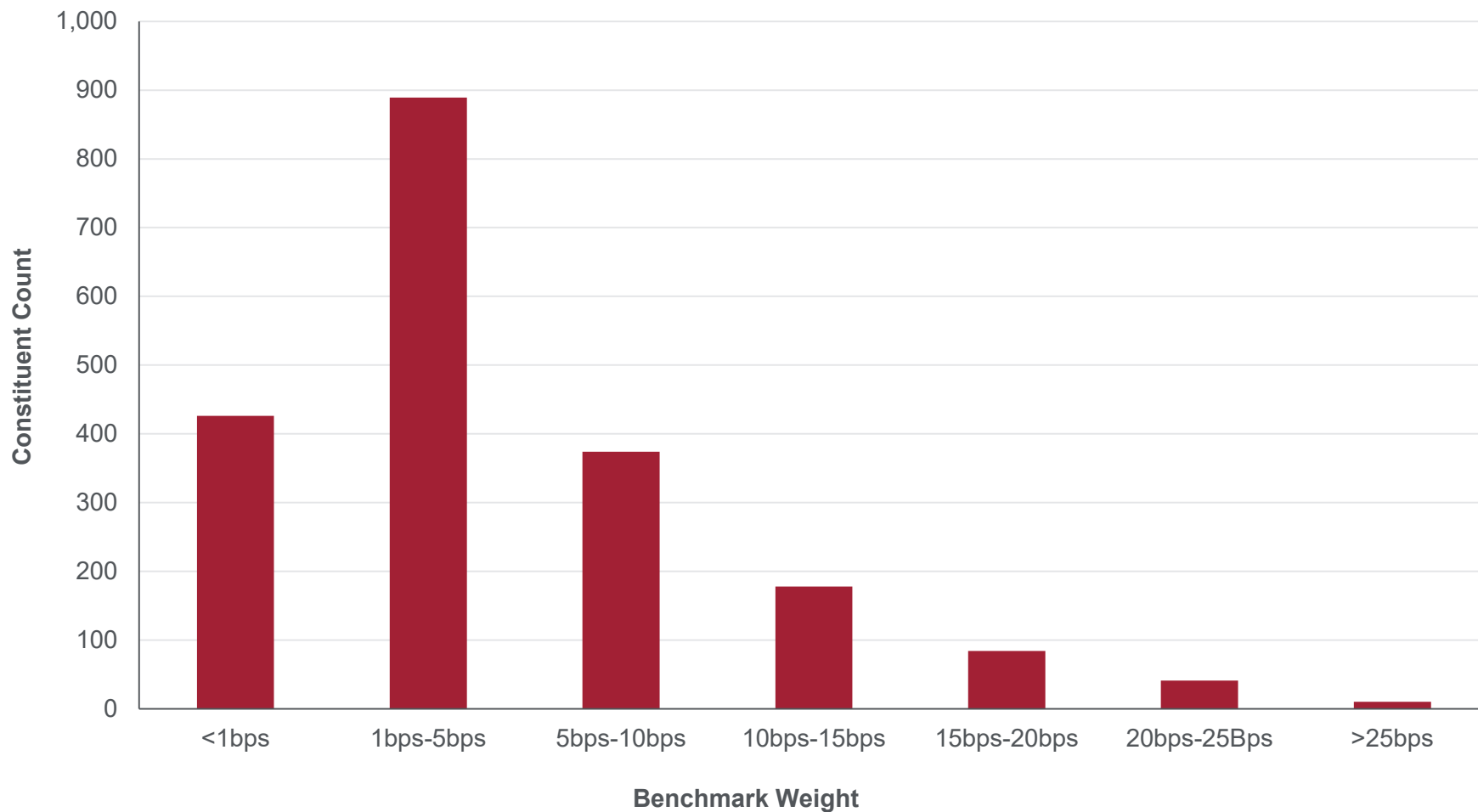
As of June 30, 2023.

Please see Important Information and Legal Disclosures at the end of this presentation for disclosure information.

Arrowstreet currently manages multiple alpha extension strategies. The alpha extension strategies shown herein were selected to communicate the breadth of our capabilities. A complete list of all of our available alpha extension options is available upon request.

# Constituent-Level Benchmark Weight

Russell 2000 Index<sup>8</sup>:  
Constituent Count by Benchmark Weight



# Beta Arbitrage

## What

- > Asset class beta (equities vs. cash) typically relatively well rewarded
- > Individual instrument level beta (high-beta instruments vs. low-beta instruments) typically relatively poorly rewarded
- > Both forms of beta tend to engender similar beta risk

## Why

- > Historical differences driven by a combination of behavioral and constraint inefficiencies
- > Substantial barriers to arbitrage exist
- > Tactical but persistent

## How

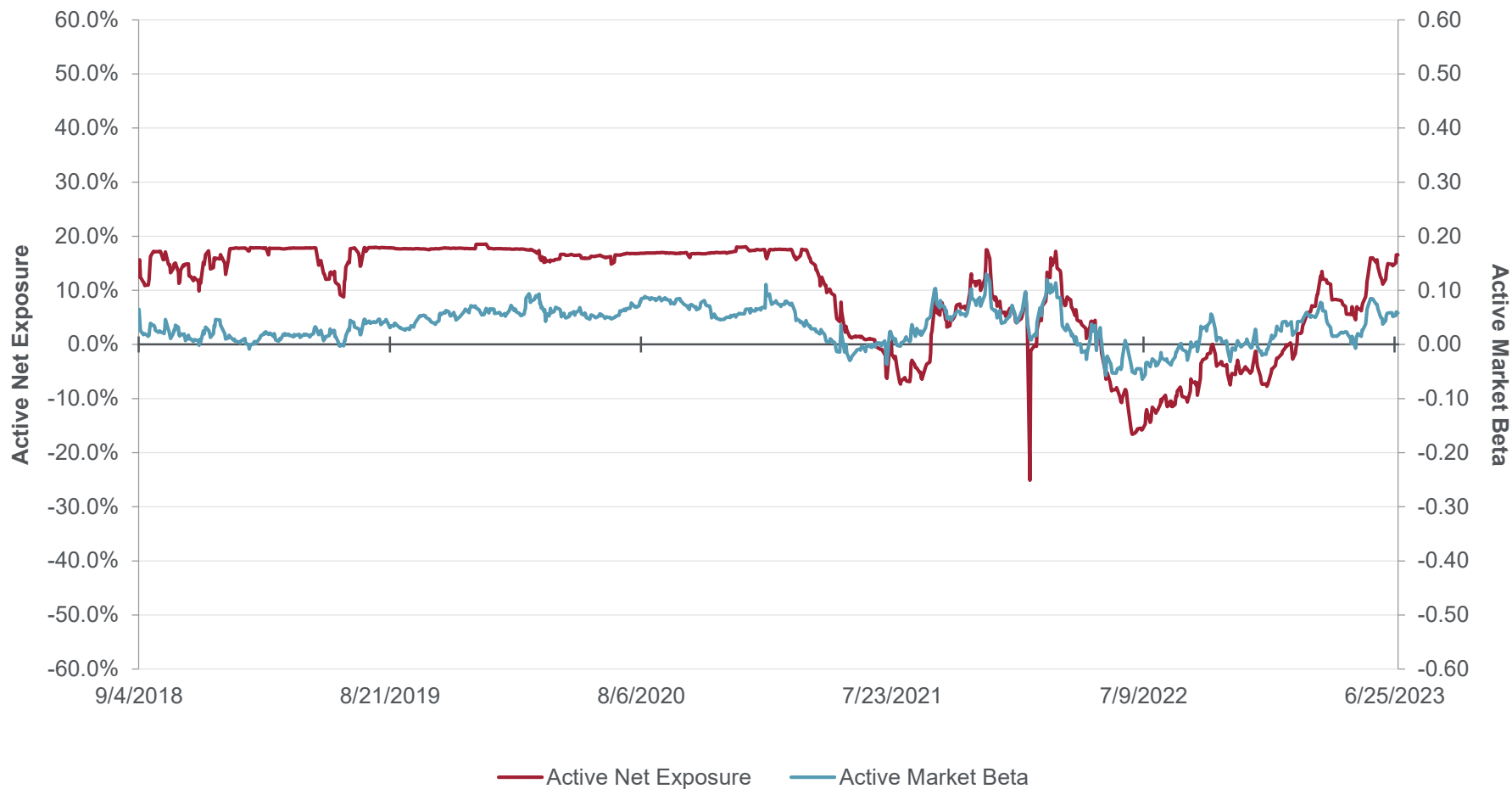
- > Asset class beta overweight through futures overlay or physical leverage
- > Tilt toward low-beta instruments offsetting asset class beta overweight
- > Overall active beta is tactical and consistent with portfolios not exploiting beta arbitrage

	Equity Premium (EP)	Cross-Sectional Beta Premium (CSBP)
Type Of Beta Premium	Asset class beta (equities vs. cash)	Individual instrument level beta (high-beta instruments vs. low-beta instruments)
Beta Arbitrage Return	Difference between EP and CSBP: (equities – cash) – (high-beta instruments – low-beta instruments)	
ASC Beta Arbitrage Return Forecast	Tactical, generally positive forecast of EP – CSBP	



# US Equity Small Cap Alpha Extension History

## Active Net Exposure and Active Market Beta<sup>12</sup>



Data as of June 30, 2023.

For illustrative purposes. The data presented above includes results from the representative portfolio.

Source: Arrowstreet Internal Databases. Represents Arrowstreet's proprietary measures of ex ante style betas.

# Performance History – Gross

Geographic Focus	Exposure	Investment Strategy <sup>7 8 9</sup>	Trailing Composite Gross Returns <sup>1 2 3 4 7</sup>							Composite Inception Date
			3 Mos	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	Since Inception	
Global Equity	Long-Only	<b>ACWI</b>	7.63%	13.00%	17.85%	16.59%	12.14%	12.62%	9.89%	Apr-06
		MSCI ACWI	<i>Value Add:</i> 1.45%	-0.93%	1.33%	5.60%	4.04%	3.86%	3.47%	
		<b>World</b>	8.33%	14.41%	22.24%	17.86%	12.73%	12.88%	10.61%	Mar-04
		MSCI World	<i>Value Add:</i> 1.50%	-0.68%	3.73%	5.68%	3.66%	3.38%	3.13%	
		<b>World Futures Beta Management</b>	8.75%	14.69%	19.72%	17.05%	12.68%		13.41%	Apr-14
		MSCI World	<i>Value Add:</i> 1.92%	-0.39%	1.21%	4.87%	3.61%		5.08%	
		<b>ACWI Minimum Volatility<sup>13</sup></b>								Feb-18
		MSCI ACWI Minimum Volatility	<i>Value Add:</i>							
		<b>ACWI Small Cap</b>	4.56%	9.45%	18.00%	18.45%	9.38%	11.12%	18.13%	Mar-09
		MSCI ACWI Small Cap	<i>Value Add:</i> 0.94%	1.43%	4.98%	7.62%	4.85%	3.50%	5.62%	
	<b>World Small Cap</b>	5.01%	10.85%	18.53%	19.52%	9.85%	11.95%	13.20%	Oct-09	
	MSCI World Small Cap	<i>Value Add:</i> 1.79%	3.20%	5.59%	9.08%	5.41%	4.00%	4.16%		
	<b>ACWI Low Active Risk</b>	6.52%	14.68%					10.47%	Dec-22	
	MSCI ACWI IMI	<i>Value Add:</i> 0.63%	1.44%					1.57%		
	Alpha Extension	<b>ACWI 130/30/20</b>	6.47%	13.07%	18.37%	21.29%	14.10%	15.68%	16.83%	Aug-12
		MSCI ACWI IMI	<i>Value Add:</i> 0.58%	-0.18%	2.23%	10.32%	6.45%	7.09%	7.60%	
		<b>World 130/30/20</b>	6.09%	12.72%	19.94%	22.25%	15.24%	16.15%	13.36%	May-08
		MSCI World IMI	<i>Value Add:</i> -0.34%	-1.51%	2.04%	10.28%	6.76%	6.87%	6.88%	
		<b>World Small Cap 130/30/20</b>	0.34%	5.28%	11.34%	22.07%	12.67%		14.18%	Apr-17
		MSCI World Small Cap	<i>Value Add:</i> -2.88%	-2.36%	-1.60%	11.62%	8.23%		7.62%	
<b>ACWI Min Vol 130/30/20 (USD)</b>		5.27%	6.59%	11.06%				4.09%	Jan-22	
MSCI ACWI Minimum Volatility (USD)		<i>Value Add:</i> 3.05%	2.81%	5.28%				8.76%		
<b>ACWI Min Vol 130/30/20 (CAD)</b>	3.86%	5.92%	13.23%	18.21%			12.11%	Oct-19		
MSCI ACWI Minimum Volatility (CAD)	<i>Value Add:</i> 2.06%	2.48%	7.56%	12.53%			9.42%			
Beta Neutral	<b>Beta Neutral</b>	-1.71%	2.22%	1.84%	20.33%	13.16%		12.75%	Jan-14	
	FTSE 3-Mo Tbill Index	<i>Value Add:</i> -2.96%	-0.17%	-1.91%	19.00%	11.59%		11.72%		
	<b>ESG Beta Neutral</b>	-2.72%	5.00%	6.66%	23.85%			15.85%	Jun-19	
FTSE 3-Mo Tbill Index	<i>Value Add:</i> -3.97%	2.61%	2.92%	22.52%			14.44%			

Data as of June 30, 2023

Gross-of-fee performance results are shown gross of management fees (including performance fees, where applicable). Any fees charged will reduce actual performance. Please see the Performance Disclosures at the end of this presentation for important disclosures to be read in conjunction with the performance results presented herein. Unless otherwise noted, all data presented within has been sourced from ASC internal databases.

# Performance History – Gross

Geographic Focus	Exposure	Investment Strategy <sup>7 8 9</sup>	Trailing Composite Gross Returns <sup>1 2 3 4 7</sup>							Composite Inception Date
			3 Mos	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	Since Inception	
Non-US Equity	Long-Only	ACWI ex-US	5.01%	11.81%	17.72%	14.85%	9.13%	9.15%	7.79%	Jun-00
		MSCI ACWI ex-US	<i>Value Add:</i> 2.58%	2.34%	5.00%	7.63%	5.61%	4.40%	3.71%	
		EAFE	4.51%	11.50%	18.11%	13.00%	7.23%	8.15%	7.42%	Jul-01
		MSCI EAFE	<i>Value Add:</i> 1.56%	-0.17%	-0.67%	4.07%	2.84%	2.74%	2.30%	
	Alpha Extension	ACWI ex-US 130/30/20	5.78%	13.75%	18.32%	19.15%	10.88%		10.11%	Jun-15
		MSCI ACWI ex-US IMI	<i>Value Add:</i> 3.39%	4.64%	5.85%	11.82%	7.49%		6.35%	
		EAFE 130/30/20	3.42%	10.83%	20.75%	18.81%	10.30%	12.30%	11.18%	Sep-08
		MSCI EAFE IMI	<i>Value Add:</i> 0.80%	0.04%	3.24%	10.37%	6.38%	6.87%	7.25%	
US Equity	Long-Only	US Equity	7.39%	12.64%	19.48%	18.44%	13.63%		13.53%	Oct-17
		Russell 3000	<i>Value Add:</i> -0.87%	-3.24%	1.11%	5.06%	2.79%		2.45%	
	Alpha Extension	US Equity 130/30/20	4.49%	11.18%	19.90%	24.69%			13.05%	Sep-18
		Russell 3000	<i>Value Add:</i> -3.77%	-4.70%	1.53%	11.31%			3.33%	
		US Equity Small Cap 130/30/20	1.61%	4.61%	14.54%	26.97%			10.70%	Sep-18
		Russell 2000	<i>Value Add:</i> -3.47%	-3.24%	2.72%	16.54%			8.02%	
Emerging Markets	Long-Only	Emerging Markets	3.64%	9.69%	10.67%	13.42%	9.66%	7.24%	12.38%	May-01
		MSCI Emerging Markets	<i>Value Add:</i> 2.75%	4.80%	8.92%	11.10%	8.73%	4.29%	4.71%	
	Alpha Extension	Emerging Markets 150/50/60	6.65%	14.39%	20.88%	28.97%			22.78%	Feb-19
		MSCI Emerging Markets IMI	<i>Value Add:</i> 5.04%	8.76%	17.69%	25.37%			20.91%	

Data as of June 30, 2023

Gross-of-fee performance results are shown gross of management fees (including performance fees, where applicable). Any fees charged will reduce actual performance. Please see the Performance Disclosures at the end of this presentation for important disclosures to be read in conjunction with the performance results presented herein. Unless otherwise noted, all data presented within has been sourced from ASC internal databases.

# Performance History – Net

Geographic Focus	Exposure	Investment Strategy <sup>7 8 9</sup>	Trailing Composite Net Returns <sup>1 2 3 4 5 6 7</sup>							Composite Inception Date
			3 Mos	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	Since Inception	
Global Equity	Long-Only	<b>ACWI</b>	7.53%	12.77%	17.32%	15.93%	11.41%	11.83%	9.17%	Apr-06
		MSCI ACWI	<i>Value Add:</i> 1.35%	-1.16%	0.79%	4.94%	3.30%	3.08%	2.76%	
		<b>World</b>	8.26%	14.27%	21.03%	17.09%	12.07%	12.29%	10.01%	Mar-04
		MSCI World	<i>Value Add:</i> 1.43%	-0.82%	2.52%	4.91%	3.00%	2.78%	2.53%	
		<b>World Futures Beta Management</b>	8.65%	14.48%	19.28%	16.39%	11.86%		12.46%	Apr-14
		MSCI World	<i>Value Add:</i> 1.82%	-0.60%	0.77%	4.22%	2.79%		4.13%	
		<b>ACWI Minimum Volatility<sup>13</sup></b>								Feb-18
		MSCI ACWI Minimum Volatility	<i>Value Add:</i>							
		<b>ACWI Small Cap</b>	3.55%	8.31%	16.56%	16.99%	8.37%	10.21%	16.98%	Mar-09
		MSCI ACWI Small Cap	<i>Value Add:</i> -0.07%	0.28%	3.53%	6.16%	3.85%	2.59%	4.48%	
	<b>World Small Cap</b>	4.84%	10.52%	17.85%	18.68%	8.99%	11.04%	12.30%	Oct-09	
	MSCI World Small Cap	<i>Value Add:</i> 1.63%	2.88%	4.91%	8.24%	4.55%	3.09%	3.25%		
	<b>ACWI Low Active Risk</b>	6.47%	14.58%					10.35%	Dec-22	
	MSCI ACWI IMI	<i>Value Add:</i> 0.59%	1.33%					1.45%		
	Alpha Extension	<b>ACWI 130/30/20</b>	6.36%	12.89%	17.20%	19.69%	12.94%	14.46%	15.65%	Aug-12
		MSCI ACWI IMI	<i>Value Add:</i> 0.48%	-0.36%	1.06%	8.72%	5.29%	5.87%	6.42%	
		<b>World 130/30/20</b>	6.04%	12.62%	17.93%	20.33%	13.86%	14.77%	12.20%	May-08
		MSCI World IMI	<i>Value Add:</i> -0.39%	-1.62%	0.04%	8.35%	5.38%	5.49%	5.72%	
		<b>World Small Cap 130/30/20</b>	0.29%	5.17%	9.53%	19.69%	10.94%		12.63%	Apr-17
		MSCI World Small Cap	<i>Value Add:</i> -2.93%	-2.48%	-3.41%	9.25%	6.50%		6.07%	
<b>ACWI Min Vol 130/30/20 (USD)</b>		5.22%	6.49%	8.67%				2.49%	Jan-22	
MSCI ACWI Minimum Volatility (USD)		<i>Value Add:</i> 3.00%	2.71%	2.88%				7.16%		
<b>ACWI Min Vol 130/30/20 (CAD)</b>	3.80%	5.80%	11.75%	16.02%			10.39%	Oct-19		
MSCI ACWI Minimum Volatility (CAD)	<i>Value Add:</i> 2.01%	2.36%	6.08%	10.34%			7.70%			
Beta Neutral	<b>Beta Neutral</b>	-1.41%	1.78%	1.37%	16.25%	10.13%		9.87%	Jan-14	
	FTSE 3-Mo Tbill Index	<i>Value Add:</i> -2.66%	-0.61%	-2.38%	14.93%	8.56%		8.84%		
	<b>ESG Beta Neutral</b>	-2.07%	4.21%	5.79%	19.74%			12.76%	Jun-19	
FTSE 3-Mo Tbill Index	<i>Value Add:</i> -3.32%	1.82%	2.04%	18.41%			11.35%			

Data as of June 30, 2023

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# Performance History – Net

Geographic Focus	Exposure	Investment Strategy <sup>7 8 9</sup>	Trailing Composite Net Returns <sup>1 2 3 4 5 6 7</sup>							Composite Inception Date
			3 Mos	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	Since Inception	
Non-US Equity	Long-Only	ACWI ex-US	4.89%	11.55%	17.13%	14.18%	8.39%	8.38%	7.11%	Jun-00
		MSCI ACWI ex-US	<i>Value Add:</i> 2.45%	2.08%	4.41%	6.96%	4.88%	3.63%	3.03%	
		EAFE	4.40%	11.26%	17.60%	12.41%	6.57%	7.43%	6.75%	Jul-01
		MSCI EAFE	<i>Value Add:</i> 1.44%	-0.41%	-1.18%	3.48%	2.18%	2.02%	1.62%	
	Alpha Extension	ACWI ex-US 130/30/20	5.64%	13.49%	17.39%	18.02%	10.05%		9.39%	Jun-15
		MSCI ACWI ex-US IMI	<i>Value Add:</i> 3.25%	4.39%	4.92%	10.69%	6.66%		5.63%	
		EAFE 130/30/20	3.11%	10.44%	19.02%	17.36%	9.24%	11.18%	10.13%	Sep-08
		MSCI EAFE IMI	<i>Value Add:</i> 0.49%	-0.34%	1.51%	8.91%	5.31%	5.74%	6.20%	
US Equity	Long-Only	US Equity	7.39%	11.50%	18.11%	17.79%	13.18%		13.10%	Oct-17
		Russell 3000	<i>Value Add:</i> -0.87%	-4.39%	-0.26%	4.41%	2.34%		2.03%	
	Alpha Extension	US Equity 130/30/20	4.45%	11.11%	17.80%	23.28%			12.15%	Sep-18
		Russell 3000	<i>Value Add:</i> -3.81%	-4.78%	-0.57%	9.90%			2.42%	
		US Equity Small Cap 130/30/20	1.58%	4.54%	14.32%	24.48%			9.22%	Sep-18
		Russell 2000	<i>Value Add:</i> -3.51%	-3.31%	2.50%	14.05%			6.54%	
Emerging Markets	Long-Only	Emerging Markets	3.42%	9.30%	9.88%	12.47%	8.72%	6.32%	11.51%	May-01
		MSCI Emerging Markets	<i>Value Add:</i> 2.53%	4.41%	8.13%	10.15%	7.79%	3.37%	3.85%	
	Alpha Extension	Emerging Markets 150/50/60	6.56%	14.18%	17.41%	24.60%			19.65%	Feb-19
		MSCI Emerging Markets IMI	<i>Value Add:</i> 4.94%	8.55%	14.22%	21.00%			17.78%	

Data as of June 30, 2023

Please see the Performance Disclosures at the end of this presentation for important disclosures to be read in conjunction with the performance results presented herein. Unless otherwise noted, all data presented within has been sourced from ASC internal databases.

# Performance History Calendar Years – Gross

Geographic Focus	Exposure	Investment Strategy <sup>7 8 9</sup>	Calendar Year Gross Returns <sup>1 2 3 4 7</sup>					Composite Inception Date
			2022	2021	2020	2019	2018	
Global Equity	Long-Only	<b>ACWI</b>	-11.85%	23.36%	23.70%	25.38%	-6.20%	Apr-06
		MSCI ACWI	<i>Value Add:</i> 6.52%	4.82%	7.44%	-1.21%	3.21%	
		<b>World</b>	-8.89%	25.55%	19.87%	24.09%	-4.82%	Mar-04
		MSCI World	<i>Value Add:</i> 9.25%	3.73%	3.96%	-3.58%	3.89%	
		<b>World Futures Beta Management</b>	-8.15%	22.72%	15.08%	31.00%	-4.32%	Apr-14
		MSCI World	<i>Value Add:</i> 9.99%	0.91%	-0.82%	3.33%	4.39%	
		<b>ACWI Minimum Volatility<sup>13</sup></b>			17.02%	19.30%	-6.84%	Feb-18
		MSCI ACWI Minimum Volatility	<i>Value Add:</i>		13.61%	-2.95%	-0.17%	
		<b>ACWI Small Cap</b>	-9.76%	21.96%	23.47%	23.18%	-13.14%	Mar-09
		MSCI ACWI Small Cap	<i>Value Add:</i> 8.91%	5.86%	7.15%	-1.47%	1.26%	
	<b>World Small Cap</b>	-7.31%	22.20%	20.28%	24.14%	-12.68%	Oct-09	
	MSCI World Small Cap	<i>Value Add:</i> 11.44%	6.44%	4.32%	-2.06%	1.17%		
	<b>ACWI Low Active Risk</b>	-3.67%					Dec-22	
	MSCI ACWI IMI	<i>Value Add:</i> 0.17%						
	Alpha Extension	<b>ACWI 130/30/20</b>	-8.55%	37.33%	16.03%	25.47%	-5.29%	Aug-12
		MSCI ACWI IMI	<i>Value Add:</i> 9.86%	19.11%	-0.22%	-0.88%	4.79%	
		<b>World 130/30/20</b>	-5.40%	40.72%	14.02%	25.28%	-2.52%	May-08
		MSCI World IMI	<i>Value Add:</i> 12.81%	19.68%	-1.88%	-2.20%	6.90%	
		<b>World Small Cap 130/30/20</b>	-5.25%	38.92%	16.20%	26.58%	-7.07%	Apr-17
		MSCI World Small Cap	<i>Value Add:</i> 13.50%	23.16%	0.24%	0.39%	6.78%	
		<b>ACWI Min Vol 130/30/20 (USD)</b>	-0.38%					Jan-22
		MSCI ACWI Minimum Volatility (USD)	<i>Value Add:</i> 9.94%					
	<b>ACWI Min Vol 130/30/20 (CAD)</b>	-0.18%	36.75%	4.20%	1.91%		Oct-19	
	MSCI ACWI Minimum Volatility (CAD)	<i>Value Add:</i> 9.62%	23.61%	3.11%	-1.63%			
Beta Neutral	<b>Beta Neutral</b>	11.27%	55.47%	-2.79%	-2.80%	15.55%	Jan-14	
	FTSE 3-Mo Tbill Index	<i>Value Add:</i> 9.77%	55.42%	-3.37%	-5.05%	13.68%		
	<b>ESG Beta Neutral</b>	20.58%	49.46%	-6.33%	2.87%		Jun-19	
FTSE 3-Mo Tbill Index	<i>Value Add:</i> 19.08%	49.42%	-6.91%	1.64%				

Data as of June 30, 2023

Gross-of-fee performance results are shown gross of management fees (including performance fees, where applicable). Any fees charged will reduce actual performance. Please see the Performance Disclosures at the end of this presentation for important disclosures to be read in conjunction with the performance results presented herein. Unless otherwise noted, all data presented within has been sourced from ASC internal databases.

# Performance History Calendar Years – Gross

Geographic Focus	Exposure	Investment Strategy <sup>7 8 9</sup>	Calendar Year Gross Returns <sup>1 2 3 4 7</sup>					Composite Inception Date
			2022	2021	2020	2019	2018	
Non-US Equity	Long-Only	ACWI ex-US	-10.46%	14.87%	22.01%	23.45%	-12.79%	Jun-00
		MSCI ACWI ex-US	<i>Value Add:</i> 5.55%	7.04%	11.36%	1.94%	1.41%	
	Alpha Extension	EAFE	-9.23%	12.79%	14.27%	22.05%	-12.25%	Jul-01
		MSCI EAFE	<i>Value Add:</i> 5.23%	1.52%	6.45%	0.03%	1.54%	
		ACWI ex-US 130/30/20	-5.79%	25.84%	10.07%	23.75%	-9.79%	Jun-15
		MSCI ACWI ex-US IMI	<i>Value Add:</i> 10.80%	17.32%	-1.05%	2.12%	4.96%	
Alpha Extension	EAFE 130/30/20	0.04%	22.28%	10.00%	20.71%	-9.33%	Sep-08	
	MSCI EAFE IMI	<i>Value Add:</i> 15.57%	11.20%	1.53%	-1.73%	5.07%		
US Equity	Long-Only	US Equity	-12.30%	34.81%	19.62%	26.25%	-2.72%	Oct-17
		Russell 3000	<i>Value Add:</i> 7.28%	9.65%	-0.65%	-4.03%	3.04%	
	Alpha Extension	US Equity 130/30/20	-8.85%	50.37%	10.52%	23.50%	-13.00%	Sep-18
		Russell 3000	<i>Value Add:</i> 10.73%	25.20%	-9.75%	-6.78%	1.32%	
Alpha Extension	US Equity Small Cap 130/30/20	-11.50%	54.28%	20.25%	20.30%	-20.90%	Sep-18	
	Russell 2000	<i>Value Add:</i> 9.26%	39.79%	0.75%	-4.70%	1.34%		
Emerging Markets	Long-Only	Emerging Markets	-14.60%	10.56%	33.34%	26.39%	-16.96%	May-01
		MSCI Emerging Markets	<i>Value Add:</i> 5.49%	13.10%	15.03%	7.97%	-2.39%	
	Alpha Extension	Emerging Markets 150/50/60	-2.97%	30.83%	49.83%	13.76%	Feb-19	
Alpha Extension	MSCI Emerging Markets IMI	<i>Value Add:</i> 16.87%	31.11%	31.44%	5.22%			

Data as of June 30, 2023

Gross-of-fee performance results are shown gross of management fees (including performance fees, where applicable). Any fees charged will reduce actual performance. Please see the Performance Disclosures at the end of this presentation for important disclosures to be read in conjunction with the performance results presented herein. Unless otherwise noted, all data presented within has been sourced from ASC internal databases.

# Performance History Calendar Years – Net

Geographic Focus	Exposure	Investment Strategy <sup>7 8 9</sup>	Calendar Year Net Returns <sup>1 2 3 4 5 6 7</sup>					Composite Inception Date
			2022	2021	2020	2019	2018	
Global Equity	Long-Only	<b>ACWI</b>	-12.24%	22.56%	22.72%	24.40%	-6.96%	Apr-06
		MSCI ACWI	<i>Value Add:</i> 6.12%	4.02%	6.47%	-2.19%	2.46%	
		<b>World</b>	-9.79%	24.74%	19.44%	23.73%	-5.49%	Mar-04
		MSCI World	<i>Value Add:</i> 8.35%	2.93%	3.54%	-3.94%	3.23%	
		<b>World Futures Beta Management</b>	-8.49%	21.92%	13.97%	29.75%	-5.26%	Apr-14
		MSCI World	<i>Value Add:</i> 9.65%	0.10%	-1.94%	2.08%	3.46%	
		<b>ACWI Minimum Volatility<sup>13</sup></b>			16.65%	18.92%	-7.11%	Feb-18
		MSCI ACWI Minimum Volatility	<i>Value Add:</i>		13.24%	-3.33%	-0.44%	
		<b>ACWI Small Cap</b>	-10.98%	20.63%	22.96%	22.63%	-13.53%	Mar-09
	MSCI ACWI Small Cap	<i>Value Add:</i> 7.68%	4.53%	6.63%	-2.02%	0.86%		
	<b>World Small Cap</b>	-7.82%	21.17%	19.21%	23.04%	-13.48%	Oct-09	
	MSCI World Small Cap	<i>Value Add:</i> 10.94%	5.42%	3.25%	-3.15%	0.38%		
	<b>ACWI Low Active Risk</b>	-3.69%					Dec-22	
	MSCI ACWI IMI	<i>Value Add:</i> 0.15%						
	Alpha Extension	<b>ACWI 130/30/20</b>	-9.69%	34.20%	15.54%	24.88%	-5.91%	Aug-12
		MSCI ACWI IMI	<i>Value Add:</i> 8.72%	15.98%	-0.71%	-1.47%	4.17%	
		<b>World 130/30/20</b>	-7.02%	36.83%	13.73%	24.89%	-3.47%	May-08
		MSCI World IMI	<i>Value Add:</i> 11.20%	15.80%	-2.17%	-2.59%	5.94%	
		<b>World Small Cap 130/30/20</b>	-6.79%	33.60%	15.78%	26.11%	-8.44%	Apr-17
		MSCI World Small Cap	<i>Value Add:</i> 11.97%	17.85%	-0.19%	-0.08%	5.42%	
		<b>ACWI Min Vol 130/30/20 (USD)</b>	-2.56%					Jan-22
MSCI ACWI Minimum Volatility (USD)	<i>Value Add:</i> 7.75%							
<b>ACWI Min Vol 130/30/20 (CAD)</b>	-1.49%	31.77%	3.57%	1.85%		Oct-19		
MSCI ACWI Minimum Volatility (CAD)	<i>Value Add:</i> 8.32%	18.64%	2.48%	-1.69%				
Beta Neutral	<b>Beta Neutral</b>	9.41%	43.81%	-3.58%	-3.57%	12.70%	Jan-14	
	FTSE 3-Mo Tbill Index	<i>Value Add:</i> 7.91%	43.76%	-4.16%	-5.83%	10.84%		
	<b>ESG Beta Neutral</b>	17.45%	40.18%	-6.94%	2.25%		Jun-19	
FTSE 3-Mo Tbill Index	<i>Value Add:</i> 15.95%	40.14%	-7.52%	1.02%				

Data as of June 30, 2023

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# Performance History Calendar Years – Net

Geographic Focus	Exposure	Investment Strategy <sup>7 8 9</sup>	Calendar Year Net Returns <sup>1 2 3 4 5 6 7</sup>					Composite Inception Date
			2022	2021	2020	2019	2018	
Non-US Equity	Long-Only	ACWI ex-US	-10.90%	14.13%	21.05%	22.48%	-13.49%	Jun-00
		MSCI ACWI ex-US	<i>Value Add:</i> 5.10%	6.31%	10.39%	0.97%	0.71%	
	Alpha Extension	EAFE	-9.61%	12.15%	13.42%	21.15%	-12.92%	Jul-01
		MSCI EAFE	<i>Value Add:</i> 4.84%	0.89%	5.60%	-0.86%	0.87%	
		ACWI ex-US 130/30/20	-6.76%	24.10%	9.63%	23.16%	-10.25%	Jun-15
		MSCI ACWI ex-US IMI	<i>Value Add:</i> 9.82%	15.58%	-1.49%	1.52%	4.51%	
Alpha Extension	EAFE 130/30/20	-1.54%	20.35%	9.62%	20.03%	-9.98%	Sep-08	
	MSCI EAFE IMI	<i>Value Add:</i> 13.99%	9.27%	1.15%	-2.40%	4.43%		
US Equity	Long-Only	US Equity	-12.72%	34.61%	19.60%	25.84%	-2.88%	Oct-17
		Russell 3000	<i>Value Add:</i> 6.86%	9.44%	-0.67%	-4.44%	2.87%	
	Alpha Extension	US Equity 130/30/20	-10.46%	48.17%	10.36%	23.36%	-13.27%	Sep-18
		Russell 3000	<i>Value Add:</i> 9.13%	23.00%	-9.91%	-6.93%	1.05%	
Alpha Extension	US Equity Small Cap 130/30/20	-11.67%	46.18%	19.82%	20.15%	-21.19%	Sep-18	
	Russell 2000	<i>Value Add:</i> 9.09%	31.69%	0.32%	-4.85%	1.05%		
Emerging Markets	Long-Only	Emerging Markets	-15.25%	9.50%	32.17%	25.28%	-17.71%	May-01
		MSCI Emerging Markets	<i>Value Add:</i> 4.84%	12.04%	13.86%	6.86%	-3.14%	
	Alpha Extension	Emerging Markets 150/50/60	-5.76%	23.87%	47.02%	12.70%	Feb-19	
Alpha Extension	MSCI Emerging Markets IMI	<i>Value Add:</i> 14.08%	24.15%	28.62%	4.15%			





Data as of June 30, 2023

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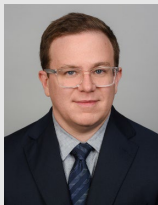

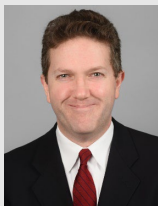

# Biographies – Senior Management

Name/Title	Responsibilities	Began at Firm	Years of Exp.	Education	Prior Experience
 <p><b>Peter Rathjens, PhD</b> <i>Partner, Chief Investment Officer</i></p>	Responsible for investment process; Chairs Investment Committee	1999	42	Princeton University, PhD in Economics: 1990 Oberlin College, BA in Economics and Mathematics: 1981	<p>1998–1999: CIO, PanAgora 1995–1999: Director of Global Investments, PanAgora 1991–1995: Director of Research, PanAgora 1990–1991: Equity Analyst, Colonial Management 1988–1990: Assistant Professor of Economics, Brandeis University 1986–1988: Instructor of Economics, Princeton University 1983–1984: Quantitative Analyst, Lehman Brothers 1981–1983: Analyst, Data Resources</p>
 <p><b>Anthony Ryan, CFA</b> <i>Partner, Chief Executive Officer</i></p>	Develops and implements strategic business plan	2011	36	London School of Economics, MS: 1986 University of Rochester, BA: 1985	<p>2009–2011: Chief Administrative Officer, Fidelity Investments 2006–2009: U.S. Treasury Department 2000–2006: Partner, Head of Global Business Development &amp; Client Relations, Grantham, Mayo, van Otterloo &amp; Co. LLC 1994–2000: State Street Global Advisors, Principal, State Street Corporation 1988–1994: Manager, Global Investments, PanAgora 1987–1988: Manager, Equity Investments, The Boston Company</p>

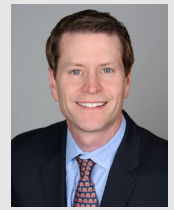

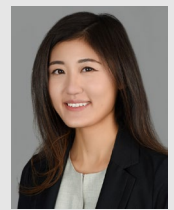

# Biographies – Investment Professionals

	Name/Title	Responsibilities	Began at Firm	Years of Exp.	Education	Prior Experience
	<b>John Campbell, PhD</b> <i>Partner, Co-Head of Research</i>	Develops and implements research agenda	1999	31	Yale University, PhD in Economics: 1984 Oxford University, BA in Economics: 1979	1994–Present: Professor of Applied Economics, Harvard University 1998–1999: Director of External Research, PanAgora 1992–1998: Academic Advisory Committee, PanAgora 1984–1994: Professor of Economics, Princeton University
	<b>Derek Vance, CFA</b> <i>Partner, Co-Head of Research</i>	Develops and implements research agenda	2008	16	Harvard College, AB in Economics: 2007	2007–2008: Analyst, Goldman Sachs
	<b>James Bothwick, CFA</b> <i>Partner</i>	Develops and enhances return and risk forecasting models	2015	7	Harvard College, BS in Chemistry and Physics, Economics: 2015	
	<b>Naveen Kartik C. K., CFA</b> <i>Partner</i>	Develops and enhances forecasting and risk models	2013	10	MIT, SM in Computation for Design and Optimization: 2013 Indian Institute of Technology, Madras BTech in Chemical Engineering: 2011	


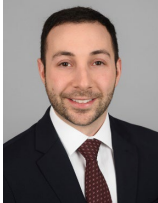


# Biographies – Investment Professionals

Name/Title	Responsibilities	Began at Firm	Years of Exp.	Education	Prior Experience
 <b>Yosef Klein</b> <i>Partner</i>	Develops and enhances forecasting and risk models	2012	15	University of Chicago, MBA in Analytic Finance, Econometrics, and Statistics: 2008  University of Illinois at Chicago, MS in Mathematics: 2005  University of Chicago, BA in Mathematics: 2000	2008–2012: Quantitative Analyst, Wellington Management 2002–2004: Operations Manager, The Aryeh Goldbloom Team, Financial Planners
 <b>Jonathan Kluberg, PhD</b> <i>Partner</i>	Develops and enhances forecasting and risk models	2015	12	MIT, PhD in Operations Research: 2011  Ecole Polytechnique, MS and BS in Applied Mathematics and Computer Science: 2006	2011–2015: Investment Analyst, HighVista Strategies
 <b>Tom Knox, PhD</b> <i>Partner</i>	Develops and enhances forecasting and risk models	2016	19	Harvard University, PhD in Business Economics: 2003  SM in Applied Mathematics and AB in Applied Mathematics: 1999	2009–2016: Quantitative Portfolio Manager, Convexity Capital Management 2007–2009: Portfolio Manager, QVT Financial 2004–2007: Bracebridge Capital, Vice President 2003–2004: Assistant Professor of Finance, University of Chicago
 <b>Jeff Li, CFA</b> <i>Partner</i>	Develops and enhances forecasting and risk models	2010	13	Boston University, BS in Computer Systems Engineering, Management MS in Economics: 2009	2009–2010: Economic Consultant, Cornerstone Research Software and Mechanical Engineer, Raytheon





# Biographies – Investment Professionals

	Name/Title	Responsibilities	Began at Firm	Years of Exp.	Education	Prior Experience
	<b>Christopher Malloy, PhD</b> <i>Partner</i>	Develops and enhances forecasting and risk models	2019	20	University of Chicago, PhD and MBA in Finance: 2003 Yale University, BA in Economics: 1996	2007–2019: Sylvan C. Coleman Chaired Professor of Financial Management, Harvard Business School 2003–2007: Assistant Professor of Finance, London Business School 1998–2003: Teaching Assistant, University of Chicago 1996–1998: Analyst, Federal Reserve Board, Washington, DC
	<b>April Rathe</b> <i>Partner</i>	Develops and enhances forecasting and risk models	2020	23	University of Iowa, BSE in Industrial Engineering, Computer Science concentration: 1999	2000–2006: Technology Consultant 2008–2015: Manager, Data and Analytics Development, UBS Investment Bank 2015–2020: AQR, Team Development Manager
	<b>Julia Yuan, CFA</b> <i>Partner</i>	Develops and enhances forecasting and risk models	2012	11	Massachusetts Institute of Technology, MS in Finance: 2012 Peking University, BS in Economics: 2011	
	<b>Yijie Zhang, PhD</b> <i>Partner</i>	Develops and enhances forecasting and risk models	2006	17	Yale University, PhD in Finance: 2006 Rutgers University, MS in Economics: 2000 Tsinghua (Qinghua) University, BA in Finance: 1997	2003–2006: Teaching Assistant, Yale University





# Biographies – Investment Professionals

Name/Title	Responsibilities	Began at Firm	Years of Exp.	Education	Prior Experience
 <p><b>Manolis Liodakis, PhD</b> <i>Partner, Head of Portfolio Management</i></p>	Implements investment strategies	2012	25	<p>City University, London, PhD in Finance: 1999</p> <p>University of Birmingham, MBA in Finance: 1996</p> <p>Athens University of Economics &amp; Business, BS in Economics and Business: 1994</p>	<p>2008–2011: Managing Director of Global Equities Hybrid Strategies, Citadel Asset Management</p> <p>2001–2008: Managing Director, Head of European Quantitative Equity Research, Citigroup Global Markets</p> <p>2000–2001: Strategist, Morgan Stanley</p> <p>1998–2000: Associate, Salomon Brothers</p>
 <p><b>Brandon Berger</b> <i>Partner</i></p>	Implements investment strategies	2013	13	<p>Fordham University, MBA in Finance: 2011</p> <p>Fordham University, BS in Business Administration with concentrations in Finance &amp; International Business: 2010</p>	<p>2011–2013: Derivatives Market Maker, ABR Management LLC</p> <p>2010–2011: Derivatives Trader, Toro Trading LLC</p>
 <p><b>John Capeci, PhD</b> <i>Partner</i></p>	Implements investment strategies	1999	29	<p>Princeton University, PhD in Economics: 1990</p> <p>Harvard College, AB in Economics: 1984</p>	<p>1998–1999: Director of Research, PanAgora</p> <p>1994–1998: Senior Investment Manager, PanAgora</p> <p>1990–1995: Assistant Professor, Brandeis University</p>
 <p><b>Harry Gakidis, PhD</b> <i>Senior Director</i></p>	Implements investment strategies	2022	20	<p>Harvard University, AB: 1993</p> <p>Massachusetts Institute of Technology, Ph.D. in Economics: 1998</p>	<p>2014–2022: Lead Portfolio Manager, Acadian Asset Management</p> <p>2009–2014: Senior Quantitative Strategist, Loomis Sayles</p> <p>2003–2009: Fixed Income Specialist, Putnam Investments</p>

# Biographies – Investment Professionals




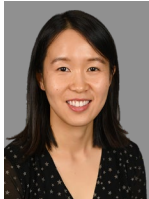
Name/Title	Responsibilities	Began at Firm	Years of Exp.	Education	Prior Experience
 <b>Anne Luisi</b> <i>Senior Director</i>	Implements investment strategies	2014	17	University of Virginia, MBA: 2012 Dartmouth College, BS in Economics: 2002	2011–2014: Associate, Investment Specialist, J.P. Morgan Private Bank 2002–2008: Associate, High Yield Credit Sales, J.P. Morgan Securities
 <b>Jonathan Noel</b> <i>Partner</i>	Implements investment strategies	2015	19	Cornell University, BS in Applied Economics: 2004	2010–2015: Program Trading, ITG 2009–2010: Proprietary Trader, Chimera Securities 2004–2009: Electronic Sales and Trading, ITG
 <b>George Pararas-Carayannis, CFA</b> <i>Partner</i>	Implements investment strategies	2002	27	Babson College, MBA: 2011 Georgetown University, BS in Business Administration: 1996	2001–2002: Data Analyst, Putnam Investments 1998–2001: Senior Investment Associate, PanAgora 1997–1998: International Operations Administrator, Evergreen Keystone Funds 1996–1997: Registered Representative, Fidelity Investments
 <b>Alex Rodin, CFA</b> <i>Senior Director</i>	Implements investment strategies	2016	11	Emory University, BS in Business Administration: 2012	2012–2015: Equity Research Analyst, Spot Trading

# Biographies – Investment Professionals

	Name/Title	Responsibilities	Began at Firm	Years of Exp.	Education	Prior Experience
	<b>Zach Vernon, CFA</b> <i>Partner</i>	Implements investment strategies	2008	17	Boston College, BS in Finance: 2006	2006–2008: Equity Derivatives Trading Operations Analyst, Blackrock
	<b>Michael Zervas, CFA</b> <i>Partner</i>	Implements investment strategies	2004	22	Stonehill College, BS in Business Administration: 2001	2001–2004: Consultant, FactSet Research Systems
	<b>Sam Thompson, PhD</b> <i>Partner, Head of Investment Processes</i>	Designs, develops, and maintains the investment systems used to support the management of client portfolios	2005	18	University of California at Berkeley, PhD in Economics and MA in Statistics: 2000  Yale University, BA in Economics: 1995	2005–2006: Consultant, Arrowstreet Capital 2004–2005: Associate Professor of Economics, Harvard University 2000–2004: Assistant Professor of Economics, Harvard University
	<b>Marta Campillo, PhD</b> <i>Partner</i>	Designs, develops, and maintains the investment systems used to support the management of client portfolios	1999	27	Boston University, PhD in Economics: 2000 Universidad Complutense, MA: 1992 Institute of Fiscal Studies, MA: 1990 Universidad de Autonomia, BS: 1989	1997–1999: Teaching Assistant, Dept. of Economics, Boston University 1995–1997: Research Assistant, Prof. Jeffrey Miron, Boston University 1990–1993: Research Associate, Foundation of Applied Economics Studies, FEDEA



# Biographies – Investment Professionals

Name/Title	Responsibilities	Began at Firm	Years of Exp.	Education	Prior Experience
 <p><b>Hui Wang, PhD</b> <i>Partner</i></p>	Designs, develops, and maintains the investment systems used to support the management of client portfolios	2012	11	University of Rochester, PhD in Physics: 2012 University of Science and Technology of China, BS in Physics: 2006	2007–2012: Research Assistant, University of Rochester 2006–2007: Teaching Assistant, University of Rochester
 <p><b>Katie McHardy</b> <i>Partner, Head of Investment Services</i></p>	Oversees pre- and post-trade activities including account, data, and market operations	2010	23	University of Massachusetts, Amherst, BA in Accounting: 2000	2002–2010: Auditor, Financial Services Practice, Deloitte LLP 2000–2002: Auditor, Arthur Andersen LLP
 <p><b>Joe Tiano</b> <i>Partner</i></p>	Oversees post-trade activities including account, data, and market operations	2014	16	Boston University, MS in Computer Information Systems: 2019 Bentley University, BS in Economics-Finance: 2006	2010–2014: Trader, Sanford C. Bernstein HK Ltd. 2008–2010: Associate, Arrowstreet Capital, LP 2007–2008: Consultant, FactSet Research Systems
 <p><b>Rachel Xiao</b> <i>Senior Director, Head of Investment Analytics</i></p>	Oversees and produces analytics to support the investment process, including portfolio attribution	2016	8	Boston University, MS in Mathematical Finance: 2015 Wuhan University, BS in Financial Engineering: 2013	2015-2016: Research Analyst, State Street

# Performance Disclosures

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1. All returns are calculated and presented in United States Dollar. Portfolios included in the Composite may have different base currencies. Currency exchange fluctuations will impact performance results.
2. Returns for periods greater than one year are annualized.
3. The presented composite returns have been calculated by asset-weighting individual portfolio monthly returns using their beginning-of-month values. Individual portfolio returns are time-weighted and based on the accounting, pricing and asset pricing methodologies of Arrowstreet's middle-office data provider or those of the fund administrator, both of which may include the use of an independent pricing service, as applicable to separately managed portfolios and Arrowstreet Sponsored Funds, respectively, and include the reinvestment of income. The returns presented may differ from the results calculated by the portfolio's official record keeper.
4. Prior to January 1, 2019, gross-of-fees returns for both separately managed portfolios and pooled investment funds for which Arrowstreet is the investment adviser, sponsor and promoter (the Arrowstreet Sponsored Funds) were calculated net of trading expenses, net of operating expenses (where, as applicable for separately managed portfolios, such expenses were, at the discretion of the client, paid through the portfolio, and gross of operating expenses otherwise) and gross of management fees (including performance fees, where applicable).  
  
Beginning January 1, 2019, gross-of-fees returns for separately managed portfolios are calculated net of trading expenses, gross of operating expenses and gross of management fees (including performance fees, where applicable). The gross-of-fees returns for Arrowstreet Sponsored Funds continue to be calculated net of trading expenses, net of operating expenses and gross of management fees (including performance fees, where applicable).
5. Net-of-fees returns for both separately managed portfolios and Arrowstreet Sponsored Funds are arrived at by deducting management fees (including performance fees, where applicable) from the calculated gross returns, which are net of trading expenses and other applicable expenses or fees as outlined above. With the exception of the Global Equity – Beta Neutral Composite and the Global Equity – ESG Beta Neutral Composite, performance fees are deducted once realized; unrealized performance fees are not reflected in the net-of-fees returns. Prior to October 1, 2022, realized performance fees, if any, were reflected in the applicable month or not until the quarter end in which they were realized, depending on the timing of the calculation of the fee and other characteristics of the portfolio. Effective October 1, 2022, all realized performance fees are reflected in the applicable month in which they were earned. For the Global Equity – Beta Neutral Composite and the Global Equity – ESG Beta Neutral Composite, both realized and unrealized performance fees are included in the net-of-fees returns. Please refer to the applicable composite presentations for additional detail on the methodology applied to calculate composite net returns historically.  
  
Where management fees are not charged to an investor or share class, a model fee is applied utilizing the highest fee currently available for the applicable strategy; where performance fees are a component of the management fee based on the strategy and characteristics of the portfolio, performance results equaling that of the applicable portfolio's actual value add are assumed. Note that the use of a model fee makes the corresponding net-of-fees return hypothetical in nature, as it does not reflect the actual return to any investor. Hypothetical returns have inherent limitations and prospective investors should not rely on any hypothetical performance shown herein.
6. Prior to July 1, 2020, depending on the characteristics of the portfolio, management fees (including performance fees) were calculated and reflected on either a monthly or quarterly basis. Where management fees were calculated and reflected on a quarterly basis, the impact of the base management fee component of the quarterly management fee has been applied evenly to each month within the quarter and the impact of the performance fee component has been applied to the month in which the fee was realized; these fees were then used to calculate the net-of-fees returns reported herein. Beginning July 1, 2020, monthly net-of-fees returns are calculated using actual and/or estimated management fees (including performance fees) for the applicable monthly period, depending on the timing of the calculation of the management fee and other characteristics of the portfolio.
7. The performance of the composites shown herein reflects the actual combined performance of portfolios in the applicable composites and does not reflect the actual performance of any one individual portfolio, and is therefore deemed to be hypothetical. Hypothetical returns have inherent limitations and prospective investors should not rely on any hypothetical performance shown herein. No representation is made that any fund or investor will or is likely to achieve the results shown. While managed pursuant to the same strategy, the portfolios have unique investment permissions and/or restrictions that result in differences in each portfolio's holdings.

# Performance Disclosures

8. The benchmark name presented reflects the current benchmark. The benchmark may have changed over time and as such all presented benchmark performance figures were calculated with respect to the benchmark applicable at each point in time. Please refer to the applicable composite presentations for additional detail on benchmark changes, if any.

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*FTSE 3-Month Treasury Bill Index* - The FTSE 3-Month Treasury Bill Index (formerly referred to as the S&P/Citigroup 3-Month Treasury Bill Index) is an unmanaged index representative of three-month U.S. Treasury Bills. Index returns do not include any transaction costs, management fees or other costs.

9. Value Added represents gross or net performance relative to the benchmark, calculated as the difference between the total return (gross-of-fees or net-of-fees, as applicable) and the benchmark

10. Target Value Add represents our ex-ante objective for outperformance per year relative to the benchmark over a full market cycle (defined here for this purpose as 5 to 7 years) based upon our assessment of the available investment opportunities when managed at the applicable tracking error range. Tracking error represents the typical expected range of annualized standard deviation of the difference between the portfolio's gross-of-fees return and the portfolio's benchmark return. The stated Target Value Add figure is hypothetical and does not reflect investments actually managed or results actually achieved. In no way should the Target Value Add be considered indicative or a guarantee of future performance.

While Target Value Add (Gross) does consider trading expenses, it does not incorporate other expenses that a portfolio may experience such as operating expenses or management fees (including performance fees). Target Value Add (Net) is calculated by deducting management fees (including performance fees) from the Target Value Add (Gross), which does consider trading expenses. Management fees are calculated utilizing the highest fee currently available for the applicable strategy; where such fee includes performance fees, performance results equaling that of the strategy's Target Value Add are assumed. Target Value Add (Net) does not take into account operating expenses, which vary by investment vehicle. Where investment in an Arrowstreet Sponsored Fund is contemplated, please refer to the corresponding fund's offering materials for further details on such expenses. Target Value Add (Net) would be lower if such expenses were reflected.

Target Value Add is based upon certain assumptions and the judgment of Arrowstreet. Such assumptions include that Arrowstreet's forecasting models work as intended and that on an ex-post basis, Arrowstreet's forecasting models will work as intended over long periods of time. It can be expected that some or all of such assumptions will not materialize or that actual facts will differ materially from such assumptions. Any change or inaccuracy in the assumptions will have a material impact on actual results, and it should not be assumed that any target returns shown herein will be achieved. Such assumptions are subject to change. Hypothetical returns have inherent limitations and prospective investors should not rely on any hypothetical performance shown herein. No representation is made that any fund or investor will or is likely to achieve the results shown. Actual results will differ and may be materially lower than the target shown herein. For actual realized returns, please refer to the applicable composite presentations.

11. "Tracking Error" represents the typical expected range of annualized standard deviation of the difference between the portfolio gross return and the portfolio's benchmark return. "Info Ratio" (Information Ratio) is determined by dividing Target Value Added (Gross) by our internal expectation of full market cycle average tracking error.

12. The data presented above includes results from the representative portfolio. Representative portfolios are selected by taking into consideration a number of factors which include: (i) the length of time the portfolio has been part of the composite; (ii) ability to invest in a broad opportunity set (for example, portfolios that include securities of all market capitalization, opportunistic emerging markets, or which utilize active currency management); (iii) minimal security restrictions, if any (for example, portfolios that have few restrictions or screens); (iv) portfolio assets close to, or greater than, the minimum portfolio size for the strategy; (v) portfolio stability and whether the client is likely to make changes to its benchmark and strategy implementation (which could indicate the portfolio may be short-lived going forward); and/or (vi) use of the strategy's or composite's standard benchmark. The representative portfolio may be replaced from time to time if, for example, the portfolio terminates or changes strategy.

13. As of February 1st, 2021 there are no longer any active constituents in the strategy.

14. The information contained herein reflects Arrowstreet's views on the matters set forth herein as of the date this information is being provided and not as of any other date. Arrowstreet undertakes no duty to update the information provided herein.

# Risk Disclosures

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All investment strategies have the potential for profit or loss. Past performance may not be indicative of future results. It should not be assumed that the future performance of any specific investment or investment strategy (including those described herein), will be profitable or equal to past performance levels. Changes in investment strategies, investable assets, or contributions or withdrawals may materially alter the performance and results of a client's portfolio.

Economic factors and market conditions will affect the performance of any portfolio and there are no assurances that it will match or outperform any particular benchmark. Different types of investments involve varying degrees of risk, and there can be no assurance that any specific investment will be profitable for a client's portfolio.

Our equity investment strategies involve the risks of investing in equities and currencies (which may include entering contracts over the counter) globally. In addition, our alpha extension strategies and long/short strategy involve the risk of shorting equities and leverage.

We actively manage our client assets and therefore the performance of a portfolio will reflect, in part, our ability to make investment decisions that seek to achieve a given strategy's investment objectives. Due to the active management, a portfolio could underperform the target benchmark and/or investment mandates with similar investment objectives.

We use proprietary quantitative models in our investment process. While we expect these models to perform as expected, deviation between model predictions and the actual events can result in either no advantage or in results opposite to those desired by us and our clients. In particular, these models draw from historical data that may not predict future returns, volatilities, correlations or market performance adequately. In addition, market conditions may be such that they are outside of the confidence level employed by the models. There can be no assurances that the models behave as expected. An error in the coding of data or formulas within the models could be magnified by the model and may be difficult to detect. While we maintain internal controls and human oversight of our investment models, no guarantee or warranty can be provided that any quantitative investment model is or will be completely free of errors. Any such errors could have a negative impact on investment results.

# Risk Disclosures

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Unexpected market turbulence or unanticipated extraneous events could also cause the actual results to fall outside of the range predicted from the models' forecasts.

Our equity strategies invest in equity securities of companies with varying market capitalizations. Investment in companies with relatively small market capitalizations generally involve greater risk and price volatility than investment in larger, more established companies, and the equity securities of such companies are typically less liquid than larger capitalization companies.

Where investment in an Arrowstreet Sponsored Fund is contemplated, please refer to the corresponding fund's offering materials for further details on risks specific to such fund.

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**Presentation to:**

**North Dakota Board of University and School Lands**

**September 1, 2023**

This document is intended only for the use of the North Dakota Board of University and School Lands for the purpose of evaluating Jacobs Levy Equity Management (“JLEM”). It is not intended to be used by any other party or for any other purpose. Thank you.



# Executive Summary

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## Organizational Overview

- Independent firm, leader in quantitative equity management
- Over 35 years dedicated to U.S. equity research and portfolio management
- Highly experienced, stable team of investment professionals
- Serving a global roster of sophisticated institutional clients

## A Foundation in Research

- For over 35 years, Bruce Jacobs and Ken Levy have conducted groundbreaking research into market inefficiencies and the complex economic and behavioral factors that underlie security pricing
- The foundation of our investment approach has been articulated in numerous award-winning journal articles

## Philosophy and Process Review

- The U.S. stock market is a complex system, substantial inefficiencies exist
- Proprietary, multidimensional, and dynamic investment process
- Profit opportunities are based on simultaneous analysis of proprietary modeled factors such as measures of growth, valuation, and quality, signals from company managements and security analysts, information from investors and prices including sentiment and momentum and reversals, and alternative data including corporate governance, among others
- Ongoing research is focused on developing new models and enhancing existing models

## Performance Overview

- 14+ year successful 130-30 Large Cap (Russell 1000) Strategy track record, and over 30 years experience managing risk-controlled strategies in a variety of market environments
- Strong inception-to-date value added and risk adjusted performance through 7/31/23: 5.02% annualized gross value added, 4.31% annualized net value added, 5.54% residual risk, 0.91 information ratio (see details on slide 11)
- Our multidimensional approach emphasizes diversification across a broad set of proprietary models

# Jacobs Levy Firm Overview

Leader in quantitative equity management

Over 35 years dedicated to quantitative equity research

Independent, SEC registered investment firm

Institutional client base, 46 client relationships

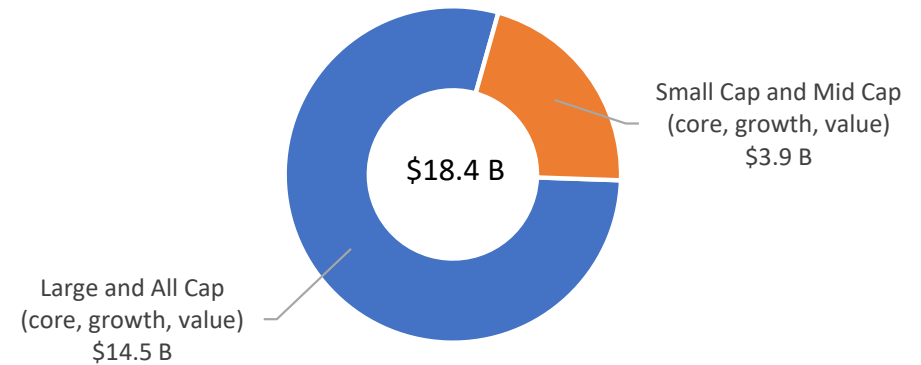
\$18.4 billion firm-wide AUM as of 7/31/23

\$14.5 billion in large cap strategies

\$8.4 billion in 130-30 strategies, including \$957 million in our 130-30 Large Cap (Russell 1000) strategy

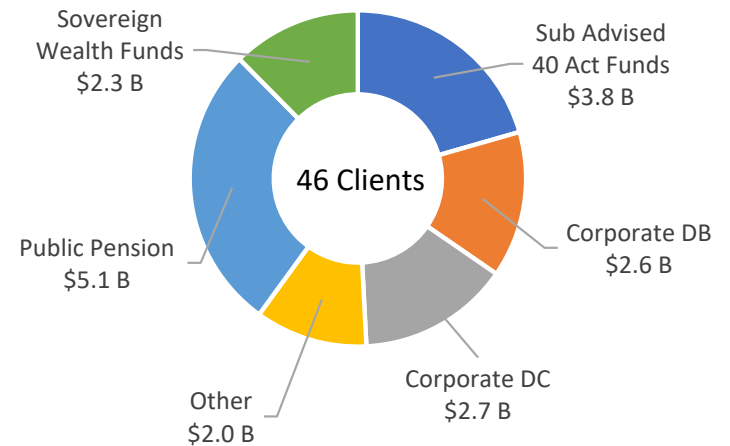
\$7.4 billion of Sovereign wealth and public fund assets

U.S. Equity AUM (\$billion)



Assets as of 7/31/23

Client Type (\$billion)



## Jacobs Levy Organizational Overview

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61 total  
employees

31 investment  
professionals

portfolio management,  
research, portfolio  
engineering, trading,  
and investment  
technology

77 advanced  
degrees

16 PhDs, 41 Masters, 17  
MBAs, 22 CFAs, 3 JDs,  
2 CPAs, and 2 FRMs

Stable Team

35 team members  
with ten or more  
years at  
Jacobs Levy

Principals Bruce Jacobs and Ken Levy are jointly responsible for investment management and leadership of the firm

All the firm's investment professionals and resources are focused on our unique, unified investment process which is applied to all strategies

Collegial and intellectually challenging environment, combined with competitive compensation, attracts and retains talented investment team

## Investment Philosophy Based on the Following Beliefs:

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### Multidimensional market environment results in numerous profit opportunities

*The market is a complex system with many forces that influence security pricing*

*Exploitable profit opportunities arise from investor behavior and changes in company fundamentals*

### Disentangling factor relationships identifies true opportunities

*Results in “pure” factor returns that can reveal relationships between factors*

*Provide more reliable predictions of stock returns*

### Dynamic and forward-looking process is needed since factor opportunities evolve over time

*Factor return opportunities can change based on the underlying economic environment or be arbitrated away*

### Ongoing proprietary research is needed to maintain power of investment insights

*Based on strong prior beliefs derived from economic, financial, and behavioral theory*

*Seek to identify factors that are meaningful for predicting security returns*

### Good Judgment is critical to quantitative investing

*Decades of quantitative investment experience, insights, and intuition*

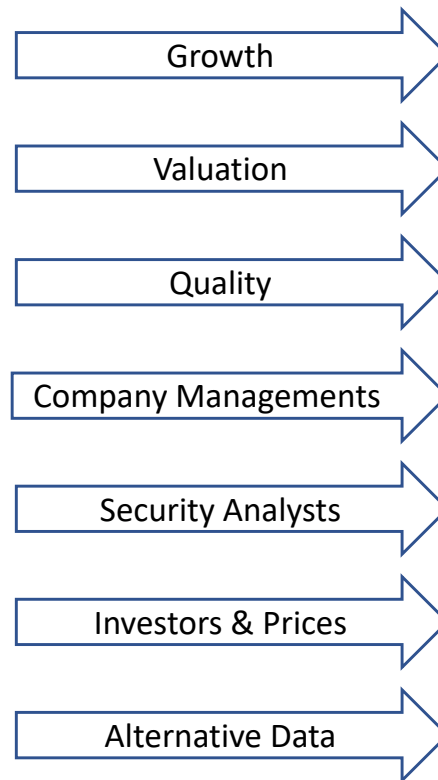
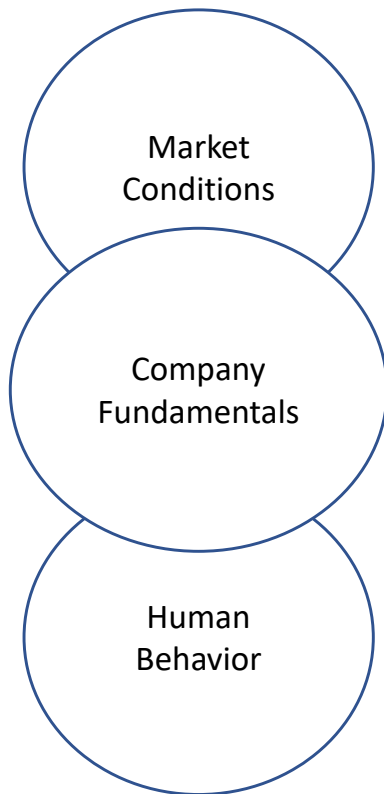
*Know what your models know, and know what they don't know*

# Jacobs Levy Proprietary Investment Approach

Security prices are determined by the market environment, company fundamentals, and human behavior

Disentangling identifies potential sources of return, controlling for relationships between factors

Security return forecasts



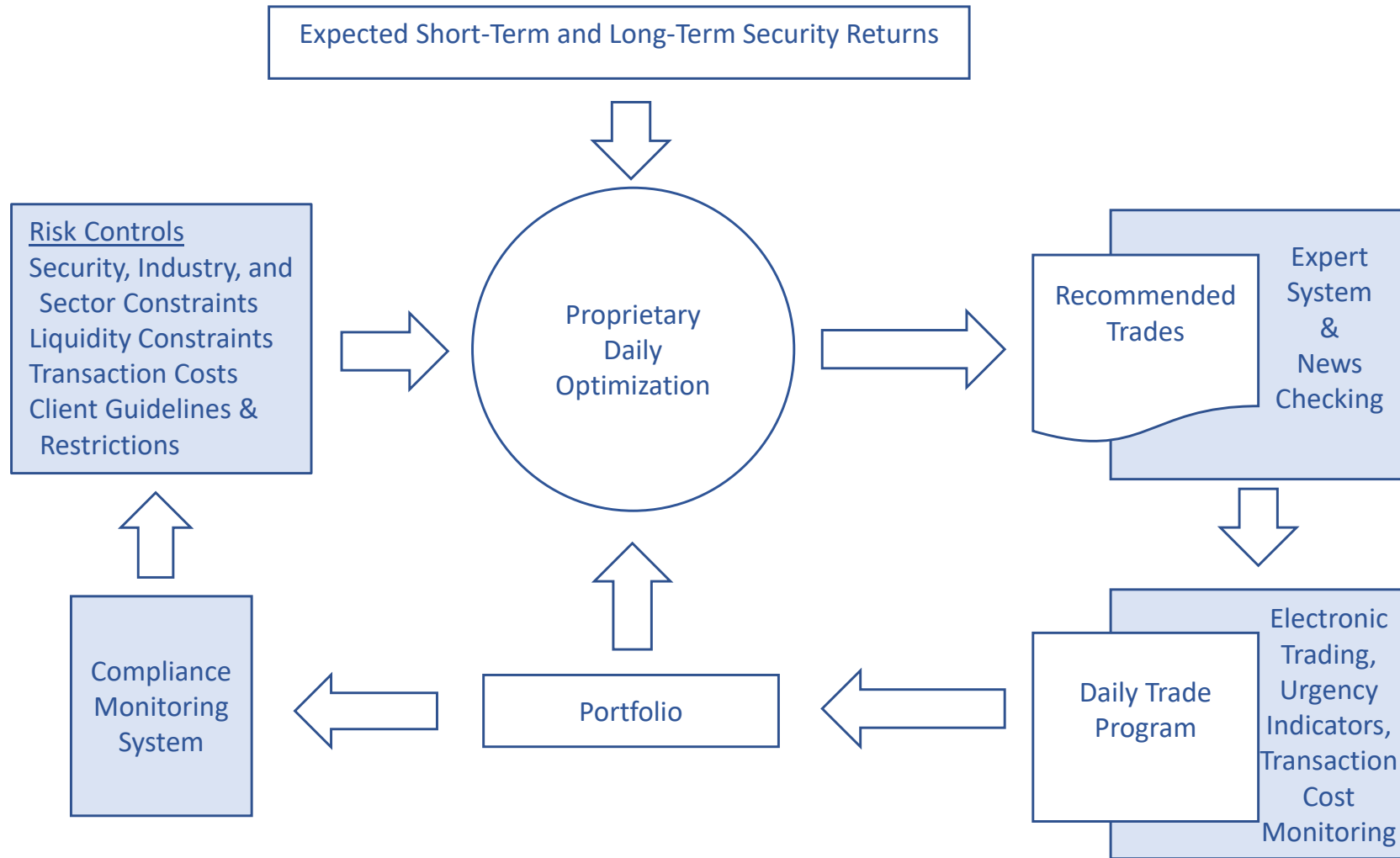
Expected Short-Term and Long-Term Security Returns

Type of stock and non-linear analysis

Pure return forecast for each modeled factor

Reliability weighting

# Jacobs Levy Portfolio Construction and Risk Control



## Risk Management and Portfolio Constraints

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Portfolio construction is determined by the firm's portfolio optimizer, with ultimate authority in the hands of the Portfolio Managers

Daily portfolio optimization controls risk along the same dimensions used in the valuation process

Portfolios are diversified across exposures to numerous potential profit opportunities

At inception, individual stocks generally limited to 5% of the portfolio or 150% of the benchmark weight, whichever is greater

The capitalization of the stocks in the portfolio generally similar to constituents of the benchmark

Portfolio industry and sector weights generally within five percentage points of benchmark weights

Daily automated compliance system monitors compliance with guidelines and restrictions

## Enhanced Active 130-30 Strategies Description

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Permits meaningful security underweights that are not achievable in long-only strategies

Allows for more symmetric and more complete use of our insights

Our optimizer integrates the long and short positions relative to benchmark weights and takes into account borrowing costs of each stock

Capital is used more intensively

Market exposure is maintained

Provides opportunity for higher value added relative to long-only strategies



## Enhanced Active 130-30 Large Cap (Russell 1000) Strategy

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Objective is to outperform the Russell 1000 Index over a market cycle

Long positions total about 130% of capital and short positions total about 30% of capital

Seeks to track Russell 1000 Index with similar risk profile, preference for Russell 1000 Index names, and moderate residual risk

Generally holds 175 or more names long and 75 or more names short, with broad diversification across stocks, market inefficiencies, industries, and sectors

Portfolio turnover generally ranges from 125% to 225% per year over a market cycle, facilitated by low cost electronic trading

## Enhanced Active 130-30 Large Cap (Russell 1000) Strategy Portfolio Fundamentals July 31, 2023

	Representative Portfolio	Russell 1000
ROE, %	25.45	29.12
Long-Term Growth, %	14.76	11.27
P/E ratio	21.27	25.12
P/B ratio	5.19	6.76
Yield, %	1.05	1.48
Beta	1.04	1.00
Market Cap, \$MM	464,487	621,333
Log Market Cap	4.71	5.24
Materials	2.2	2.7
Consumer Discretionary	14.0	11.4
Consumer Staples	3.7	6.2
Energy	2.4	4.0
Financials	14.0	11.6
Health Care	11.4	13.0
Industrials	11.7	8.5
Information Technology	30.9	29.0
Communication Services	5.2	8.1
Utilities	3.9	3.0
Real Estate	0.7	2.6
Number of Holdings	208 long/93 short	1,009

## Enhanced Active 130-30 Large Cap (Russell 1000) Strategy – Trailing Period Performance

(As of July 31, 2023)	Annualized							Since Inception (1/1/2009)
	QTD	YTD	1 Year	3 Year	5 Year	7 Year	10 Year	
<b>Composite Gross Return</b>	4.14%	17.87%	18.08%	26.57%	17.78%	19.17%	18.11%	19.10%
<b>Composite Net Return</b>	4.09%	17.47%	17.38%	25.83%	17.08%	18.46%	17.41%	18.39%
<b>Russell 1000 Index Return</b>	3.44%	20.69%	12.95%	13.22%	11.92%	13.09%	12.44%	14.08%
<b>Gross Value-Added</b>	<b>0.70%</b>	<b>-2.82%</b>	<b>5.13%</b>	<b>13.35%</b>	<b>5.86%</b>	<b>6.08%</b>	<b>5.67%</b>	<b>5.02%</b>
<b>Net Value Added</b>	<b>0.65%</b>	<b>-3.22%</b>	<b>4.43%</b>	<b>12.61%</b>	<b>5.16%</b>	<b>5.38%</b>	<b>4.98%</b>	<b>4.31%</b>
Residual Risk	--	--	6.16%	8.98%	7.86%	6.87%	6.11%	5.54%
Information Ratio	--	--	0.83	1.49	0.75	0.89	0.93	0.91

Returns are preliminary.

Represents results for the 130-30 Large 1 composite, inception date is 1/1/2009.

Gross Return of the strategy includes the deduction of brokerage fees and commissions and, where applicable, stock loan costs incurred, but does not reflect the deduction of management fees and/or performance fees. Net Return of the strategy is the Gross Return with the deduction of a model management fee equal to the highest fee on the applicable strategy's current standard fixed fee schedule. The fee schedules for the strategies shown are described in the accompanying disclosure. The returns presented do not reflect certain expenses that may apply, such as custodial and administrative fees.

Gross Value Added is the annualized gross return of the strategy less the annualized return of the benchmark. Net Value Added is the annualized net return of the strategy less the annualized return of the benchmark.

Residual Risk and Information Ratio are calculated based on gross monthly observations through 7/31/23.

Please also see the accompanying disclosures at the end of this presentation, which are an integral part of the presentation.

## Enhanced Active 130-30 Large Cap (Russell 1000) Strategy – Calendar Year Performance

	Since Inception (1/1/2009)	YTD 2023 *	2022	2021	2020	2019	2018	2017	2016	2015
<b>Composite Gross Return</b>	19.10%	17.87%	3.42%	38.56%	17.65%	33.09%	-5.23%	21.30%	18.86%	13.28%
<b>Composite Net Return</b>	18.39%	17.47%	2.81%	37.75%	16.96%	32.31%	-5.80%	20.59%	18.16%	12.60%
<b>Russell 1000 Index</b>	14.08%	20.69%	-19.13%	26.46%	20.96%	31.42%	-4.78%	21.69%	12.05%	0.92%
<b>Gross Value-Added</b>	<b>5.02%</b>	<b>-2.82%</b>	<b>22.55%</b>	<b>12.10%</b>	<b>-3.31%</b>	<b>1.66%</b>	<b>-0.45%</b>	<b>-0.38%</b>	<b>6.80%</b>	<b>12.36%</b>
<b>Net Value-Added</b>	<b>4.31%</b>	<b>-3.22%</b>	<b>21.93%</b>	<b>11.29%</b>	<b>-4.01%</b>	<b>0.89%</b>	<b>-1.02%</b>	<b>-1.10%</b>	<b>6.10%</b>	<b>11.69%</b>
	2014	2013	2012	2011	2010	2009				
<b>Composite Gross Return</b>	15.98%	39.19%	14.48%	9.09%	20.24%	28.90%				
<b>Composite Net Return</b>	15.29%	38.38%	13.80%	8.44%	19.53%	28.14%				
<b>Russell 1000 Index</b>	13.24%	33.11%	16.42%	1.50%	16.10%	28.43%				
<b>Gross Value-Added</b>	<b>2.74%</b>	<b>6.08%</b>	<b>-1.94%</b>	<b>7.59%</b>	<b>4.15%</b>	<b>0.47%</b>				
<b>Net Value-Added</b>	<b>2.05%</b>	<b>5.27%</b>	<b>-2.62%</b>	<b>6.94%</b>	<b>3.44%</b>	<b>-0.29%</b>				

\* Returns are preliminary.

Represents results for the 130-30 Large 1 composite, inception date is 1/1/2009.

Please also see the accompanying disclosures at the end of this presentation, which are an integral part of the presentation.

# Summary of Strengths

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## Firm Structure and Focus

- Independent investment firm, U.S. equity specialist
- Sophisticated institutional clients
- Highly experienced investment team

## A Foundation in Groundbreaking Research

- Over 35 years of proprietary research into numerous market inefficiencies
- Original, published research on leverage aversion and portfolio optimality and the rationale for enhanced active 130-30 portfolios, their construction and optimization

## The Market's Complexity Disentangled

- Proprietary means of separating real, “pure” return-predictor relationships from merely spurious ones

## Breadth of Inquiry and Depth of Analysis

- Increases number of potential investment insights
- Improves “goodness” of those insights

## Dynamic, Forward Looking, Multidimensional Investment Approach

- Pioneered dynamic, multidimensional equity investing

## Good Judgment is Critical

- Sophisticated quantitative methods are combined with human insight and intuition

## Integrated Investment Process

- Synchronization of research, security selection, portfolio construction, trading, performance attribution, and guideline compliance

## Liquidity Controls Preserve Value

- Capacity constraints
- Sophisticated trading methods

## Performance

- Successful long-term track record engineering risk-controlled long and long-short strategies

## Important Information

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The information contained herein is provided by Jacobs Levy Equity Management, Inc. ("Jacobs Levy") for informational purposes only and is intended for sophisticated institutional investors. The strategy or strategies described herein involve the potential of loss and, for separate accounts that use short sales, possible losses in excess of the amounts invested. For an investor in a limited liability vehicle, such as a commingled fund, possible investment losses to the investor cannot be in excess of the amounts invested in the vehicle. The information herein is not intended as an offer or solicitation with respect to any services or the purchase or sale of any security. An investment decision should only be made after receiving further information on the strategies, objectives, performance history, and applicable fees, and conducting an independent evaluation with legal, accounting, and tax advisors.

Past performance is not a guarantee of future results. There can be no assurance that the strategies described herein will continue to achieve returns at levels comparable to the returns presented.

The performance returns for the strategies shown herein were calculated to include reinvestment of dividends and other income. For all strategies, fee schedules may vary by account size and type of account and may downscale for larger accounts. Performance fee schedules are also available.

Benchmark indices shown for strategies are provided for comparison purposes. Holdings and portfolio characteristics will differ from those of the benchmark. Index returns assume the reinvestment of dividends and do not reflect brokerage and other costs of a managed portfolio.

## Glossary

**Information Ratio:** For a designated period, the Gross Value Added of a strategy divided by the Residual Risk of the strategy relative to its benchmark. The Information Ratio is a measure of risk-adjusted performance of a strategy relative to its benchmark.

**Residual Risk:** For a designated period, the standard deviation of the monthly differences in performance between a strategy and its benchmark. Residual Risk is a measure of the risk (volatility) of a strategy relative to its benchmark.

**Sharpe Ratio:** For a designated period, the Sharpe Ratio is calculated by subtracting the annualized Bloomberg Barclays 1-3 Month US Treasury Bill Index from the performance of the strategy and dividing the result by the Standard Deviation of the strategy for the period.

**Standard Deviation:** For a designated period, the annualized variability or dispersion of the monthly gross returns of the portfolio from its average monthly gross return.

Please see page 18 for additional composite performance disclosure.

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## Biographies and Performance Disclosures

# Biographies

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## Portfolio Management and Research & Development

**BRUCE I. JACOBS**, Principal, co-founded Jacobs Levy Equity Management in 1986. He is co-chief investment officer, portfolio manager, and co-director of research. Dr. Jacobs's articles on equity management have appeared in the *Financial Analysts Journal*, *Journal of Portfolio Management*, *Journal of Investing*, *Journal of Financial Perspectives*, *Japanese Security Analysts Journal*, *Operations Research*, and *Journal of Impact and ESG Investing*. He has received several Graham and Dodd Awards from *Financial Analysts Journal*, a Bernstein Fabozzi/Jacobs Levy Award from the *Journal of Portfolio Management*, and an Outstanding Article Award from the *Journal of Investing*. Dr. Jacobs is author of *Too Smart for Our Own Good: Ingenious Investment Strategies, Illusions of Safety, and Market Crashes* (McGraw-Hill) and is also co-author with Ken Levy of *Equity Management: The Art and Science of Modern Quantitative Investing*, 2<sup>nd</sup> ed. (McGraw-Hill).

Formerly he was First Vice President of the Prudential Insurance Company of America, where he served as Senior Managing Director of a quantitative equity management affiliate of the Prudential Asset Management Company and Managing Director of the Pension Asset Management Group. Prior to that, he was on the finance faculty of the University of Pennsylvania's Wharton School and consulted to the Rand Corporation.

Dr. Jacobs has a B.A. from Columbia College, an M.S. in Operations Research and Computer Science from Columbia University's School of Engineering and Applied Science, an M.S.I.A. from Carnegie Mellon University's Graduate School of Industrial Administration, and an M.A. in Applied Economics and a Ph.D. in Finance from the Wharton School. He serves on the Advisory Boards of the *Journal of Portfolio Management* and the *Journal of Financial Data Science*, and is an Advisory Editor for the *Journal of Impact and ESG Investing*. He has served on the *Financial Analysts Journal* Advisory Council, and was an Associate Editor of the *Journal of Trading*. Dr. Jacobs also served on the Committee to Establish the National Institute of Finance and was a member of its successor, the Office of Financial Research Discussion Forum. He is Chair of the Advisory Board of the Jacobs Levy Equity Management Center for Quantitative Financial Research at the Wharton School, and helped create the new Quantitative Finance major at the Wharton School by establishing the Dr. Bruce I. Jacobs Professorship in Quantitative Finance and the Dr. Bruce I. Jacobs Scholars in Quantitative Finance.

**KENNETH N. LEVY**, Principal, co-founded Jacobs Levy Equity Management in 1986. He is co-chief investment officer, portfolio manager, and co-director of research. His articles on equity management have appeared in the *Financial Analysts Journal*, *Journal of Portfolio Management*, *Journal of Investing*, *Journal of Financial Perspectives*, *Japanese Security Analysts Journal*, *Operations Research*, and *Journal of Impact and ESG Investing*. He has received several Graham and Dodd Awards from *Financial Analysts Journal* and a Bernstein Fabozzi/Jacobs Levy Award from the *Journal of Portfolio Management*. Ken is co-author with Bruce Jacobs of *Equity Management: The Art and Science of Modern Quantitative Investing*, 2<sup>nd</sup> ed. (McGraw-Hill).

Formerly he was Managing Director of a quantitative equity management affiliate of the Prudential Asset Management Company. Prior to that, he was responsible for quantitative research at Prudential Equity Management Associates.

Ken has a B.A. in Economics from Cornell University, an M.B.A. and an M.A. in Business Economics from the University of Pennsylvania's Wharton School, and completed all requirements short of the dissertation for a Ph.D. at Wharton. He is a CFA charterholder and has served on the CFA Candidate Curriculum Committee, POSIT Advisory Board, and the investment board of a community foundation. Ken is on the Advisory Board of the Jacobs Levy Equity Management Center for Quantitative Financial Research at the Wharton School.



# Biographies

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## Client Service and Portfolio Analysis

**PETER LEHRER**, Managing Director, Portfolio Analysis & Client Service, joined Jacobs Levy in 2002. Formerly he was Vice President at Deutsche Asset Management, where he was responsible for U.S. large cap equity research and portfolio management, and also performed client service and marketing functions. Before that, he was Vice President, Strategic Investment Advisory, at J. P. Morgan Investment Management, where he advised clients on investment policy and asset allocation. Peter has a B.A. in Mathematics and an M.B.A. from Cornell University. He is a CFA charterholder.

**DAVID P. SPARACINO**, Director, Client Service & Business Development, joined Jacobs Levy in 2003. Previously he worked at Northern Trust Company for over 10 years. Most recently, he was Vice President, Investment Relationship Manager, responsible for all aspects of ongoing client service. David has a B.S. in Economics from the University of Wisconsin, and an M.B.A. in Finance from the Kellstadt Graduate School of Business at DePaul University. He is a CFA charterholder.

# Performance Disclosures

## Jacobs Levy Equity Management Performance Results 130-30 Large 1 Composite: January 2009 – December 2022

Year	Composite Gross Return (%)	Composite Net Return (%)	Russell 1000 Return (%)	Number of Portfolios	Composite Gross 3-Yr St Dev (%)	Benchmark 3-Yr St Dev (%)	Composite Dispersion (%)	Total Composite Assets (US\$M)	Total Firm-Wide Assets (US\$M)
2022	3.42	2.81	-19.13	2	19.36	21.33	NM	211	15,039
2021	38.56	37.75	26.46	1	18.47	17.71	NM	16	14,677
2020	17.65	16.96	20.96	1	19.62	19.10	NM	57	13,920
2019	33.09	32.31	31.42	1	13.73	12.05	NM	53	13,096
2018	-5.23	-5.80	-4.78	1	12.68	10.95	NM	40	7,437
2017	21.30	20.59	21.69	1	11.24	9.97	NM	47	7,757
2016	18.86	18.16	12.05	1	12.04	10.69	NM	42	7,699
2015	13.28	12.60	0.92	1	11.06	10.48	NM	46	7,909
2014	15.98	15.29	13.24	1	10.17	9.12	NM	47	8,883
2013	39.19	38.38	33.11	1	13.02	12.26	NM	41	9,756
2012	14.48	13.80	16.42	1	15.12	15.40	NM	29	9,017
2011	9.09	8.44	1.50	1	19.43	18.95	NM	24	7,883
2010	20.24	19.53	16.10	1	NM	NM	NM	6	9,674
2009	28.90	28.14	28.43	1	NM	NM	NM	5	9,704

Jacobs Levy Equity Management claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Jacobs Levy Equity Management has been independently verified for the periods January 1, 2002 through March 31, 2023. The verification report is available upon request.

A firm that claims compliance with the GIPS standards must establish policies and procedures for complying with all the applicable requirements of the GIPS standards. Verification provides assurance on whether the firm's policies and procedures related to composite and pooled fund maintenance, as well as the calculation, presentation, and distribution of performance, have been designed in compliance with the GIPS standards and have been implemented on a firm-wide basis. Verification does not provide assurance on the accuracy of any specific performance report.

**Notes:**

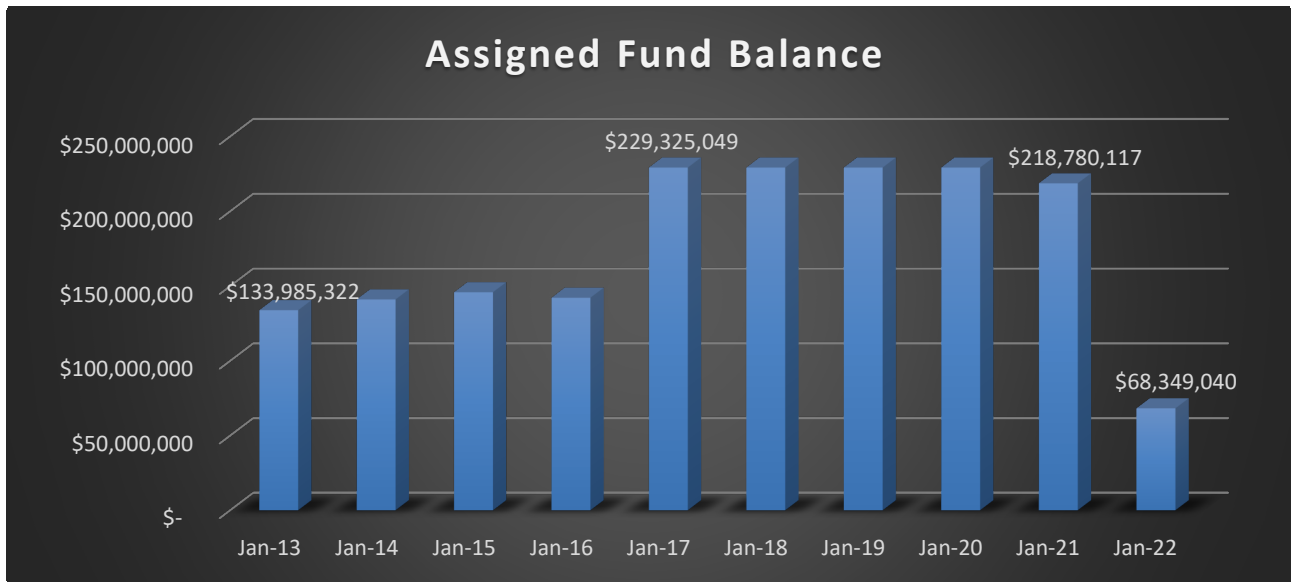
- Jacobs Levy Equity Management, Inc., an independent investment management firm, was founded in September 1986 and registered as an investment advisor in October 1986. The firm is engaged exclusively in the management of institutional US equity portfolios for clients worldwide.
- The composite includes all discretionary commingled funds with approximately 130% of capital invested long and 30% of capital invested short in US equity securities and managed to outperform the Russell 1000 Index over a market cycle. Composite return is an asset-weighted average of the time-weighted return of each account and includes reinvestment of dividends and other income. The composite creation and inception date is 1/1/09.
- Leverage is used in the 130-30 Large 1 Strategy, as the short proceeds are used to buy long positions. The long positions collateralize the securities borrowed which are sold short.
- Valuations and returns are computed and reported in US Dollars.
- The benchmark: Russell 1000 Index, a capitalization-weighted index consisting of the large-cap segment of the US equity universe. The Russell 1000 Index is a subset of the Russell 3000 Index and includes approximately 1000 of the largest securities based on market capitalization. Holdings and characteristics of an active account will differ from those of the benchmark. Index returns assume the reinvestment of dividends and do not reflect brokerage and other costs of an actively-managed portfolio.
- The three-year annualized ex-post standard deviation of the composite gross returns and benchmark returns is not presented for year-end periods 2010 and prior because the length of return history was less than 36 months.
- Composite dispersion is calculated as the annualized, average monthly, asset-weighted standard deviation of portfolios' gross returns. Dispersion is only calculated for composites with five or more portfolios in the composite for the entire year.
- No alteration of composites as presented here has occurred because of changes in personnel or other reasons at any time.
- "Composite Gross Return" is presented net of commissions and other transaction costs and before deduction of management fees. The client's return will be reduced by such fees and other expenses incurred in managing and maintaining the account. "Composite Net Return" reflects the deduction of a model management fee equal to the highest fee on the current fixed fee schedule of: 1st \$200M, 0.60%; next \$300M, 0.35%; thereafter, 0.30% per annum. To calculate Composite Net Return, the model fee was deducted on a monthly basis from Composite Gross Return. Fees downscale for larger accounts. Performance fee schedules are also available.
- There can be no assurance that future performance will equal the past performance. Investing in equities entails the possibility of loss and, for separate accounts that use short sales, possible losses in excess of the amounts invested. For an investor in a limited liability vehicle, possible losses to the investor will not exceed the amounts invested in the vehicle.
- The complete list of firm composite descriptions, a list of limited distribution pooled fund descriptions, and policies for valuing investments, calculating performance, and preparing GIPS Reports are available upon request.
- GIPS® is a registered trademark of CFA Institute. CFA Institute does not endorse or promote this organization, nor does it warrant the accuracy or quality of the content contained herein.

Intended for use in a one-on-one presentation.

**RE: Strategic Investment and Improvements Fund (SIIF) - Assigned Fund Balance**

On August 25, 2022, the Board approved the existing Assigned Fund Balance of \$68,349,040. Since then, the Department of Trust Lands (Department) has completed acreage adjustments pursuant to N.D.C.C. ch. 61-33.1. Based upon the completion of these lease corrections, the Department has determined the Board can reduce the amount preserved in the Assigned Fund Balance. The recommended reduction is based upon the lease corrections and royalty adjustments that have been executed. The table below details the recommended Assigned Fund Balance which is \$17,597,108 less than the prior year.

	<b>6/30/2023 Recommended Assigned Fund Balance</b>
Fort Berthold Reservation Riverbed Bonus	\$ 42,019,220
Fort Berthold Reservation Riverbed Royalties	1,825,469
Wenck Line Litigation Hold Bonus	6,908,243
<b>Recommended Assigned Fund Balance</b>	<b>\$ 50,751,932</b>



**Recommendation: For purposes of its financial reporting, the Board affirms the “Assigned Fund Balance” of the Strategic Investment and Improvements Fund be set at \$50,751,932 as of June 30, 2023.**

Action Record	Motion	Second	Aye	Nay	Absent
Secretary Howe					
Superintendent Baesler					
Treasurer Beadle					
Attorney General Wrigley					
Governor Burgum					

**RE: Litigation Update**  
(No Action Requested)

- EEE (OHWM title dispute / takings claim) – ND Federal District Court issued order May 31, 2022, granting Board’s motion to dismiss on all counts: federal preemption, sovereign immunity, takings; Plaintiffs appealed to 8<sup>th</sup> Circuit; on August 30, 2023, the 8<sup>th</sup> Circuit issued its opinion in our favor affirming the trial court’s dismissal on all counts; Plaintiffs have 14 days to request reconsideration by the 8<sup>th</sup> Circuit and 90 days to appeal to the U.S. Supreme Court
- Continental Oil Royalty Deductions – Now that the Newfield gas royalty deductions case has been resolved, this case comes off stay and the parties are required to file a status report with the Court by November 1, 2023.
- MHA (Missouri riverbed ownership) – On July 7, 2023, the United States filed a motion to amend its pleading to add a quiet title crossclaim against North Dakota as a new Intervenor in the case. We filed a motion requesting a change of venue to North Dakota that the Court is now considering.
- Continental Interpleader (OHWM fed/state dispute) – ND Federal District Court issued opinion March 21, 2023, granting Board’s motion for partial summary judgment on “Acquired Federal Lands” issue; this means the Wenck survey controls for establishing the historical ordinary high-water mark of the Missouri River in areas where the uplands were acquired by the federal government, and not original “public domain lands”; federal government appealed and we filed cross appeal; briefing scheduled to be completed in October
- Leland/Whiting (OHWM river island ownership) – Watford City trial September 12-16, 2022; currently in post-trial briefing stage
- Whitetail Wave (OHWM title dispute / takings claim) – On August 22, 2023, Whitetail Wave appealed the trial court’s rulings for the state (takings, Wenck Line, quiet title) and the award of attorney fees to co-defendant XTO Energy. Briefings and oral arguments before the North Dakota Supreme Court to follow.

## **Procedures for Executive Session regarding Attorney Consultation and Consideration of Closed Records**

### Overview

- 1) The governing body must first meet in open session.
- 2) During the meeting's open session the governing body must announce the topics to be discussed in executive session and the legal authority to hold it.
- 3) If the executive session's purpose is attorney consultation, the governing body must pass a motion to hold an executive session. If executive session's purpose is to review confidential records a motion is not needed, though one could be entertained and acted on. The difference is that attorney consultation is not necessarily confidential but rather has "exempt" status, giving the governing body the option to consult with its attorney either in open session or in executive session. Confidential records, on the other hand, cannot be opened to the public and so the governing body is obligated to review them in executive session.
- 4) The executive session must be recorded (electronically, audio, or video) and the recording maintained for 6 months.
- 5) Only topics announced in open session may be discussed in executive session.
- 6) When the governing body returns to open session, it is not obligated to discuss or even summarize what occurred in executive session. But if "final action" is to be taken, the motion on the decision must be made and voted on in open session. If, however, the motion would reveal "too much," then the motion can be abbreviated. A motion can be made and voted on in executive session so long as it is repeated and voted on in open session. "Final actions" DO NOT include guidance given by the governing body to its attorney or other negotiator regarding strategy, litigation, negotiation, etc. (See NDCC §44-04-19.2(2)(e) for further details.)

Recommended Motion to be made in open session:

**Under the authority of North Dakota Century Code Sections 44-04-19.1 and 44-04-19.2, the Board close the meeting to the public and go into executive session for purposes of attorney consolation, to review confidential records, and discuss negotiating strategy regarding regarding:**

- **Continental Resources, Inc. v. North Dakota Board of University and School Lands and the United States of America – Case No. 1:17-cv-014**
- **Oil Royalty Settlements**

<b>Action Record</b>	<b>Motion</b>	<b>Second</b>	<b>Aye</b>	<b>Nay</b>	<b>Absent</b>
Secretary Howe					
Superintendent Baesler					
Treasurer Beadle					
Attorney General Wrigley					
Governor Burgum					

**Statement:**

“This executive session will be recorded and all Board members are reminded that the discussion during executive session must be limited to the announced purpose for entering into executive session, which is anticipated to last approximately 20 minutes.

The Board is meeting in executive session to provide guidance or instructions to its attorneys regarding the identified litigation. Any formal action by the Board will occur after it reconvenes in open session.

Board members, their staff, employees of the Department of Trust Lands and counsel with the Attorney General staff will remain, but the public is asked to leave the room.

The executive session will begin at: \_\_\_\_\_AM, and will commence with a new audio recording device. When the executive session ends the Board will reconvene in open session.”

Statements upon return to open session:

State the time at which the executive session adjourned and that the public has been invited to return to the meeting room.

State that the Board is back in open session.

State that during its executive session, the Board consulted with attorneys regarding the identified legal issue.

State that no final action will be taken at this time as a result of the executive session discussion

**-or- .**

Ask for a formal motion and a vote on it.

**Move to the next agenda item.**