

Executive Summary

Chief Investment Officer
Jon M. Braeutigam

Performance

- The returns are higher than peer median
- Compounding at higher than peer returns adds significant value
 - Added approximately \$18.4 billion in excess value compared to median returns over the past ten years
 - This equates to approximately an additional \$1.8 billion to the FY-2025 budget
 - For every year the Funds sooner get to 100% funded, it equates to approximately \$3 billion to the budget annually

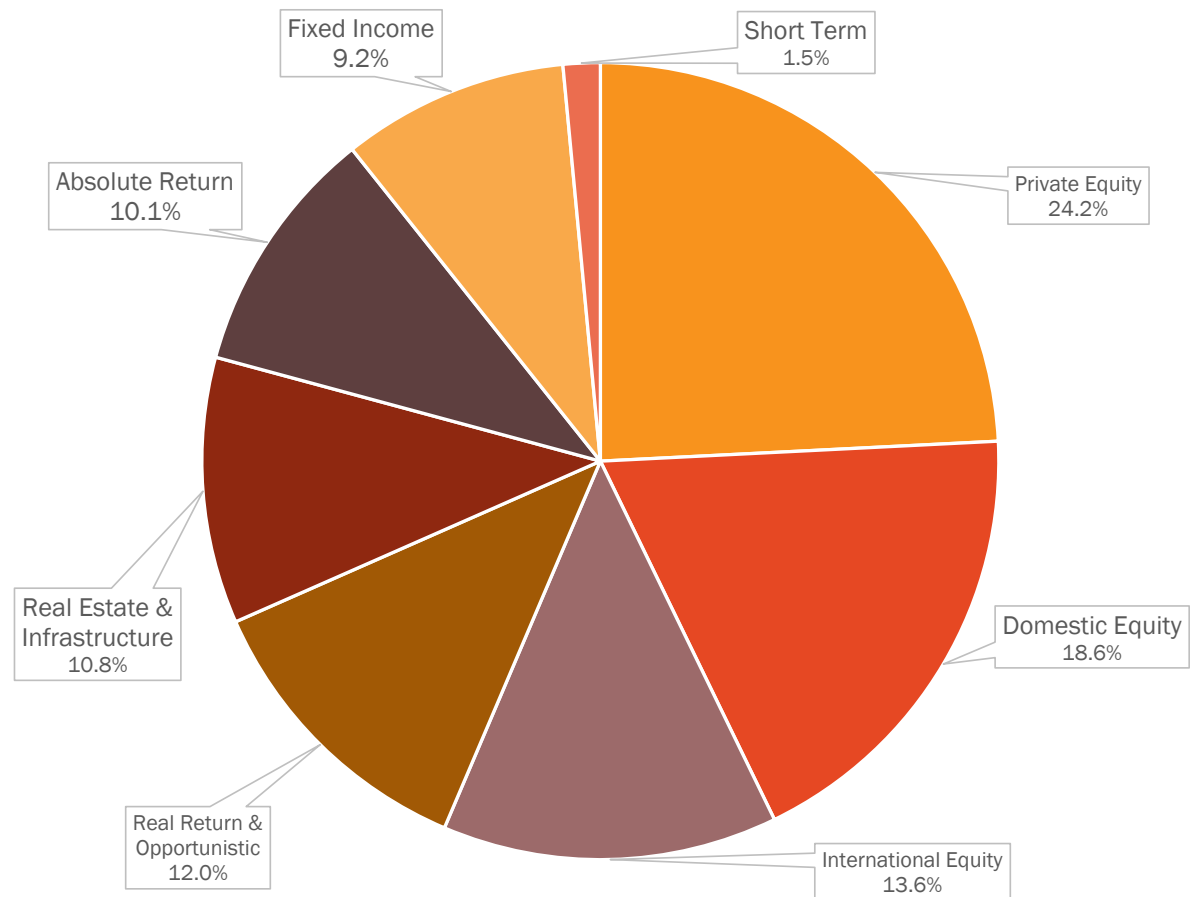
SMRS (12/31/22)	1-Year	3-Years	5-Years	7-Years	10-Years
Annualized Returns	-6.3%	8.4%	8.6%	9.5%	9.6%
Policy Benchmark	-8.0%	6.1%	7.1%	8.8%	8.9%
Peer Median Returns*	-7.8%	6.4%	6.6%	8.0%	7.9%

*State Street Peer Universe greater than \$10 billion

Portfolio

12/31/22

- \$92.6 billion AUM
- Unfunded Commitment Value \$17.8 billion
- \$500 million new commitments made during the December 2022 quarter
- The combined systems paid out approximately \$1.2 billion net of contributions over the past year



New Commitments

October 1, 2022 – December 31, 2022

Asset Class	Fund Name / Managed By	Commitment (\$ Millions)
Private Equity		
	GTCR XIV, LP (GTCR LLC)	\$150
Real Estate & Infrastructure		
	Lone Star Fund XII, LP (Lone Star Management Co. XI, Ltd.)	\$300
	Avanath Affordable Housing Renaissance Fund, LP (Avanath Capital Management, LLC)	\$50
Total		\$500

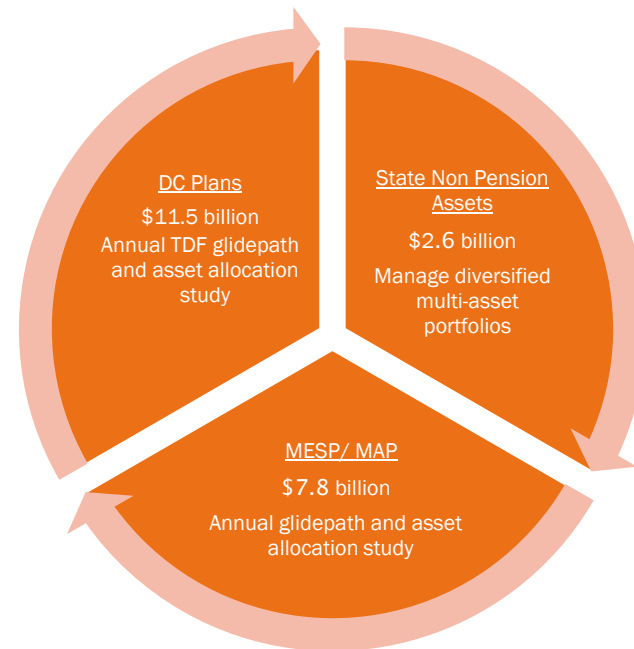
Defined
Contribution,
Trust &
Agencies

Senior Investment Manager

Lan H. Chen, CFA, CAIA

DCTA Team

- Keep up to date on 401K regulation, guidelines and industry trends
- Recommend investment design and lineup
- Underwrite QDIA: target date glide path
- Continuous review of managers in investment lineup
- Research potential additions/consolidation of funds
- Annual review of fees
- Recommend to SMIB changes to the investment manager lineup



Team of 3, working collaboratively with the Office of Retirement Services (ORS) for the benefit of over 265,000 plan participants

Portfolio

12/31/22

- DC plans are participant led investments
- The investment lineup offers a sufficient range of investment options to allow the Participants to diversify their individual retirement accounts and construct portfolios that reasonably span the risk/return spectrum

Tier I Funds

BlackRock Government Short-Term Investment Fund	State Street Bond Market Index Fund	State Street S&P 500 Index Fund	State Street S&P Mid Cap Index Fund	BlackRock S&P Small Cap 600 Equity Index Fund
State Street Global All Cap Equity ex-U.S. Index Fund	BlackRock Emerging Markets Index Fund	State Street Target Retirement Funds		

Tier II Funds

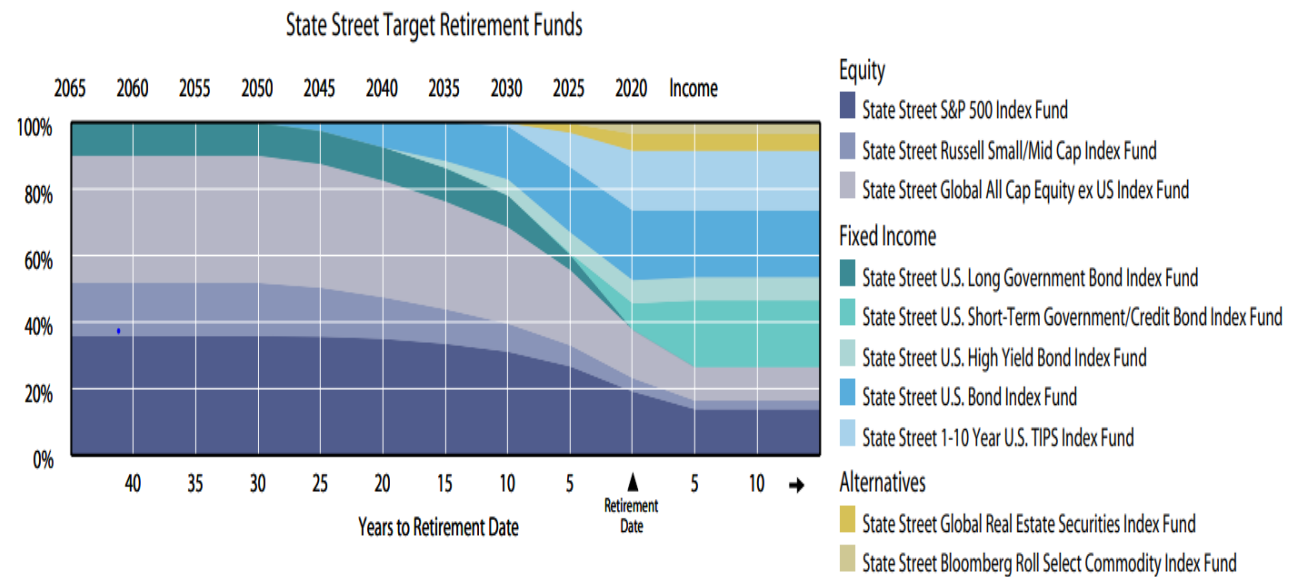
Stable Value Fund	PIMCO Total Return I Fund	Prudential High Yield Fund	Dodge & Cox Stock	Jennison Large Cap Growth Equity Fund
T. Rowe Price Mid-Cap Value Fund	Artisan Mid Cap Fund	Virtus Ceredex Small-Cap Value Eq I	Voya Small Cap Growth Equity Fund	American Funds Euro Pacific Growth R6

Self-Directed Brokerage Account

SDBA

Default Option

Target date funds are professionally managed portfolios that transition a participant from building wealth to preserving wealth



Defined Contribution, Trusts & Agencies Team

- Lan Chen, CFA, CAIA; Senior Investment Manager, 14 years of finance industry experience
 - Krasimir Yankov; Investment Officer, 6 years of finance industry experience
 - Lewis Brody; Investment Analyst, 2 years of finance industry experience
- All three investment professionals have a master's degree, with two of the three having completed all three levels of the rigorous Chartered Financial Analyst program
- Highly educated team that are passionate about what they do

Private
Equity

Senior Investment Manager
Peter Woodford

Purpose

The Private Equity Division's (PED) goal is to beat the S&P 500 benchmark by 300 bps

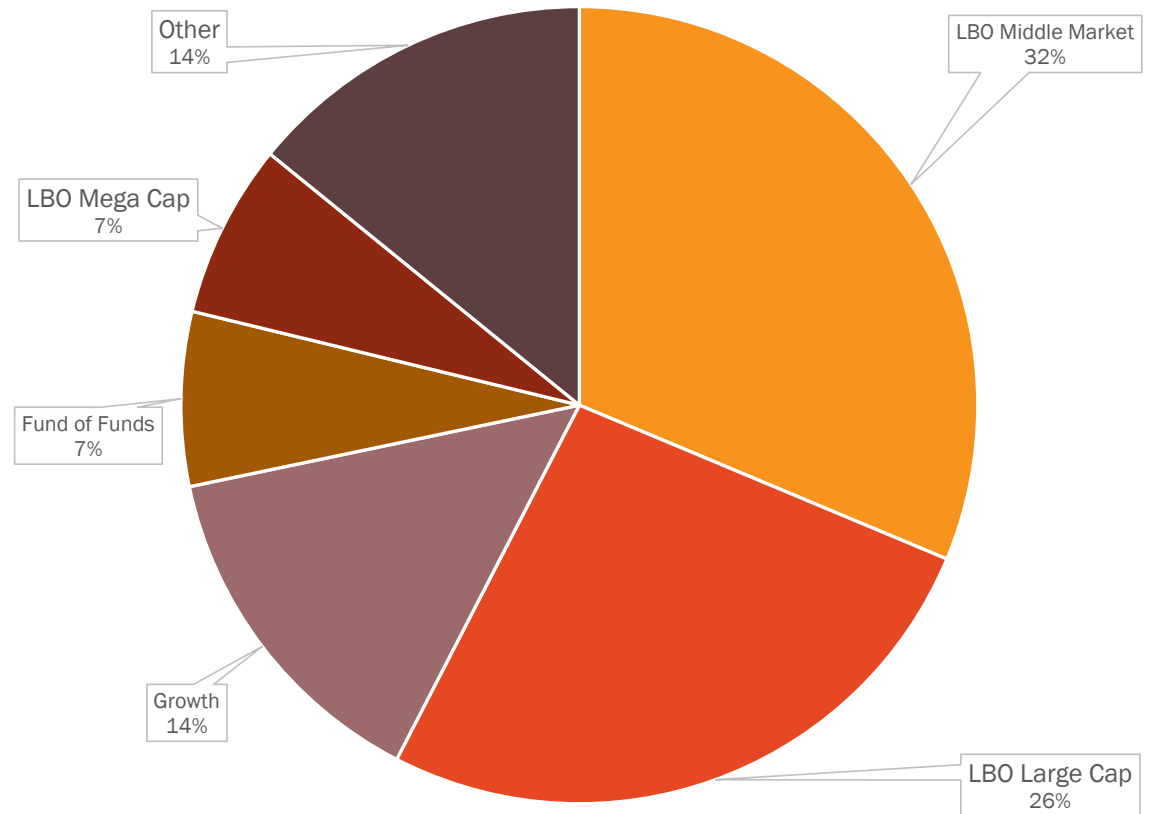
Provide portfolio returns that exceed peer median returns

Construct a portfolio that generates attractive risk adjusted returns

Portfolio

12/31/22

- \$19.1 billion AUM
- Unfunded Commitment Value \$6.9 billion
- Target Weight Ranges:
 - LBO Middle Market 25 - 30%
 - LBO Large Cap - 25 - 30%
 - Growth - 10 - 15%
 - Fund of Funds 0 - 10%
 - LBO Mega 0 - 10%
 - Other* - 0 - 20%



*Includes Multi-Strategy, LBO Micro, Secondary, LBO Lower Middle Market and Co-Investment Funds

Performance

- Over the last 10 years, the Private Equity Division outperformed the S&P by 3.2% (ten-year S&P 500 return 12.6%) and outperformed the benchmark by 0.8%
- Private equity returns have been strong relative to peer median returns, ranking in the top 8.0% of peers over the past ten years

Private Equity (12/31/22)	1-Year	3-Years	5-Years	7-Years	10-Years
Annualized Returns	-2.4%	20.1%	17.4%	16.2%	15.8%
PE Benchmark Returns	-12.9%	11.4%	12.5%	14.7%	15.0%
Peer Median Returns*	2.6%	12.6%	11.3%	11.6%	10.9%

*State Street Peer Universe greater than \$1 billion

Private Equity Team

- Peter Woodford; Senior Investment Manager, with the BOI approximately 16 years and 28 years of total investment experience
 - Matthew Hutson; Senior Assistant Investment Manager, with the BOI approximately 5 years and 16 years of total investment experience
 - Chad Houghton, CFA, CAIA; Investment Specialist, with the BOI approximately 10 years
 - Jamie Prevo; Investment Specialist, with the BOI approximately 25 years
 - Nick Whitman; Investment Specialist, with the BOI approximately 5 years

Venture
Capital

Senior Investment Manager
Ryan Rathman

Strategy

A continued bias toward early stage

Support of early-stage managers that have built platforms

Still thoughtful and selective on unique growth opportunities

Keeping an eye on international exposure

Portfolio

Total NAV: \$3.3 billion

Commitments: \$4.6 billion

Unfunded: \$1.4 billion

Sector:

70% broad tech

30% healthcare

Stage:

65% early-stage

35% late-stage/growth

Market Update

Valuations trends

Pacing and fund sizes

An evolution of the venture model

Venture Capital Team

- Ryan Rathman; Senior Investment Manager, 5+ years at the BOI, previous experience in technology equity research, investment banking, and corporate development
 - Chris Lett; Investment Specialist, 15 years at the BOI across three divisions: Real Estate (4 years), Public Equities (8 years), and now Venture Capital (3 years)
 - Erin Mock; Investment Specialist, 3+ years at the BOI, previous experience in wealth management
 - Mitch Kerkstra; Investment Analyst, 1+ years at the BOI, previous experience in private equity and investment banking
 - Dylan St. Cyr, Student Assistant, graduate student at MSU; current goalie for the MSU men's hockey team

Real Estate &
Infrastructure

Senior Investment Manager

Todd A. Warstler

Purpose

Focused on sourcing off-market opportunities through extensive network and where available, reducing risk through early income-generating investments.

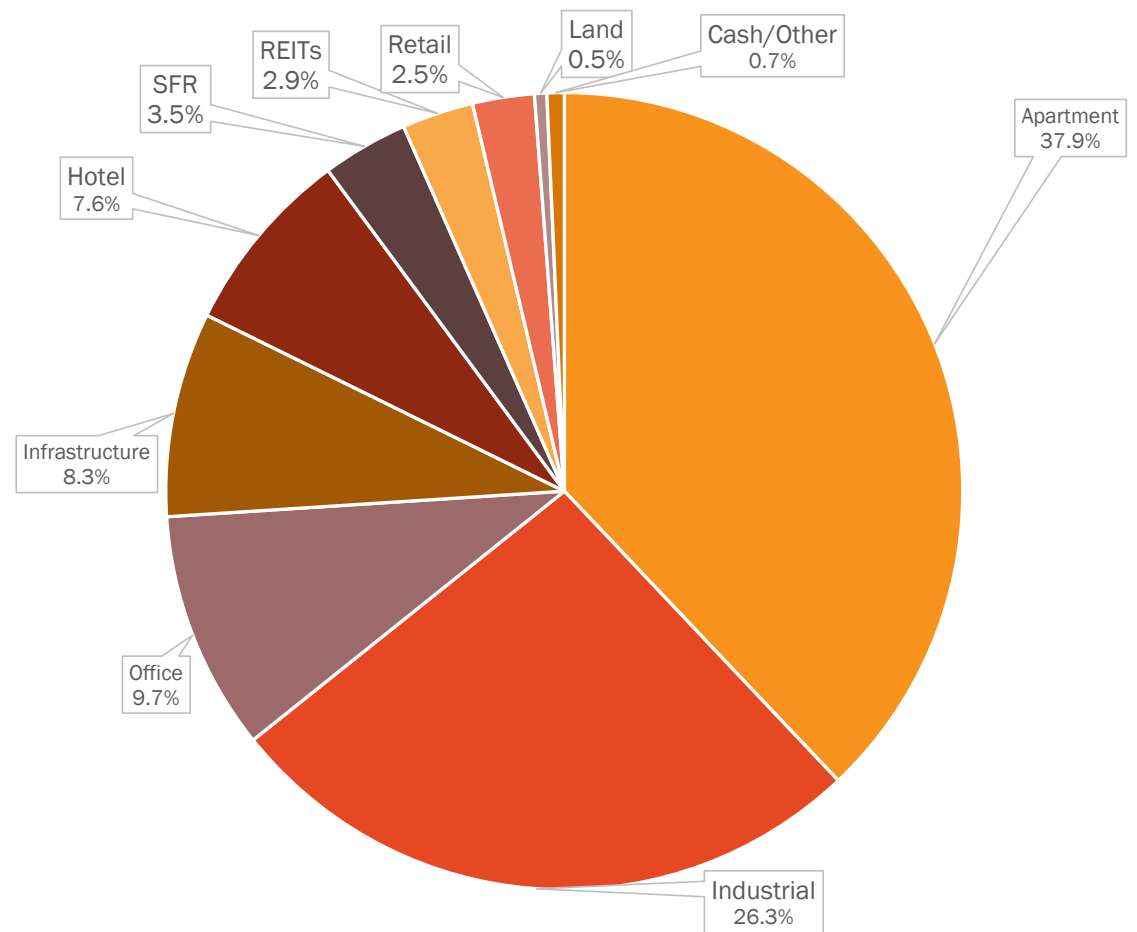
Selectively acquire properties where value can be added through management and leasing, and to develop properties at attractive risk-adjusted returns

In infrastructure; focus on diversified strategies and identify managers with top performing track-records and best in class investment teams who are pursuing opportunities in desirable sectors

Portfolio

12/31/22

- \$10.0 billion AUM
- Unfunded Commitment Value \$3.2 billion
- Impacts due to the COVID-19 pandemic on commercial markets have been uneven across the sectors
- New threats to markets emerged in 2022 including geopolitical tensions, elevated levels of inflation and sharply higher interest rates
- Actively managing the portfolio with capital returned of approximately \$737 million and funding approximately \$2.2 billion over the past 12 months



Performance

- Outperformance relative to the one-year benchmark resulted primarily from the Real Estate and Infrastructure Division's (REID) strategy of being overweight in residential, underweight to office & retail and recovery in the hospitality sector
- Over the ten-year timeframe the REID is outperforming the benchmark by 360 basis points

REID (12/31/22)	1-Year	3-Years	5-Years	7-Years	10 Years
Annualized Returns	19.6%	10.6%	10.2%	10.0%	11.0%
NCREIF NPI	4.2%	6.7%	6.1%	6.1%	7.4%
Peer Median Returns*	8.3%	10.3%	9.2%	9.0%	10.9%

*State Street Peer Universe greater than \$1 billion

Real Estate & Infrastructure Team

- Todd Warstler; Senior Investment Manager, with the BOI approximately 26 years
 - Giles Feldpausch; Senior Assistant Investment Manager, with the BOI approximately 26 years
 - Dave Klauka; Senior Assistant Investment Manager, with the BOI approximately 13 years and 25 years of total investment/banking experience
 - Camille Wood; Investment Specialist, with the BOI approximately 20 years
 - Bradley Hartwell; Investment Specialist, with the BOI approximately 4 years and 15 years of total real estate industry experience
 - Taylor Broekstra; Investment Analyst, with the BOI approximately 3 years

Real Return &
Opportunistic

Senior Investment Manager
Travis L. Haney, CFA, CAIA

Purpose

Exposures to investments that complement other private and public market portfolios

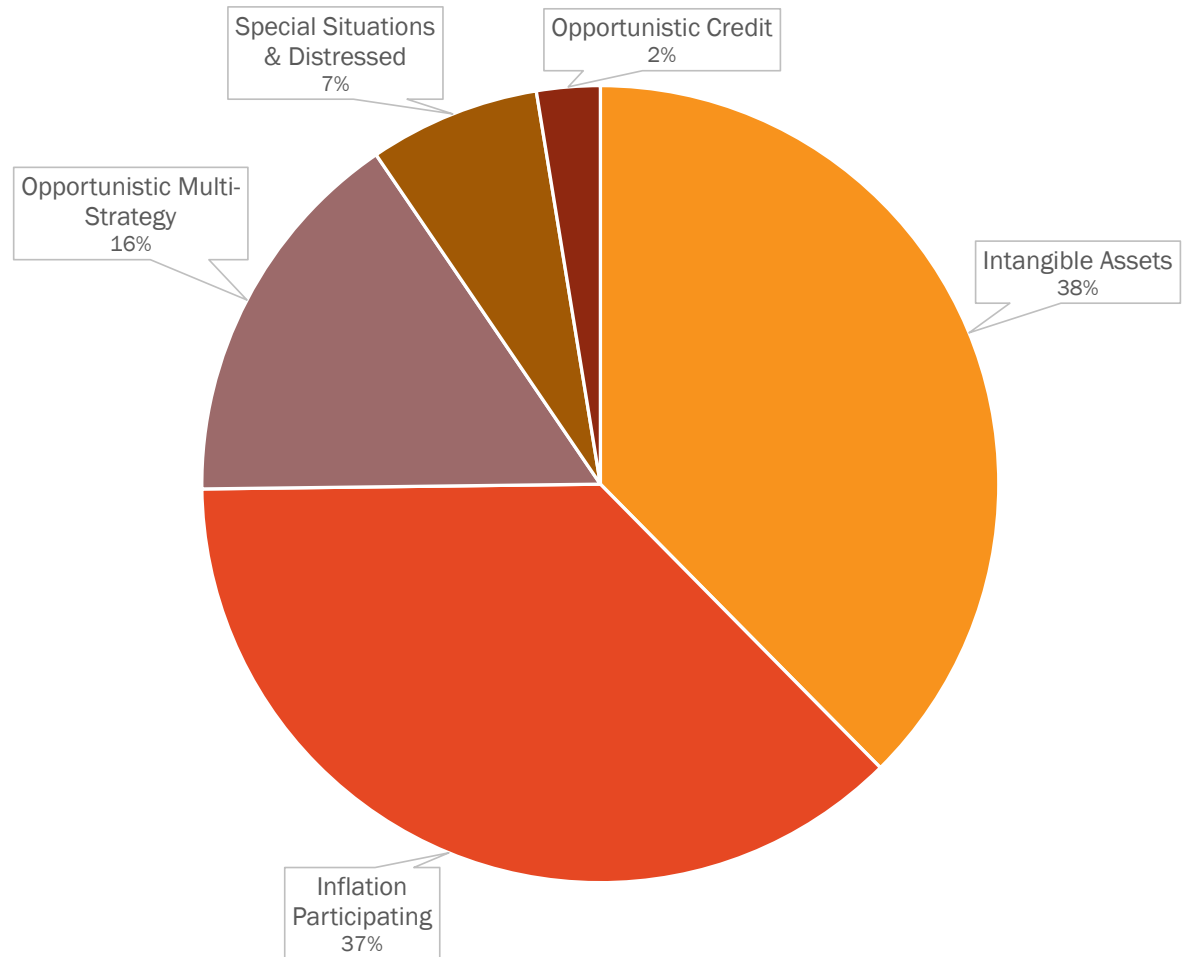
Focus on inflation-participating and uncorrelated opportunities in addition to other niche private market strategies with attractive risk-adjusted returns

Tactically target strategies that are less widely adopted where capital can still be deployed at scale

Portfolio

12/31/22

- \$11.1 billion AUM
- Unfunded Commitment Value \$3.3 billion
- Illustrative Investments:
 - Intangible Assets
Axton Holdings
 - Inflation Participating
Sixth Street Agriculture Partners I
 - Opportunistic Multi-Strategy
BSCH I and II, Co-Invest Vehicles
 - Special Situations & Distressed
American Industrial Partners VII



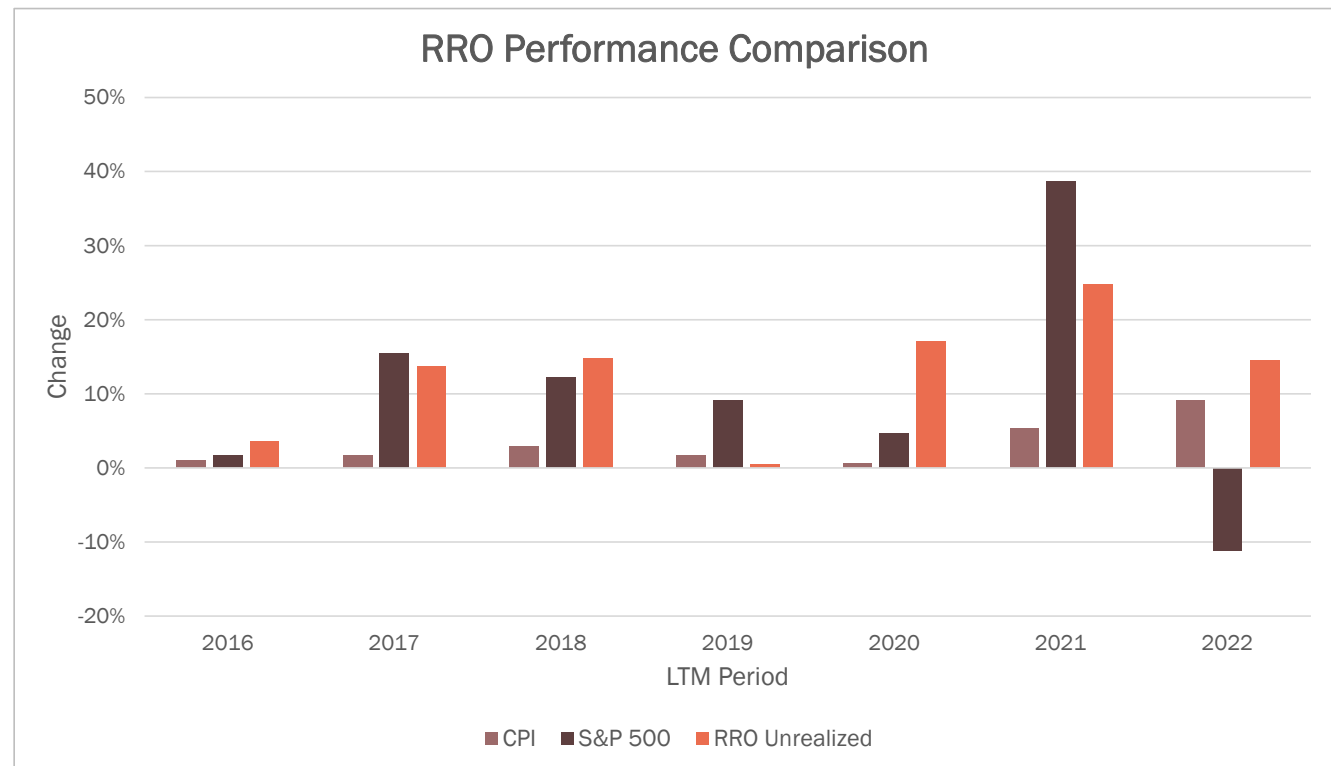
Performance

➤ Outperformance relative to the one-year benchmark (50% CPI + 400bps and 50% actuarial rate) resulted primarily from the inflation-participating assets in the portfolio which returned more than 20% during the period

Opportunistic (12/31/22)	1-Year	3-Years	5-Years	7-Years	10-Years
Annualized Returns	14.7%	15.6%	14.8%	13.1%	13.1%
Benchmark Returns	8.3%	7.8%	7.5%	7.5%	7.4%

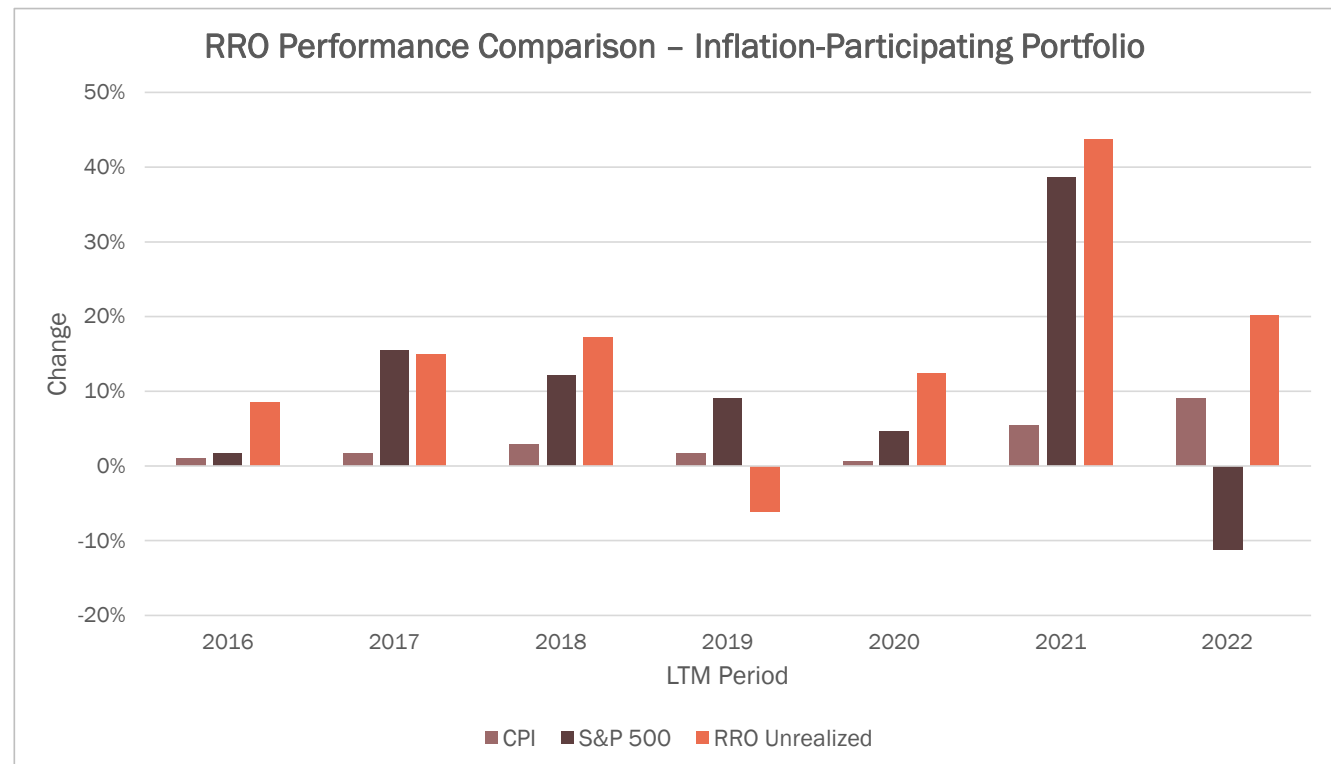
Performance

- The overall portfolio has demonstrated solid absolute returns and impressive relative returns versus the benchmark, CPI, and the S&P 500
- From 2020 to 2022, the portfolio increased in aggregate 43% (19.5% annually) versus an aggregate CPI increase of 15.0% (7.2% annually) and an aggregate S&P 500 increase of 23.2% (11.0% annually)



Performance

➤ The inflation-participating assets in the portfolio have performed even better; generating an aggregate return of 72.7% (31.4% annually) over the same period and outpacing CPI by 57.8% (24.2% annually)



Real Return & Opportunistic Team

- Travis Haney; Senior Investment Manager – 13 years with the BOI and 20 years of finance industry experience
 - Craig Coulter; Senior Assistant Investment Manager – ~7 years with the BOI and 9 years of finance industry experience
 - Charles Knoll; Investment Specialist – 5 years with the BOI and 11 years of finance industry experience
 - Ryan Marr; Investment Specialist – 9 years with the BOI and 16 years of finance industry experience
 - Eyan Bell; Intern – <1 year of finance industry experience

Absolute
Return

Senior Investment Manager

Daniel J. Quigley

Purpose

The goal for the Absolute Return portfolio is to diversify the total plans' holdings

Target returns above investment-grade fixed income with lower volatility than the equity portfolio

The portfolio is comprised of private credit and hedge fund strategies

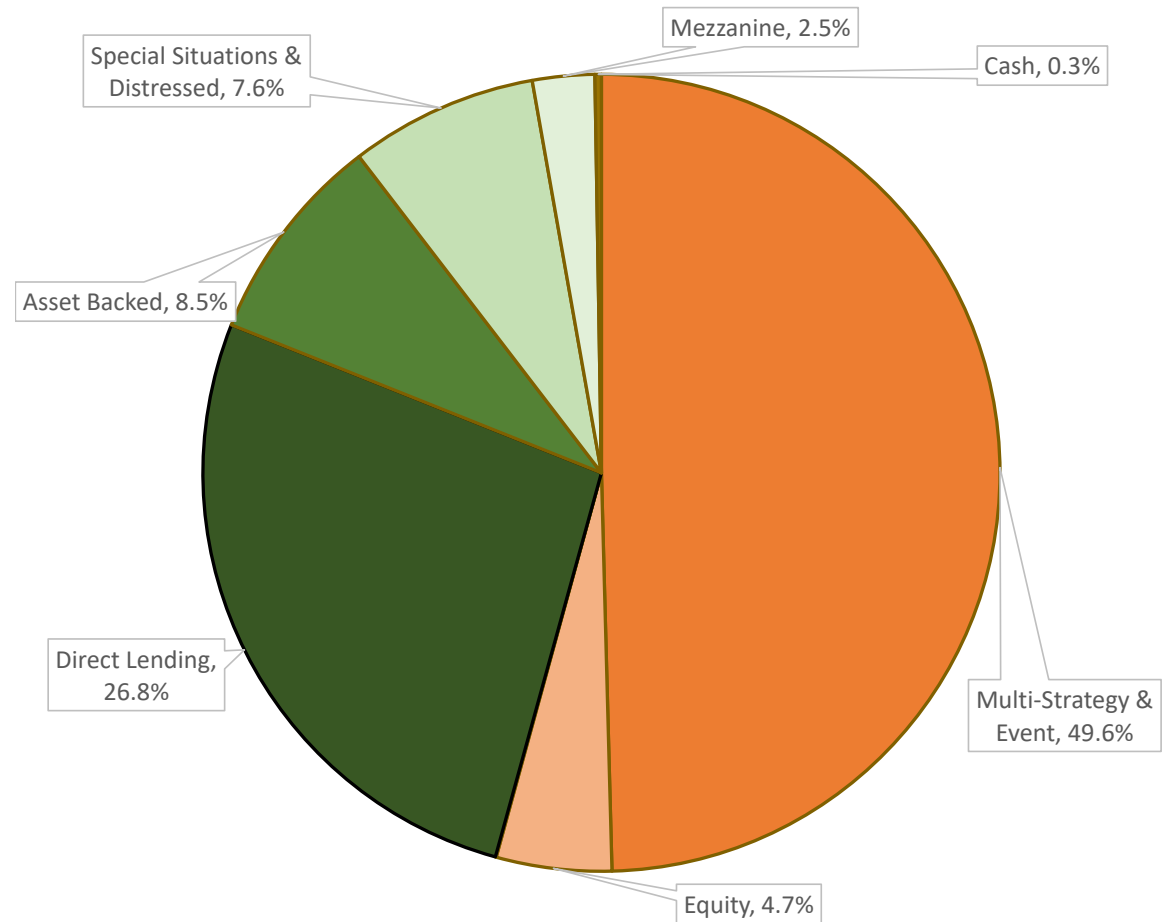
The hedge fund allocation utilizes a diverse mix of managers that invest both long and short to target specific exposures and seek to hedge out unwanted risk

The private credit portfolio consists of both long-only and hedged strategies that target corporate credit, structured credit, specialty finance, and asset-backed strategies

Portfolio

12/31/22

- \$9.3 billion AUM
- Transferred \$2.9 billion of private credit strategies into the portfolio during the 2022 fiscal year
- The allocation to private credit is targeted to be approximately 50% of the portfolio on a go-forward basis



Performance

Absolute Return (12/31/22)	1-Year	3-Years	5-Years	7-Years	10 Years
Annualized Returns	2.9%	7.4%	6.2%	5.7%	5.8%
HFRI FOF Conservative Returns	0.0%	4.8%	3.8%	3.4%	3.7%

Absolute Return Team

- Daniel Quigley; Senior Investment Manager, with the BOI approximately 16 years
 - Mitchell Brussel; Investment Analyst, with the BOI approximately 3 years

Fixed
Income

Senior Investment Manager

Daniel J. Quigley

Purpose

The Fixed Income Division's (FID) goal is to meet or exceed the returns of the Bloomberg U.S. Aggregate Bond Index while satisfying the overall characteristics of a core fixed income portfolio

Provide portfolio returns with characteristics of: Income, Liquidity, Principal Preservation, and Diversification from equity market risk

Employs a Core-Plus portfolio structure. The Core targets relatively liquid bonds having exposure to interest rate duration. The Plus targets bonds that offer the best risk-adjusted credit spreads while targeting an investment grade credit risk profile

Portfolio

12/31/22

➤ **Income** The coupon of the portfolio is approximately 100bp higher than the index. The portfolio maintains a meaningful overweight to floating rate securitized assets such as CLO liabilities and ABS. These coupons continue to increase as the Federal Reserve increases short-term interest rates

➤ **Liquidity** The portfolio has a 26.3% allocation to U.S. Treasuries, TIPS, and cash. In addition to this, the portfolio has another 10.7% allocated to ETFs and Agency RMBS that can be liquidated via same day or next-day trading

➤ **Principal Preservation** The portfolio has a large allocation to government guaranteed securities and maintains an average credit rating of A+

➤ **Diversification** The equity beta of the portfolio is 0.1, in line with the equity beta of the benchmark. The overall interest rate duration of the portfolio is 5.8 years, 0.3 years short of the benchmark

	Weight	Maturity	Duration	Coupon	YTM	Beta
FID	100%	9.3 Yr	5.8 Yr	3.7%	6.8%	0.1
FID Core	71%	10.7 Yr	7.2 Yr	3.4%	5.8%	0.1
FID Plus	29%	5.7 Yr	2.2 Yr	4.1%	9.0%	0.2
Benchmark Index		8.4 Yr	6.1 Yr	2.7%	4.7%	0.1

Performance

Fixed Income (12/31/22)	1-Year	3-Years	5-Years	7-Years	10-Years
Annualized Returns	-10.9%	-1.4%	1.2%	2.5%	2.4%
FID Benchmark Returns	-13.0%	-2.7%	0.0%	0.9%	1.1%
Peer Median Returns*	-12.7%	-1.8%	0.6%	1.6%	1.5%

*State Street Peer Universe greater than \$1 billion

Fixed Income Team

- Daniel Quigley; Senior Investment Manager , with the BOI approximately 16 years
 - Betty Nicklesen; Senior Assistant Investment Manager, ST Fixed Income, with the BOI approximately 30 years
 - Ann Stange; Investment Specialist, with the BOI approximately 26 years
 - Robert Anderson; Investment Specialist, with the BOI approximately 10 years
 - Monica Blackwell; Departmental Analyst, with the BOI approximately 23 years
 - Barb Becker; Senior Assistant Investment Manager, LT Fixed Income, with the BOI approximately 32 years
 - Jane Weidman; Investment Specialist, with the BOI approximately 43 years
 - Tyler Isola; Investment Analyst, with the BOI approximately 2 years

Domestic
Equity

Senior Investment Manager

Jack Behar

Purpose

Provide long-term domestic equity market returns or better, investing in a diversified and attractively valued portfolio of companies at an index fund-like cost

Develop staff, growing both their investing and leadership skills

Create a culture of investment education, passion, individual ownership, support for one another, respecting differing viewpoints and a willingness to examine and learn from mistakes

Portfolio

12/31/22

- Domestic Equity invests in a diversified mix of index funds, undervalued companies, growth stocks, quantitative factor strategies, and smaller companies with potentially disruptive technology
- At the aggregate level, Domestic Equity tends to run a beta higher than 1.0 when it believes markets are reasonably priced, in order to generate excess returns when markets are up
- Division members are given a portfolio to manage oriented around their style, strengths and approach, which is then weighted by the division's Senior Investment Manager based on diversification benefit to the division, portfolio manager experience, expected return, and risk

	Domestic Equity	S&P 1500
Characteristics:		
Market Cap. (\$ in Billions)	\$376.4	\$383.1
FY1 P/E	15.3X	16.4X
P/E upside to S&P 1500	6.6%	-
Return on Equity	22.6%	20.2%
Risk Metrics		
Beta	1.10	1.00
Tracking Error	2.8%	-

Performance

- Returns are in the top third of the peer group over the long term
- Most recently; energy, defensive and value stocks did well, while growth companies, where DED was overweight, underperformed, leading to what we believe to be a cyclical lull in both short and long term relative performance versus the S&P 1500
- DED has taken advantage of the current environment to maintain its exposure to growth and add leading, high-quality companies to the portfolio at price levels that haven't been seen in over a decade
- We believe that this portfolio will meaningfully outperform the market once the Fed has concluded its rate rising cycle and the economy recovers from its induced slowdown

Domestic Equity (12/31/22)	1-Year	3-Years	5-Years	7-Years	10 Years
Annualized Returns	-22.5%	4.4%	7.6%	10.2%	11.6%
S&P 1500 Returns	-17.8%	7.6%	9.2%	11.3%	12.4%
Peer Median Returns*	-15.9%	5.5%	6.6%	8.9%	9.6%

*State Street Peer Universe greater than \$1 billion

Domestic Equity Team

- Jack Behar, Senior Investment Manager, Portfolio Manager, 20+ years of experience
 - Tom Smith; Senior Assistant Investment Manager, Portfolio Manager, Trader, 30+ years of finance industry experience
 - Ted Kulinski; Senior Assistant Investment Manager, Head of Indexing, 20+ years of finance industry experience
 - Greg Harrison; Investment Officer, Portfolio Manager, 20+ years of finance industry experience
 - John Richards; Investment Specialist, Portfolio Manager, 45+ years of finance industry experience
 - Henry James; Investment Specialist, Portfolio Manager, 30+ years of finance industry experience
 - Vikram Ambekar; Investment Specialist, Portfolio Manager, 20+ years of finance industry experience
 - Kenji Griffith; Investment Specialist, Portfolio Manager, 5+ years of finance industry experience
- Seven of the eight investments professionals have completed all three levels of the rigorous Chartered Financial Analyst program, with the eighth having completed both levels one and two
- Highly experienced team that remains passionate about what they do
- Staff members have a wide range of investment styles, approaches, and strengths, which creates natural diversification at the division level

International
Equity

Senior Assistant Investment Manager

Mark C. Porrell, CFA

Purpose

Construct an international equity-focused portfolio generating ten-year returns exceeding the MSCI ACWI ex USA Index by 1.0%, consistently

Produce returns in the top half of the public plan peer universe over a 7-10 year horizon

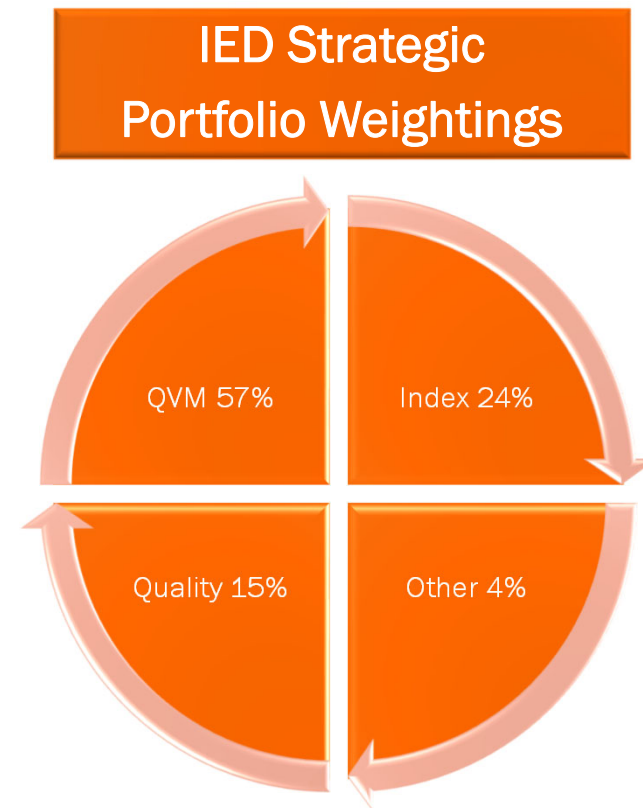
Achieve persistent exposure to the quality, value and momentum factors delivering higher risk-adjusted returns relative to the market over time

Advance people, processes and systems to continuously improve investment decisions

Portfolio

12/31/22

- \$12.8 billion in AUM
- The IED invests in international stock markets through index funds, a stock plus strategy and external active managers
- A factor based investment strategy intent on achieving persistent exposure to the quality, value and momentum factor
- Factors target characteristics in securities proven to deliver higher risk adjusted returns, over time
- Persistent factor exposure creates a diversified portfolio that is lower cost with more consistent, more transparent and more efficient returns



Performance

- The portfolio trailed the index by 3.2% over the past twelve months but has met the objective of outperforming over a longer time horizon
- In 2022, relative exposure to quality, momentum, technology and energy negatively impacted returns
- The core strategy of quality, value and momentum trailed the index by 0.5% in 2022 but has delivered +200bps of outperformance since inception in 2018

International Equity (12/31/22)	1-Year	3-Years	5-Years	7-Years	10 Years
Annualized Returns	-19.2%	0.0%	1.1%	5.1%	4.6%
MSCI ACWI ex USA Returns	-16.0%	0.1%	0.9%	4.8%	3.9%
Peer Median Returns*	-15.8%	1.0%	1.8%	5.2%	4.8%

*State Street Peer Universe greater than \$1 billion

International Equity Team

- Patrick M. Moraniec, CFA – Senior Investment Manager, with the BOI approximately 14 years
 - Thaddeus L. Townsel – Investment Specialist, with the BOI approximately 18 years
 - Mark C. Porrell, CFA – Senior Assistant Investment Manager, with the BOI approximately 35 years
 - Aaron M. Bandy – Investment Analyst, with the BOI approximately 4 years
 - Leonardo Sanchez – Investment Analyst, with the BOI approximately 1 year