



# HAMPDEN COUNTY RETIREMENT BOARD

PRESENTED BY

Francesco Daniele, Director of Client Services

DECEMBER 4, 2024

**Deborah B. Goldberg**, Treasurer and Receiver General, Chair

**Michael G. Trotsky**, CFA, Executive Director and Chief Investment Officer

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A blue-tinted photograph of a city skyline at dusk, viewed from a waterfront promenade. The sky is a deep blue, and the city lights are beginning to glow. In the foreground, there is a paved walkway with a low stone wall and some greenery. The water of the harbor is visible on the right side.

# PRIM BOARD & PRIT FUND OVERVIEW



AS OF SEPTEMBER 30, 2024

# PRIT Fund Snapshot

As of September 30, 2024

## PRIT FUND FACTS

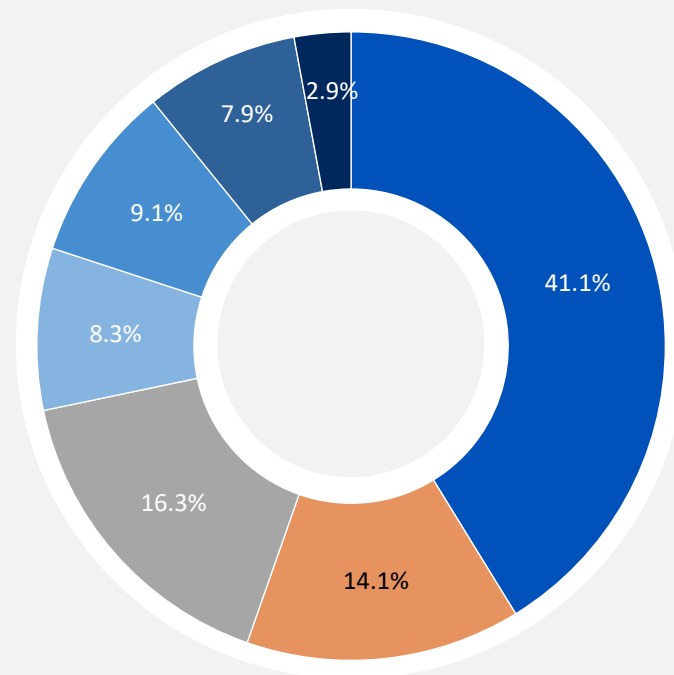
- \$110.5 billion AUM
- 73 public markets portfolios
- 15 real estate, timber and REIT portfolios
- 100+ private equity managers; 400+ partnerships
- 33 portfolio completion strategies managers

## OVERSIGHT AND STAFFING

- 9 appointed and elected trustees
- 5 advisory committees, consisting of 43 industry professionals and Board members
- Staff of over 60 professionals
  - 33 Masters
  - 16 CFAs
  - 6 CPAs
  - 3 CAIAs
  - 3 JDs
  - 1 FRM
  - 1 CRE
- 10 CFA Investment Foundations Program Certificate Holders

## ASSET ALLOCATION

(as of 9/30/24)



## TARGET RANGES

(approved 2/15/24)

- Global Equities 31% - 41%
- Core Fixed Income 12% - 18%
- Private Equity 13% - 19%
- Portfolio Completion Strategies 7% - 13%
- Real Estate 7% - 13%
- Value-Added Fixed Income 6% - 12%
- Timberland 1% - 7%



# About PRIM



**\$110.5 billion investment fund that invests public employee pension benefits**

- PRIM has a professional, experienced and focused investment staff.
- PRIM does not administer benefits.

**PRIM's mission is to relieve the pension funding burden on the taxpayer**

- Self-funded agency which generates asset returns for the Massachusetts pension system.
- PRIM's Project SAVE initiative is achieving nearly \$300 million annualized value enhancing activities for the fund annually.

**PRIM is independent and governed by a nine-member Board of Trustees**

- Massachusetts State Treasurer is the Chair of the PRIM Board.
- A robust committee structure lends investment and operational expertise to the decision-making process.



## PRIM Core Beliefs

We believe that any investment must be evaluated on three equally important parameters: return, risk and cost.

We don't make tactical asset allocation decisions or investment decisions based on market or economic predictions. Instead, we engineer a strategic, long-term asset allocation strategy that we hope will stand the test of a long-time horizon.

We value a basis point of cost reduction more than a basis point of return. Because we can count on cost savings every year, but nobody ever really knows what the markets will deliver.



# PRIM Board



**Chair**  
**DEBORAH B. GOLDBERG**  
State Treasurer and  
Receiver General,  
Commonwealth of Massachusetts



**Ruth Ellen  
Fitch**

Appointee of  
the State  
Treasurer



**Catherine  
D'Amato**

Designee  
of the  
Governor,  
Ex Officio  
Member



**Peter  
Monaco**

Appointee  
of the  
Governor,  
Non-State  
Employee or  
Official



**Carly Rose**

Appointee  
of the  
Governor,  
Public Safety



**Theresa F.  
McGoldrick,  
Esquire**

State  
Retirement  
Board  
Member  
(SRB)



**Dennis J.  
Naughton**

Teachers'  
Retirement  
Board  
Member  
(TRB)



**Robert L.  
Brousseau**

Elected  
Representative  
State Teachers'  
Retirement  
System



**Paul E.  
Shanley,  
Esquire**

Elected  
Representative  
State  
Employees  
Retirement  
System



# PRIM Advisory Committees

## Investment Committee

The Committee advises the Board with respect to the asset allocation policy of PRIM and related investment policies and assist the Board in overseeing the investment program. The mandate of the Investment Committee does not include real estate and timber. Members include:

1. **Deborah B. Goldberg**, Chair, Treasurer and Receiver General of Massachusetts, PRIM Board Chair (Ex Officio)
2. **Joseph C. Bonfiglio**, Massachusetts & Northern New England Laborers' District Council
3. **C. LaRoy Brantley**, Investment Consultant
4. **Catherine D'Amato**, President and CEO, The Greater Boston Food Bank
5. **Michael Even**, Former President and CEO, Numeric Investors
6. **Constance M. Everson**, CFA, Managing Director, Capital Markets Outlook Group
7. **Ruth Ellen Fitch**, Esq., Board Member, Former President and CEO, the Dimock Center
8. **James B. G. Hearty**, Board Member, Former Partner, Clough Capital (Ex Officio)
9. **Peter Monaco**, Board Member, Managing Director, Raptor Group
10. **Phillip H. Perelmuter**, Former Managing Partner, Wellington Management
11. **Philip Rotner**, Chief Investment Officer, Boston Children's Hospital
12. **Paul E. Shanley**, Esq., Board Member, Former Director of Professional Liability, Amity Insurance
13. **Glenn P. Strehle**, CFA, Treasurer Emeritus, MIT
14. **Timothy L. Vaill**, Former Chairman and CEO, Boston Private Holdings





# PRIM Advisory Committees

## Real Estate Committee

The Committee advises the Board in setting investment policy within the real estate and timber portfolios and assist the Board in overseeing these portfolios. Members include:

1. **Jill S. Hatton**, CRE, Chair, Real Estate Investment Professional
2. **Deborah B. Goldberg**, Treasurer and Receiver General of Massachusetts, PRIM Board Chair (Ex Officio)
3. **Lydia Chesnick**, Esq., Partner, Bernkopf Goodman LLP
4. **Robert Gifford**, RGA Corp.
5. **Jack Lutz**, PhD., Forest Research Group
6. **William F. (Bill) McCall, Jr.**, CRE, McCall & Almy, Inc.
7. **Garlan Morse, Jr.**, CRE, Morris and Morse Company, Inc.
8. **Peter F. O'Connell**, Marina Bay Company
9. **Carly Rose**, Board Member, Public Safety Union Member

## Administration and Audit Committee

The Committee assists the Board in overseeing all issues related to the governance, administration, and audit functions of PRIM, and to provide recommendations for the Board's consideration. Members include:

1. **Robert L. Brousseau**, Chair, Board Member, Retired Teacher, Town of Wareham School System
2. **Deborah B. Goldberg**, Treasurer and Receiver General of Massachusetts, PRIM Board Chair (Ex Officio)
3. **Patrick E. Brock**, Chairman, Hampshire County Retirement Board
4. **Catherine D'Amato**, President and CEO, The Greater Boston Food Bank
5. **James B. G. Hearty**, Board Member, Former Partner, Clough Capital (Ex Officio)
6. **Theresa F. McGoldrick**, Esq., Board Member, National Executive Vice President, National Association of Government Employees (NAGE)
7. **Dennis J. Naughton**, Board Member, Retired Educator, Millis Public Schools



# PRIM Advisory Committees

## Stewardship and Sustainability Committee

The Committee assists the Board in overseeing all issues related to the development and ongoing implementation of an ESG framework and related engagement activities, and to provide recommendations for the Board's approval. Members include:

1. **Deborah B. Goldberg**, Treasurer and Receiver General of Massachusetts, PRIM Board Chair (Ex Officio)
2. **Ruth Ellen Fitch**, Esq., Board Member, Former President and CEO, the Dimock Center
3. **Theresa F. McGoldrick**, Esq., Board Member, National Executive Vice President, National Association of Government Employees (NAGE)
4. **Dennis J. Naughton**, Board Member, Retired Educator, Millis Public Schools
5. **Michael Even**, Former President and CEO, Numeric Investors
6. **Poonam Patidar**, Member, Mintz
7. **Mary Cerulli**, Founder, Climate Finance Action
8. **Marcela Pinilla**, Director of Sustainable Investing, Zevin Asset Management

## Compensation Committee

The Committee assists the Board in overseeing staff compensation and benefit policies. The Administration and Audit Committee is responsible for assisting the Board on other human resource matters. Members include:

1. **Deborah B. Goldberg**, Chair, Treasurer and Receiver General of Massachusetts, PRIM Board Chair (Ex Officio)
2. **Robert L. Brousseau**, Board Member, Retired Teacher, Town of Wareham School System
3. **Patrick E. Brock**, Chairman, Hampshire County Retirement Board
4. **Catherine D'Amato**, President and CEO, The Greater Boston Food Bank
5. **Marian A. Tse**, Retired Partner, Goodwin Procter

# Recent Recognition

## **The Allocator from With Intelligence Lifetime Achievement Award**

*The Allocator from With Intelligence* presented Michael G. Trotsky, CFA, PRIM's Executive Director and Chief Investment Officer, with its Lifetime Achievement Award. The publication called PRIM "a beacon of public service and investment prowess for the people of the Commonwealth of Massachusetts." (October 2024)

## **2023 Chief Investment Officer Power 100 List**

Michael G. Trotsky, CFA, PRIM's Executive Director and Chief Investment Officer, was named to the 2023 CIO Power 10 List by the publication, *Chief Investment Officer*. The designation honors leaders "who continue to guide their funds through volatile times and are disciplined enough to navigate whatever is ahead." (November 2023)

## **Institutional Investor's Next Generation Recognition Award**

Bill Li, CFA, CAIA, Director of Portfolio Completion Strategies received *Institutional Investor's* Next Generation Recognition. The award honors "distinguished leaders within the allocator community for their outstanding contributions to portfolio construction." (May 2024)

## **Commonwealth Citations for Outstanding Performance**

Veena Ramani, Director of Stewardship, and George Tsipakis, Director of Investment Operations, were named 2024 recipients of the Commonwealth Citation for Outstanding Performance by Treasurer Deborah B. Goldberg. (October 2024)

## **GIPS® Compliance**

For the 7<sup>th</sup> consecutive year, PRIM has completed the CFA Institute's Global Investment Performance Standards (GIPS®) verification.\* PRIM is one of only a handful of large public pension plans to comply with the GIPS® standards. Additionally, Matt Liposky, PRIM's Chief Investment Operations Officer, was appointed by the CFA Institute to chair the GIPS® Standards Asset Owner Subcommittee. (August 2024)

## **Certificate of Achievement for Excellence in Financial Reporting – Government Finance Officer Association**

PRIM was awarded the Government Finance Officer Association's Certificate of Achievement for Excellence in Financial Reporting for the 19<sup>th</sup> consecutive year. (June 2024)

## **PRIM Ranked #4 For Assets Managed by Diverse Managers by Pensions & Investments**

PRIM was ranked fourth among the largest 200 funds in the U.S. for assets managed by diverse managers. This is an indication that PRIM's ongoing efforts over the years, combined with the new FUTURE initiative are putting PRIM at the top of the rankings in terms of progress. (February 2024)

## **Institutional Investor's Alpha Edge Award**

PRIM's Private Equity team won Alpha Edge recognition for Alpha Generation from *Institutional Investor*, which cited PRIM's strong leadership culture, collaboration, and thesis-driven approach to manager selection as well as PRIM's annual commitment modeling process and strong long-term performance in the asset class. (July 2023)

## **Private Equity Women Investor Network Limited Partner of the Year**

Private Equity Women Investment Network (PE-WIN), which is the preeminent organization for senior-level women investment professionals in private equity, recognized PRIM as "Limited Partner of the Year" for "empowering women in private equity." The award reflected both PRIM's work on investing with women and diverse managers via the FUTURE Initiative and the strong leadership presence of women on PRIM's Private Equity team. (July 2023)

## **PRIM's Private Equity Portfolio Ranked #4 by the American Investment Council**

PRIM's Private Equity Portfolio was ranked 4<sup>th</sup> among 200 U.S. public pension funds based on 10-year performance by the American Investment Council's Public Pension Study. PRIM is the only fund that has been in the top five every year the study has been conducted, including #1 rankings in 2019, 2018, 2015, and 2013. (June 2024)

\*PRIM claims compliance with the Global Investment Performance Standards (GIPS®). 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. You may obtain GIPS® compliant performance information by emailing



A photograph of a city skyline at dusk, viewed from a waterfront promenade. The sky is a deep blue, and the city lights are visible. In the foreground, there is a paved walkway with a low wall and some greenery. The water is calm, reflecting the city lights.

# STEWARDSHIP & SUSTAINABILITY

Mass  
PRIM

# Stewardship Priorities

These are areas of high potential for value creation where we will proactively spend the majority of our time and resources.



## Climate Transition Planning

Encourage climate-aware strategic plans and business models.



## Fair Pay

Drive uptake of equitable and transparent pay practices.



## Sustainable Forestry

Support practices that reduce forest loss and promote resilience.



## Transparency

Encourage improved disclosure on stewardship priorities.

# Ambition and Action Steps for Stewardship Priorities

**Our ambition** with each stewardship priority reflects the maturity of the issue, MassPRIM's expertise and resources, potential to deliver measurable outcomes and opportunities to demonstrate thought leadership in the investment community.

**Our actions** to operationalize these priorities across the fund will include:

- 1) **Assess impact on risk/ return:** Regularly assessing how these priorities improve the risk/return profile of the PRIT Fund.
- 2) **Engagement:** Engaging purposefully with portfolio companies, including through proxy voting.
- 3) **Manager/ consultant involvement:** Actively involving investment managers and consultants across all asset classes.
- 4) **Strategic partnerships:** Collaborating strategically with aligned investor groups that share our objectives.
- 5) **Progress assessment:** Systematically tracking and reporting progress.



A photograph of a city skyline at dusk, with buildings illuminated against a dark blue sky. In the foreground, there is a waterfront promenade with a cobblestone path and a low stone wall. The water reflects the city lights.

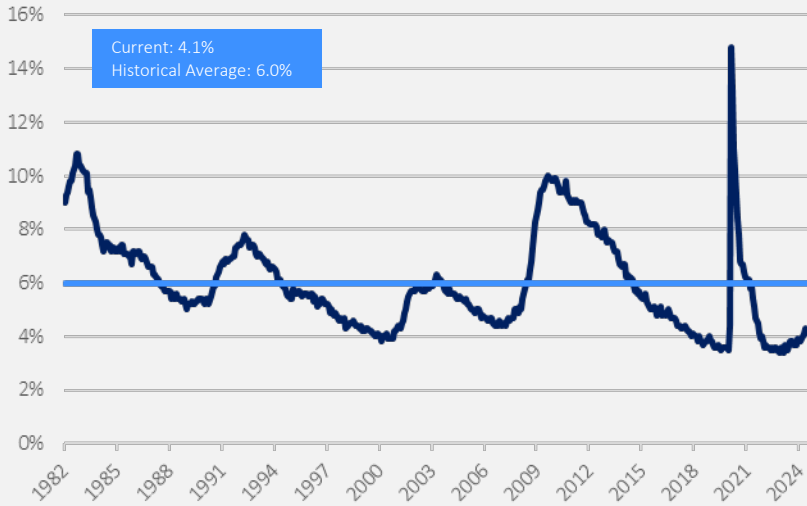
# ECONOMIC BACKDROP

Mass  
PRIM

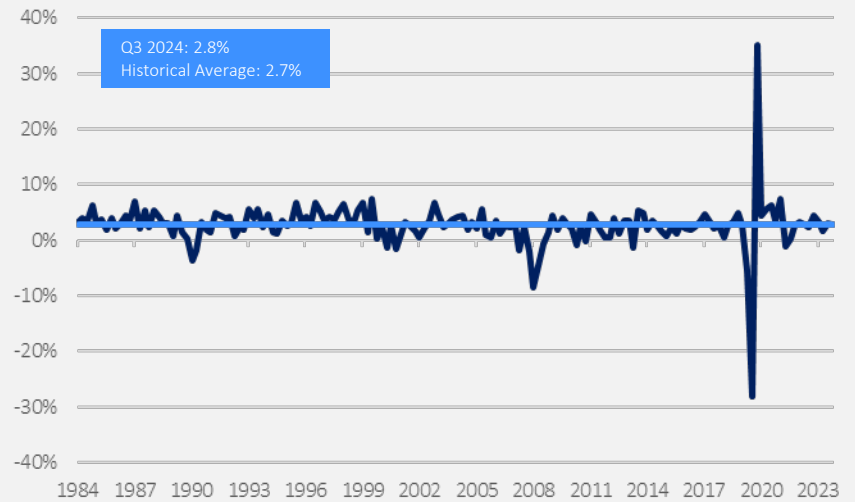
AS OF SEPTEMBER 30, 2024

# U.S. Economic Data

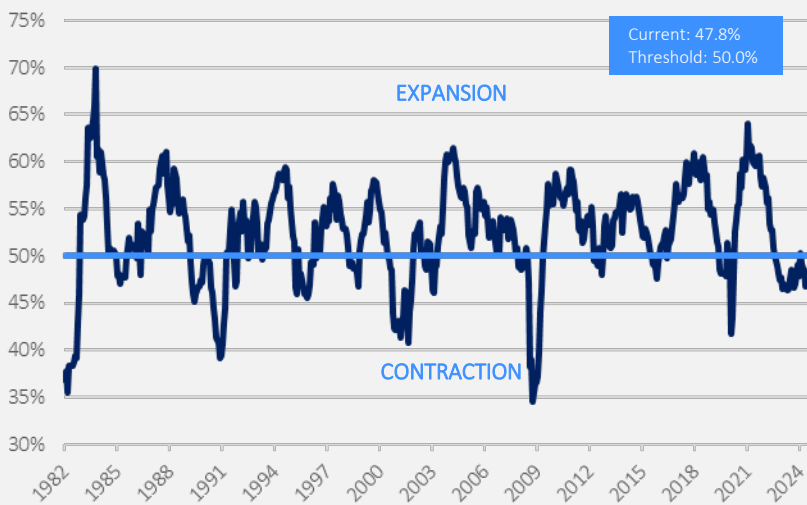
## UNEMPLOYMENT RATE



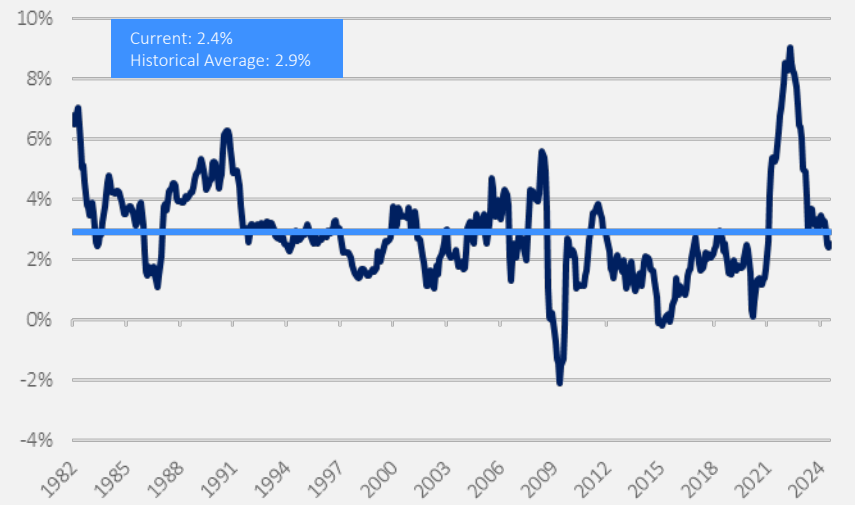
## GDP GROWTH RATE



## MANUFACTURING PMI

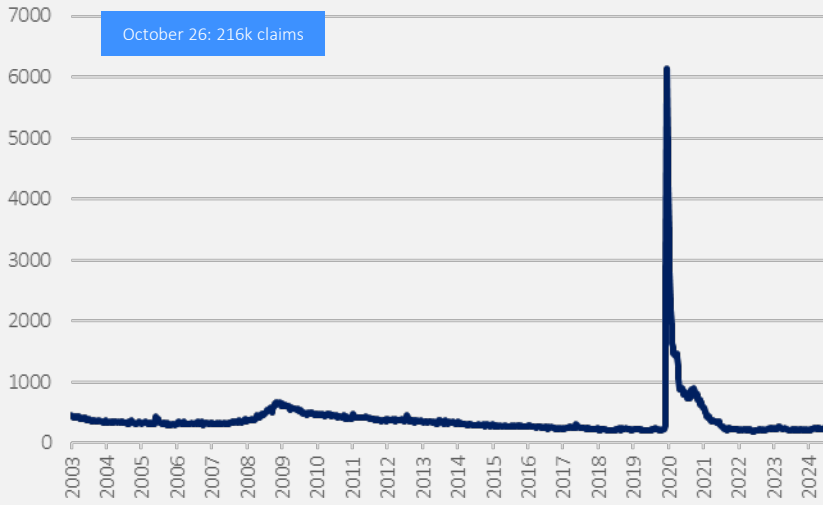


## CONSUMER PRICE INDEX

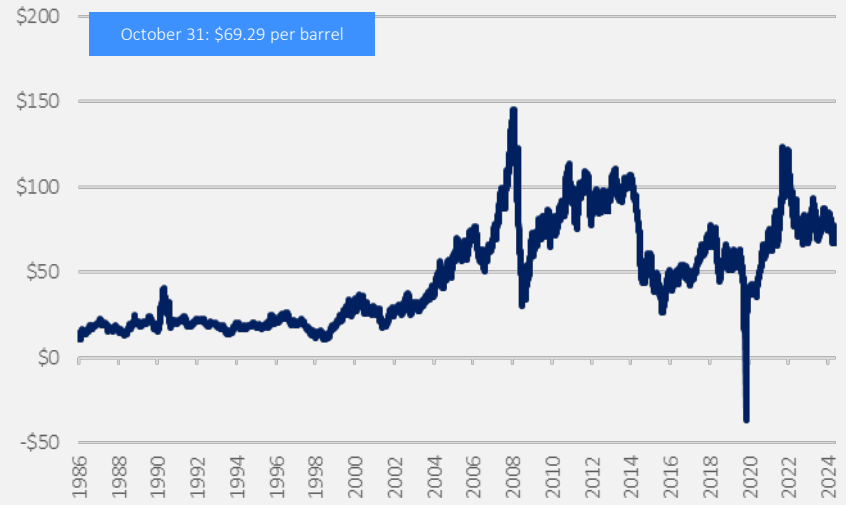


# U.S. Economic Data

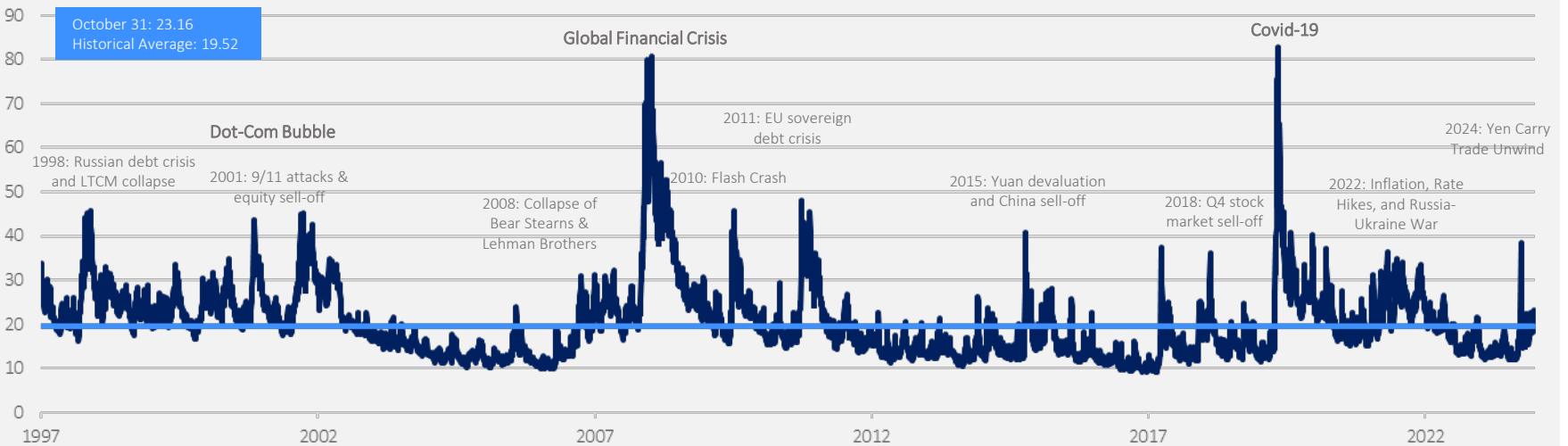
## WEEKLY INITIAL JOBLESS CLAIMS (IN MILLIONS)



## WTI CRUDE OIL (\$/BBL)



## CBOE MARKET VOLATILITY INDEX (VIX)





A blue-tinted photograph of a city skyline, likely Boston, featuring several skyscrapers and a prominent cable-stayed bridge in the foreground. The image is overlaid with a semi-transparent blue filter. The text 'PRIT FUND ASSET ALLOCATION TARGETS' is centered in white, bold, sans-serif font.

# PRIT FUND ASSET ALLOCATION TARGETS

The logo for Mass PRIM, consisting of the word 'Mass' in a white, sans-serif font above the word 'PRIM' in a larger, bold, white, sans-serif font. To the left of the text are three vertical bars of varying heights, also in white.

Mass  
PRIM

# Changes to Target Ranges – PRIT Fund Asset Allocation

Approved February 15, 2024

## Increase in Allocation Range

**Value-Added Fixed Income:**  
Target Band moves up 1%

## Same Allocation Range

**Core Fixed Income:**  
Target Band stays the same

**Private Equity:**  
Target Band stays the same

**Real Estate:**  
Target Band stays the same

**Timberland:**  
Target Band stays the same

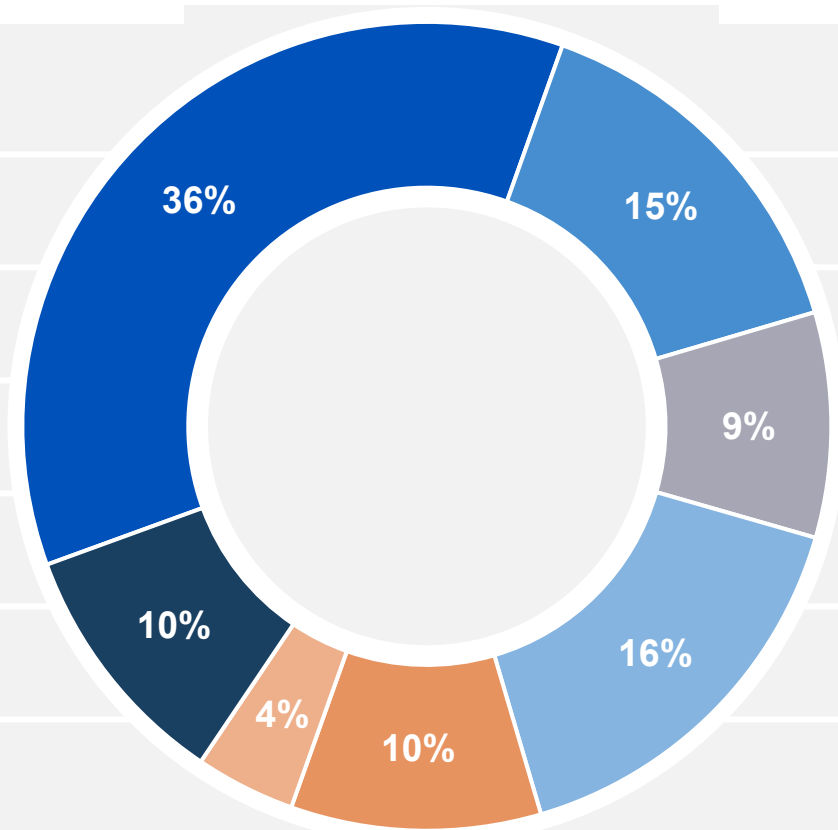
**Portfolio Completion Strategies:**  
Target Band stays the same

## Decrease in Allocation Range

**Global Equity:**  
Target Band moves down 1%

# PRIT Asset Allocation

Approved February 15, 2024



	AA 2023 Approved Range	AA 2024 Approved Range
<b>Global Equity</b>	32 – 42%	31% - 41%
<b>Core Fixed Income</b>	12% - 18%	No Change
<b>Value-Added Fixed Income</b>	5% - 11%	6% - 12%
<b>Private Equity</b>	13% - 19%	No Change
<b>Real Estate</b>	7% - 13%	No Change
<b>Timberland</b>	1% - 7%	No Change
<b>Portfolio Completion Strategies</b>	7% - 13%	No Change

The ranges in the PRIM asset allocation reflect the long-standing use of bands around a midpoint. Managing the asset allocation to a particular midpoint in the range is not always possible, practical or advisable.

# PRIM 2024 Asset Allocation Recommendations

NEPC Capital Market Assumptions with Value-Added Fixed Income and Global Equity Changes

		12/31/23 Asset Class Assumptions	
Asset Classes	Target Range	10 Yr. Expected Return	30 Yr. Expected Return
US Equity <sup>1</sup>		4.7%	6.9%
International Equities <sup>2</sup>		4.9%	6.6%
Emerging International Equities <sup>3</sup>		8.6%	9.2%
<b>Global Equity</b>	<b>31% - 41%</b>		
Core Bonds		4.6%	4.9%
Short-Term Fixed Income <sup>4</sup>		4.4%	4.2%
20+ Yr. Treasury STRIPS		3.3%	4.2%
TIPS/ILBs		4.3%	4.3%
<b>Core Fixed Income</b>	<b>12% - 18%</b>		
Value-Added Fixed Income <sup>5</sup>	<b>6% - 12%</b>	7.5%	7.8%
Private Equity	<b>13% - 19%</b>	9.1%	10.2%
Real Estate <sup>6</sup>	<b>7% - 13%</b>	5.8%	6.6%
Timberland <sup>7</sup>	<b>1% - 7%</b>	6.8%	7.1%
Portfolio Completion (PCS) <sup>8</sup>	<b>7% - 13%</b>	6.0%	6.4%
<b>Total Fund Expected Return<sup>9</sup></b>		<b>6.6%</b>	<b>7.7%</b>

1. Blended allocation to large-cap equity, small-cap equity, micro-cap equity
2. Blended allocation to large-cap equity and small-cap equity
3. Blended allocation to large-cap equity and small-cap equity
4. Modeled as Short-Term Treasury
5. Blended allocation to high yield, bank loans, EMD, private debt

6. Blended allocation to Private Real Estate and REITs
7. Timberland is modeled as Private Real Assets Infrastructure/Land
8. Modeled as equal weighted blend of Hedge Fund Equity, Credit, and Macro
9. Asset classes modeled at the midpoint of the asset allocation range



A blue-tinted photograph of a city skyline at dusk, viewed from a waterfront promenade. The sky is a deep blue, and the city lights are visible. In the foreground, there is a paved walkway with a low wall and some greenery on the left. The water is calm, reflecting the city lights.

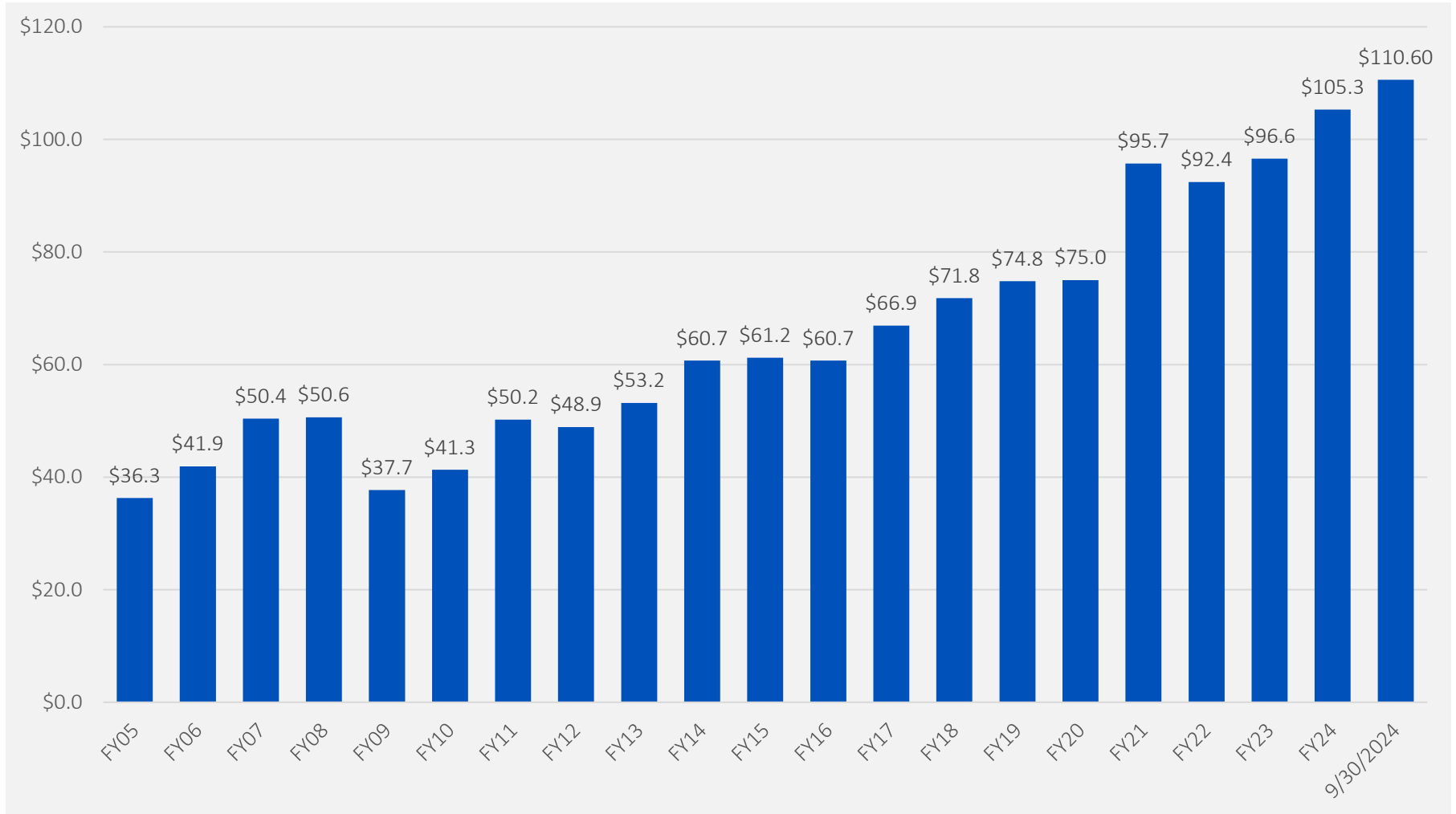
# PRIT FUND PERFORMANCE

Mass  
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AS OF SEPTEMBER 30, 2024

# Total PRIT Fund Fiscal Year Market Value

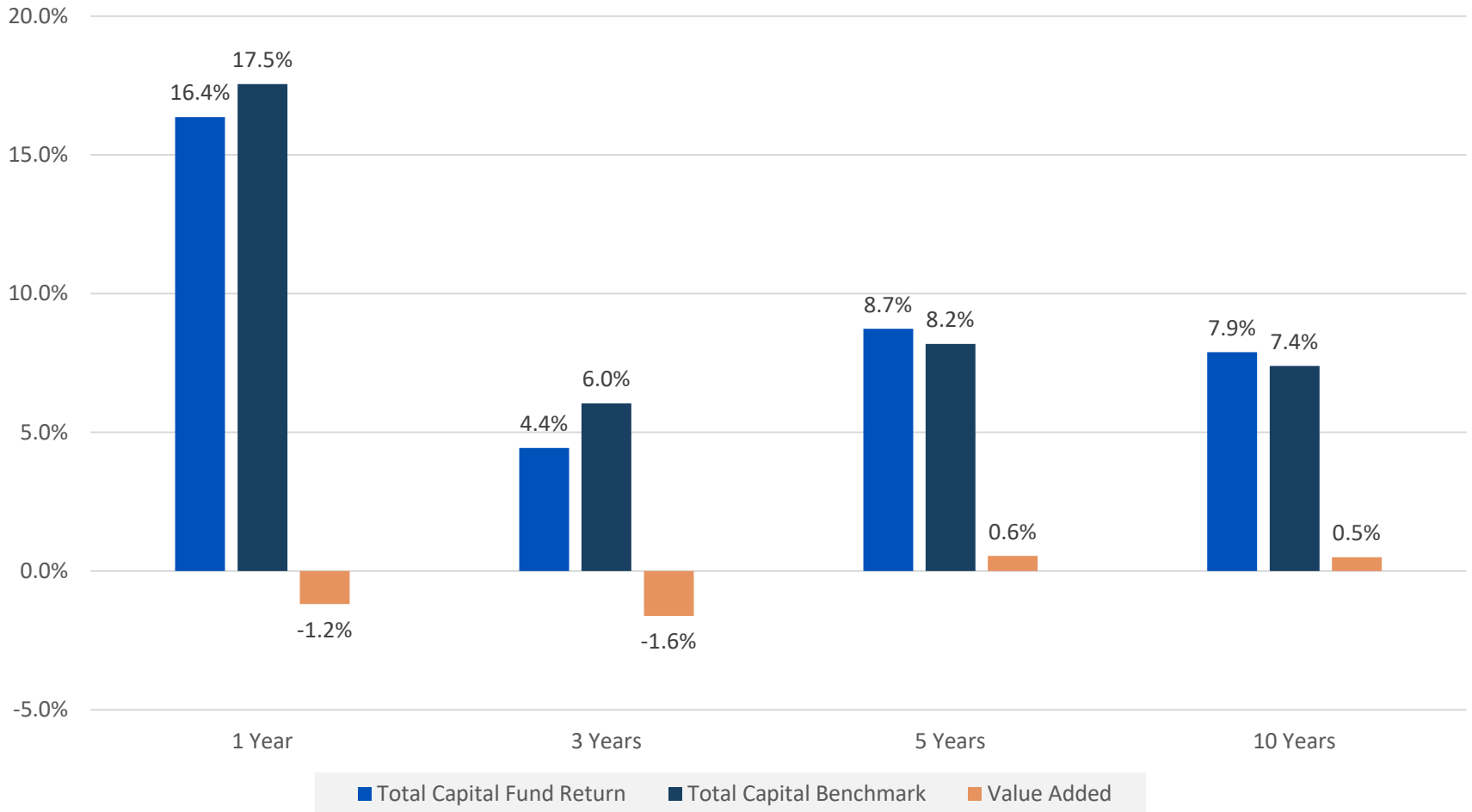
Value (\$Billions)



Source: BNY Mellon. As of September 30, 2024.

# PRIT Fund Total Returns

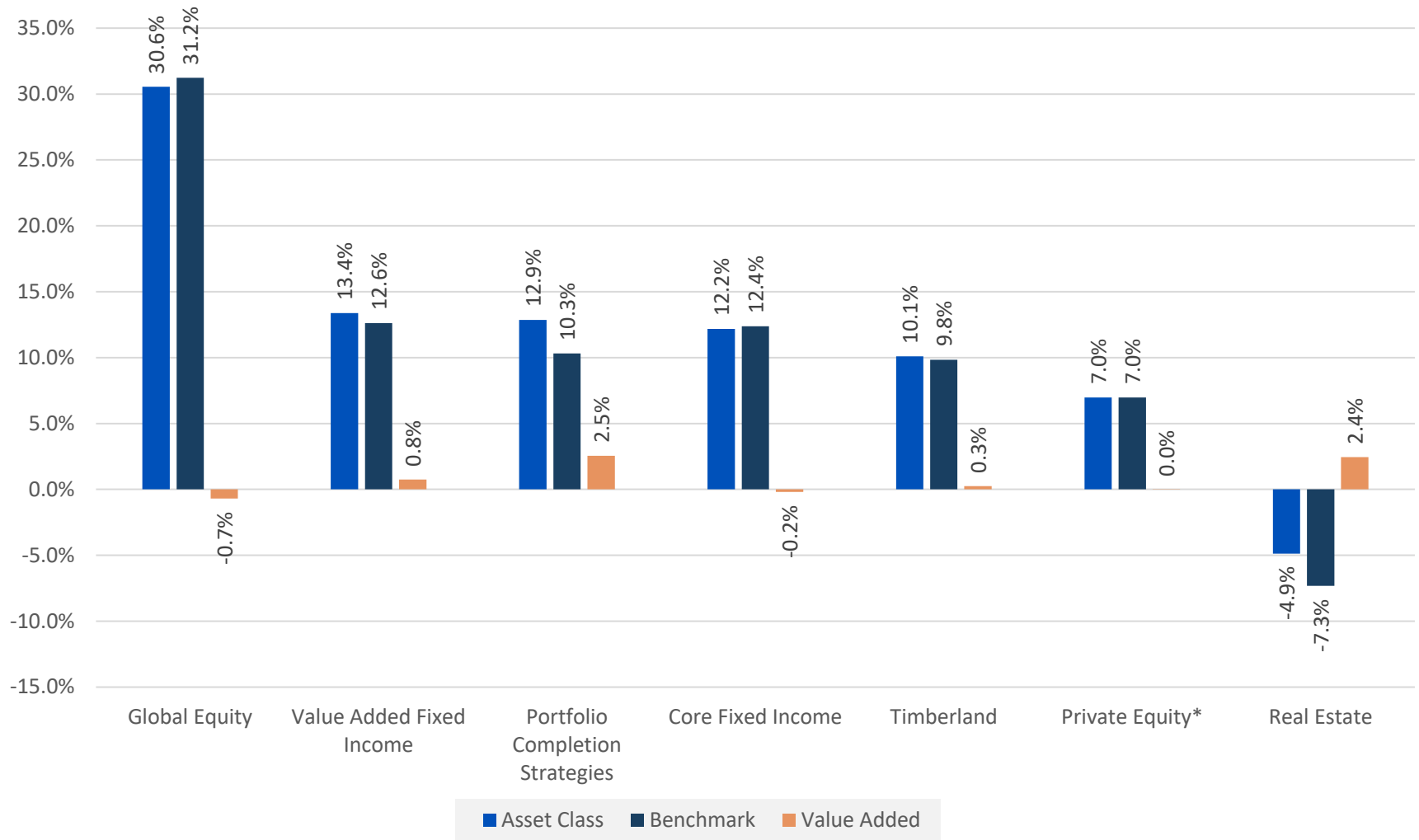
Annualized Returns as of September 30, 2024 (Net of Fees)



Source: BNY Mellon. Totals may not add due to rounding. Total Capital Benchmark includes private equity benchmark  
PRIT Fund Fiscal Year 10-year average ratio of expenses is 0.51%.

# PRIT Asset Class Performance Summary

One-Year Ended September 30, 2024 (Net of Fees)

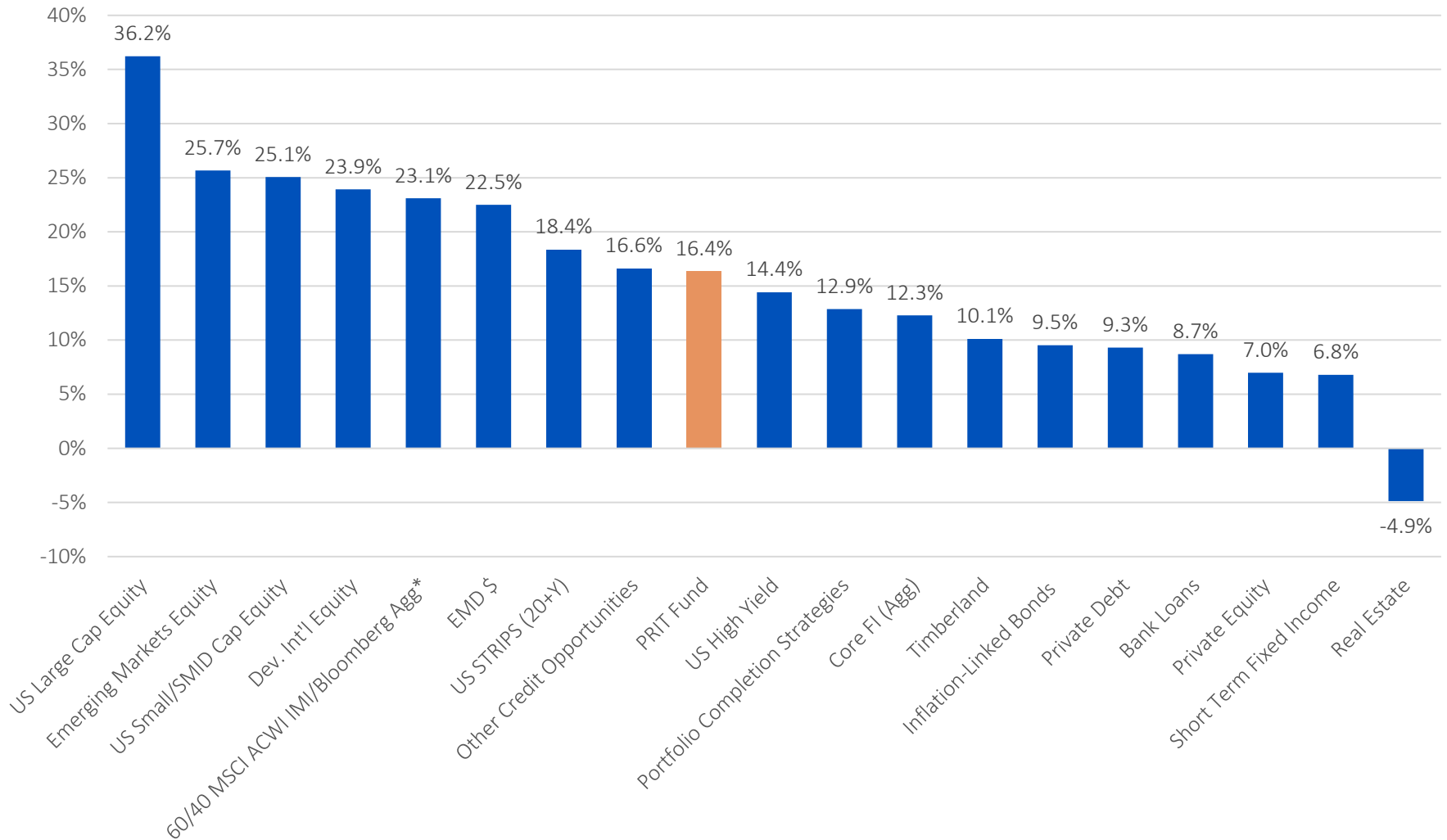


Source: BNY Mellon. Totals may not add due to rounding. \*Benchmark is actual performance.



# PRIT Performance By Strategy – One-Year

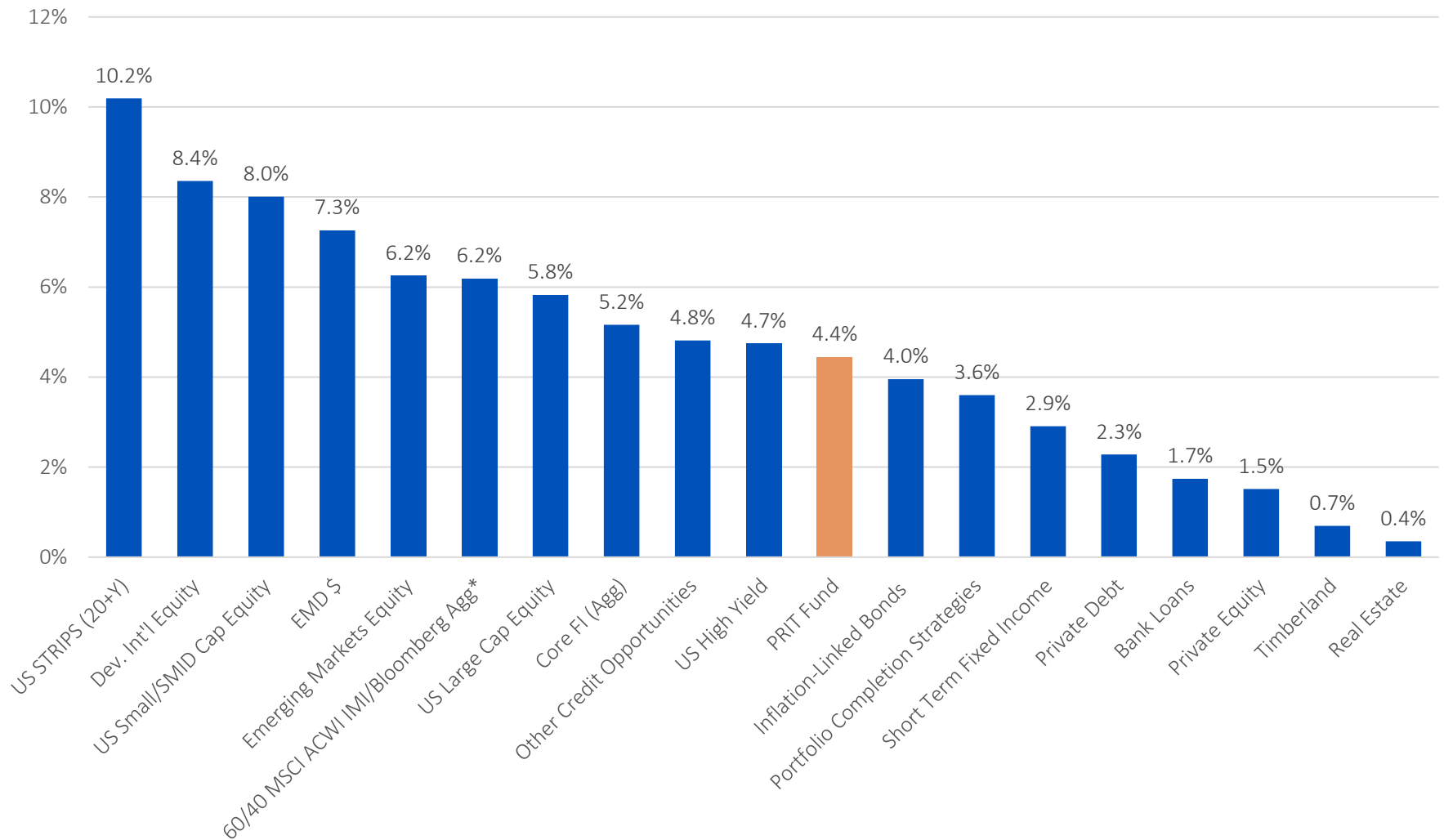
One-Year Ended September 30, 2024 (Net of Fees)



Source: BNY Mellon, FactSet. All performance figures reflected are PRIT Fund Asset Class returns. \*MSCI ACWI/Bloomberg Aggregate is derived from a 60/40 combination of index returns.

# PRIT Performance By Strategy – Third Quarter 2024

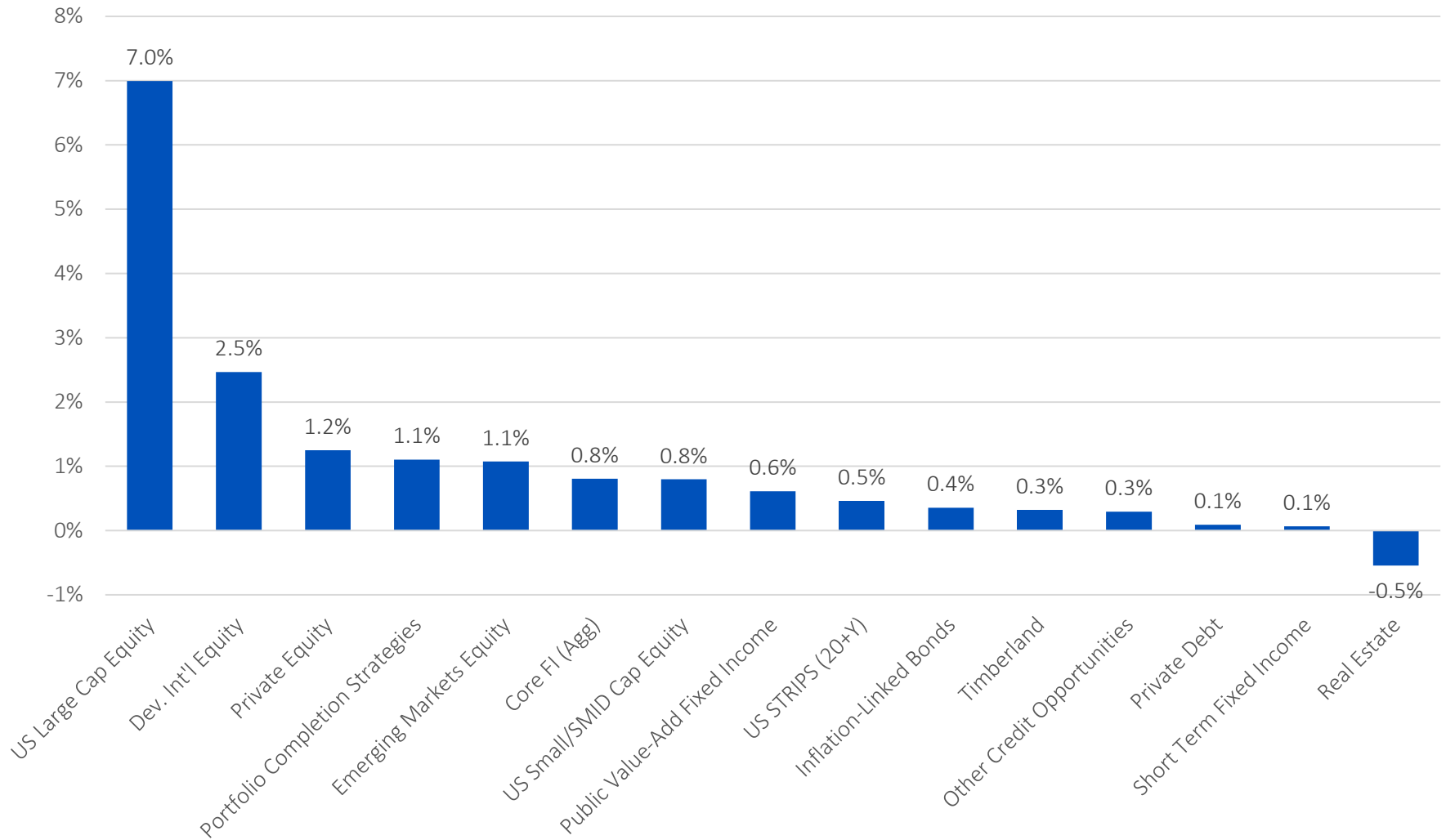
Quarter Ended September 30, 2024 (Net of Fees)



Source: BNY Mellon, FactSet. All performance figures reflected are PRIT Fund Asset Class returns. \*MSCI ACWI/Bloomberg Aggregate is derived from a 60/40 combination of index returns.

# PRIT Fund Contribution to Return by Strategy

One-Year Ended September 30, 2024 (Net of Fees)



Source: BNY Mellon.

# PRIT Fund Annualized Returns By Asset Class

As of September 30, 2024 (Net of Fees)

1 Year	3 Year	5 Year	10 Year
GLOBAL EQUITY 30.6%	TIMBER 9.4%	PRIVATE EQUITY 17.2%	PRIVATE EQUITY 16.7%
VALUE-ADDED FIXED INCOME 13.4%	GLOBAL EQUITY 7.6%	GLOBAL EQUITY 12.0%	GLOBAL EQUITY 9.4%
PORTFOLIO COMPLETION STRATEGIES 12.9%	PORTFOLIO COMPLETION STRATEGIES 5.3%	TIMBER 6.6%	REAL ESTATE 7.1%
CORE FIXED INCOME 12.2%	PRIVATE EQUITY 4.9%	VALUE-ADDED FIXED INCOME 5.9%	TIMBER 5.7%
TIMBER 10.1%	VALUE-ADDED FIXED INCOME 4.9%	REAL ESTATE 5.2%	VALUE-ADDED FIXED INCOME 4.7%
PRIVATE EQUITY 7.0%	REAL ESTATE 1.8%	PORTFOLIO COMPLETION STRATEGIES 5.0%	PORTFOLIO COMPLETION STRATEGIES 4.0%
REAL ESTATE (4.9%)	CORE FIXED INCOME (3.4%)	CORE FIXED INCOME (0.4%)	CORE FIXED INCOME 2.4%

Source: BNY Mellon.



# Hampden County Retirement System

Net of Fees Returns as of September 30, 2024

	MKT \$	%	Month	QTR	FY '25	Calendar YTD	1 Year	3 Year	5 Year	10 Year	Inception
<b>HAMPDEN COUNTY RETIREMENT SYSTEM</b>	<b>582,085,146</b>	<b>100%</b>	<b>1.31</b>	<b>4.49</b>	<b>4.49</b>	<b>9.78</b>	<b>16.55</b>	<b>4.41</b>	<b>8.71</b>	<b>7.88</b>	<b>8.98</b>
GENERAL ALLOCATION	582,085,146	100%	1.30	4.48	4.48	9.78	16.55	4.41	8.71	7.88	
<i>IMPLEMENTATION BENCHMARK (using short term private equity benchmark)</i>			<i>1.61</i>	<i>4.38</i>	<i>4.38</i>	<i>9.29</i>	<i>15.73</i>	<i>4.39</i>	<i>8.46</i>	<i>7.71</i>	
<i>TOTAL CAPITAL FUND BENCHMARK (using long term private equity benchmark)</i>			<i>1.56</i>	<i>4.82</i>	<i>4.82</i>	<i>10.28</i>	<i>17.55</i>	<i>6.05</i>	<i>8.19</i>	<i>7.39</i>	

**Inception date: November 1, 2004**

A photograph of a city skyline at dusk, with buildings illuminated and reflected in the water. The foreground shows a cobblestone walkway and a low wall.

# APPENDIX PRIT FUND ASSET CLASS DETAIL



AS OF SEPTEMBER 30, 2024

A blue-tinted photograph of a city skyline, likely New York City, with several tall skyscrapers. In the foreground, a body of water is filled with numerous sailboats of various colors (white, red, green, purple) sailing across it. The sky is blue with scattered white clouds.

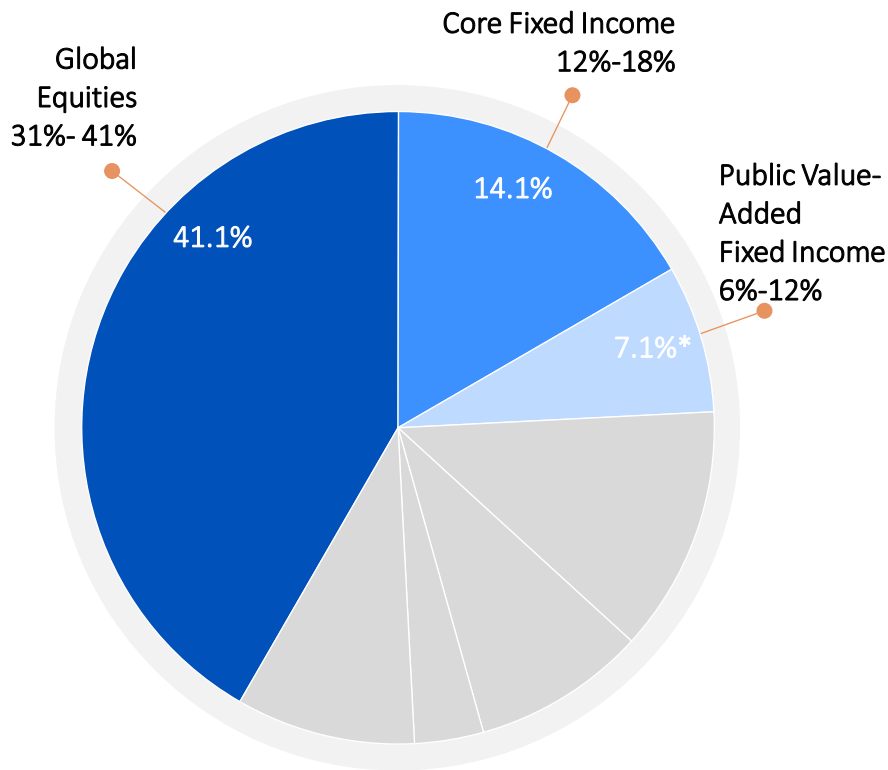
# PUBLIC MARKETS PORTFOLIOS

Mass  
PRIM

# Public Market Portfolios

## PRIT FUND TARGET ASSET ALLOCATION

Actual Allocation as of September 30, 2024



Source: BNY Mellon and PRIM Staff.  
\*Excludes Private Debt allocation.

## \$68.9 billion 62.3% of PRIT Fund

- Global Equities: \$45.4 billion, 41.1% of PRIT Fund
- Public Fixed Income: \$23.5 billion, 21.3% of PRIT Fund\*

## 46% Active / 54% Passive

- Global Equities: 37% Active / 63% Passive
- Public Fixed Income: 62% Active / 38% Passive

## 73 Portfolios

- 36 equity portfolios
- 37 fixed income portfolios

## Emerging-Diverse Managers

## 16 Asset Classes

- U.S. Large Cap Equity
- U.S. Small/SMID Cap Equity
- Developed International Equity
- Developed International Small Cap Equity
- Emerging Markets Equity
- Emerging Markets Small Cap Equity
- Core Bonds
- 20+ Year STRIPS
- Short Term Fixed Income
- U.S. TIPS
- Global Inflation-Linked Bonds
- High Yield Bonds
- Bank Loans
- Multi-Asset Credit
- EMD \$
- Other Credit Opportunities

## 4 Team Members



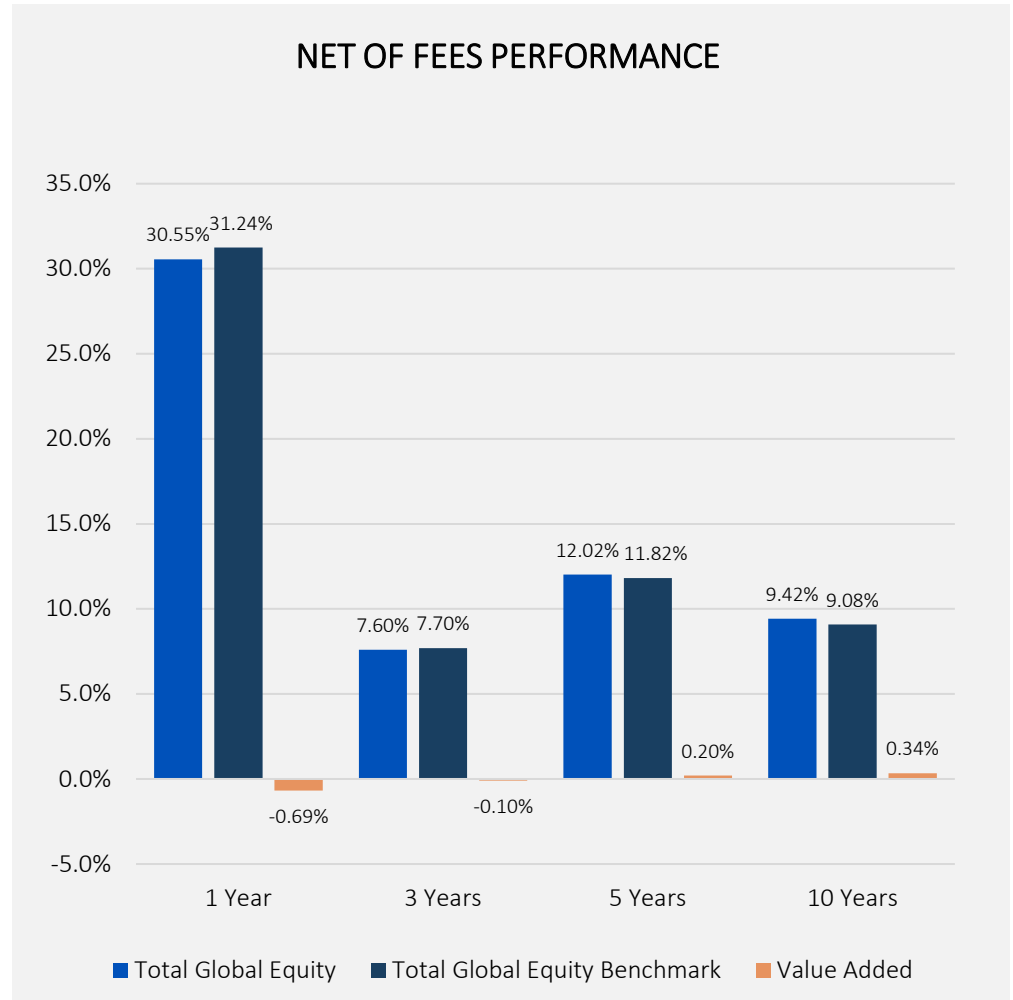
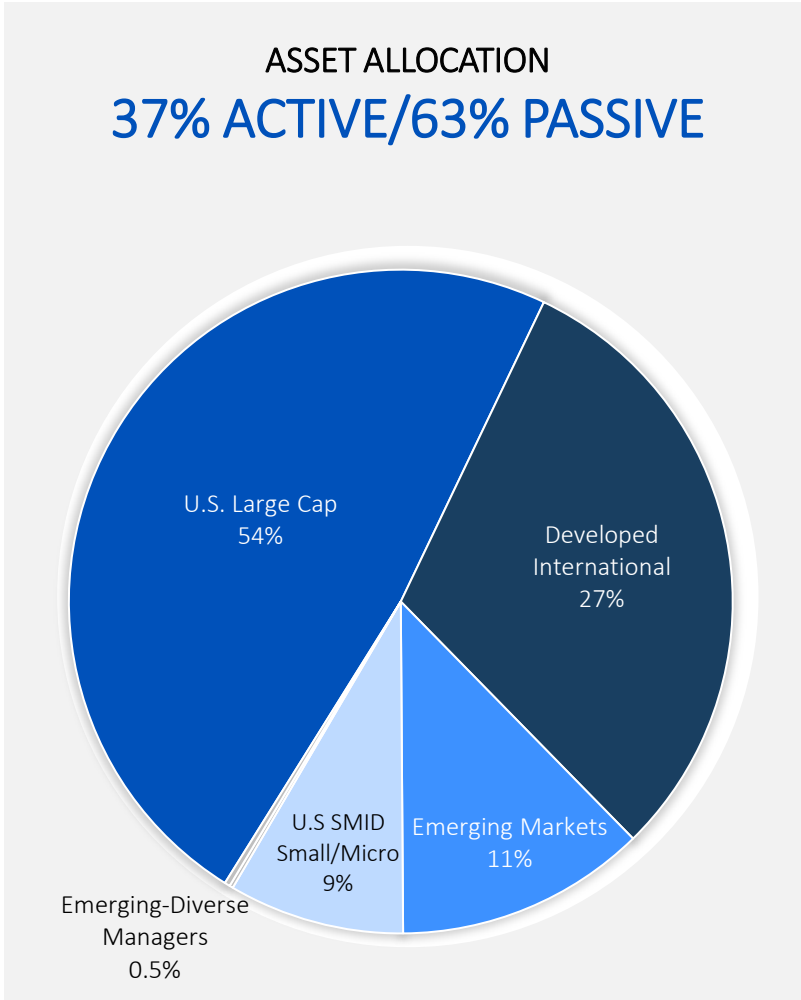
# Public Markets – Key Initiatives



- Research and identify complimentary active U.S. equity managers.
- Research and identify complimentary growth managers in Developed International allocation.
- Continue to identify Other Credit Opportunities investments, including co-investment opportunities.
- Evaluate role of global and specialized (sector or county specific) equity managers within Global Equities structure.
- Collaborate with PRIM Risk Team on manager selection enhancements and analytic tools.
- Continue to source and allocate to diverse investment managers.
- Collaborate with the Director of Stewardship on PRIM's stewardship efforts.
- Explore applications of large language models (AI) in investment analysis/monitoring processes.

# Global Equity

As of September 30, 2024, \$45.4 Billion – 41.1% of PRIT Fund (Target 31%-41%)

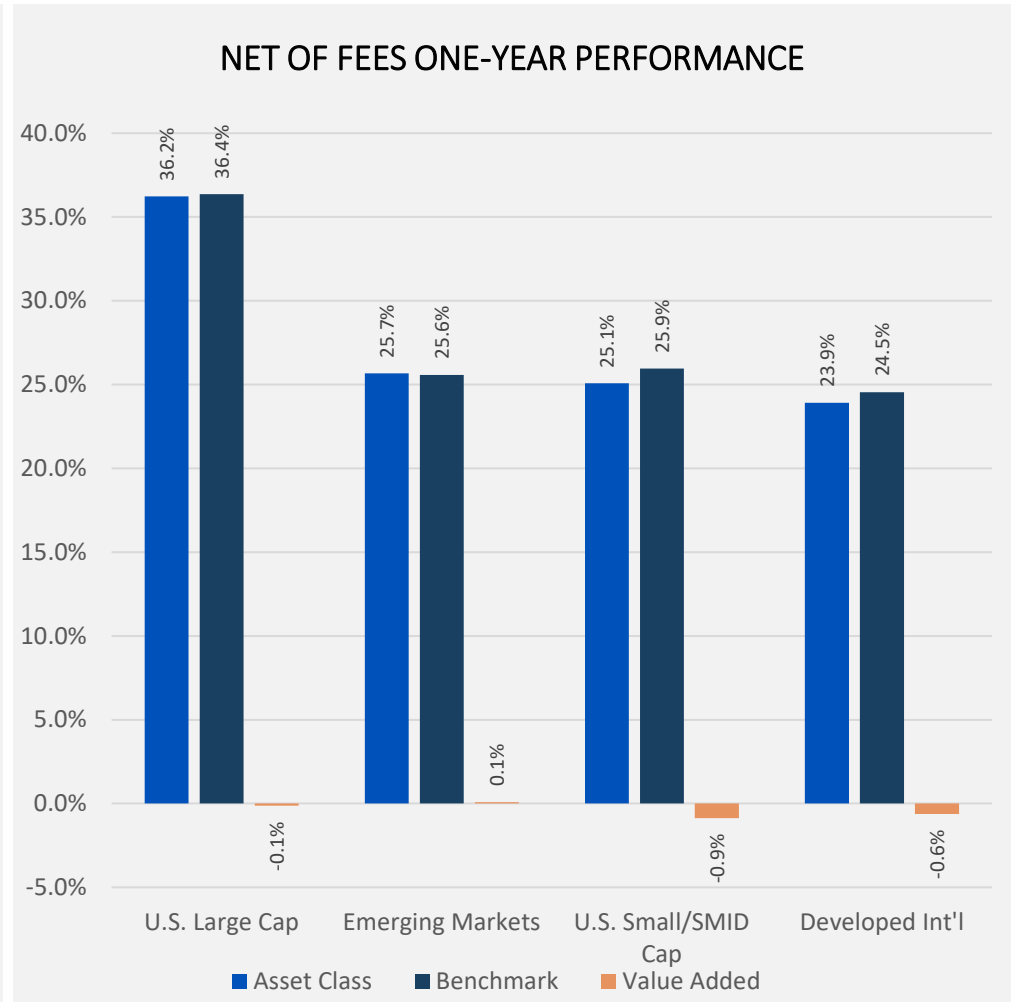
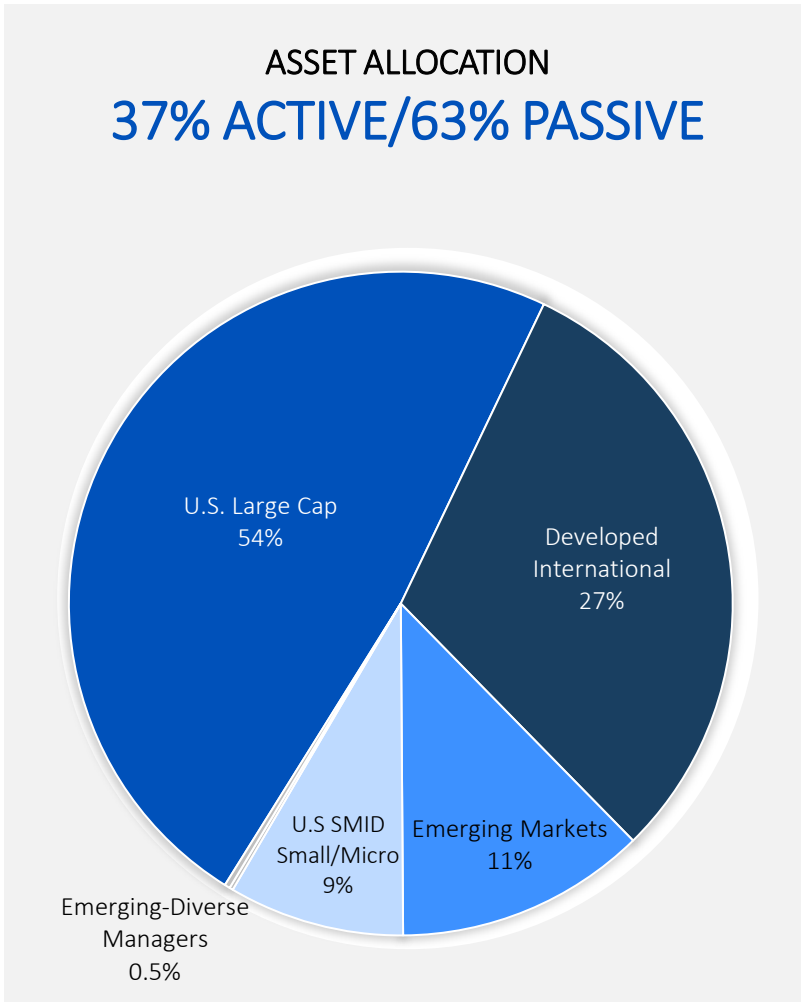


Source: BNY Mellon, PRIM Staff. As of September 30, 2024.

\*Total Global Equity Benchmark: Currently 100% MSCI ACWI IMI with USA Gross Custom Exclusion Index (Net Variant), customized to exclude legislatively prohibited tobacco, Sudan, Iran and Russian securities.

# Global Equity

As of September 30, 2024, \$45.4 Billion – 41.1% of PRIT Fund (Target 31%-41%)

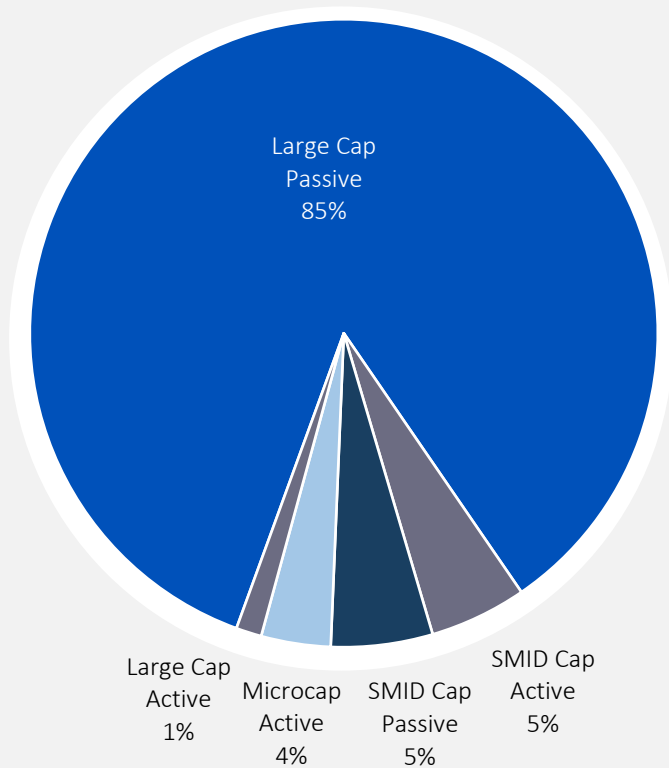


Source: BNY Mellon, PRIM Staff. As of September 30, 2024.

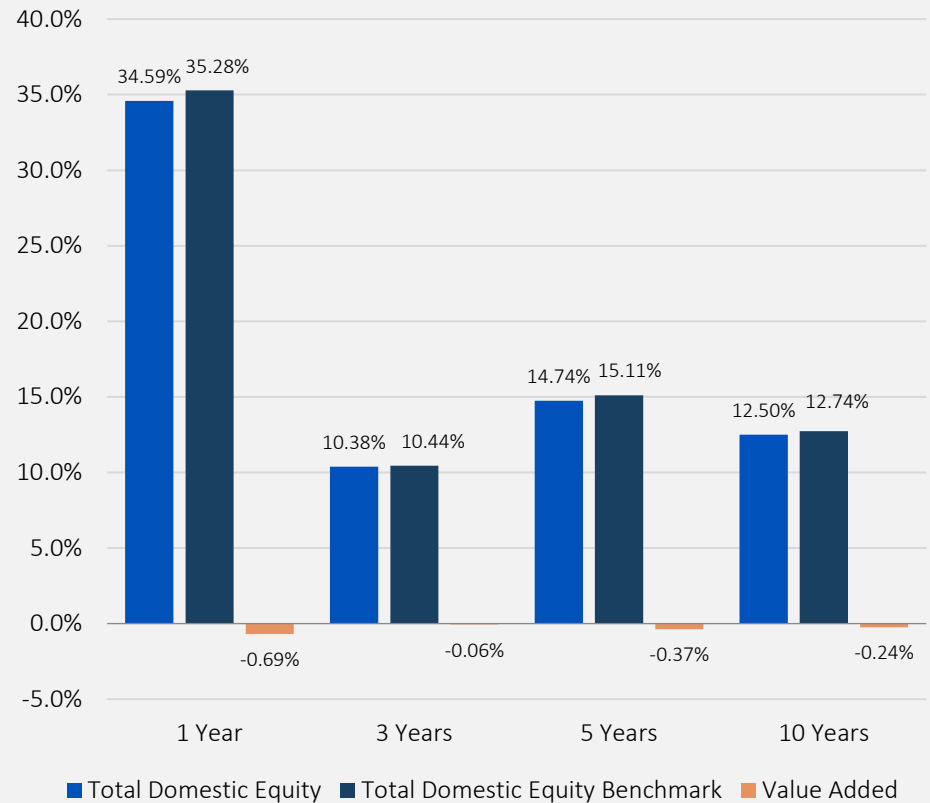
# Domestic Equity

As of September 30, 2024, \$28.2 Billion – 25.5% of PRIT Fund

## ASSET ALLOCATION 10% ACTIVE/90% PASSIVE



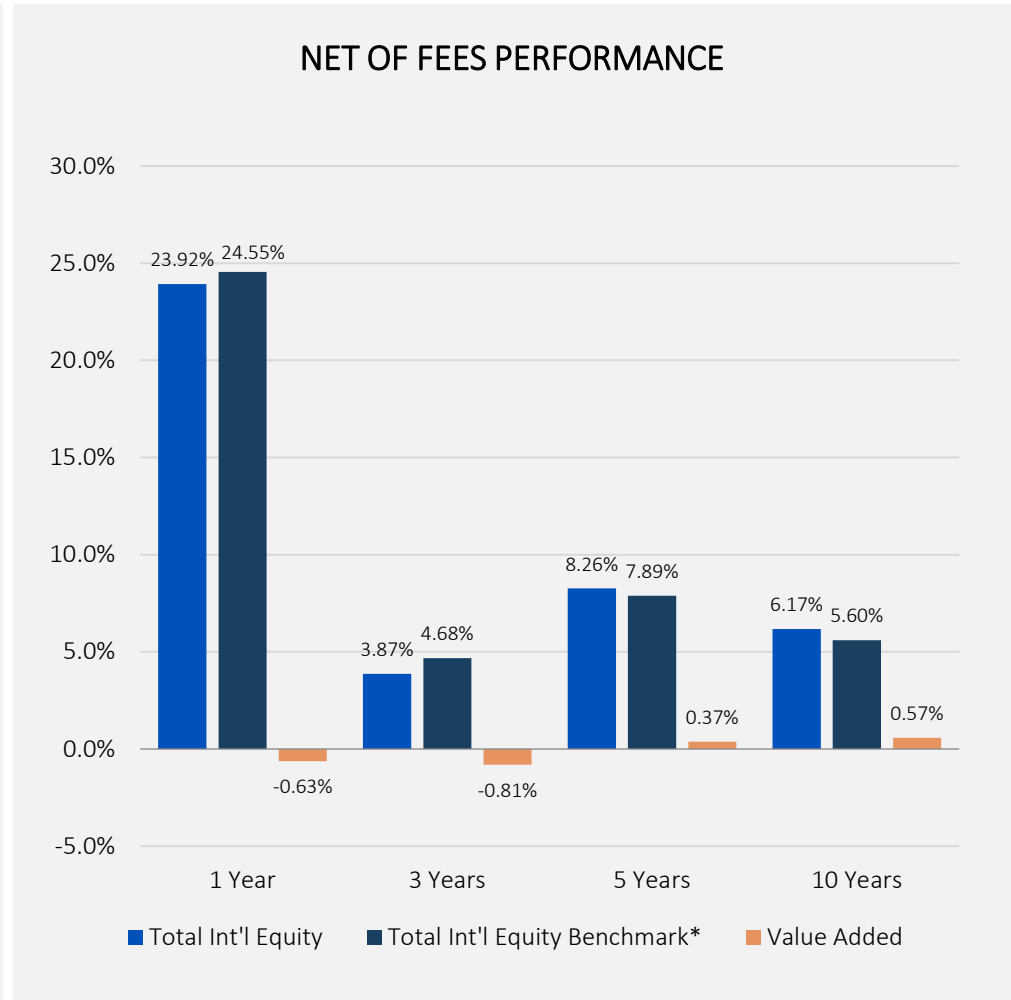
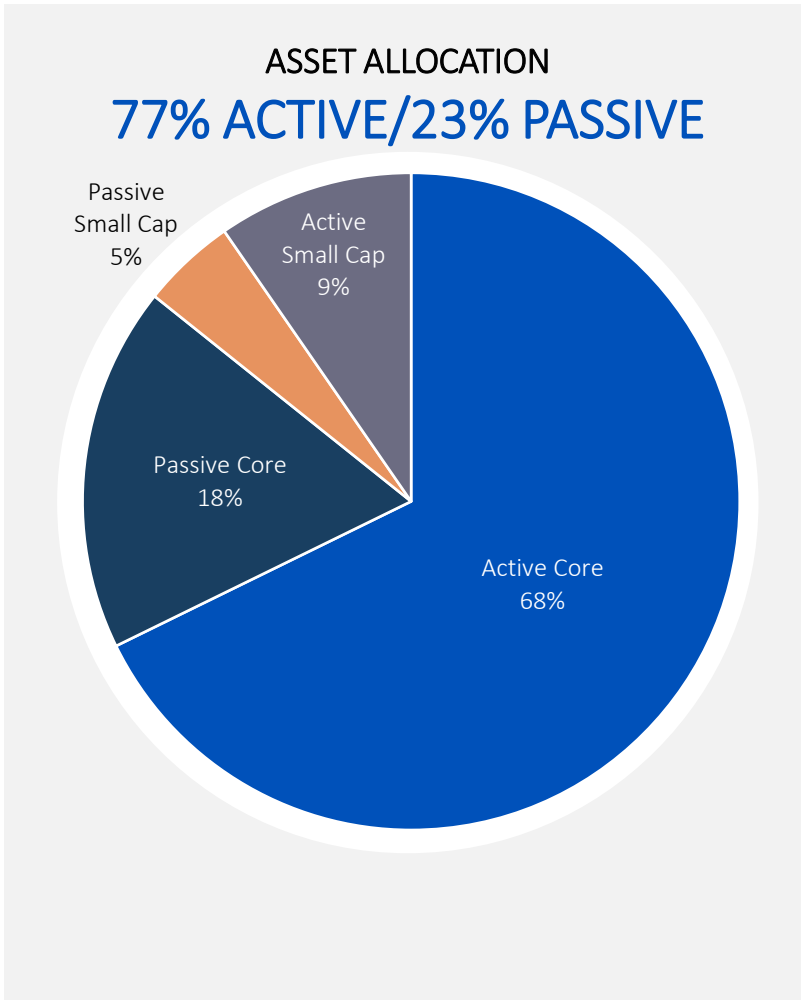
## NET OF FEES PERFORMANCE



\*Total Domestic Equity Benchmark: Currently 100% MSCI USA IMI Custom Exclusion Index (Gross), customized to exclude legislatively prohibited tobacco, Sudan, Iran and Russian securities.

# International Equity

As of September 30, 2024, \$12.0 Billion – 10.9% of PRIT Fund

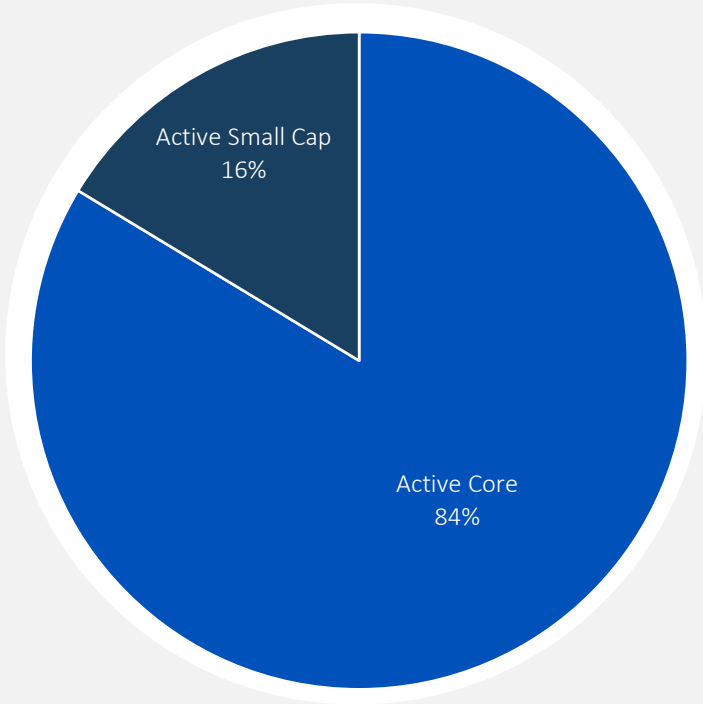


\*Total International Equity Benchmark: Custom MSCI World Ex-US IMI Net Divs, customized to exclude legislatively prohibited tobacco, Sudan Iran and Russian securities (blend is maintained by MSCI).

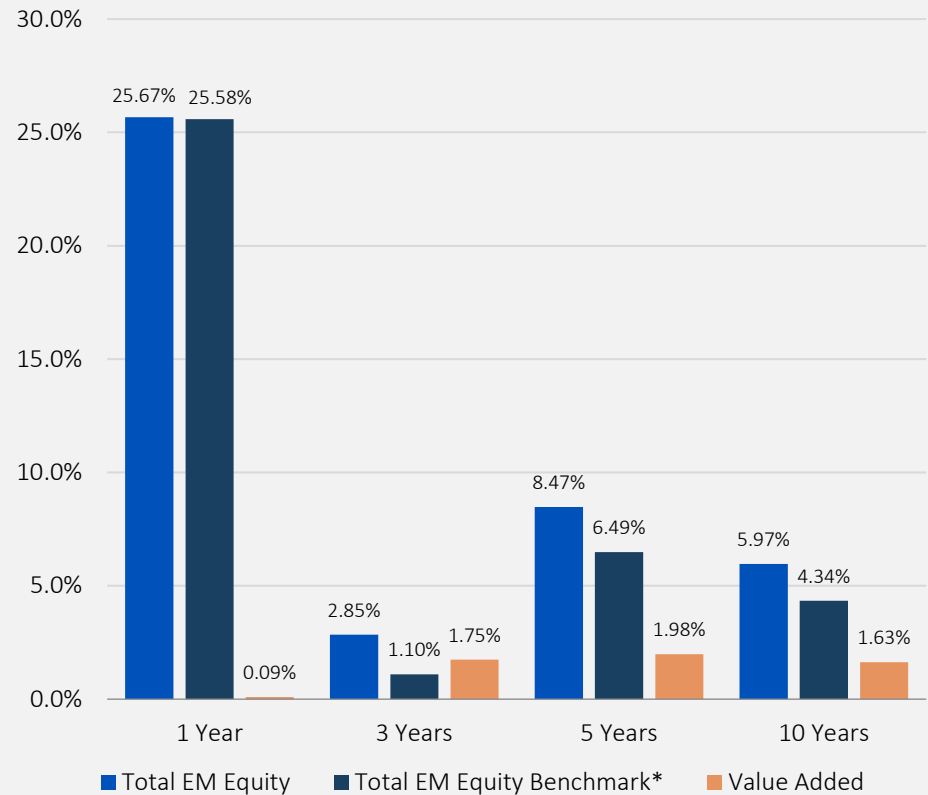
# Emerging Markets Equity

As of September 30, 2024, \$4.9 Billion – 4.4% of PRIT Fund

## ASSET ALLOCATION 100% ACTIVE



## NET OF FEES PERFORMANCE

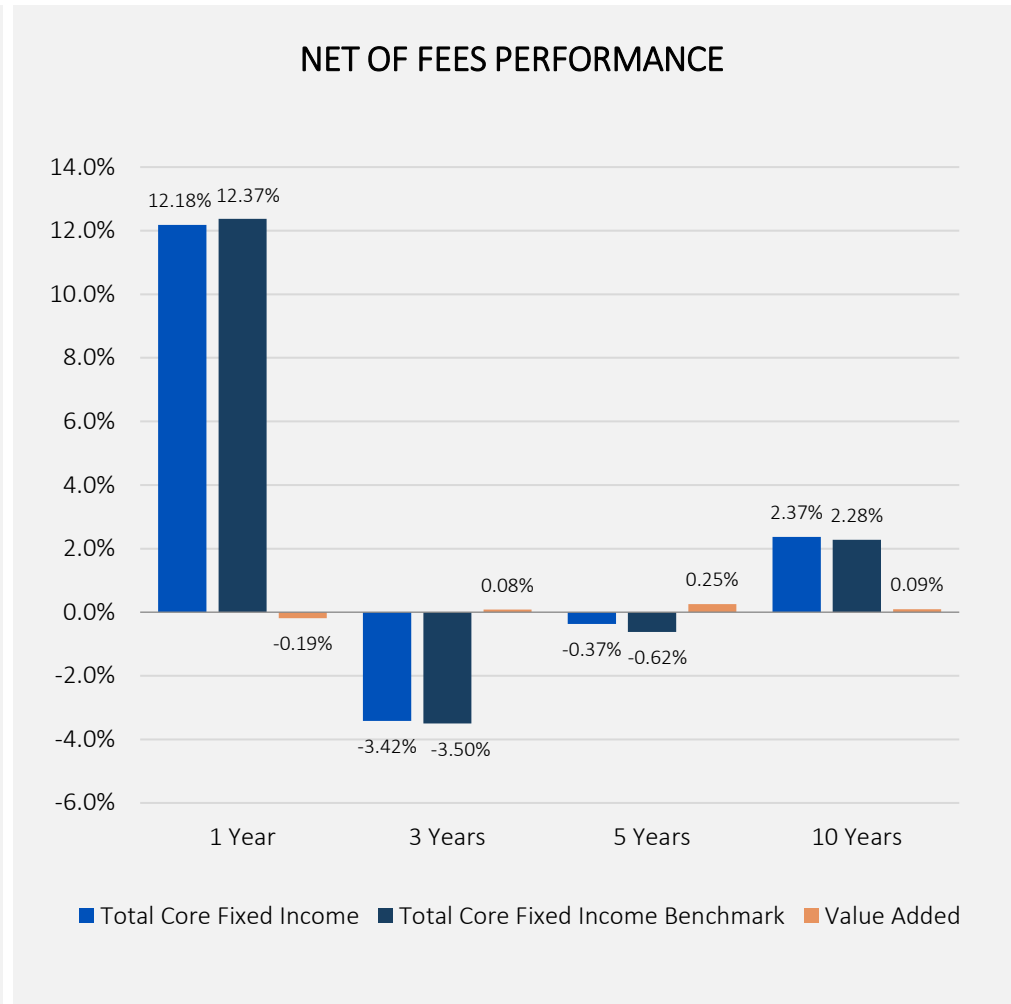
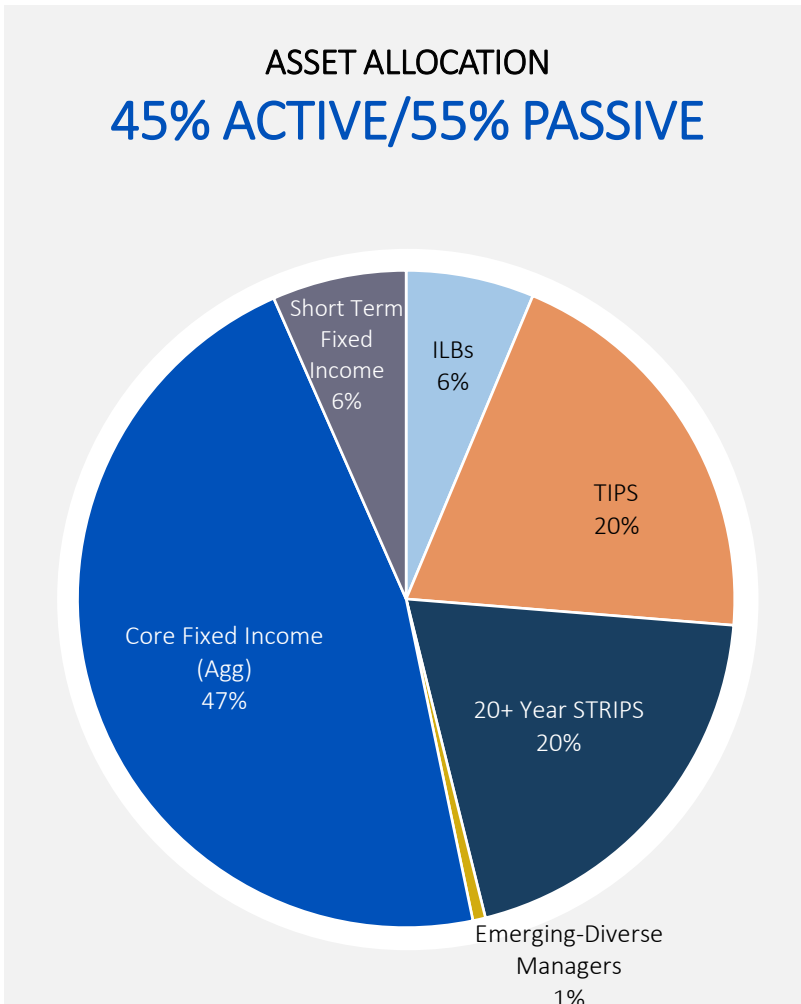


\*Total Emerging Markets Equity Benchmark: currently Custom MSCI Emerging Markets IMI Net Div, customized to exclude legislatively prohibited tobacco, Sudan, Iran and Russian securities (blend is maintained by MSCI).



# Core Fixed Income

As of September 30, 2024, \$15.6 Billion – 14.1% of PRIT Fund (Target 12%-18%)

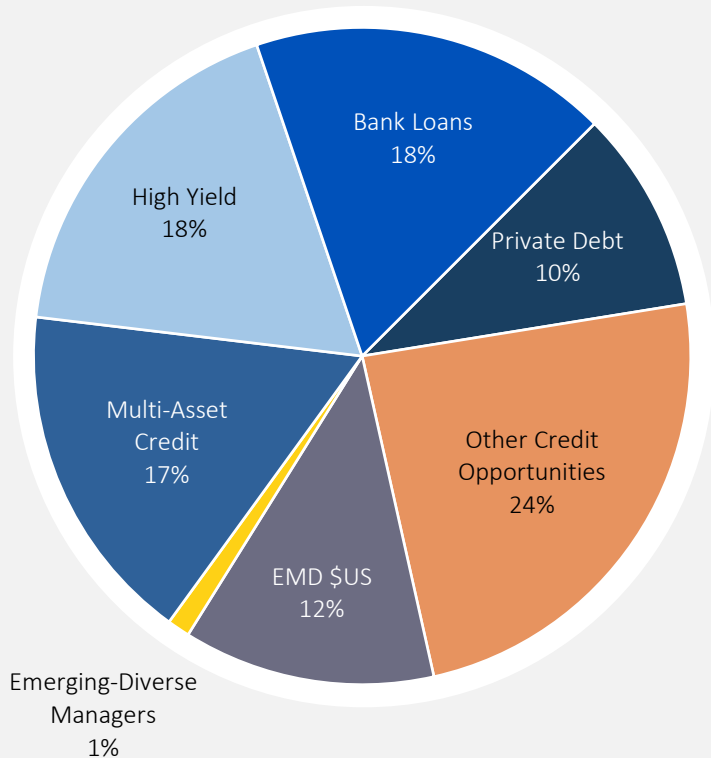


\*Core Fixed Income Benchmark: Currently 46.6666% Bloomberg U.S. Aggregate Bond/20% Bloomberg Global IL U.S. Tips/6.6667% Bloomberg World Gov Inflation-Linked USD Hdg/20% Bloomberg US STRIPS 20+ Years/6.6667% Bloomberg U.S. Treasury: 1-3 Year. Formerly labeled 46.6666% BC Aggregate/20% BC US TIPS/6.6667% BC ILB US\$ Hedged/20% BC STRIPS 20+/6.6667% Bloomberg Barclays US Treasury 1-3 Year Index.

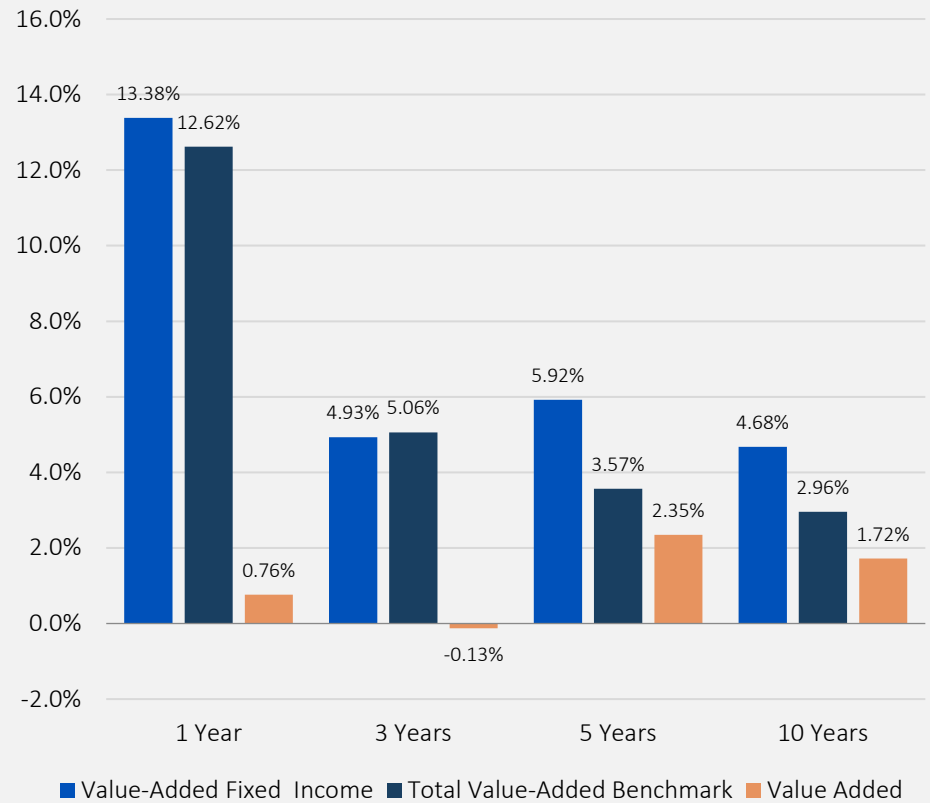
# Value-Added Fixed Income

As of September 30, 2024, \$8.7 Billion – 7.9% of PRIT Fund (Target 6%-12%)

## ASSET ALLOCATION 100% ACTIVE



## NET OF FEES PERFORMANCE



\*Currently the Value-Added benchmark is calculated by applying the investment performance of the sub asset class benchmarks to the sub asset class weights within the value-added fixed income portfolio, Net Private Debt component is using the 3-year annualized return of the Altman NYU Salomon Center Combined Defaulted Public Bond & Bank Loan Index through 12/31/2021; currently Burgiss Distressed Debt Universe Lagged, if the Burgiss return is not available, the actual portfolio net return will be used as a placeholder until the Burgiss Private Debt BM is published. These weightings will be automatically adjusted on a monthly basis.

The background of the slide is a blue-tinted photograph of a meeting table. On the table, there are several documents, some with charts and graphs. A hand is visible in the upper left corner, resting on the table. The overall scene suggests a professional business environment.

# PRIVATE EQUITY PORTFOLIO

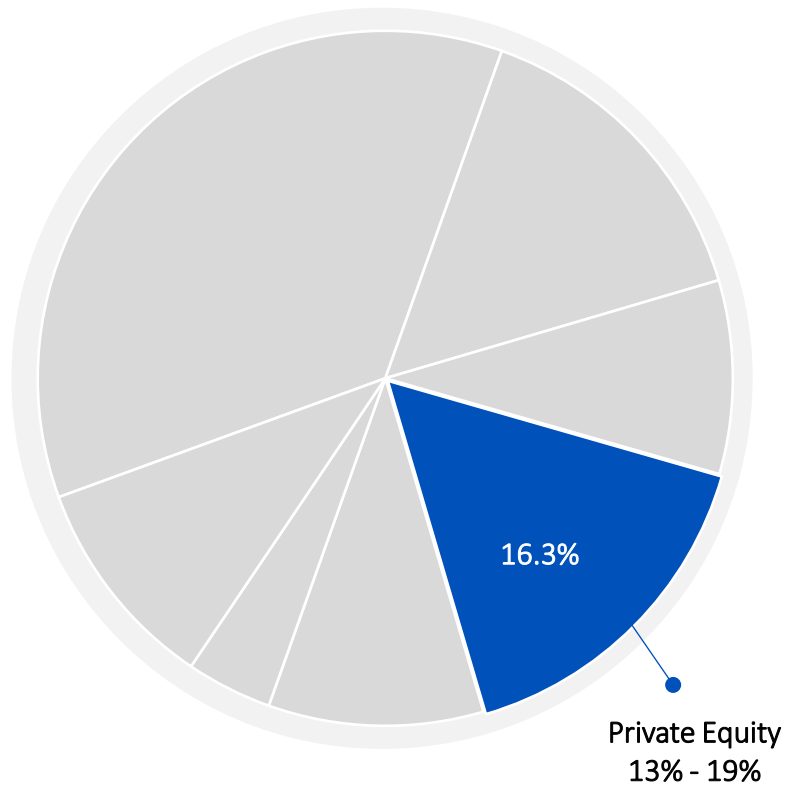
The logo for Mass PRIM, featuring the word "Mass" in a serif font above the word "PRIM" in a bold, sans-serif font. To the left of the text are three vertical bars of increasing height, resembling a bar chart.

**Mass**  
**PRIM**

# Private Equity Portfolio

## PRIT FUND TARGET ASSET ALLOCATION

Actual Allocation as of September 30, 2024



\$18.0 billion, 16.3% of PRIT Fund

106 GP Relationships

402 Active Partnerships

- 81 Co-Investment Partnerships

Emerging-Diverse Managers

~ 30 investment decisions/year

5 core investment strategies:

- Large buyouts
- Small and mid cap buyouts
- Growth equity
- Venture capital
- Co-investments

7 team members



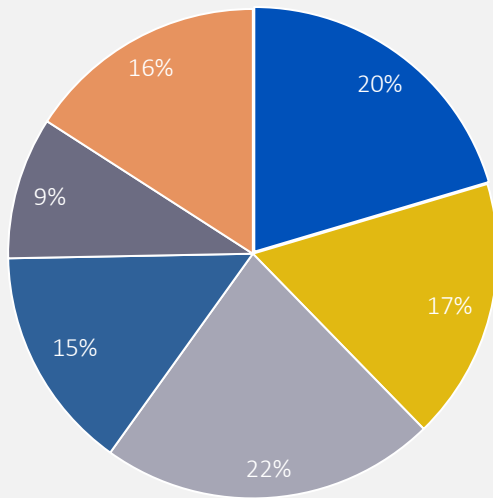
## Private Equity Key Initiatives

- **Execute successful Private Equity Investment strategy.**
  - Commitment goal of \$2.2 billion to \$3.0 billion to funds, co-investments, and secondary opportunities.
  - Continue to source and evaluate attractive new investment opportunities.
  - Continue to scale and improve co-investment program.
  - Further refine frameworks for market mapping and pro-active sourcing.
  - Continue to strengthen private equity portfolio monitoring.
- **Private Equity Research:**
  - Explore new analytic tools to enhance decision making, including AI.
  - Explore applications of large language models (AI) in investment analysis/monitoring processes.
  - Continue to evaluate secondary market opportunity
- **Build the team's expertise and capacity.**
  - Recruit talented team members with complementary skills to existing members.
  - Increase collaboration with other PRIM teams.
  - Collaborate with the Director of Stewardship on PRIM's stewardship efforts.
  - Continue to source and allocate to diverse investment managers.



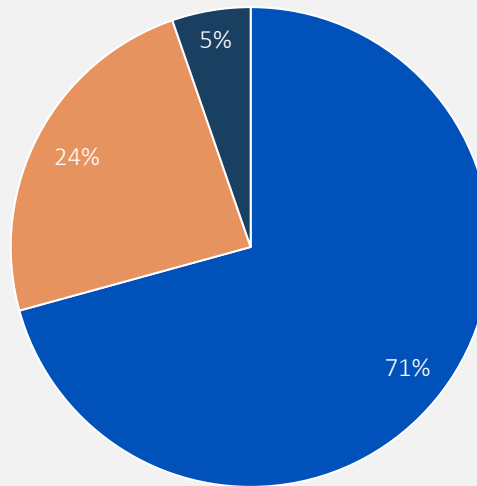
# Private Equity Diversification

## By Strategy



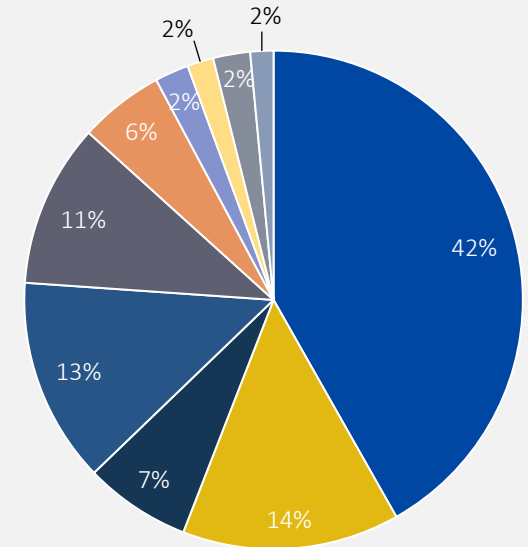
- Buyout - Mid
- Buyout - Large
- Buyout - Mega
- Buyout - Small
- Venture Capital
- Growth Equity

## By Geography



- North America
- Western Europe
- Other

## By Sector



- Information Technology
- Health Care
- Consumer Discretionary
- Industrials
- Financials
- Communication Services
- Energy & Utilities
- Materials
- Consumer Staples
- Other



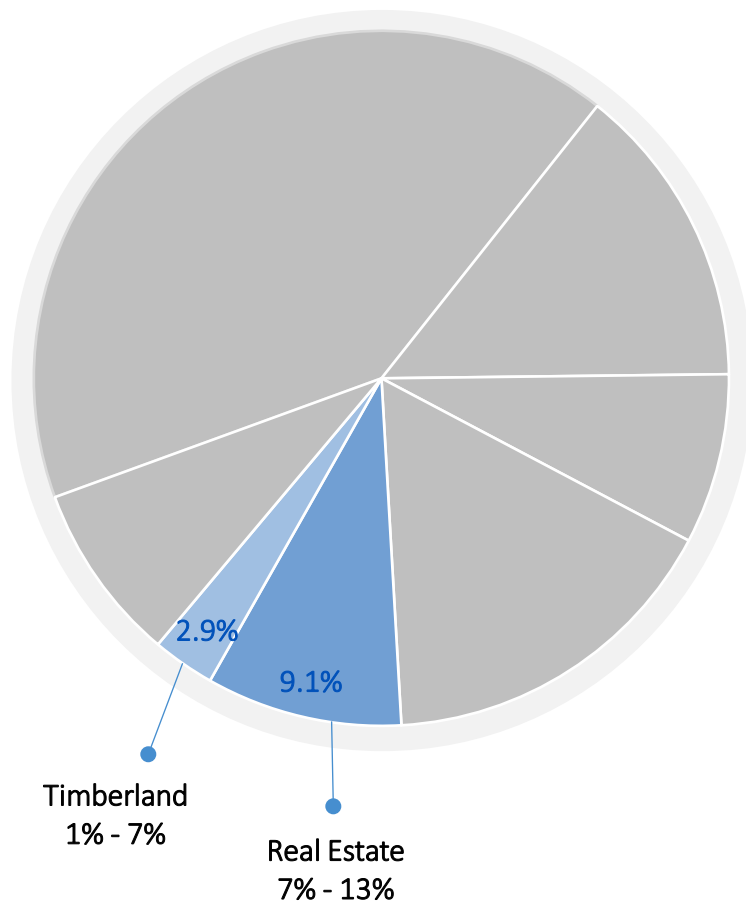
# REAL ESTATE AND TIMBERLAND PORTFOLIOS

 Mass  
PRIM

# Real Estate and Timberland Portfolios

## PRIT FUND TARGET ASSET ALLOCATION

Actual Allocation as of September 30, 2024



**\$13.3 billion, 12.0% of PRIT Fund**

- Real Estate: \$10.1 billion, 9.1% of PRIT Fund
- Timberland: \$3.2 billion, 2.9% of PRIT Fund

**15 portfolios**

- 6 core portfolios
- 5 non-core portfolios
- 1 global REIT portfolios
- 2 timberland portfolios
- 1 direct investment portfolio

**Property Investments**

- Real Estate – 124 properties
- Timberland – 23 properties

**103 Global real estate securities**

**9 Emerging-Diverse Managers**

**4 primary strategies**

- Core U.S. private real estate
- Non-core U.S. private real estate
- Global real estate securities
- Global timberland

**6 team members**



# Real Estate and Timberland Key Initiatives



- Continue to source attractive opportunities. Source and grow relationships with high quality real estate and timberland investment managers and operating partners. Grow our view and conviction on emerging sectors and strategies within the real estate and timberland asset classes.
- Collaborate with the Public Markets team to source and conduct due diligence on Other Credit Opportunities investments. Add select core separate account credit exposure as identified.
- Oversee the implementation of the asset business and development plans and hold-sell recommendations in the Real Estate and Timberland portfolios.
- Utilize REITs , PRIM's internal real estate financing facility, and other available capital sources to fund new investment opportunities and maintain PRIM's current leverage structure.
- Continue to source and allocate to diverse investment managers.
- Collaborate with the Director of Stewardship on PRIM's stewardship efforts.
- Explore applications of large language models (AI) in investment analysis/monitoring processes.
- Identify and engage a third-party timberland data research provider.
- Evaluate portfolio management and performance analysis technology solutions.

# Real Estate

As of September 30, 2024, \$10.1 Billion – 9.1% of PRIT Fund (Target 7%-13%)

## ASSET ALLOCATION

Emerging-Diverse Managers  
0.8%

Non-Core  
5.5%

REITs  
8.4%

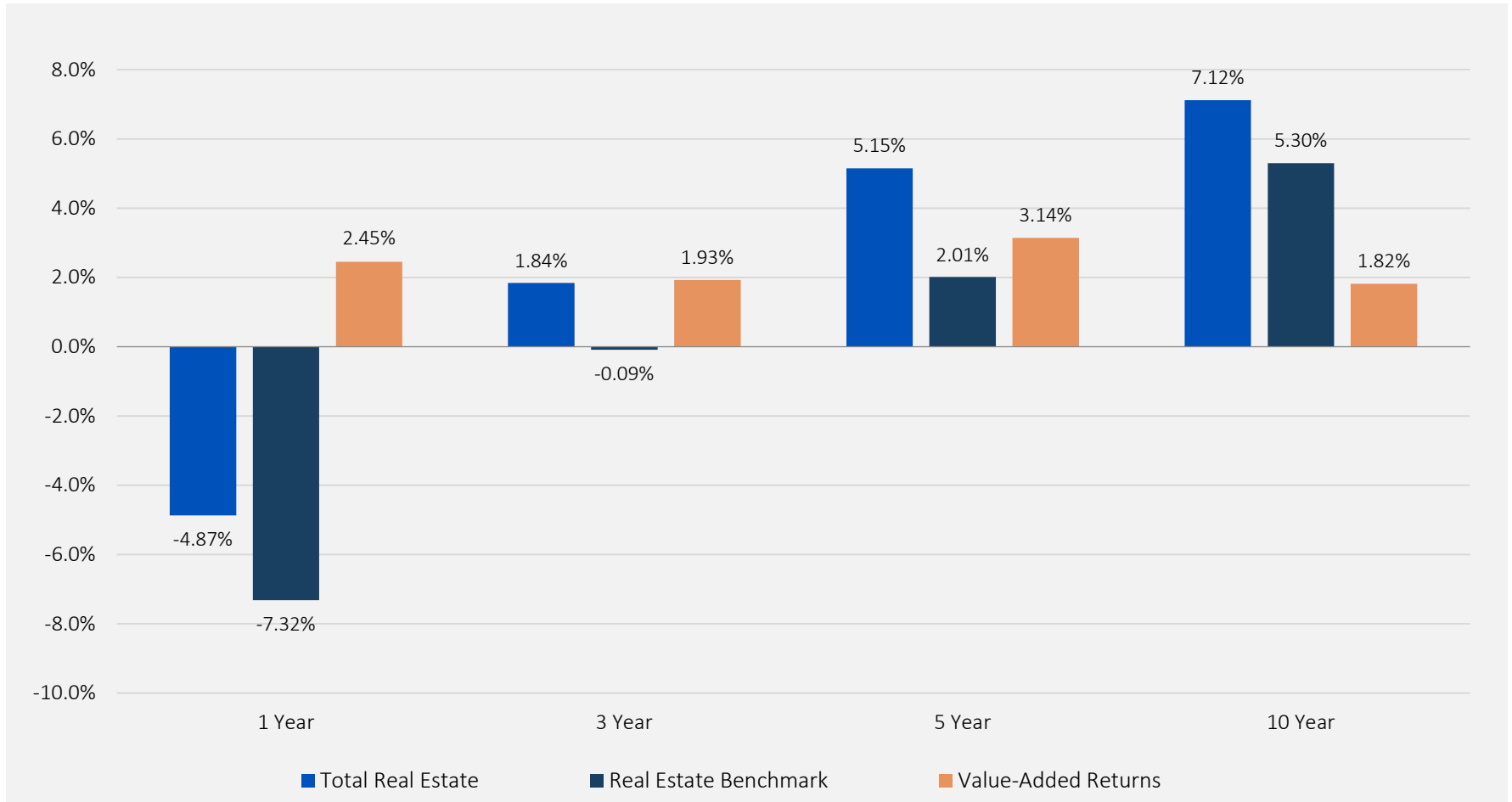
Core  
85.2%

- Equity investments in both directly-owned properties and **REIT** securities
- Directly-owned **Core** properties make up the majority of the real estate portfolio
  - **Core** properties are typically well-leased, operating properties that provide regular cash flow from rents
- **Non-Core** investments make up approximately 6% of the real estate portfolio
  - **Non-Core** includes properties that are under development



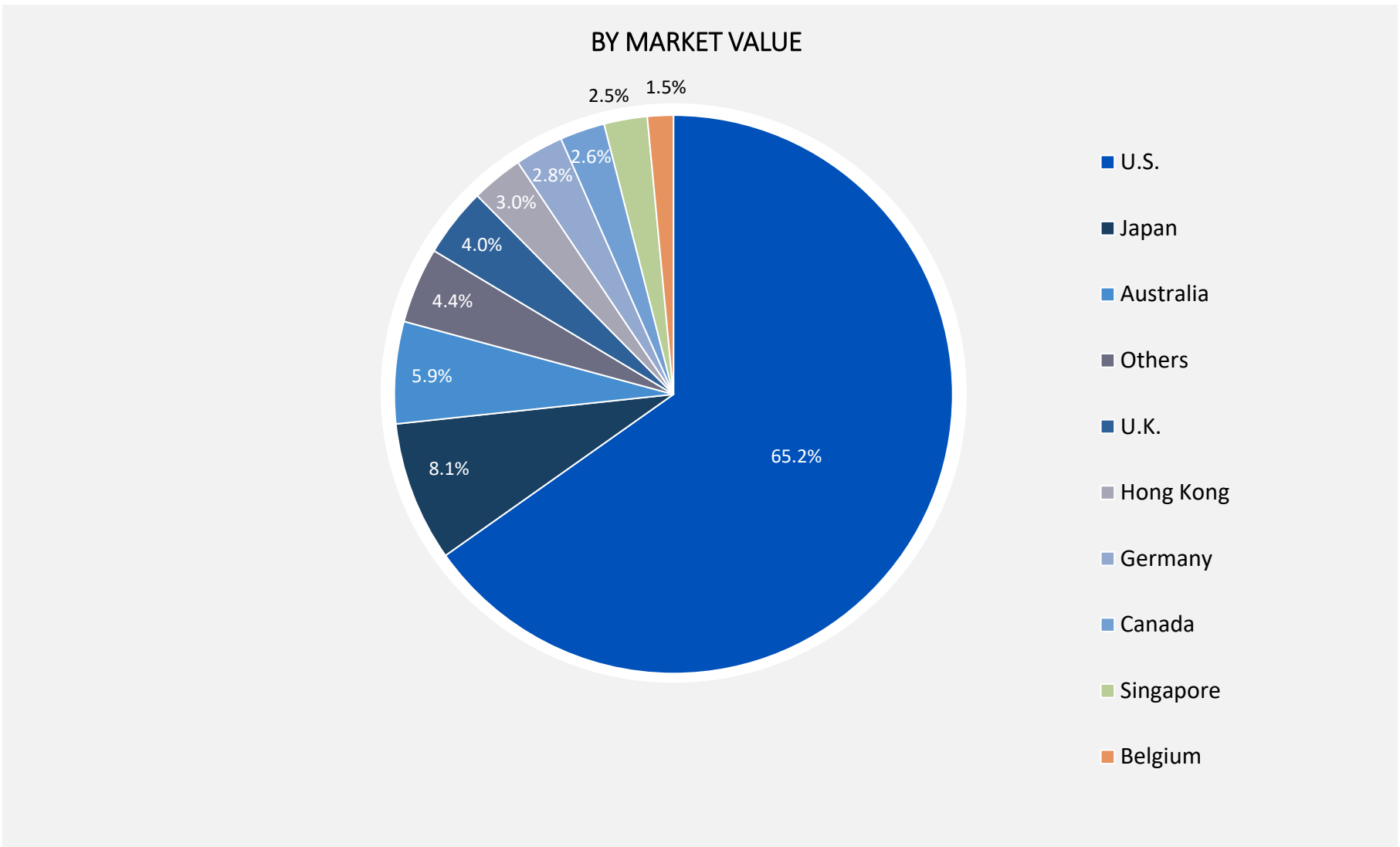
# Total Real Estate Performance

Annualized Returns as of September 30, 2024 (Net of Fees)

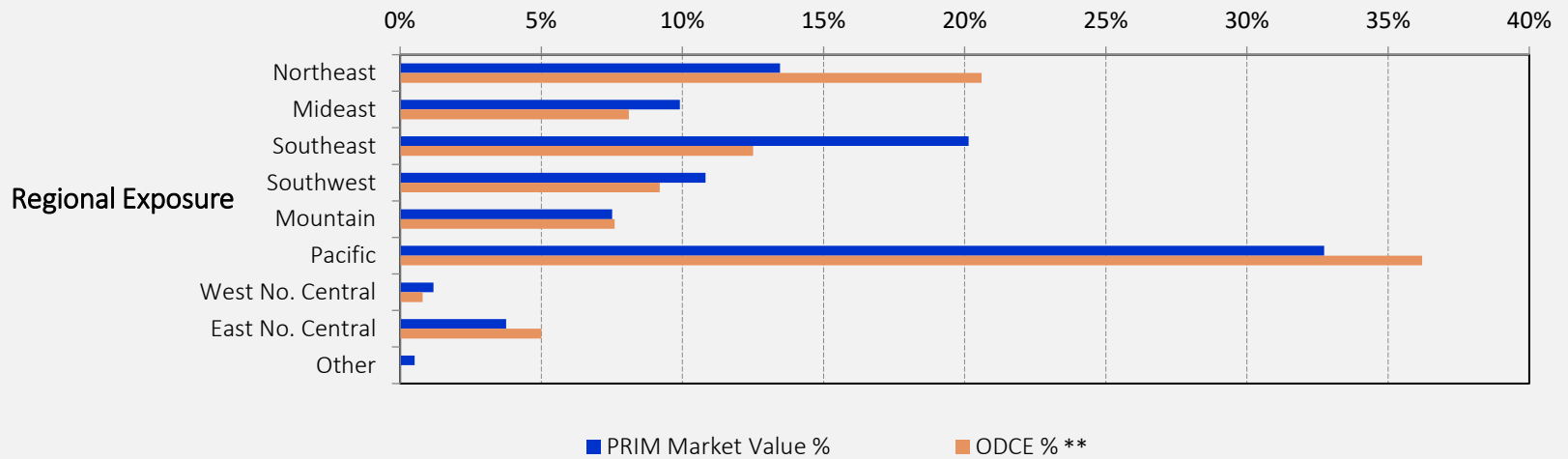
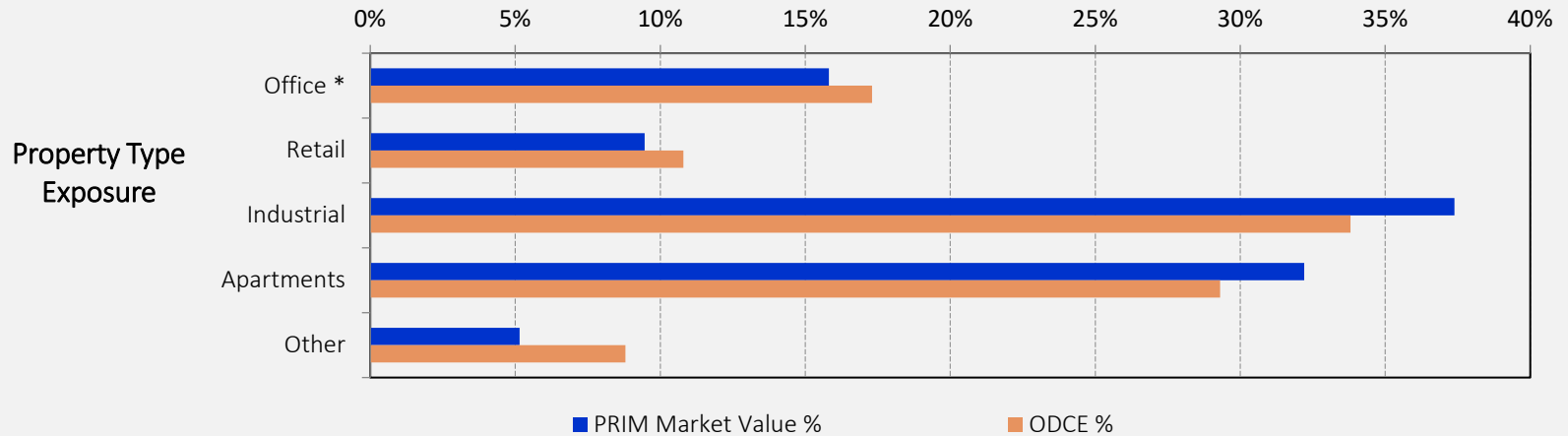


Benchmark: Currently benchmark is calculated by applying the investment performance of the sub asset class benchmarks to the sub asset class weights within the Total RE portfolio. These weights are based on the beginning adjusted monthly market value of each sub asset.

# Public Real Estate (REITs) Exposure by Country



# Private Real Estate Portfolio Exposure

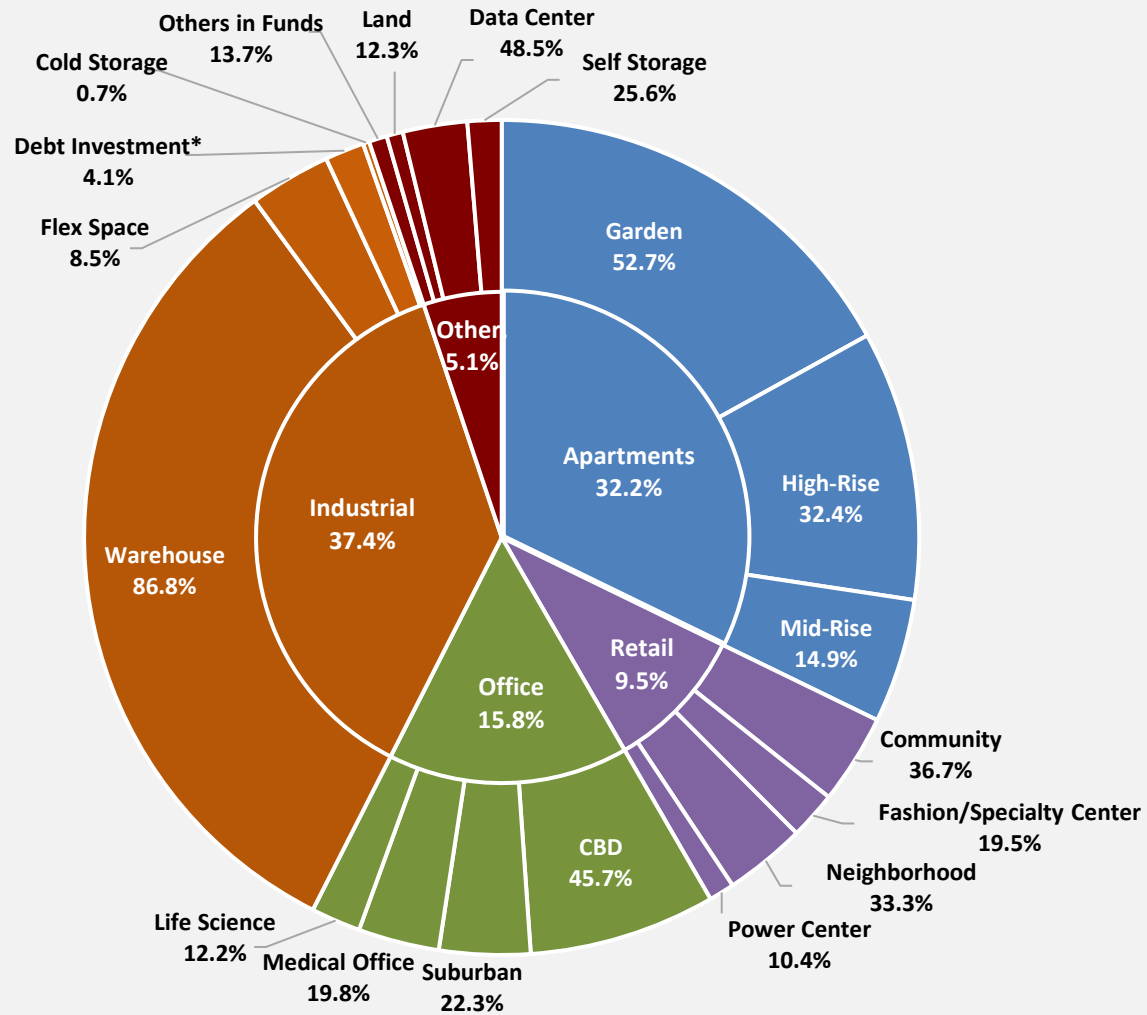


\*Office includes life science assets

\*\*ODCE is one-quarter lagged

Source: BNY Mellon, Chatham, NCREIF, and PRIM Staff. As of September 30, 2024

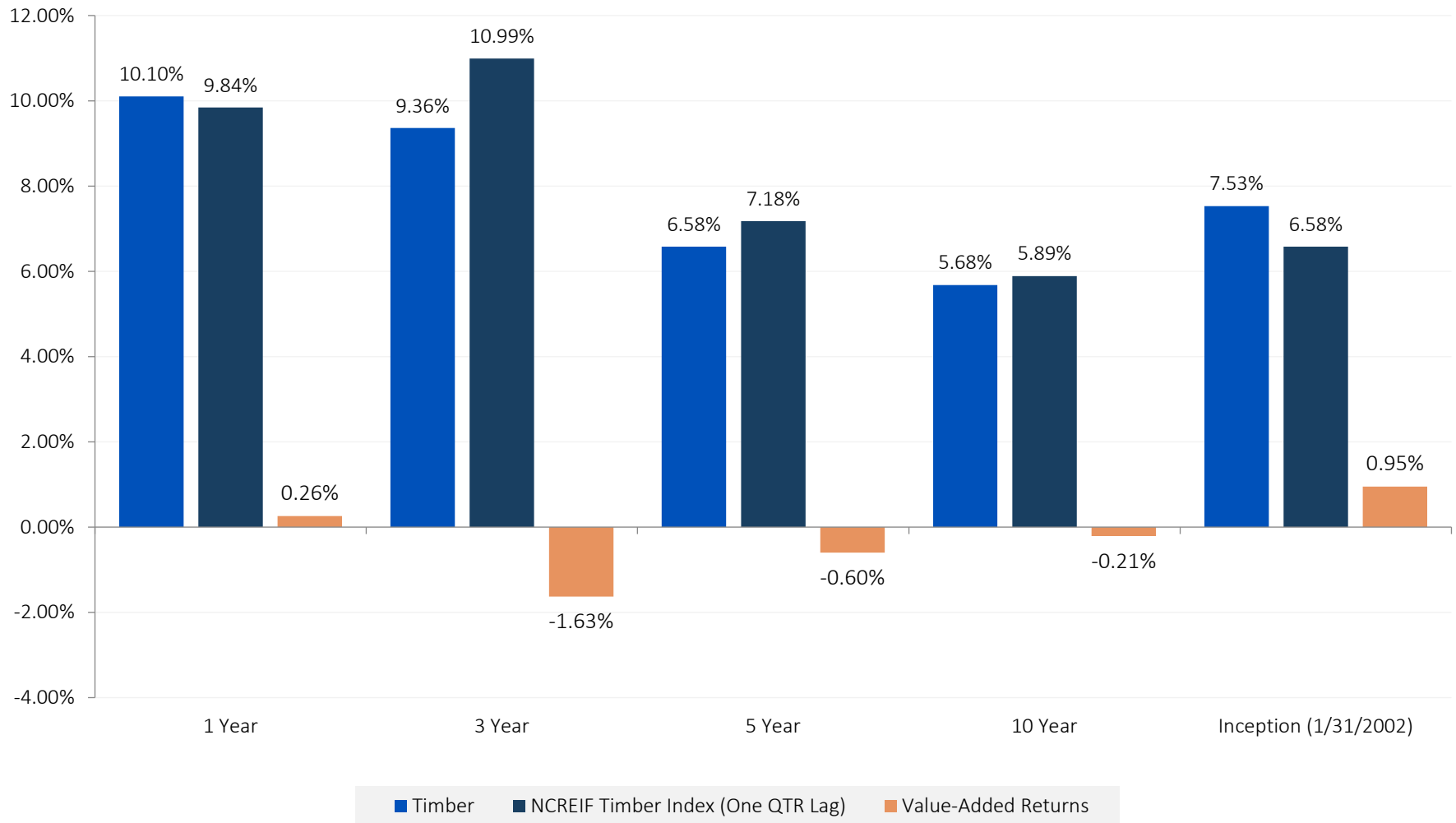
# Property Subtype Breakdown



\* Debt investments in industrial construction loans

# Timberland

Annualized Returns as of September 30, 2024 (Net of Fees)

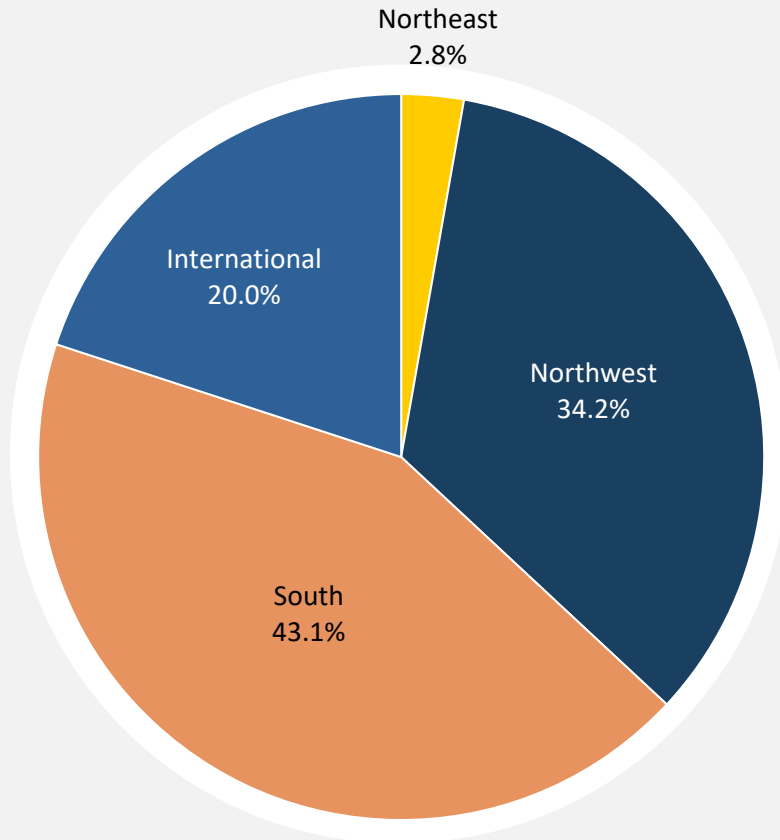


Benchmark: Currently NCREIF Timberland Index one quarter lag.

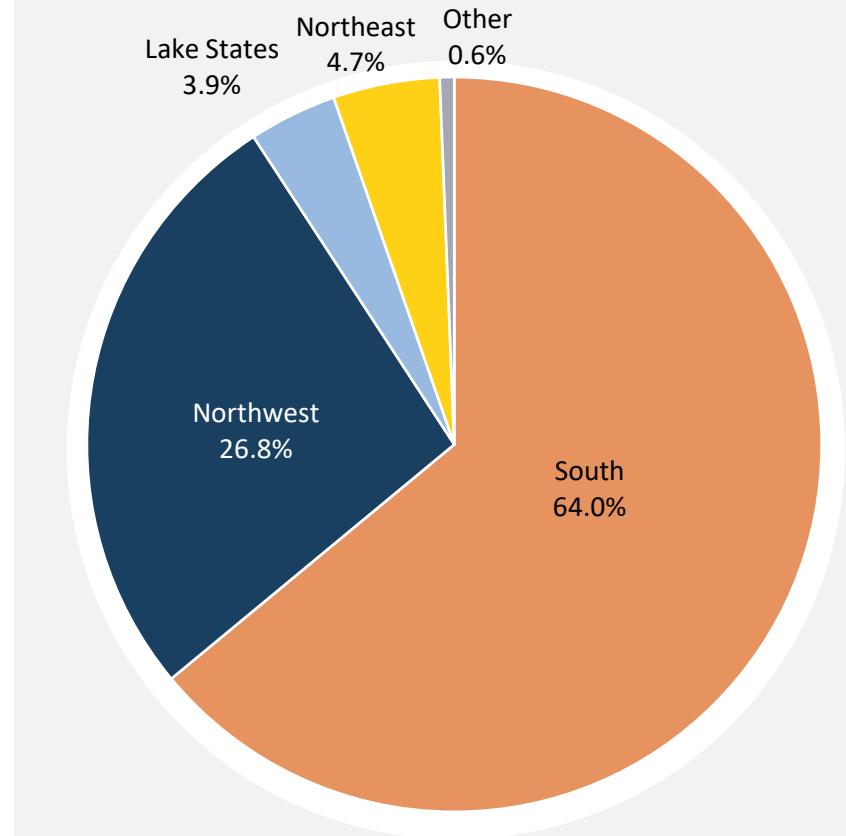
# Timberland Exposure by Region vs. Benchmark

As of September 2024, \$3.2 Billion – 2.9% of PRIT Fund (Target 1%-7%)

## PRIM REGION EXPOSURE



## BENCHMARK

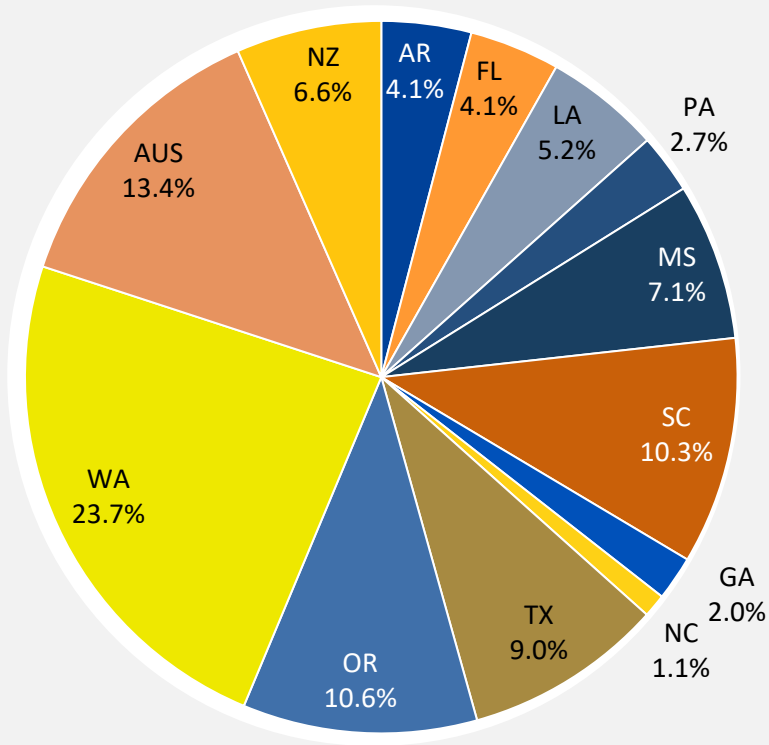




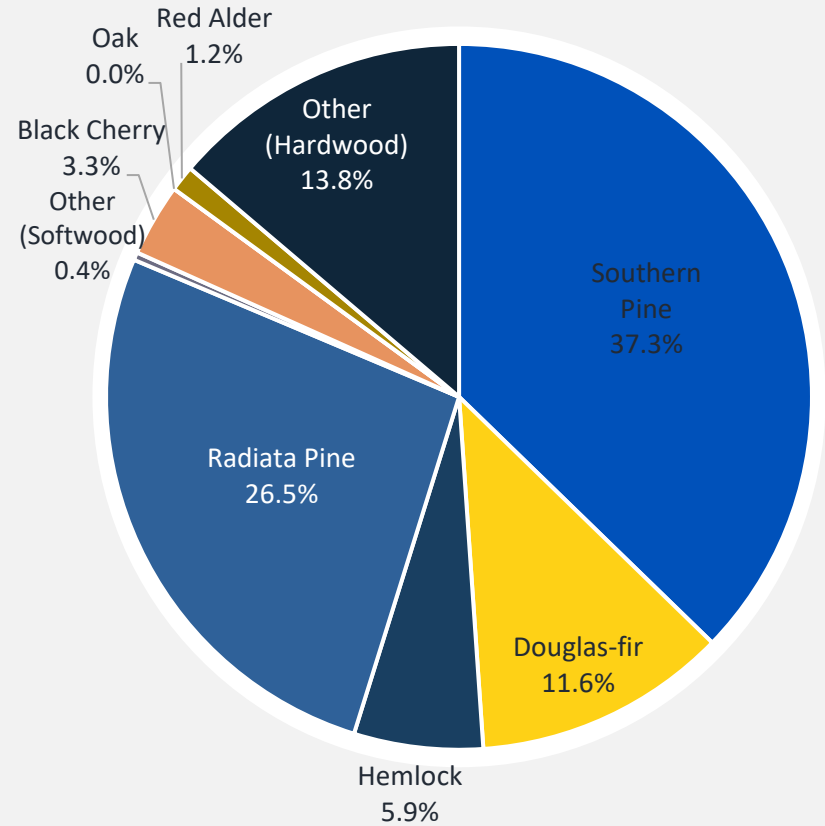
# Timberland Exposure by State/Region

# Timberland Exposure by Species

BY EQUITY VALUE



BY ACRES



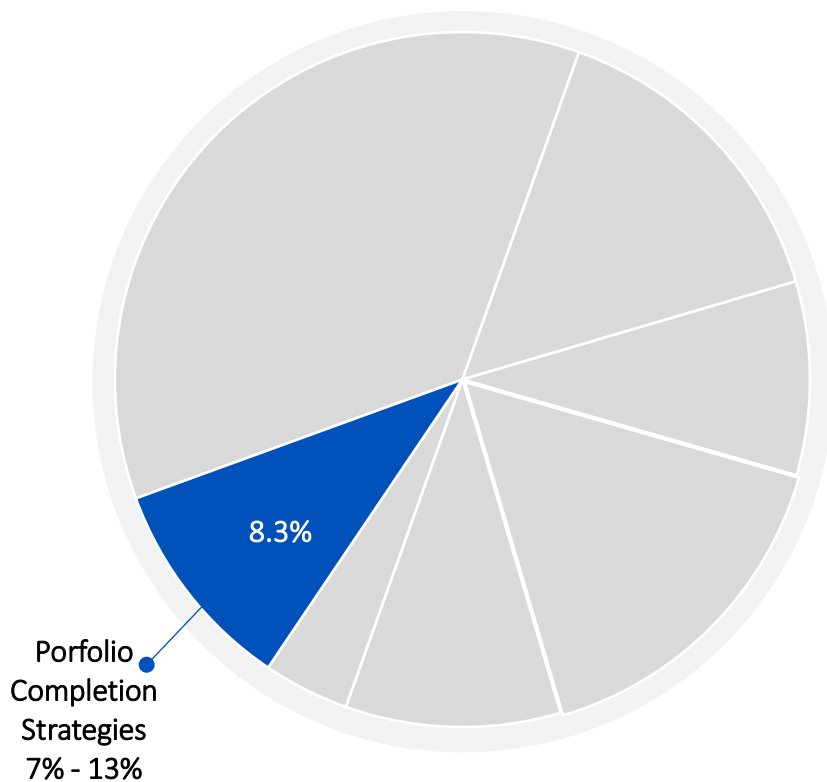
# PORTFOLIO COMPLETION STRATEGIES



# Portfolio Completion Strategies (PCS)

## PRIT FUND TARGET ASSET ALLOCATION

Actual Allocation as of September 30, 2024



PCS \$9.1 billion, 8.3% of PRIT Fund

- Stable Value Hedge Funds: \$4.6 billion, 51% of PCS
- Directional Hedge Funds: \$3.0 billion, 33% of PCS
- Hedge Fund of Funds: \$0.9 billion, 9% of PCS
- Real Assets: \$0.7 billion, 7% of PCS

27 Hedge Fund managers:

- 1 FoHF Manager
- 26 Direct Hedge Fund Managers

6 Real Assets Managers

Emerging-Diverse Managers

5 team members

Collaboration across all PRIM teams

# Portfolio Completion Strategies

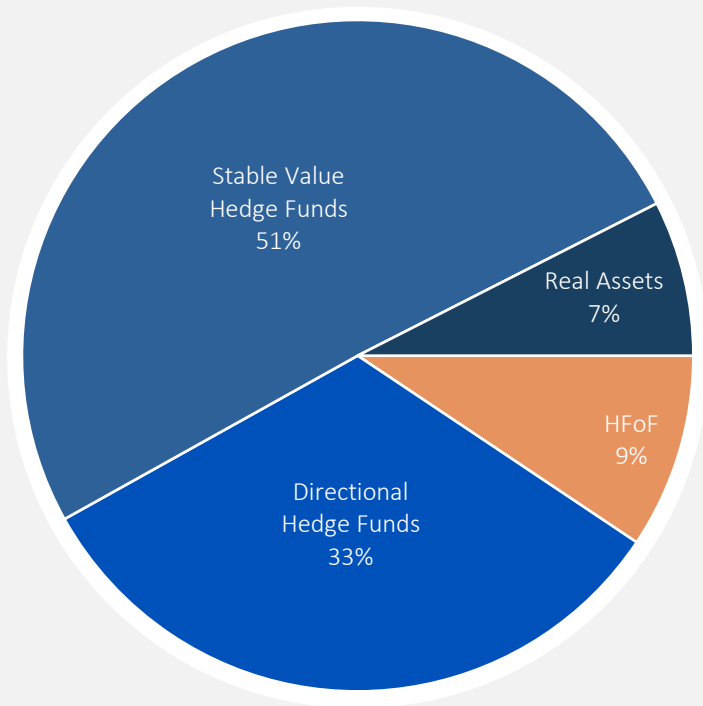
## Key Initiatives

- Hedge Funds:
  - Continue to source high quality partners and investment opportunities pertaining to both Stable Value and Directional Funds.
  - Finish researching the evolving thesis of Special Situation/Distressed investing.
  - Continue to identify and implement other value enhancing initiatives, including innovative fee structure and co-investments.
- Real Assets:
  - Complete market mapping of the Real Assets funds in collaboration with the Real Estate team and the Director of Stewardship.
- Continue to source and allocate to diverse investment managers.
  - Collaborate with the Director of Stewardship on PRIM's stewardship efforts.
- Portfolio/Risk Management:
  - Collaborate with Risk Team to review mandate sizing and concentration limit.
  - Develop a position-based, look-through reporting of the Directional Fund sleeve.
- Organizational:
  - Continue to collaborate and exploit synergies with other asset classes.

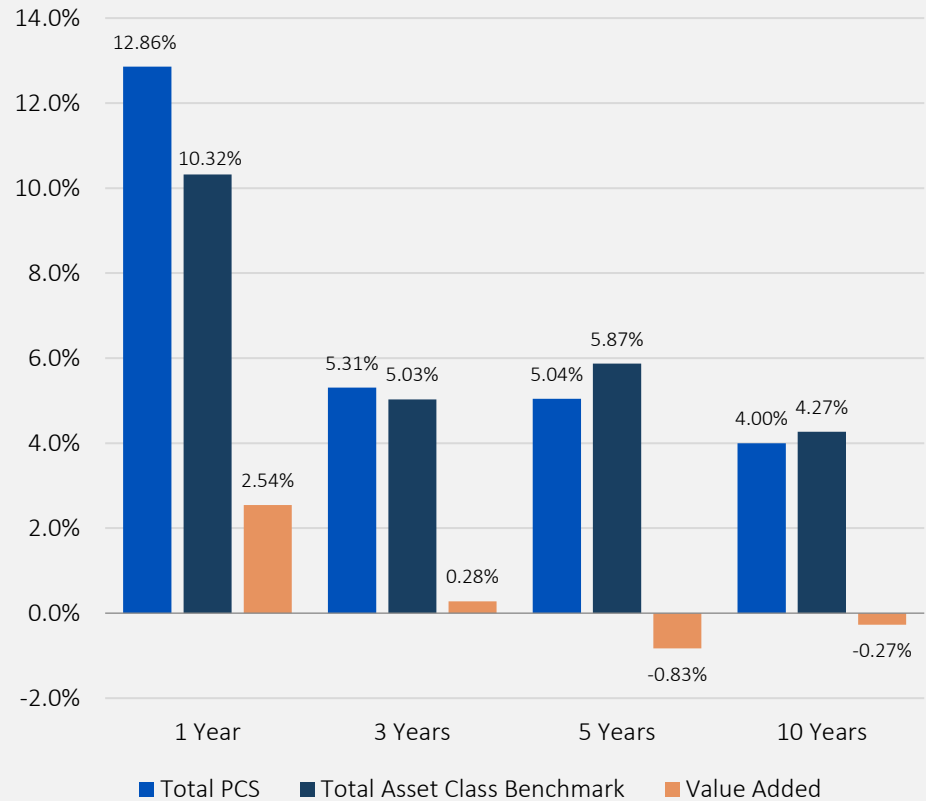
# Portfolio Completion Strategies

As of September 30, 2024, \$9.1 Billion – 8.3% of PRIT Fund (Target 7%-13%)

## ASSET ALLOCATION



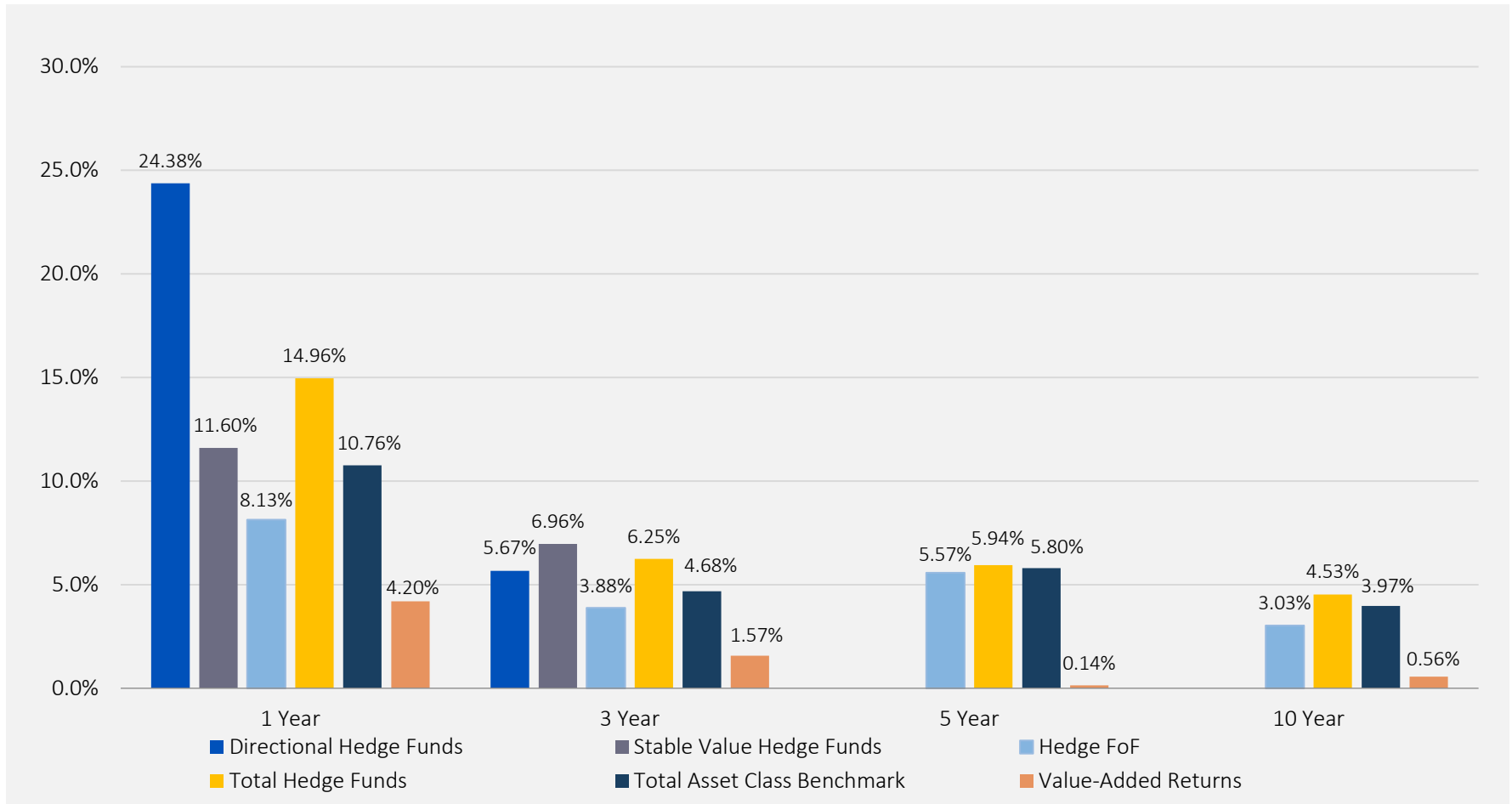
## NET OF FEES PERFORMANCE



Benchmark: Total Portfolio Completions Composite Index was formed on April 1, 2017 by combining the prior Portfolio Completion Strategies with Total Hedge Funds. Total Portfolio Completion Strategies Composite Index is calculated by applying the underlying benchmark return for each sub asset class to the asset class's weight within the Total Portfolio Completion Strategies Composite. These weights are based on the beginning adjusted monthly market value of each sub asset.

# Hedge Funds Performance

Annualized Returns as of September 30, 2024 (Net of Fees)



Benchmark: Currently, Total Hedge Funds benchmark is calculated by applying the investment performance of the sub asset class benchmarks to the sub asset class weights within the Total HF portfolio. These weights are based on the beginning adjusted monthly market value of each sub asset.

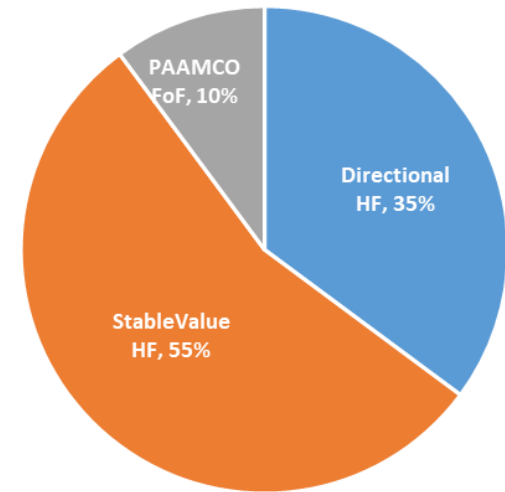


# PRIM Hedge Funds Portfolio Snapshot

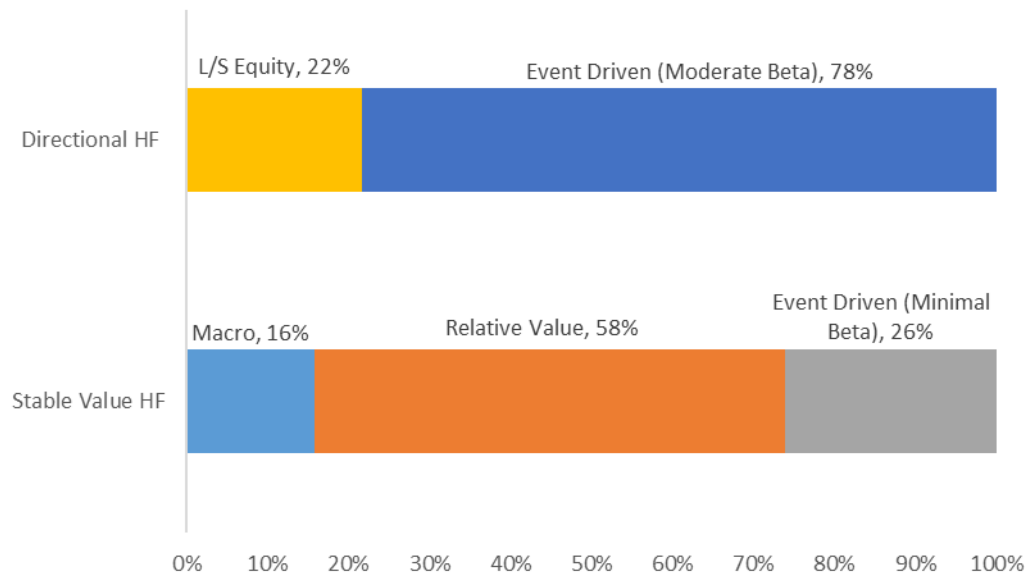
As of September 30, 2024, \$8.5 Billion – 7.6% of PRIT Fund

- Directional Hedge Funds: \$3.0 Billion
- Stable Value Hedge Funds: \$4.6 Billion
- Hedge Fund of Funds: \$0.9 Billion

### Hedge Fund Portfolio Breakdown



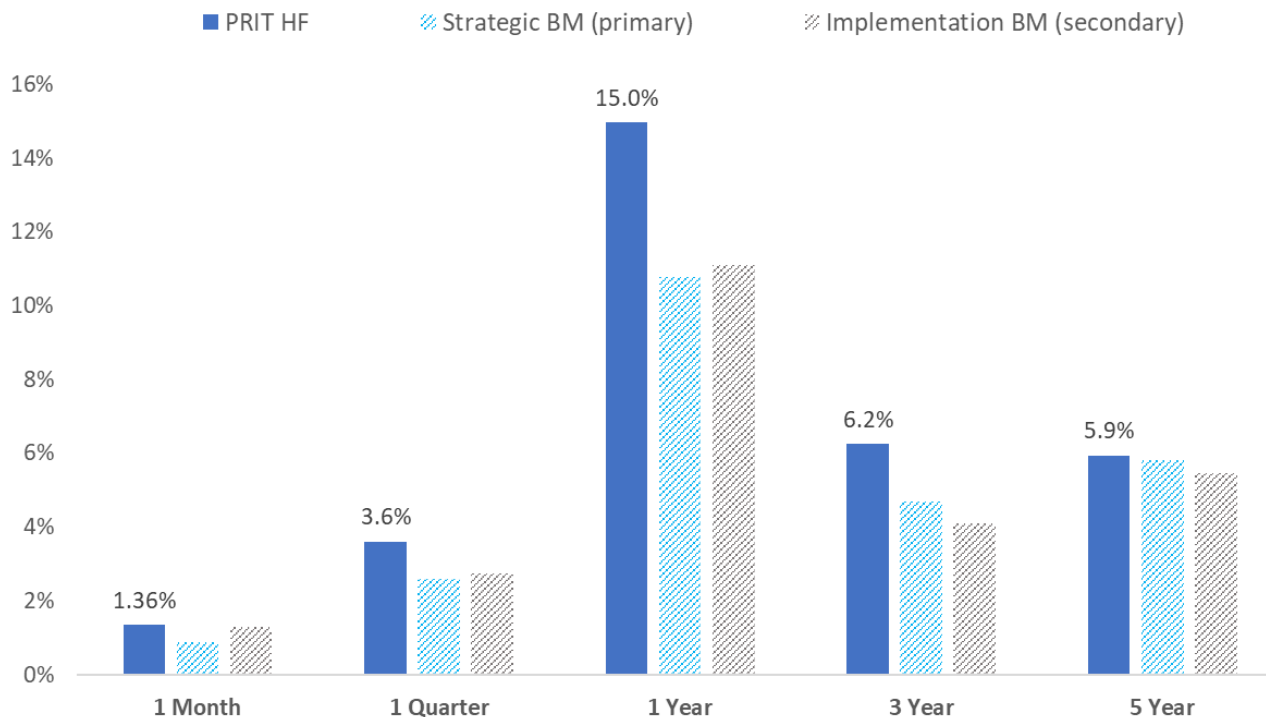
### Sub Strategy Breakdown



# PRIM Hedge Funds Performance Summary

As of September 30, 2024 (Net of Fees)

Performance - PRIT HF (as of 9/2024)



	NAV	1 Month	1 Quarter	1 Year	3 Year	5 Year
<b>PRIT HF</b>	<b>\$8.45 bn</b>	<b>1.36%</b>	<b>3.6%</b>	<b>15.0%</b>	<b>6.2%</b>	<b>5.9%</b>
Strategic BM (primary)		0.88%	2.6%	10.8%	4.7%	5.8%
Implementation BM (secondary)		1.30%	2.7%	11.1%	4.1%	5.5%

- Returns over 1 year are annualized.
- “Strategic BM” measures the opportunity cost of investing in a comparable public market alternative plus a liquidity/volatility premium.
- “Implementation BM” measures the implementation efficacy, especially performance versus asset class peers.

# Risk-Adjusted Return and Market Beta Performance

As of September 30, 2024 (Net of Fees)

## Performance by Asset Classes (as of Sep-2024)

	Directional HF	StableValue HF	Total HF	Total PCS	PRIT Fund	MSCI ACWI	Barclays Agg
1 Year	Return	24.4%	11.6%	15.0%	12.9%	16.3%	11.6%
	Volatility	7.8%	1.7%	3.1%	2.4%	6.4%	7.3%
	<b>Return/Volatility</b>	<b>3.1</b>	<b>6.7</b>	<b>4.9</b>	<b>5.4</b>	<b>2.6</b>	<b>1.6</b>
	<i>EQ Beta</i>	<i>0.6</i>	<i>0.0</i>	<i>0.2</i>	<i>0.2</i>	<i>0.5</i>	<i>0.5</i>
	<i>Bond Beta</i>	<i>0.9</i>	<i>0.1</i>	<i>0.3</i>	<i>0.2</i>	<i>0.8</i>	<i>1.0</i>
	<i>Beta vs. PRIT Fund</i>	<i>1.1</i>	<i>0.1</i>	<i>0.4</i>	<i>0.3</i>	<i>1.0</i>	<i>1.0</i>
3 Year	Return	5.7%	7.0%	6.2%	5.3%	4.4%	-1.4%
	Volatility	9.7%	2.9%	4.0%	3.5%	8.5%	7.6%
	<b>Return/Volatility</b>	<b>0.6</b>	<b>2.4</b>	<b>1.6</b>	<b>1.5</b>	<b>0.5</b>	<b>(0.2)</b>
	<i>EQ Beta</i>	<i>0.5</i>	<i>0.0</i>	<i>0.2</i>	<i>0.2</i>	<i>0.5</i>	<i>0.4</i>
	<i>Bond Beta</i>	<i>1.0</i>	<i>0.0</i>	<i>0.3</i>	<i>0.3</i>	<i>0.9</i>	<i>1.0</i>
	<i>Beta vs. PRIT Fund</i>	<i>1.0</i>	<i>0.1</i>	<i>0.4</i>	<i>0.3</i>	<i>1.0</i>	<i>0.7</i>
5 Year	Return			5.9%	5.0%	8.7%	0.3%
	Volatility			5.4%	4.8%	8.7%	6.3%
	<b>Return/Volatility</b>			<b>1.1</b>	<b>1.1</b>	<b>1.0</b>	<b>0.1</b>
	<i>EQ Beta</i>			<i>0.2</i>	<i>0.2</i>	<i>0.5</i>	<i>0.2</i>
	<i>Bond Beta</i>			<i>0.3</i>	<i>0.2</i>	<i>0.9</i>	<i>1.0</i>
	<i>Beta vs. PRIT Fund</i>			<i>0.5</i>	<i>0.4</i>	<i>1.0</i>	<i>0.4</i>

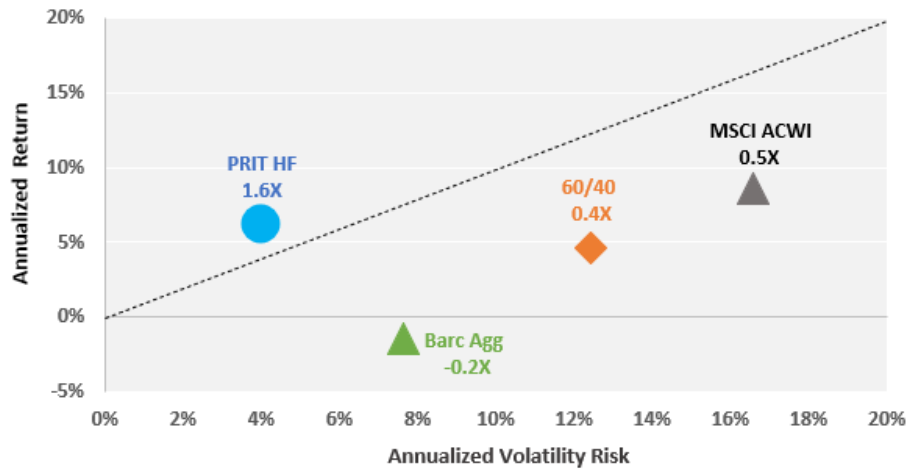
Note: returns are annualized, net of fees.

- Since 2Q 2020, Mellon started separately reporting Stable Value vs. Directional, after Asset Allocation decided to bifurcate their different value propositions.

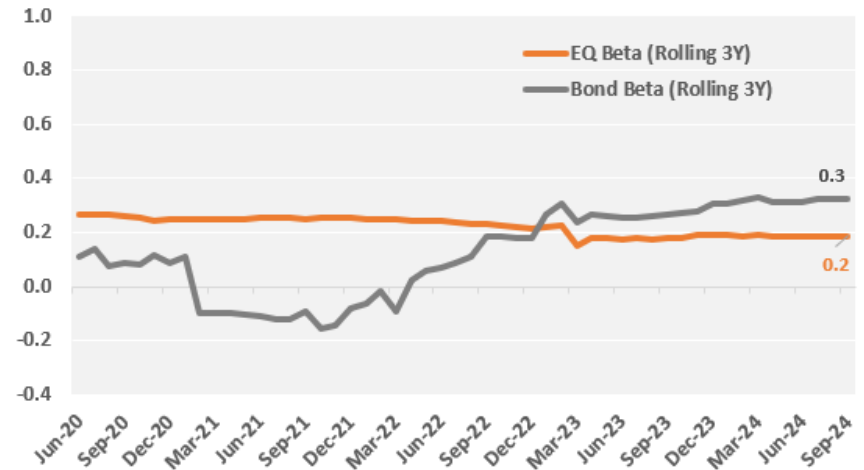
# Risk-Adjusted Return and Market Beta

As of September 30, 2024

### Risk-Adjusted Return: 3 Years



### Diversifying Benefit - PRIT HF's Beta



# PRIM Hedge Funds and PCS Performance Breakdown

As of September 30, 2024 (Net of Fees)

	NAV	as of Total HF	as of Total PCS	1 Quarter	1 Year	3 Year
<b>StableValue HF</b>	\$4.62 bn	55%	51%	<b>2.6%</b>	<b>11.6%</b>	<b>7.0%</b>
Strategic BM (primary)				1.9%	7.6%	4.7%
Implementation BM (secondary)				1.9%	8.3%	4.3%
<b>Directional HF</b>	\$2.97 bn	35%	33%	<b>6.3%</b>	<b>24.4%</b>	<b>5.7%</b>
Strategic BM (primary)				4.0%	18.2%	5.1%
Implementation BM (secondary)				4.5%	17.9%	4.0%
<b>PAAMCO FoF</b>	\$0.86 bn	10%	9%	<b>1.2%</b>	<b>8.1%</b>	<b>3.9%</b>
Strategic BM (primary)				1.9%	7.6%	2.8%
Implementation BM (secondary)				2.6%	10.6%	3.2%
<b>Real Assets</b>	\$0.68 bn	N/A	7%	<b>3.4%</b>	<b>-7.6%</b>	<b>-4.0%</b>
Benchmark				1.2%	5.7%	7.7%

- Returns over 1 year are annualized.
- Since 2Q2020, Mellon started separately reporting Stable Value vs. Directional, after Asset Allocation decided to bifurcate their different value propositions.
- “Strategic BM” measures the opportunity cost of investing in a comparable public market alternative plus a liquidity/volatility premium.
- “Implementation BM” measures the implementation efficacy, especially performance versus asset class peers.

# Glossary of PRIT Fund Investment Terms

**Active Management** – Refers to a portfolio management strategy where the manager makes specific investments with the goal of outperforming an investment benchmark index.

**Barclays Capital Aggregate Bond Index** – An index that replicates the U.S. investment-grade bond market. The index is comprised of government and corporate bonds.

**Core Fixed Income Portfolio** – Investments in investment-grade bonds (see definition of Barclays Capital Aggregate Bond Index).

**Domestic Equity Portfolio** – Investments in shares of publicly-traded U.S. companies utilizing a large capitalization (large cap), small and middle capitalization (small/smld cap), and micro capitalization (micro cap) strategies.

**Emerging-Diverse Manager** – Investment managers with less than \$2B of AUM, less than 3 yrs track record, that are minority-owned or women-owned.

**Emerging Markets Equity Portfolio** – The primary strategy for this portfolio is investing in companies in developing countries, including, but not limited to, China, Brazil, Russia, South Korea, Taiwan, India and Turkey. These countries typically have less efficient securities markets, and thus there is opportunity for substantial returns.

**Hedge Fund Research, Inc. (HFRI)** – An organization that specializes in the areas of indexation and analysis of hedge funds.

**International Equity Portfolio** – The primary strategy for this portfolio is investing in companies in developed markets, industrialized nations outside of the United States, including, but not limited to, Japan, Germany, the United Kingdom, France, Italy, Switzerland, Hong Kong, Canada, and Australia.

**MSCI ACWI Index** – Captures large and mid cap representation across 23 Developed Markets and 25 Emerging Markets.

**MSCI Emerging Markets Index** – Captures large and mid cap representation across 25 Emerging Markets.

**MSCI Europe Investable Market Index** – Captures large, mid and small cap representation across 15 Developed Markets

**Passive Management** - An investing strategy that tracks a market-weighted index or portfolio. The most popular method is to mimic the performance of an externally specified index by buying an index fund.

**Portfolio Completion Strategies (PCS)** – The objective of the PCS portfolio is to provide the PRIT Fund access to broader investment opportunities. Investments selected for the PCS portfolio should enhance the risk/return profile of the PRIT Fund. Investments may include long-term strategic investments or short-term opportunistic investments. Some of these strategies include hedge funds and real assets.

**Private Equity Portfolio** – Two components comprise the PRIT Fund’s Private Equity portfolio: venture capital (early-stage and multi-stage) and special equity partnerships (buyout and growth equity). Unlike public markets, where the investor has the ability to “cash out” of positions at any time, these private market investments are illiquid.

**Real Estate Portfolio** – Equity investments in both directly-owned properties and REIT securities. Directly-owned core properties make up most of the portfolio. Core properties are typically well-leased, operating properties that provide regular cash flow from rents. Non-core investments include properties that are under development.

**REIT** – A company that owns, and in most cases operates, income-producing real estate. REITs often trade on major exchanges like other securities and provide investors with a liquid stake in real estate.

**Russell 3000 Index** – A stock market index that measures the performance of the largest 3,000 U.S. companies representing approximately 97% of the investable U.S. equity market.

**Standard & Poor’s (S&P) 500 Index** – A U.S. stock market index based on the market capitalizations of 500 large companies having common stock listed on the NYSE or NASDAQ.

**Timberland Portfolio** – Direct investments in timberland: in the United States timberland markets are divided into three regions, each with distinct economic characteristics: the Pacific Northwest, the Northeast and the Southeast. The Pacific Northwest is a high value softwood market, in which the growing cycle to produce a mature tree is forty to fifty years; in Australia, there is approximately 2 million hectares (4.9 million acres) of plantation timberlands that are almost evenly split between hardwood and softwood species.

**Treasury Inflation-Protected Securities (TIPS)** – Investment grade fixed income investments designed to provide a hedge against rising inflation. The principal of a TIPS increases with inflation and decreases with deflation, as measured by the Consumer Price Index. When a TIPS matures, the investor is paid the adjusted principal or original principal, whichever is greater.

**Treasury Separate Trading of Registered Interest and Principal of Securities (STRIPS)** – Bonds that are sold at a discount to their face value. The investor does not receive interest payments but is repaid the full-face value when the bonds mature. Also called “zero coupon” bonds.

**Value-Added Fixed Income** – A fixed income portfolio consisting of the following strategies: high yield bonds (non-investment grade corporate debt); bank loans (senior secured corporate debt); emerging markets debt (debt issued within the emerging, or developing countries, marketplace, and private debt (investments in private partnerships that invest directly in companies under financial distress).





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THANK YOU

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