



Minutes of the PRIM Investment Committee Remote Meeting
Tuesday, January 31, 2023

Committee members present:

- Treasurer Deborah Goldberg, Chair
- C. LaRoy Brantley
- Michael Even
- Constance Everson, CFA
- Ruth Ellen Fitch, Esq.
- Phillip Perelmuter
- Philip Rotner (arrived at 9:44 a.m.)
- Glenn Strehle, CFA
- Timothy Vaill (departed at 11:27 a.m.)

Committee members not present:

- Joseph Bonfiglio
- James Hearty
- Peter Monaco
- Paul Shanley, Esq.

The PRIM Investment Committee meeting was called to order at 9:32 a.m. Chair Treasurer Deborah Goldberg announced that the meeting was being held by internet and telephone in accordance with the provisions of Massachusetts, “Chapter 22 of the Acts of 2022” which was signed into law on February 15, 2022, and most recently amended on July 16, 2022, that includes an extension until March 31, 2023 of the remote meeting provisions of the March 12, 2020, Executive Order “Suspending Certain Provisions of the Open Meeting Law”. Accordingly, all members of the Committee participated remotely via telephone and/or internet enabled audio and video conferencing, and all votes were taken by roll call. Public access to the deliberations of the Committee was likewise provided via telephone, with presentation materials made available on PRIM’s website (www.mapension.com). At the start of the meeting, the names of the members participating remotely were announced.

I. Approval of the Minutes (Voting Item)

The PRIM Investment Committee approved, by unanimous roll-call vote, the minutes of its November 15, 2022, meeting.

II. Executive Director / Chief Investment Officer Comments

Michael G. Trotsky, CFA, Executive Director, and Chief Investment Officer, made comments to the Committee, including:

Markets and PRIT Fund Performance

Mr. Trotsky stated economic cycles and financial market declines will impact the PRIT Fund periodically, and calendar 2022 was one of those periods. PRIM is pleased that the PRIT Fund was up 4% for the December quarter, and the gains continued into January following three straight quarters of market declines. Returns were negative during the 12-month period ending December 2022 as equity and bond indices were down globally: domestic equities were down 18%, developed international equities were down 14.5%, and emerging equities were down 20%. Normally, PRIM would expect bonds to offer protection from a selloff in equities, but bonds were also down substantially in calendar 2022, by approximately 13%. A 60/40 mix of stocks and bonds was down 16.2%, but the PRIT Fund fared better, down 11.2% net of fees. The loss in calendar year 2022 followed a very strong calendar year 2021.

Calendar year 2021 returns were the fourth largest return ever, and the outperformance of 8% net of fees relative to our benchmark in 2021 was the strongest outperformance in PRIM's entire history.

Mr. Trotsky noted the PRIT Fund has performed well over the last several years while the financial markets and global economies responded to several disruptive situations. PRIM does not control geopolitical events, slowing economic growth worldwide, monetary policy responses, wars, viruses, supply chain shortages, or the behavior of other investors. PRIM is a market taker, and the only thing we can control is the design and composition of the PRIT Fund. PRIM has carefully engineered a diversified portfolio with components that will perform well in a variety of market environments, and we are also very focused on controlling our costs. PRIM's history of strong performance in both strong and weak markets is an indication that our portfolio is well constructed in terms of risk, return, and cost; PRIM's philosophical three pillars of investment. PRIM's alternatives, specifically Hedge Funds, Private Equity, Timberland, and Real Estate helped anchor the PRIT Fund in this very stormy environment, an investment period when both public equities and bonds were down significantly in all markets around the globe.

The silver lining in turbulent markets is that selloffs create attractive buying opportunities. The PRIM team was busy during the year evaluating opportunities and deploying approximately \$5.7 billion in new investments. Another silver lining is that some of the uncertainties are beginning to resolve. Namely, inflation appears to have peaked, the Fed is beginning to taper interest rate increases, and the economy is still growing. PRIM hopes the positive trends continue.

The main risks going forward are familiar: that inflation spikes again or remains too high, business spending or corporate earnings could weaken more than anticipated, and unemployment or wages could spike. Any of those conditions could result in an economic slowdown that turns into a severe recession, one that is worse than the current consensus expectations. That scenario would be a headwind for financial markets. There are many moving pieces in the global economy and in the world's geopolitical situation, PRIM cannot control any of that, but PRIM does believe the PRIT Fund is well constructed to perform relatively well in any environment.

Philip Rotner joined the meeting at 9:44 a.m.

Investment Committee member Connie Everson, CFA, provided her comments on the economy and markets.

PRIT Fund Performance

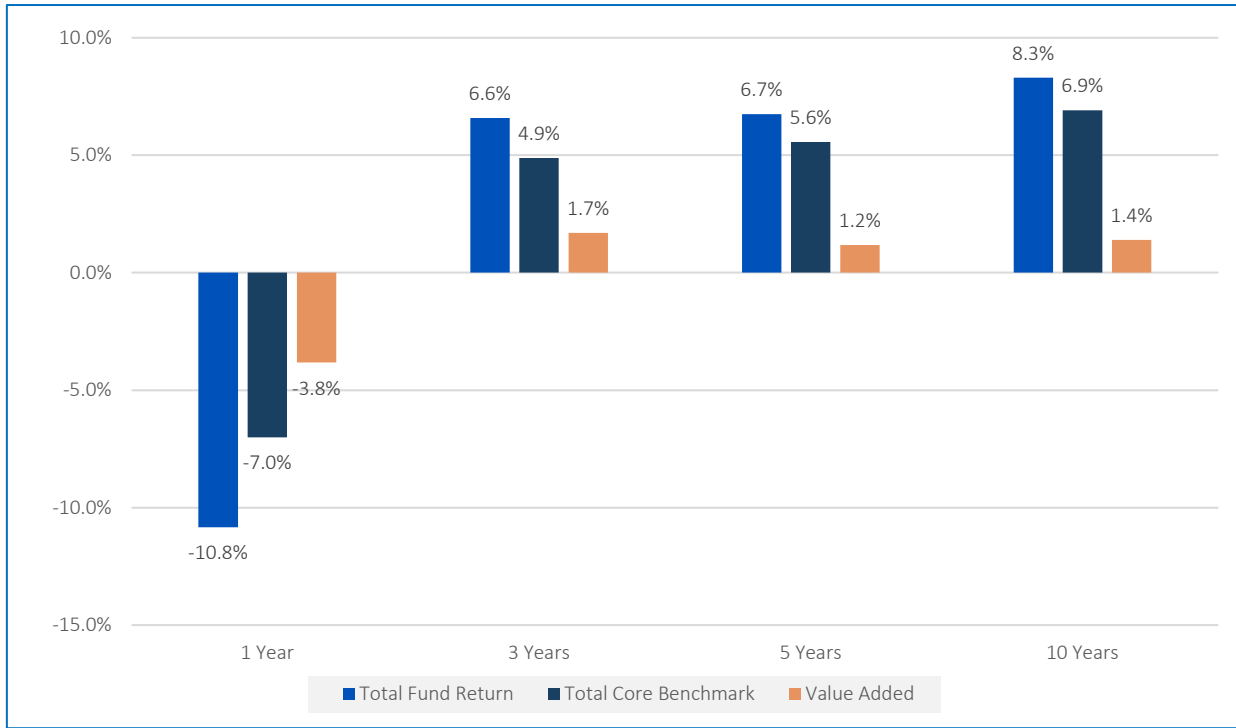
For the one-year ended December 31, 2022, the PRIT Fund was down -10.8%, (-11.2% net), underperforming the total core benchmark of -7.0% by 382 basis points (422 bps net).

- This performance equates to an investment loss of \$11.6 billion, net of fees.
- This underperformance equates to \$4.4 billion of value below the benchmark return, net of fees.
- Net total outflows to pay benefits for the one-year ended December 31, 2022, were approximately \$738 million.

The following charts summarize the PRIT Fund performance for the fiscal year ended December 31, 2022.

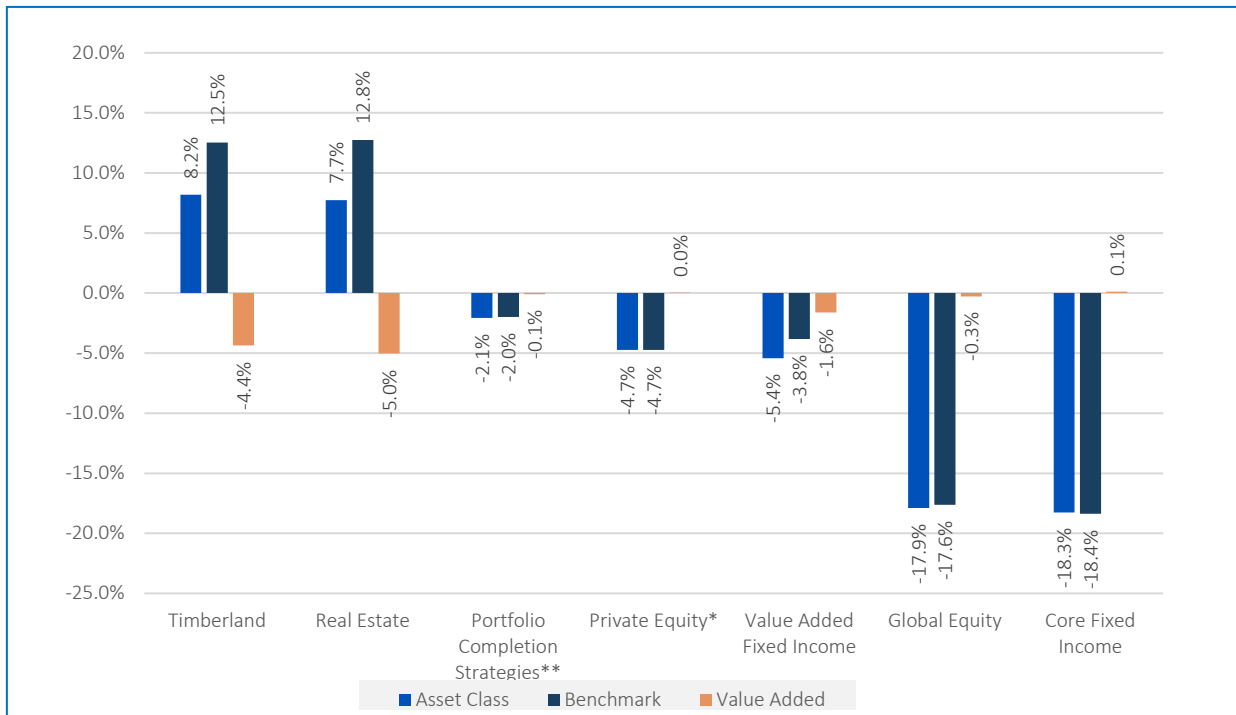
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Total PRIT Fund Returns
Annualized Returns as of December 31, 2022 (Gross of Fees)



Source: BNY Mellon. Totals may not add due to rounding. Total Core Benchmark includes private equity benchmark.

PRIT Asset Class Performance Summary
One-Year Ended December 31, 2022 (Gross of Fees)



Source: BNY Mellon. Totals may not add due to rounding. *Benchmark is actual performance. **Hedge Fund returns are net of fees.

PRIT Fund Annualized Returns by Asset Class
As of December 31, 2022 (Gross of Fees)

1 Year	3 Year	5 Year	10 Year
TIMBER 8.2%	PRIVATE EQUITY 26.0%	PRIVATE EQUITY 22.9%	PRIVATE EQUITY 21.0%
REAL ESTATE 7.7%	REAL ESTATE 11.7%	REAL ESTATE 10.4%	REAL ESTATE 10.6%
PORTFOLIO COMPLETION STRATEGIES (2.1%)	TIMBER 7.7%	TIMBER 5.3%	GLOBAL EQUITY 8.3%
PRIVATE EQUITY (4.7%)	GLOBAL EQUITY 4.3%	GLOBAL EQUITY 5.3%	TIMBER 6.1%
VALUE-ADDED FIXED INCOME (5.4%)	VALUE-ADDED FIXED INCOME 3.3%	VALUE-ADDED FIXED INCOME 3.9%	VALUE-ADDED FIXED INCOME 4.2%
GLOBAL EQUITY (17.9%)	PORTFOLIO COMPLETION STRATEGIES 2.4%	PORTFOLIO COMPLETION STRATEGIES 2.5%	PORTFOLIO COMPLETION STRATEGIES 4.1%
CORE FIXED INCOME (18.3%)	CORE FIXED INCOME (2.8%)	CORE FIXED INCOME 0.3%	CORE FIXED INCOME 2.0%

Source: BNY Mellon

Organizational Updates and Summary of 2023 Annual Plans

Mr. Trotsky stated that customary for this Board cycle, asset allocation recommendations are approved, and annual plans are discussed. The annual plans are consistent with prior years, but this year each functional area includes plans to support the newly formed ESG committee. PRIM believes the ESG Committee will build on the important work we have been doing internally and with our partners in the MIT Sloan School's Aggregate Confusion Project. PRIM is excited to get started with the new Committee and has reached out to the new Committee members to schedule our customary on-boarding briefings. PRIM expects the ESG Committee's first meeting will occur at the next Board cycle.

On asset allocation, PRIM staff is recommending continuing our multi-year effort to gradually increase the PRIT Fund's allocation to Private Equity. Maintaining a consistent pace of Private Equity commitments has been a key contributor to our long-term success. PRIM has observed throughout our history that some of our highest performing Private Equity vintage years originate during volatile times like this, when other investors may be cutting their commitments for a variety of reasons. Our Private Equity partners have the proven ability to wait for valuations to become attractive to deploy capital, and investors who provide capital in difficult environments benefit when valuations are cheapest. PRIM has learned that 80% of our peers are currently 4-6% above their ranges for Private Equity, but at 17.7% of PRIT Fund assets, Private Equity is within the current range, and PRIM has room to continue our commitment pace. PRIM's Private Equity team carefully models commitment pacing each year, and the fact that we are still within our range when most others are not, is testimony to the robustness of PRIM's very disciplined process. The recommended increase of 1% to Private Equity continues a multi-year trend consistent with PRIM's asset allocation research findings and will provide extra headroom to maintain an adequate commitment pace.

Mr. Trotsky announced that Pengtuan Wu joined the Research team in January as an Investment Officer reporting to Maria Garrahan. Pengtuan holds a Master of Science degree in Mathematical Finance from

Rutgers University, and before coming to PRIM was a principal quantitative developer at Fidelity Investments. At Fidelity Pengtuan led the development of the centralized factor engine in addition to many other quantitative research initiatives.

Mr. Trotsky noted that Tianyi Shi would be joining the Research team on February 6th as an Investment Analyst reporting to Maria Garrahan. Tianyi joined PRIM as a Research intern in May 2022 and has worked within multiple areas of Research, all while finishing her degree at Boston University. Tianyi graduated from Boston University in December 2022 with a Master of Science degree in Mathematical Finance & Financial Technology. Tianyi also has a bachelor's degree in Financial Engineering. We are delighted that Tianyi chose PRIM to start her very promising career.

Mr. Trotsky stated that PRIM deployed more than \$2.8 billion to diverse managers in 2022 as part of the FUTURE Initiative, bringing the total to more than \$9 billion. In December 2022, PRIM received the Commonwealth's "Equity in Governance Award" for its efforts in this area. PRIM also designated more than \$340 million to 15 emerging-diverse managers as part of a \$1 billion program specifically designed to reduce barriers between the PRIT Fund and emerging-diverse managers. This progress was reported to the state legislature as a requirement of the Investment Equity legislation, the legislation championed by the Treasurer more than two years ago. As reported by Pensions and Investments, this puts PRIM at the very top of the heap compared to other pension funds, 7th in the nation in capital deployed with diverse investment managers, far above our rank in size.

III. Asset Allocation Recommendation (Voting Item)

Maria Garrahan, Senior Investment Officer - Director of Research, presented the staff's 2023 Asset Allocation recommendation along with representatives from NEPC.

Ms. Garrahan noted the 2023 Asset Allocation recommendation represents no major changes to the prior year recommendation. The recommendation includes a 1% increase in the Private Equity range to 13-19% (formerly 12-18%) and subsequently a 1% decrease in the Global Equities ranges to 32-42% (formerly 33-43%).

PRIM's asset allocation framework, Ms. Garrahan continued, uses a probabilistic based approach to maximize the likelihood of achieving the dual objective. As part of the asset allocation research program, PRIM continues to be mindful of rebalancing decisions and liquidity.

Ms. Garrahan noted PRIM's asset allocation research program is comprehensive in nature with the core framework using principal component analysis to identify areas of diversification through PRIM's actual historical experience while also conducting forward-looking analysis through an evaluation of Capital Market Assumptions. This forward-looking analysis does suggest caution with regards to Private Equity whereas it highlights the rising yield environment and subsequently a favorable fixed income opportunity set. However, this forward-looking analysis is very dependent on forward expectations. PRIM staff is cognizant of the rising yield environment and may allocate to fixed income opportunities as they arise so long as they are within the approved range.

Ms. Garrahan highlighted key findings from our core asset allocation framework and systematic tests. Private Equity remained the most additive to the PRIT Fund regarding probability of achieving our dual objective. PRIM's Private Equity allocation recommendation has remained consistent over the years. PRIM staff acknowledges that market conditions outside of our control may lead Private Equity actual weight to be temporarily outside of the range. PRIM's liquidity risk is relatively low with our annual redemption to pay beneficiaries being less than 2%. Through a peer assessment, PRIM's allocation is in-line with other public plans and significantly lower than endowments.

Mr. Leu, CFA, FRM, Senior Investment Officer – Director of Risk Management, noted we look at the PRIT Fund through building blocks of risk: 1) equity risk; 2) interest rate risk; 3) credit risk; and 4) some private factors. Equity risk contributes 74% of the total PRIT Fund risk. While interest rate risk contributes 1.3% and credit risk contributes 2.7%. Global Equity and Private Equity accounts for roughly 56% of the market value but 80% of the total risk. When looking at the PRIT Fund PRIM thinks in terms of overall equity risk.

Mr. Leu noted that PRIM's Private Equity portfolio has benefited from diversification by vintage year and through consistent annual commitment targets, which ensures PRIM is committing capital when equity markets are weak.

Philip Nelson, CFA, Partner, Director of Asset Allocation from NEPC, presented to the Committee a summary of NEPC's 2023 investment outlook asset class overview and NEPC's asset class return assumptions.

The PRIM Investment Committee voted, by unanimous roll-call vote, to approve a recommendation to the PRIM Board to approve the 2023 Asset Allocation Recommendation as described in the Expanded Agenda, and further to authorize the Executive Director to take all actions necessary to effectuate this vote.

IV. Hedge Fund Benchmark Review (Voting Item)

Shannon Ericson, Senior Investment Officer – Risk Management, presented a benchmark recommendation for Stable Value and Directional Hedge Funds (collectively, "Direct Hedge Funds") and PAAMCO.

Ms. Ericson reminded everyone of the benchmark project the Risk Team has been working on with Verus, PRIM's benchmarking consultant. PRIM hired Verus as a benchmark consultant in January 2021. One of the initial objectives for Verus was to help PRIM perform a comprehensive review of all benchmarks PRIM uses. To date, PRIM and Verus have reviewed and implemented recommended changes for PRIM's Private Equity, Global Equity, Core Fixed Income, Value-Added Fixed Income, Private Debt and Real Estate benchmarks.

Ms. Ericson provided an in-depth overview of the two benchmark recommendations for the Hedge Fund sub-components which will introduce a new core benchmark and recategorize the current benchmark for Stable Value Funds, Directional Hedge Funds and PAAMCO. The new core or primary benchmark for Stable Value Hedge Funds and PAAMCO is SOFR + 2%. The new core (primary) benchmark for Directional Hedge Funds is 50% MSCI ACWI + 50% SOFR. These new core (primary) benchmarks will be considered strategic benchmarks that will be used to measure the efficiency of the allocation decision. The recategorized current benchmark will be an implementation or secondary benchmark and used as a measure for manager selection which will help us evaluate how PRIM's private assets have performed versus their asset class peers.

The PRIM Investment Committee voted, by unanimous roll-call vote, to approve a recommendation to the PRIM Board to approve the Hedge Fund Benchmark Recommendation as described in the Expanded Agenda, and further to authorize the Executive Director to take all actions necessary to effectuate this vote.

V. Request to Issue an RFP for Investment Performance Reporting Services (Voting Item)

Matthew Liposky, Chief Investment Operating Officer, presented the request to issue a request for proposals (RFP) for Investment Performance Reporting Services. Mr. Liposky stated this is a new service for PRIM that will enhance the monthly and quarterly reporting that is provided to the Board and committees, our participants and that PRIM staff uses internally as well as bring efficiencies and automate our performance reporting process.

The PRIM Investment Committee voted, by unanimous roll-call vote, to make a recommendation to the PRIM Board to approve the issuance of a Request for Proposals for Investment Performance Reporting Services as described in the Expanded Agenda and further to authorize the Executive Director to take all actions necessary to effectuate this vote.

VI. Public Markets Performance Summary

A. Performance Summary

Michael McElroy, CFA, Senior Investment Officer - Director of Public Markets, provided an update on Public Markets performance.

Mr. McElroy stated it was encouraging to see the recovery in public equity and bond markets in the fourth quarter, after three consecutive quarters of negative returns in these normally uncorrelated asset classes. In the quarter, global equity returns ranged from 7% in U.S. markets to 15% in non-U.S. markets. Value outperformed growth in all geographies. For the year, equities were down nearly 20%, and it was broad-based across geography and sector, with energy the only meaningful exception. Just as in the fourth quarter, the value style was the highest performing in 2022, and this may be a trend that continues into at least the first half of 2023.

Bonds were a bit more mixed, with shorter-duration bonds and value-added areas such as high-yield and emerging markets debt up between 2-7% in the quarter, but longer-duration bonds lost value as long-term interest rates ended the quarter slightly higher. For the year, Core Fixed Income was down between -12% to -40%, while Value-Added Fixed Income did provide some downside cushion, with those strategies declining only about -7%. The U.S. and many developed markets yield curves remain inverted, and the Fed funds rate was increased over the quarter.

Within this backdrop, results for the PRIT Fund were within expectations. All regions of our Global Equity portfolio outperformed in the fourth quarter; the strongest results seen from our Developed International portfolio. Similarly, for the year, our U.S. and Emerging Markets managers outperformed, but our Developed International portfolio (particularly the growth style) brought down our overall results in this region. Within fixed income, both Core and Value-Added slightly underperformed in the quarter; while for the year, Core Fixed Income was in-line with benchmark, while our Value-Added Fixed Income underperformed due to credit conditions weakening through the year.

Mr. McElroy noted the fourth quarter marked five years since we started making allocations to Other Credit Opportunities (OCO), where the PRIT Fund invests in credit strategies complementary to our High Yield, Bank Loans or Emerging Market Debt portfolios. Although fourth quarter was challenging, over the five-year experience so far OCO has been a source of uncorrelated returns and strong absolute/relative performance and is an area we continue to be excited about as market dislocations and diminished liquidity have made these credit strategies with stronger covenants, better collateral, and more conservative valuations.

In closing, Mr. McElroy stated market conditions have been and will remain uncertain, however, our Public Markets portfolio was built to weather turbulent environments. High volatility should be a good environment for active managers to add value, managing all these changing risks all at once, can at times prove challenging. PRIM is encouraged by the diversification we have built into the PRIT Fund, and that our managers have provided. PRIM experienced a nice recovery in the fourth quarter, both relative and absolute returns remain strong over the long-term in both equities and fixed income. The aggregate risk of the overall equity and fixed income portfolios remains low, and risk factors are balanced across our managers.

B. Public Markets Advisory Services RFP Recommendation (Voting Item)

Investment Committee member LaRoy Brantley recused himself and left the meeting at 11:16 a.m.

Andre Abouhala, Investment Officer – Public Markets presented the Public Markets Advisory Services RFP recommendation. Mr. Abouhala highlighted the issuance of the RFP, proposals received and PRIM’s selection process. PRIM received seven proposals; respondents included Aon, Callan, Meketa, NEPC, RVK, Verus and Wilshire. The Evaluation Committee consisted of Michael McElroy, Chuck LaPosta, David Gurtz, Jay Leu, Shannon Ericson, Tony Falzone, Matthew Liposky, Francesco Daniele, and Andre Abouhala. All responses were thoughtfully reviewed, and finalists were selected based on the criteria detailed in the RFP. Five finalists were selected for in-depth interviews to better understand their approach, experience, and qualifications.

A concern was raised regarding the impact of hiring Meketa on fellow Committee member LaRoy Brantley’s ability to continue serving on the Committee. PRIM staff answered by noting that PRIM will work on any potential conflicts to ensure Mr. Brantley can continue to serve on this Committee. After careful consideration, the Evaluation Committee unanimously recommended the selection of Meketa Investment Group.

The PRIM Investment Committee voted, by unanimous roll-call vote, to make a recommendation to the PRIM Board to approve the Public Markets Advisory Services RFP recommendation as described in the Expanded Agenda and further authorize the Executive Director to take all actions necessary to effectuate this vote.

Timothy Vaill departed the meeting and Mr. Brantley returned to the meeting at 11:27 a.m.

VII. Portfolio Completion Strategies Performance Summary

Bill Li, CFA, CAIA, Senior Investment Officer – Director of Portfolio Completion Strategies, provided an update on Portfolio Completions Strategies (PCS) performance, noting that for the fourth quarter 2022, PRIM’s Hedge Fund, which is 90% of PCS, increased 1.5%, while the remaining 10% of PCS, the Real Assets portfolio, was down 5.9%.

Mr. Li noted for the full calendar year, PRIM’s Hedge Fund portfolio was slightly down by 1.9%, with an equity beta of merely 0.1x. That provided ample risk buffer to the total PRIT Fund, in a year when a 60/40 market mix declined by over 16%. Over the trailing 3-year and 5-year time frames, the Hedge Fund program’s realized equity beta and bond beta remained low, exhibiting strong diversifying benefits in a tumultuous environment. Notably, on a beta-adjusted basis, PRIM’s Hedge Fund portfolio also outperformed both equities and bonds.

2023 should be an exciting year for PRIM’s Hedge Funds allocations. Stable Value Funds, the biggest Hedge Funds sleeve that delivered a positive 2.3% last year, is largely comprised of Relative Value and low-beta Event-Driven investment mandates. Directional Funds, which are stock and credit investors that are absolute-return oriented, see tremendous valuation support in selective securities. This year, PRIM anticipates ample alpha potential from Directional managers’ security selection.

VIII. Private Equity Performance Summary

Michael McGirr, CFA, Senior Investment Officer - Director of Private Equity, provided an update on Private Equity market performance, noting 2022 was a difficult year for Private Equity and the challenges continue in 2023. In 2022 Global mergers and acquisitions were down 37% compared to the previous year. U.S. mergers and acquisitions volume fell by 43% year-to-year. U.S. private equity dealmaking volume declined 19.5% for the calendar year 2022. Dry powder was down by 11% in 2022, the first reduction since 2008. U.S. IPOs were down 95% with only 74 companies listed. PRIM continues to see a deep correction in the Venture Capital and Growth sectors. Financing became materially more expensive for Private Equity

buyers over the course of 2022. PRIM is noticing a slowdown in debt markets which is slowing down the investment pace of Private Equity managers and finally leading to a slowdown in the fundraising markets.

Regarding performance, Mr. McGirr noted Private Equity was down -0.51% gross (Net: -0.8%), which was less than the decline of the Public Markets in third quarter 2022. PRIM's trailing 1-year return for Private Equity declined to -4.75% gross (net: -5.75%), bringing PRIM's 3-year, 5-year and 10-year returns to 26%, 23% and 21% respectively, gross. Venture Capital and Growth Equity continued to give back some of their gains from 2020/2021. Growth Equity was down 16% for the trailing year, while Venture Capital was down another 2% for the quarter and down 17% for the trailing 1-year. Buyouts remain resilient. Private Equity assets remained at \$16.2 billion and decreased slightly as a percentage of the PRIT Fund (17.7%) given the strong Public Markets performance in fourth quarter of 2022.

Mr. McGirr noted looking forward, the 1% increase to the target range of Private Equity to 13-19%, means PRIM's Private Equity commitment goal for 2023 is \$2.2 billion to \$3.0 billion.

The PRIM Investment Committee meeting adjourned at 11:55 a.m.

List of documents and exhibits used during the meeting:

- *Minutes of the PRIM Investment Committee Meeting on November 15, 2022*
- *PRIT Fund Performance Report (December 31, 2022)*
- *BNY Mellon Gross of Fees Performance Report (December 31, 2022)*
- *2023 PRIM Staff Annual Plans*
- *2023 Asset Allocation Presentation*
- *2023 NEPC Asset Allocation Presentation*
- *Hedge Funds Benchmark Recommendation Presentation*
- *Verus Investments' Benchmark Recommendation Memorandum – Hedge Funds*
- *Verus Investments' Benchmark Recommendation Memorandum – PAAMCO*
- *Public Markets Advisory Services RFP Evaluation Committee's Recommendation Report*