Investment Section

COMMONWEALTH OF PENNSYLVANIA
PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM

James H. Grossman Jr., CPA, CFA
Chief Investment Officer

October 27, 2016

Dear Members of The PSERS Board of Trustees:

It is a privilege to present to you the Investment Section of the Comprehensive Annual Financial Report for the fiscal year ended June 30, 2016.

Authority and Fiduciary Standard

The Board has the responsibility to invest funds of the System in accordance with guidelines and limitations set forth in the Code and other applicable state law. As fiduciaries, the members of the Board and Staff must act solely in the interests of the members of the System and for the exclusive benefit of the System's members. In performance of their duties, the members of the Board and Staff who have been delegated with investment authority shall be held to the Prudent Investor Standard.

The Prudent Investor Standard, as articulated in the Code, means "the exercise of that degree of judgment, skill, and care under the circumstances then prevailing which persons of prudence, discretion, and intelligence who are familiar with such matters exercise in the management of their own affairs not in regard to speculation, but in regard to the permanent disposition of the fund, considering the probable income to be derived therefrom as well as the probable safety of their capital."

The Prudent Investor Standard requires a trustee to act prudently and with caution, discretion, loyalty, and care but does not restrict the assets in which the Board can invest. Under the Prudent Investor Standard, which recognizes modern portfolio theory, the Board's investment and management decisions with respect to individual assets shall be considered in the context of the portfolio as a whole and as part of an overall investment strategy, and not in isolation. No specific investment or course of action, taken alone, shall be considered inherently prudent or imprudent. This Standard recognizes the trade-off between risk and return.

Policies and Objectives

The Board is responsible for the formulation of investment policies for the System. Staff is responsible for the implementation of those investment policies. The overall investment objectives of the System are as follows:

Return Objectives – the System has a return objective of meeting or exceeding the targeted actuarial rate of return (ARR) over the long-term (i.e. 25 to 30 years). The targeted ARR was dropped to 7.25% from 7.50% effective July 1, 2016. In addition, the Board has the following broad objectives:

1. The assets of the System shall be invested to maximize the returns for the level of risk taken; and,
2. The System shall strive to achieve a net of fee return that exceeds the Policy Index (the Policy Index is a custom benchmark, based on the Board-established asset allocation structure that seeks to generate a return that meets the actuarial rate of return assumption).

Risk Objectives

1. The assets of the System shall be diversified to minimize the risk of losses at the portfolio level and within any one asset class, investment type, industry or sector distribution, maturity date, or geographic location. Failure to do so could impair the System's ability to achieve its funding and long-term investment goals and objectives; and,
2. The System's assets shall be invested so that the probability of investment losses (as measured by the Policy Index) in excess of 15% in any one year is no greater than 2.5% (or two standard deviations below the expected return).

To achieve these objectives, the Board meets during the second half of the calendar year to review the overall asset allocation plan and investment policies for the System. Implementation of investment policies is accomplished through the use of external investment management firms who act as agents for the System and through the use of internal investment managers. The Board also retains various investment consultants to assist with the formulation and implementation of investment policies.

Operations

The Board, via its Finance Committee, provides oversight of investment activities. The Finance Committee generally conducts six meetings per year and may meet more frequently as needed. Investment Office staff, as well as external investment advisors, Investment Accounting staff, and Internal Audit staff, assist the Board in achieving investment objectives and monitoring compliance with investment policies. For the fiscal year ended June 30, 2016, Aon Hewitt Investment Consulting, Inc. (Aon Hewitt) served as the general investment consultant to assist the Board and Staff in formalizing investment objectives, establishing an asset allocation plan, conducting investment advisor searches, reviewing performance, and commenting on compliance with investment policies. In addition, the Board retained Aksia, LLC as an absolute return consultant, Courtland Partners, Ltd. as a real estate consultant, and Portfolio Advisors, LLC as an alternative investment consultant. Alternative investments generally consist of investments in private debt, private equity, and venture capital limited partnerships. Investment Office staff implement the investment decisions within the guidelines established in the Investment Policy Statement, Objectives and Guidelines regarding asset allocation, manager selection, security selection, and other objectives directed by the Board.

The Board employs both external investment management firms and internal investment managers to manage the investment portfolio of the System. At fiscal year-end, 36 external public market investment management firms were managing $12.4 billion in assets of the System, $19.2 billion in assets were managed by the System's internal investment managers, and the remaining $16.4 billion in assets were managed by numerous alternative investment and real estate investment managers. The performance of each external investment management firm and each internal manager is monitored quarterly against a pre-established benchmark as well as the performance of the manager's peer group.

Asset Allocation

The Board reviews the long-term asset allocation targets of the System annually. The Board will consult with its actuary, consultants, Investment Office staff, and other sources of information it deems appropriate in formulating the asset allocation plan. The level of risk assumed by the System is largely determined by the Board's strategic asset allocation plan. The Board, in determining its long-term asset allocation, takes the following factors into consideration:

- The System's investment time horizon;
- The demographics of the plan participants and beneficiaries;
- The cash flow requirements of the System;
- The actuarial assumptions approved by the Board;
- The funded status of the System;
- The employers' (Commonwealth and school districts) financial strength; and,
- The Board's willingness and ability to take risk.

In approving the asset allocation for the System that is recommended by Investment Office staff and PSERS' general investment consultant, the Board considers capital market expectations for expected return, volatility, and asset class correlations as prepared by its general investment consultant. The current long-term, top-down asset allocation targets of the Board, based on targeted exposures, are discussed in the following paragraphs. Targeted exposures include positions obtained through derivative exposure with minimal capital requirements.

The current target allocation as of June 30, 2016, included an equity target allocation of 37.5% consisting of publicly traded stocks (21.5%) and private markets (16.0%). Specific publicly traded stock targets have been established for U.S. equity (8.5%) and non-U.S. equity (13.0%). Within the U.S. equity target, the portfolios are diversified between large and small capitalization investment mandates. The non-U.S. equity exposure includes both developed and emerging markets portfolios as well as large and small capitalization investment mandates. The non-U.S. developed markets equity exposure is 75% currency-hedged back to the U.S. Dollar. The primary vehicle used to invest funds in private markets is the limited partnership. The partnerships are established by individual management groups that have been selected by the System for the purpose of investing in and managing private equity, venture capital, and debt positions on behalf of PSERS and other limited partners.

The fixed income target allocation of 31.5% consisted of investment grade exposure (8.5%), credit-related exposure (8.0%), inflation-protected exposure (12.0%) and cash (3.0%). Investment grade exposure consisted of U.S. core fixed income (5.0%), U.S. Long Treasuries (2.5%), and non-U.S. developed market fixed income (1.0%). Credit-related exposure consisted of high yield (6.0%) and emerging markets fixed income (2.0%). Inflation protected exposure consisted of leveraged global Inflation-Linked Securities (global ILS) which provides approximately two times exposure to global ILS. Within these categories, all sectors of the fixed income market are represented. The high yield exposure is primarily private debt. The cash consisted of short-duration, high quality government and investment grade securities. The Board, Investment Office Staff, and Aon Hewitt deemed it prudent to have an allocation to cash given the known and potential cash flow requirements of the System.

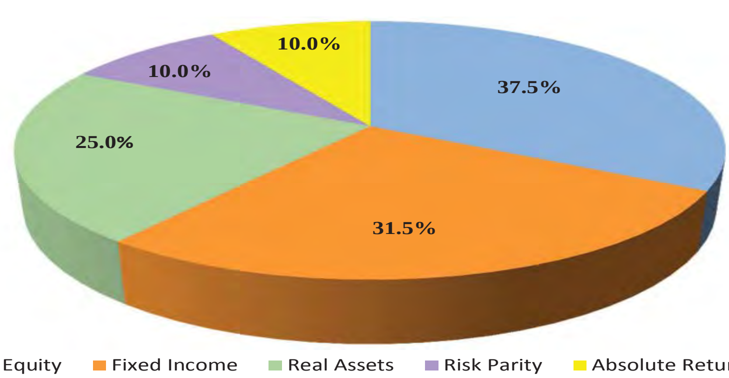
The real asset exposure of 25.0% consisted of real estate (12.0%), master limited partnerships (4.0%), infrastructure (1.0%) and commodities (8.0%). The real estate allocation consisted primarily of limited partnerships. The types of partnerships the System invests in include core, value-added, and opportunistic real estate limited partnerships. The commodities allocation consisted primarily of commodity futures and commodity-related publicly traded stocks. Commodities are included in the allocation for inflation protection and to diversify the System's total portfolio risk. The Master Limited Partnership (MLP) allocation consisted of publicly traded partnerships that own and operate assets such as natural gas, crude oil, refined products and pipelines, and storage facilities that are a vital part of the U.S. energy infrastructure. MLPs are included in the allocation due to their attractive current yields, strong growth potential, and ability to diversify the System's total portfolio risk. The Infrastructure allocation targets stable, defensive investments primarily within the energy, power, water, and transportation sectors. Infrastructure plays a strategic role within the System by providing steady returns and cash yields, defensive growth, inflation protection, capital preservation, and diversification benefits. Infrastructure consists of publicly traded companies.

The absolute return target allocation of 10.0% consisted primarily of investment managers retained by the System to generate positive returns over time that are independent of how the equity, fixed income, and commodity markets perform. Strategies implemented to achieve this target include, but are not limited to, global macro, event-driven, and relative value strategies such as insurance-linked securities and long/short credit. The absolute return program is included in the allocation to generate returns equal to or greater than LIBOR plus 3.5% with low volatility and low correlation to the public financial markets to diversify the System's total portfolio risk.

The risk parity allocation of 10.0% consisted primarily of global equities, global nominal bonds, global ILS, and commodities in an allocation that balances risk across these asset classes with structurally offsetting biases to the primary drivers of asset class returns - growth and inflation. Risk parity provides diversification and liquidity to the System.

Leverage was utilized at the asset allocation level to provide additional exposure to diversifying asset classes. The System utilized 14.0% leverage through use of derivative instruments that allow the System to gain asset class exposure with minimal margin requirements. Leverage is utilized in the fixed income, real asset, and risk parity allocations.

Asset Allocation Exposures as of June 30, 2016*



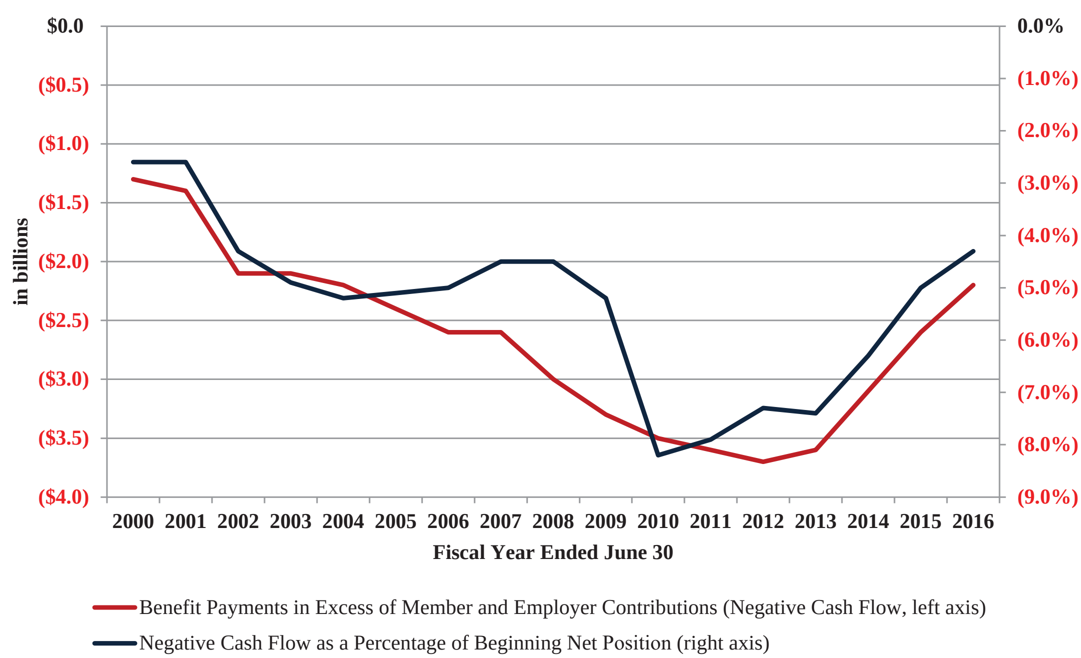
*Financing represents a negative 14% allocation and is not relected in the pie chart.

The System also participates in a securities lending program administered by Deutsche Bank AG. This program is designed to provide incremental income to the System by lending publicly traded securities in the System's portfolio held by the System's custodial bank, The Bank of New York Mellon, to securities dealers in exchange for cash collateral, which can be reinvested to generate income, or non-cash collateral plus a cash fee. This program generated $11.9 million in net income during the year.

Liquidity and Asset Allocation

The System's risk profile is, in part, driven by its liquidity needs. Over the past fifteen fiscal years, the System has paid out $42.6 billion more in benefits than it has received in member and employer contributions (negative cash flow). In total, the negative cash flow of the System was over $2.0 billion per year during this period. This annual funding deficiency has amounted to 4.0% or more of the beginning net position each year and represents the amount of investment return needed each year to make up the shortfall (i.e., if the System earned 4.0% in a given year with a 4.0% cash flow shortfall, then the net position of the plan would be unchanged). The large negative annual cash flow has improved significantly since fiscal year 2012 due to the implementation of Act 120 in 2010 (see chart below). Act 120 provided for increased employer contributions to the actuarially required contribution levels. The large annual cash flow shortfall, while much improved, will continue over the next few years and necessitates a larger liquidity position and lower risk profile than a retirement system that has smaller liquidity requirements.

Given the significant cash outflows, the Board has prudently reduced the risk profile of the System since the financial crisis in 2008. It has done so by decreasing its return dependence on the equity markets and increasing its risk exposures to asset classes that are less correlated to equity markets such as global ILS, commodities, and absolute return. The goal of such an allocation is to generate the desired return profile with less volatility. While such an allocation will not provide for a large upside in returns, it is expected to minimize downside risks to the System's assets in the event of a large equity market drawdown as experienced during the financial crisis in 2008.



The Economy During The Past Fiscal Year

The U.S. Economy

The U.S. economy has shown continued, albeit slow, growth this past fiscal year. The U.S. continues to have very accommodative monetary conditions as the Federal Reserve has maintained very low interest rates. The Federal Funds target rate increased by 0.25% during the past fiscal year (in December 2015) and has a range of 0.25% to 0.50%. Low interest rates have provided a low cost of borrowing so that the economy, housing, and employment conditions can continue to improve. The U.S. real Gross Domestic Product (GDP) increased an average of 1.2% per quarter during the past fiscal year with a range of 0.8% to 2.0%. Housing during the past fiscal year has shown continued improvement, up around 4.6% as measured by the S&P Case-Shiller 20-City Home Price Index. The official unemployment rate (otherwise known as the U3 unemployment rate) fell during the fiscal year from 5.3% as of June 2015 to 4.9% as of June 2016, approaching what the Fed would consider full employment. The more encompassing U6 unemployment rate, which measures not only people without work seeking full-time employment (U3 unemployment rate) but also counts "marginally attached workers and those working part-time for economic reasons" remains elevated at 9.6% as of fiscal year end, down from 10.5% at the end of the last fiscal year but significantly above the low point over the past 10 years of 7.9% in December 2006. However, the U.S. Labor Participation Rate (LPR), which measures the total labor force as a percentage of the working age population, remains depressed relative to historical levels. The LPR modestly increased from 62.6% in June 2015 to 62.7% in June 2016. The LPR was as high as 67.3% in March 2000. If the LPR were at 2000 levels today, the official unemployment rate would probably be significantly higher.

Disappointing GDP growth and a significantly falling unemployment rate seem inconsistent on the surface. However, the combination is made possible by falling productivity in the U.S. Nonfarm business productivity (the goods and services produced each hour by American workers) decreased at a 0.5% seasonally adjusted annual rate in the second quarter of 2016 according to the U.S. Labor Department. According to BCA Research, an independent provider of global investment research, "if productivity growth had remained at its pre-crisis (pre-2008) trend, the unemployment rate today would still be close to its Great Recession peak (of around 10%)."

Inflation in the United States, even with improving economic conditions and very accommodative interest rates, remains well below the Fed's target inflation rate of 2.0% as the burdens of high global debt create a more deflationary environment worldwide. The U.S. Core Consumer Price Index (CPI) was 1.0% year over year as of June 2016, an increase from the past year of 0.1% as of June 2015.

Select Non-U.S. Economies

The Euro Area economy has shown modest improvement from last year but is still only showing tepid growth. As of the second quarter 2016, the Euro Area is growing at a 1.6% annual pace. The unemployment rate, while still elevated, has fallen to 10.1% as of June 2016 from 11.0% a year earlier. Inflation has been very anemic in Europe during the past year at 0.1% versus a 0.2% rate in the previous year. Economic conditions continue to be very weak in Europe as aggressive European Central Bank (ECB) policies have been unable to generate any significant improvements in economic growth, employment, and inflation. The ECB has cut the overnight rate to negative 0.4% (from negative 0.2% last year) and is purchasing $88 billion (up from $72 billion last year) a month in euro-denominated sovereign and corporate debt in an effort to put liquidity into the economy as well as ease financial conditions.

While the Euro Area economy is weak, Japan's economy may be even weaker. As of the first quarter 2016 (the latest data available), Japan's real GDP increased by 0.1% over the past year. Japan's demographics are poor as the population ages which generally will not lead to robust growth. However, since the size of the working age population is decreasing, unemployment has been low and was 3.1% in June 2016, down from 3.5% last year. The inflation rate in Japan was negative 0.4% over the past year, down from positive 0.4% at the end of last year. Japanese policy makers continue to aggressively try to stimulate their economy through a combination of low interest rates (Bank of Japan policy rate is negative 0.1%), the purchase of higher risk assets by the Bank of Japan, coordinated diversification into higher risk assets by large public investors, and fiscal spending policies to encourage liquidity to move into riskier assets. Economic conditions remain stagnant and time will tell if the necessary economic and structural reforms can be put in place for a sustained period of economic prosperity.

China had robust growth compared to the other developed regions of the world. China's real GDP increased by 6.7% over the past year, slightly slower than the 7.0% pace as of June 2015. Inflation in China has remained relatively stable over the past year at 1.8% compared to 1.4% last year. As noted last year, China is struggling to rebalance its economy from an investment-oriented economy to a consumer-oriented economy, while maintaining political stability. The Chinese government is continuing to target economic growth of between 6.5% and 7.0% over the foreseeable future.

The following table provides the System's total time-weighted investment returns for each major asset class and the total portfolio, including, where applicable and available, respective benchmark indexes used by asset class and median performance by asset class:

	Annualized Total Returns (%) Net of Fees Ended June 30, 2016			
	1 Year	**3 Years**	**5 Years**	**10 Years**
PSERS Total Portfolio	**1.29**	**6.24**	**6.01**	**4.94**
Total Fund Policy Index	2.00	5.19	4.51	3.92
Median Public Defined Benefit Plan (DBP) Fund Universe (Aon Hewitt Database)	0.26	6.36	6.27	5.49
PSERS U.S. Equity Portfolios	**3.79**	**11.47**	**11.83**	**7.23**
U.S. Equity Policy Index (1)	2.25	11.18	11.61	7.39
PSERS Non-U.S. Equity Portfolios	**-8.25**	**5.76**	**3.59**	**4.68**
Non-U.S. Equity Policy Index (2)	-9.38	5.25	2.50	3.50
PSERS Fixed Income Portfolios (10)	**6.42**	**6.02**	**5.98**	**7.40**
Fixed Income Policy Index (3)	6.32	3.82	3.60	6.34
PSERS Commodity Portfolios (10)	**-1.34**	**-4.01**	**-6.66**	**N/A**
Commodity Policy Index (4)	-4.58	-6.01	-8.13	N/A
PSERS Absolute Return Portfolios	**-3.43**	**2.43**	**2.88**	**5.12**
Absolute Return Policy Index (5)	4.01	5.08	6.04	7.02
PSERS Risk Parity Portfolios (11)	**0.01**	**5.40**	**N/A**	**N/A**
Risk Parity Policy Index (6)	5.13	6.69	N/A	N/A
PSERS Master Limited Partnership (MLP) Portfolios	**-18.75**	**-0.24**	**9.13**	**N/A**
Standard & Poor's MLP Index	-18.93	-5.44	3.36	N/A
PSERS Real Estate (7) (10)	**8.86**	**13.03**	**11.09**	**2.51**
Blended Real Estate Index (8)	5.71	10.41	10.14	6.76
PSERS Alternative Investments (7)	**3.44**	**6.65**	**7.93**	**9.63**
Burgiss Median, Vintage Year Weighted Index (9)	2.11	4.63	4.54	4.06

1. MSCI USA Investable Market Index effective April 1, 2009; previously was the Dow Jones Wilshire 5000 Index.
2. MSCI ACWI ex USA IMI with DM 75% Hedged to USD (Net) Index effective April 1, 2016. From October 1, 2014 to March 31, 2016, the index was the MSCI ACWI ex USA IMI with DM 100% Hedged to USD (Net) Index. From July 1, 2008 to September 30, 2014, the index was the MSCI All Country World (ACW) ex. USA Investable Market Index. Before July 1, 2008, the MSCI ACW ex. U.S. Index was used. The benchmark was 30% hedged to the U.S. dollar from July 1, 2006 to March 31, 2009.
3. Returns presented are a blend of the Barclays Capital U.S. Aggregate Index (17.5%), Barclays Capital Global Aggregate GDP Weighted Dev x U.S. (Unhedged) Index (3.5%), Barclays Capital Emerging Mkt 10% Country Cap Index (7.0%), Barclays Capital U.S. Treasury Long Index (8.8%), Barclays Capital U.S. High Yield Index (21.1%), and Barclays Capital U.S. TIPS Index (42.1%) effective April 1, 2016. Prior to July 1, 2013, the blend was Barclays Capital U.S. Universal Index (24.7%), JP Morgan GBI EM Global Diversified Index (9.4%), Barclays Capital U.S. High Yield Index (28.2%), Barclays Capital Multiverse Index (14.1%), and Blended Policy (Net Levered TIPS) (23.6%).
4. Returns presented are a blend of the Bloomberg Commodity Gold Index (37.5%) and the Bloomberg Commodity Index (62.5%). On July 1, 2014, the indices names were changed from DJ/UBS to Bloomberg. The returns have been adjusted for leverage.
5. Three month LIBOR +3.50% effective July 1, 2014. Previously, was based on the assumed actuarial rate of return for the Fund which was 8.0% from July 1, 2009 through June 30, 2011. The assumed rate changed to 7.5% on July 1, 2011 and was used as the Absolute Return Policy Index through June 30, 2014.
6. Effective July 1, 2014 returns presented are a blend of MSCI ACW Index ($Net) (50%); Barclays Capital U.S. Treasury Index (75%); Barclays Capital World Inflation Linked Bond Index Hedged (55%); Bloomberg Commodity Index (Total Return) (15%); Bloomberg Gold Subindex (5%); and 3-Month LIBOR (-100%). The weights to these indices have varied in previous quarters. The returns have been adjusted for volatility.
7. Returns reported on a one-quarter lag, except for publicly traded real estate security investments.
8. Effective April 1, 2015, comprised of a blended benchmark consisting of the National Council of Real Estate Investment Fiduciaries (NCREIF) – Open End Diversified Core Equity (ODCE) Index and Burgiss Private iQ (for Value-Added Real Estate and Opportunistic Real Estate) reported on a one-quarter lag. For periods between April 1, 2010 and March 31, 2015, the benchmark was comprised of a blended benchmark of NCREIF-ODCE (core) and various private real estate benchmarks for Value-Added and Opportunistic (including NCREIF-Closed-End Value-Added (CEVA), NCREIF/Townsend and NCREIF-NPI) reported on a one-quarter lag. For all prior periods, the benchmark was comprised of a blended benchmark strategically split between public/private using various public REIT indices (FTSE EPRA/NAREIT Global Real Estate, Wilshire Real Estate Securities and Wilshire REIT) and NCREIF-NPI (for all non-core) reported on a one-quarter lag.
9. Burgiss Median, Vintage Year Weighted Index effective January 1, 2011. Previously, the Thompson ONE, Vintage Year Weighted Index was used. Returns reported on a one-quarter lag.
10. Returns are presented on an unleveraged basis for comparability purposes to the Policy Index.
11. Returns are presented on a volatility-adjusted basis for comparability purposes to the Policy Index.

Investment Results

Aon Hewitt calculates the total investment return of the System as well as the performance of each external investment management firm and each internal investment manager retained by the Board to invest the System's assets. Performance is calculated using a time-weighted return methodology.

For the one-year period ended June 30, 2016, the System generated a total net of fee return of 1.29%. This return fell below the total fund Policy Index return of 2.00% by 71 basis points. Annualized total net of fee returns for the three-, five-, and ten-year periods ended June 30, 2016 were 6.24%, 6.01%, and 4.94%, respectively. The three-, five- and ten-year returns ended June 30, 2016 exceeded the total fund Policy Index returns by 105, 150, and 102 basis points, respectively.

The past fiscal year was a challenging year for the System with a net of fee performance of 1.29%. The following asset classes generated solid returns this past fiscal year:

- U.S. Long Treasuries, as represented by the Barclays Capital U.S. Treasury Long Index, were up 19.30%. Returns in long-term treasuries were driven by falling interest rates and increased demand for safe haven assets, especially from foreign investors who were looking for assets with positive yields;
- Gold, as represented by the Bloomberg Gold Index, was up 12.23%. Gold represents a safe haven asset that has benefited from global uncertainty and ultra-low and negative interest rates in many global markets;
- Real Estate, as represented by a blended benchmark consisting of the National Council of Real Estate Investment Fiduciaries (NCREIF) – Open End Diversified Core Equity (ODCE) Index and Burgiss Private iQ (for Value-Added Real Estate and Opportunistic Real Estate), was up 5.71%, as fundamentals were strong and capitalization rates fell driving real estate prices higher.

Significant detractors from performance this past fiscal year included:

- Master Limited Partnerships (MLPs), as represented by the Standard & Poor's MLP Index, were down 18.93% driven by falling oil prices and reduced expectations for ongoing growth; and
- Commodities, as represented by the Bloomberg Commodity Index, were down 13.34% led by a fall in oil prices. Crude oil futures fell from $59.47 a barrel on June 30, 2015 to $48.33 a barrel on June 30, 2016. Prices fell due to a large supply glut driven by increasing shale production in the U.S and slow global growth.

Diversification into asset classes such as non-U.S. equities, commodities, and MLPs were a drag on overall performance. As noted above, the best performing asset class this past fiscal year was U.S. long-term treasury bonds, up over 19%. Coming into the fiscal year, the 30-year U.S. Treasury bond yielded 3.12%, meaning that if an investor had purchased that bond on June 30, 2015 and held that bond to maturity, the investor's total annualized return would be 3.12%. Not many investors with return targets of 7.0%+ were holding a lot of long U.S. Treasuries due to their low absolute yields. However, yields fell during the fiscal year as the Fed backed away from expectations of multiple interest rate hikes which caused bond prices to rise and yields to fall. By June 30, 2016, the yield on the 30-year Treasury bond had fallen 0.83% to 2.29%, generating a total return for the year significantly higher than 3.12%. This illustrates the importance of diversification. Many investment professionals discuss diversification using terms such as standard deviation, correlation, and co-variance. However, at its most basic level, diversification is insurance against bad outcomes. The System diversifies simply because it doesn't know how actual events in the future will transpire relative to what is priced into the market. Diversification is a very humble approach to investing. If an investor knew with certainty which asset class would perform best the next month, quarter, or year, the investor would simply invest in that one asset class. However, without such perfect foresight, the downside risk of such a strategy could be devastating.

The fiscal year was a tale of two halves. The first seven and a half months (July 1, 2015 to February 11, 2016) were weak, marked by a Fed rate hike in December, expectations of multiple interest rate hikes in 2016, and risk assets falling in price. The MSCI All Country World Index, a global equity index, fell by 16.6% during this period, only to rebound 13.0% from the middle of February to June 30, 2016, for a total return of negative 3.1% for the fiscal year. Commodities fell by 27.9% during the first seven and a half months, but rebounded 20.3% during the remainder of the year for a total return of negative 13.3%. U.S. long-term treasuries were up 14.0% during the first half and continued to rise another 4.6% during the second half for a total return of 19.3%. Prior to February 11, 2016, the market was pricing in multiple Fed interest rate hikes for 2016. What changed on February 11, 2016? Fed Chair Janet Yellen gave her semi-annual testimony to Congress which was interpreted by the market as very dovish remarks, meaning the pace and number of interest rate increases priced into the market were too aggressive. This meant that the discount rate used to value assets was now too high and a falling discount rate generally translates into higher asset values. In addition, given the expectation that interest rates would remain lower for longer periods of time, the prospects for economic growth improved which also needed to be priced into markets.

Finally, I'd be remiss not to mention a major global event that occurred on June 23, 2016, Brexit. The United Kingdom (U.K.) held a non-binding referendum on that day to determine if the U.K. would remain in or leave the European Union (EU), where the U.K. had been a member since being admitted in 1973. The repercussions of this vote would affect factors such as trade, regulation, and immigration. The polls all suggested prior to the vote that the U.K. would remain; however, the polls were wrong and its citizens voted to leave. Global risk markets (equities, commodities, credit) heavily sold off for a couple of days immediately following the vote; however, they rebounded quickly as it was questionable how significant the impact of these factors would be in the short-term. The long-term impacts have yet to be determined, including if the U.K. Parliament will ever vote to leave the EU, an option since the referendum was non-binding.

Accomplishments

The biggest accomplishment of fiscal year 2016 was the sale of approximately $1.6 billion in private real estate limited partnership interests in the secondary market. The purpose of this sale was to bring the amount invested in real estate investments down closer to the System's long-term allocation target of 12.0%. In addition, this sale will allow the System to be more liquid prospectively since the proceeds from the sale were re-invested in the public markets. The strength of the real estate market over the past seven years and strong investor demand for higher risk/higher expected return assets presented the Investment Office staff with the opportunity to execute a sale of this size (one of the largest real estate secondary sales in the world in calendar year 2015). I appreciate all of the efforts of our Board, Investment Office staff, the System's Legal staff, Greenhill Cogent, LP, our external financial advisor on this transaction, and Proskauer Rose LLP, our external legal advisor on this transaction.

Another significant accomplishment during the fiscal year was an increase in the amount of asset exposure managed internally from $16.8 billion, or 30% of the System's exposures, to $19.2 billion, or 34% of the System's exposures. By bringing more assets in-house, the System generates management fee savings. Using conservative assumptions, the management fees savings on managing $19.2 billion in-house is approximately $25 million per year. PSERS will endeavor to continue bringing assets in-house to manage in those areas where 1) staff believes active management can't reliably add value above index returns from both a risk and return perspective; 2) the System has the available investment and operations staff to take on additional assets; and, 3) staff has the expertise to competently manage those assets.

Summary

It has been a challenging return environment as evidenced by the System's one-, three-, five-, and ten-year returns. However, since the first quarter after the Great Recession, PSERS' annualized net of fee return has been 9.16%, comfortably above the actuarial assumed rate of return of 7.5%. With cash rates below 1%, the System needs to take prudent risks to achieve its long-term goal of a 7.5% return. An important concept to remember from the last sentence is "long-term". The System has built a diversified allocation to allow it to collect risk premiums over the long-term. In the short-term, no one knows what will happen and the System can go through periods of time of sub-7.5% annual returns. The System continues to believe the best way to achieve its long-term objectives is to maintain a very diversified portfolio which includes all asset classes available to it, such as equities, fixed income, real assets, risk parity and absolute return. In any given year, the System expects some assets to perform well, such as U.S. long-term treasuries, real estate, and gold did this past fiscal year, and some to not do as well, such as non-U.S. equities, MLPs and commodities did this past fiscal year. However, over the long run, the System expects each of its asset classes to generate a positive return commensurate with the risks taken. The future is uncertain, but PSERS believes it is well positioned to accomplish its objectives.

James H. Grossman Jr., CPA, CFA
Chief Investment Officer

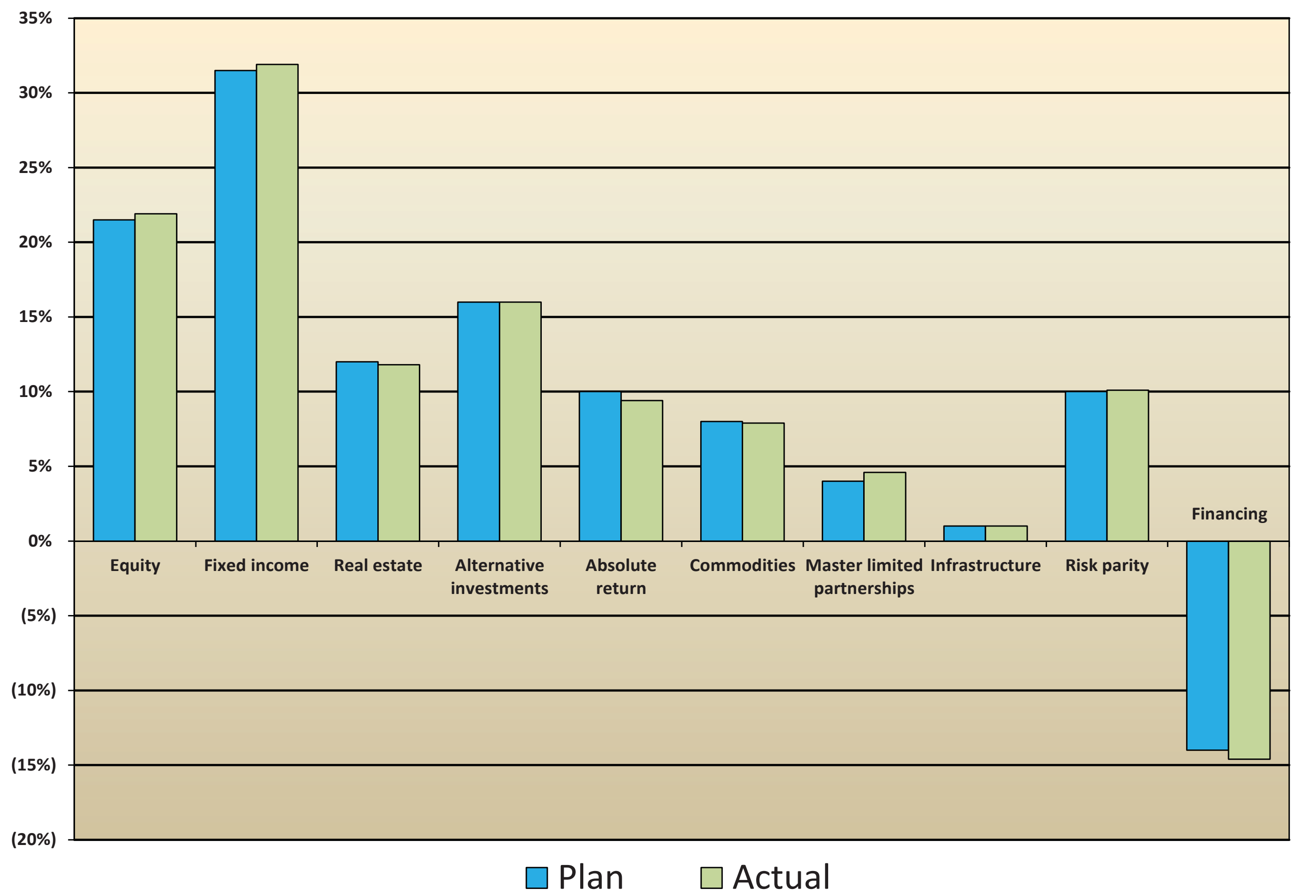
Portfolio Summary Statistics
Asset Allocation
As of June 30, 2016
(Dollar Amounts in Thousands)

Pension investments	Fair Value	% Fair Value
Common and preferred stock (Equity):		
Large and mid cap stocks	$ 4,175,206	8.5
Small cap stocks	734,098	1.5
Emerging markets stocks	1,475,077	3.0
Total Non-U.S. equity	**6,384,381**	**13.0**
Large cap stocks	2,907,002	5.9
Mid and small cap stocks	1,460,038	2.9
Microcap stocks	12,892	0.1
Total U.S. equity	**4,379,932**	**8.9**
Total Common and preferred stock - Asset Allocation Basis	**10,764,313**	**21.9**
Fixed income:		
Investment grade fixed income	6,208,925	12.6
High yield fixed income	3,791,347	7.7
Total U.S. Fixed income	**10,000,272**	**20.3**
Non-U.S. developed markets fixed income	3,966,936	8.0
Emerging markets fixed income	314,540	0.6
Total Non-U.S. Fixed income	**4,281,476**	**8.6**
Cash and cash equivalents	**1,482,118**	**3.0**
Total Fixed income - Asset Allocation Basis	**15,763,866**	**31.9**
Real estate	**5,792,403**	**11.8**
Alternative investments:		
Private equity	5,792,265	11.8
Private debt	1,116,937	2.3
Venture capital	965,637	1.9
Total Alternative investments - Asset Allocation Basis	**7,874,839**	**16.0**
Absolute return	**4,629,806**	**9.4**
Commodities	**3,868,367**	**7.9**
Master limited partnerships	**2,268,747**	**4.6**
Infrastructure	**506,862**	**1.0**
Risk parity	**4,963,721**	**10.1**
Financing	**(7,201,338)**	**(14.6)**
Total Pension investments - Asset Allocation Basis	**49,231,586**	**100.0**
Net Asset Allocation Adjustment*	(1,515,819)	
Pension investments per Statement of Fiduciary Net Position	**47,715,767**	
Postemployment Healthcare investments	**$ 282,217**	**100.0**

* Includes reclassifications of certain investments between asset classes and investment receivables/payables to adjust the Statement of Fiduciary Net Position classification to the basis used to measure Asset Allocation. See the table and graph which follow.

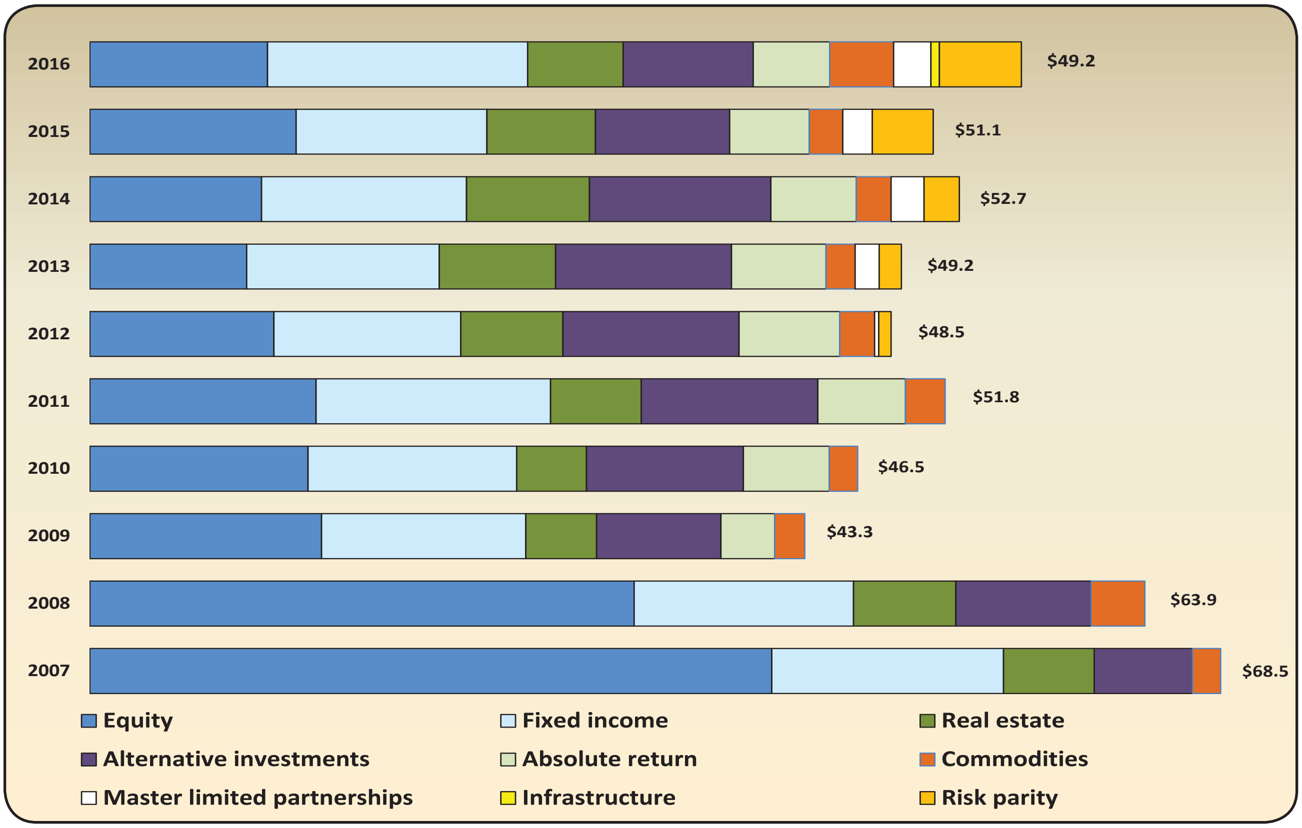
Comparison of Actual Portfolio Distribution to Asset Allocation Plan As of June 30, 2016

Asset Category	Plan	Actual
Common and preferred stock (Equity)	21.5%	21.9%
Fixed income	31.5	31.9
Real estate	12.0	11.8
Alternative investments	16.0	16.0
Absolute return	10.0	9.4
Commodities	8.0	7.9
Master limited partnerships	4.0	4.6
Infrastructure	1.0	1.0
Risk parity	10.0	10.1
Financing	(14.0)	(14.6)
Total	**100.0%**	**100.0%**



Portfolio Capital Distribution 10 Year Trend*

(Fair Value - Dollar Amounts in Billions)



*Financing is not reflected in the Portfolio Capital Distribution 10 Year Trend Chart.

The following lists of portfolio detail statistics present the ten largest holdings by descending order of fair value for the largest public market asset classes. Information on the complete holdings of the System can be downloaded from the PSERS website at www.psers.state.pa.us.

Common and Preferred Stock - Non-U.S. Equity

10 Largest Holdings in Descending Order by Fair Value

As of June 30, 2016

(Dollar Amounts and Shares in Thousands)

Description	No. of Shares		Fair Value
BlackRock Emerging Markets Alpha Advantage Fund Ltd.- Class D	319	$	326,230
The 32 Capital Fund Ltd.	93		173,269
BlackRock Emerging Markets Alpha Advantage Fund Ltd.- Class P	35		107,872
Nestle SA	961		74,119
Royal Dutch Shell PLC	1,807		52,295
Roche Holding AG	169		44,487
Novartis AG	525		43,166
Taiwan Semiconductor Manufacturing Company	7,830		38,936
Novo Nordisk A/S	680		36,379
British American Tobacco PLC	555		35,925
Total of 10 Largest Holdings		**$**	**932,678**

Common and Preferred Stock - U.S. Equity

10 Largest Holdings in Descending Order by Fair Value
As of June 30, 2016
(Dollar Amounts and Shares in Thousands)

Description	No. of Shares	Fair Value
SPDR Trust Unit Series 1	1,790	$ 374,913
Enterprise Products Partners, L.P.	10,344	302,662
Security Capital Preferred Growth	13,039	213,350
Energy Transfer Partners, L.P.	5,053	192,369
Magellan Midstream Partners, L.P.	1,837	139,577
Energy Transfer Equity, L.P.	9,122	131,084
Plains All American Pipeline, L.P.	3,707	101,895
MPLX, L.P.	3,018	101,493
Williams Partners, L.P.	2,625	90,916
Buckeye Partners, L.P.	1,273	89,501
Total of 10 Largest Holdings		**$ 1,737,760**

Fixed Income

10 Largest Holdings in Descending Order by Fair Value
As of June 30, 2016
(Dollar Amounts and Shares in Thousands)

Description	No. of Shares	Fair Value
Bridgewater International Inflation-Linked Bond Fund	361	$ 1,186,901
BlackRock US Extended Core Global Alpha Bond Fund Ltd.	448	884,897
Bridgewater Pure Alpha Fund II Ltd.	115	421,694
PIMCO Multi-Sector Strategy Fund Ltd.	346	404,624
Garda Inflation Opportunity Fund Class B	374	361,800
Bain Capital Distressed and Special Situations 2013 A, L.P.	N/A	311,913
Bain Capital Credit Managed Account, L.P.	N/A	305,612
ICG Europe Fund V, L.P.	N/A	220,531
Brigade Structured Credit Offshore Fund Ltd.	200	211,062
HayFin Special Opportunities Credit Fund Parallel, L.P.	N/A	199,889
Total of 10 Largest Holdings		**$ 4,508,923**

Absolute Return
10 Largest Holdings in Descending Order by Fair Value
As of June 30, 2016
(Dollar Amounts and Shares in Thousands)

Description	No. of Shares	Fair Value
Bridgewater Pure Alpha Fund II, Ltd.	240	$ 759,957
Capula Global Relative Value Fund, Ltd.	3,000	402,507
Capula Tail Risk Fund Ltd.	4,466	394,232
Garda Fixed Income Relative Value Opportunity Fund Ltd.	291	365,908
PIMCO Global Credit Opportunity Offshore Fund Ltd.	122	272,119
PIMCO Absolute Return Strategy V Offshore Fund Ltd.	96	272,031
BlackRock Capital Structure Investments Offshore Fund Ltd.	198	260,191
Brigade Leveraged Capital Structures Offshore Ltd.	170	257,668
Palmetto Fund Ltd.	191	243,829
PIMCO Multi-Asset Volatility Offshore Fund Ltd.	223	240,507
Total of 10 Largest Holdings		**$ 3,468,949**

Postemployment Healthcare Investments
10 Largest Holdings in Descending Order by Fair Value
As of June 30, 2016
(Dollar Amounts in Thousands)

Description	Maturity Date	Interest Rate (%)	Par Value	Fair Value
PSERS Short-Term Investment Fund	Various	Various	$ 113,069	$ 113,069
Wilmington US Government MM	N/A	Various	64,006	64,006
FHLMC Multiclass Mtg K007 A1	12/25/19	3.342%	5,658	5,764
GNMA Guaranteed REMIC P/T 11-38 B	12/16/49	3.939%	5,000	5,162
Citibank Credit Card ISS A7	08/24/18	0.652%	5,000	5,000
Ford Credit Auto Owner TR C A4	10/15/18	1.250%	3,000	3,005
JPMorgan Chase & Co.	11/18/16	0.682%	3,000	3,003
CenterPoint Energy Transition Bond Co.	04/15/18	0.901%	2,878	2,877
Wells Fargo Bank, N.A.	09/19/16	0.817%	2,500	2,502
Province of Ontario Canada	07/22/16	1.000%	2,500	2,501
Total of 10 Largest Holdings				**$ 206,889**

Comparison of Investment Activity Income
Fiscal Years Ended June 30, 2016 and 2015
(Dollar Amounts in Thousands)

Investment Activity	2016	2015
Net appreciation in fair value of investments	**$ (160,866)**	$ 511,869
Short-term	**18,489**	9,502
Fixed income	**145,326**	167,788
Common and preferred stock	**311,356**	279,940
Collective trust funds	**3,168**	2,117
Real estate	**246,217**	345,250
Alternative investments	**314,270**	458,658
Total investment activity income	**$ 877,960**	$ 1,775,124

Brokers' fees on equity investment transactions for the fiscal year ended June 30, 2016 were $5.1 million. The System has commission recapture contracts with several brokers. These contracts generally stipulate that the brokers rebate a percentage of commissions earned on investment transactions directly to the System. During the fiscal year ended June 30, 2016, the System earned $69,000 from the commissions recapture program. A list of the brokers receiving fees in excess of $100,000 during the fiscal year follows:

Summary Schedule of Brokers' Fees
(Cumulative Fiscal Year Amounts Exceeding $100,000)
Fiscal Year Ended June 30, 2016

Broker Name	Fees Paid	Broker Name	Fees Paid
Instinet Corporation	$ 482,432	JP Morgan Chase & Company	$ 173,831
Citigroup Global Markets Incorporated	389,381	Wells Fargo Securities	167,757
UBS Securities	294,462	Jones Trading	162,452
Fimat USA	231,167	Macquarie Bank Ltd.	162,411
Bank of America Merrill Lynch	197,805	Liquidnet Inc.	147,032
Morgan Stanley & Company	194,792	Daiwa Securities	138,972
Credit Suisse	193,971	Jefferies & Company Inc.	103,831
Goldman Sachs & Company	177,390		

Professional Consultants
External Investment Advisors
As of June 30, 2016

Absolute Return Managers
- Apollo Aviation Services II & III, LP
- Aeolus Capital Management, Ltd.
- BlackRock Financial Management, Inc.
- Brevan Howard Asset Management, LLP
- Bridgewater Associates, Inc.
- Brigade Capital Management
- Capula Investment Management, LLP
- Caspian Capital, LP
- Garda Asset Management, LLC
- Ellis Lake Capital, LLC
- Independence Reinsurance Partners, LP
- Nephila Capital, Ltd.
- Oceanwood Capital Management, Ltd.
- One William Street Capital Management, LP
- Pacific Investment Management Company
- Perry Capital, LLC

Publicly-Traded Real Estate Securities Manager
- Security Capital Research & Management, Inc.

Non-U.S. Equity Managers
- Acadian Asset Management, Inc.
- Baillie Gifford Overseas, Ltd.
- Batterymarch Financial Management, Inc.
- BlackRock Financial Management, Inc.
- Marathon Asset Management, LLP
- Oberweis Asset Management, Inc.
- Pyramis Global Advisors, Inc.
- Wasatch Advisors, Inc.

Commodity Managers
- Gresham Investment Management, LLC
- Pacific Investment Management Company
- Wellington Management Company, LLP

U.S. Core Plus Fixed Income Managers
- BlackRock Financial Management, Inc.
- Pugh Capital Management, Inc.
- SEI Investment Management Corporation

High Yield Fixed Income Managers
- Apollo Management International, LLP
- Avenue Capital Group
- BlackRock Financial Management, Inc.
- Brigade Capital Management
- Cerberus Institutional Partners, LP
- Haymarket Financial, LLP
- Intermediate Capital Group, PLC
- LBC Credit Partners
- Mariner Investment Group, LLC
- Oaktree Capital Management, LP
- Park Square Capital, LLP
- Radcliffe Capital Management, LP
- Sankaty Advisors, LLC
- Summit Partners
- The Carlyle Group
- TPG Partners, LP
- Varde Partners

Non-U.S. Developed Markets Fixed Income Manager
- AllianceBernstein, LP

Emerging Markets Debt Managers
- Franklin Templeton Investments

Multi-Sector Fixed Income Manager
- Pacific Investment Management Company

Global Treasury Inflation - Protected Securities Managers
- Bridgewater Associates, Inc.
- Garda Asset Management, LLC

Passive Currency Hedging Overlay Program Manager
- Pareto Investment Management, Ltd.

Risk Parity Managers
- AQR Capital Management, LLC
- BlackRock Financial Management, Inc.
- Bridgewater Associates, Inc.
- D.E. Shaw Investment Management, LLC

Master Limited Partnership Advisors
- Atlantic Trust Private Wealth Management
- Harvest Fund Advisors, LLC
- Salient Capital Advisors, LLC

Real Estate Advisors
- Charter Oak Advisors, Inc.
- GF Management, Inc.
- L&B Realty Advisors, LLP

Real Estate Partnerships
- AG Core Plus Realty Fund III, LP
- Almanac Realty Securities V & VI, LP
- Apollo Real Estate Finance Corp.
- AREFIN Co-Invest Corp.
- Ares European Real Estate Fund III, LP
- Ares U.S. Real Estate Fund VII, LP
- AvalonBay Value Added Fund I, LP
- Avenue Real Estate Fund, LP
- Bell Institutional Fund IV & V, LP
- BlackRock Asia Property Fund III, LP
- BlackRock Europe Property Fund III, LP

Professional Consultants (Continued)

- Blackstone Real Estate Debt Strategies II, LP
- Blackstone Real Estate Partners V, VI, & VII, LP
- Blackstone Real Estate Partners Europe III & IV, LP
- BPG/PSERS Co-Investment Fund, LP
- Broadway Partners Real Estate Fund II & III, LP
- Brookfield Strategic Real Estate Partners I & II, LP
- Cabot Industrial Value Fund III & IV, LP
- Carlyle Realty Partners III, IV, V, & VI, LP
- DLJ Real Estate Capital Partners II, LP
- DRA Growth and Income Fund VI & VII, LLC
- Exeter Core Industrial Club Fund II, LP
- Exeter Industrial Value Fund II, LP
- Fortress Investment Fund I, IV, & V, LP
- Hines U.S. Office Value Added Fund, LP
- JP Morgan Strategic Property Fund
- LAI Real Estate Investors, LLC
- Latitude Management Real Estate Capital III, Inc.
- Legg Mason Real Estate Capital I & II, Inc.
- LEM Real Estate High Yield Debt and Preferred Equity Fund III, LP
- LEM Real Estate Mezzanine Fund II, LP
- Paramount Group, Inc.
- Peabody Global Real Estate Partners
- Pramerica Real Estate Capital VI, LP
- PRISA
- RCG Longview Debt Fund IV & V, LP
- RCG Longview Equity Fund, LP
- Senior Housing Partnership Fund IV, LP
- Silverpeak Legacy Partners I, LP
- Stockbridge Real Estate Fund I, II, & III, LP
- Strategic Partners II, III, & IV RE, LP
- UBS (US) Trumbull Property Fund, LP

Farmland Advisor

- Prudential Agricultural Group

Private Equity/Venture Capital Partnerships

- ABS Capital Partners II, LP
- Actis Emerging Markets 3, LP
- Actis Global 4, LP
- Adams Capital Management, LP
- Aisling Capital Partners II, III & IV, LP
- Allegheny New Mountain Partners, LP
- Apax Europe VII, LP
- Bain Capital Asia Fund II & III, LP
- Bain Capital Fund XI, LP
- Baring Asia Private Equity Fund III, IV, & V, LP
- Blue Point Capital Partners I, II, & III, LP
- Bridgepoint Capital II, LP
- Bridgepoint Europe I, II, III, IV & V, LP
- Capital International Private Equity Fund V & VI, LP
- Catterton Growth Partners I, II & III, LP
- Catterton Partners V, VI, & VII, LP
- Co-Investment Fund 2000, LP
- Co-Investment Fund II, LP
- Coller International Partners VI & VII, LP
- Credit Suisse Intl. Equity Partners, LP
- Crestview Partners I & II, LP
- Cross Atlantic Technology Fund I & II, LP
- CVC Capital Partners Asia Pacific III, LP
- CVC European Equity Partners V, LP
- DCPF VI Oil and Gas Co-Investment Fund, LP
- Denham Commodity Partners VI, LP
- DLJ Merchant Banking Partners III, LP
- Dubin Clark Fund II, LP
- Equistone Partners Europe Fund VE, LP
- Evergreen Pacific Partners I & II, LP
- First Reserve Fund XI & XII, LP
- Goldpoint Partners Co-Investment Fund V, LP
- Greenwich Street Capital Partners II, LP
- HgCapital 7, LP
- HGGC Fund II
- Incline Equity Partners III, LP
- Irving Place Capital Partners II & III, LP
- Jefferson Partners Fund IV, LP
- KBL Healthcare Ventures, LP
- KRG Capital Fund II, LP
- Landmark Equity Partners IV, V, XIII, & XIV, LP
- Landmark Mezzanine Partners, LP
- Lexington Capital Partners I, LP
- Lindsay, Goldberg & Bessemer, LP
- LLR Equity Partners I, II, III, & IV, LP
- Milestone Partners II, III, & IV, LP
- Morgan Stanley Dean Witter Capital Partners IV, LP
- North Haven Private Equity Asia Fund IV, LP
- NEPA Venture Fund II, LP
- New Mountain Partners I & III, LP
- New York Life Capital Partners I, II, III, & IV, LP
- NGP Natural Resources X, LP
- Novitas Capital I & II, LP
- Odyssey Investment Partners, LLC
- Orchid Asia V, LP
- PAI Europe IV & V, LP
- Palladium Equity Partners II-A & IV, LP
- Partners Group Secondary 2008, 2011 & 2015, LP
- Permira IV, LP
- Perseus-Soros Bio-Pharmaceutical Fund, LP
- Platinum Equity Capital Partners I, II, & III, LP
- PNC Equity Partners I & II, LP
- Psilos Group Partners III, LP
- Quadrangle Capital Partners I, LP
- Quaker BioVentures I & II, LP
- SCP Private Equity Partners I & II, LP
- StarVest Partners I & II, LP
- StepStone International Investors III, LP
- Sterling Capital Partners, LP
- Sterling Venture Partners, LP
- Strategic Feeder, LP
- Strategic Partners II, III, III-B, & III-VC, IV, IV-VC, V, VI, & VII, LP

Professional Consultants (Continued)

- Summit Partners Growth Equity Fund VIII, LP
- Summit Partners Venture Capital Fund III & IV, LP
- Tenaya Capital IV-P , V-P, & VI, LP
- The Energy & Minerals Group
- The Fifth Cinven Fund No. 1, LP
- The Fourth Cinven Fund
- Trilantic Capital Partners IV, LP
- Trilantic Capital Partners V (North America), LP
- U.S. Equity Partners II, LP

Private Debt Partnerships

- Apollo Investment Fund VIII, LP
- Avenue Asia Special Situations Fund II, III, & IV, LP
- Avenue Europe Special Situations Fund, LP
- Avenue Special Situations Fund IV, V, & VI, LP
- Cerberus Institutional Partners, II, III, IV, V & VI, LP
- Clearlake Capital Partners IV, LP
- Gleacher Mezzanine Fund I & II
- Gold Hill Venture Lending, LP
- GSC Partners CDO Investors IV, LP
- GSC Recovery II & III, LP
- New York Life Investment Management Mezzanine Partners I & II, LP
- OCM Opportunities Fund VII & VII-B, LP
- Searchlight Capital II, LP
- Venor Special Situations Fund II, LP
- Versa Capital Fund I, II & III, LP
- Windjammer Senior Equity Fund III & IV, LP

Alternative Investment Consultant

- Portfolio Advisors, LLC

Custodian Bank

- The Bank of New York Mellon Corporation

Securities Lending Agent

- Deutsche Bank AG

Absolute Return Consultant

- Aksia, LLC

Investment Accounting Application Service Provider

- Financial Control Systems, Inc.

Investment Evaluator and General Investment Consultant

- Aon Hewitt Investment Consulting, Inc.

Proxy Voting Agent

- Glass, Lewis & Co., LLC

Real Estate Investment Consultant

- Courtland Partners, Ltd.