Investment Section

2017 COMPREHENSIVE ANNUAL FINANCIAL REPORT

For the Fiscal Year Ended June 30, 2017

INPRS

INDIANA PUBLIC RETIREMENT SYSTEM

August 2, 2017

Board of Trustees
Indiana Public Retirement System
One North Capitol Avenue
Indianapolis, IN 46204

Dear Trustees:

Verus is pleased to provide the Board of Trustees of the Indiana Public Retirement System (INPRS) with an overview of the market environment, an update on performance, and a summary of recent developments for the fiscal year ended June 30, 2017.

Investment Landscape

To begin the fiscal year, debate surrounding the potential implementation of Brexit led to the first rate cut by the Bank of England since 2009 and a significant drawdown in the Pound Sterling. The currency hit a new 31-year low relative to the U.S. dollar. Global interest rates remained near all-time lows, and negative yielding sovereign and corporate debt totaled $11.6 trillion by the end of the first quarter of the fiscal year. U.S. equity markets rallied with small cap stocks leading the way; the Russell 2000 Index finished up 9.0 percent. Information technology, up 12.9 percent, was the best performing sector in the S&P 500 by a large margin. Emerging market equities experienced a rebound, returning 9.0 percent for the quarter.

During the second quarter of the fiscal year, economies around the globe experienced a pickup in headline inflation as energy prices increased. Strong performance from companies in the energy and financial sectors led to value equities outperforming growth equities. The Russell 1000 Value Index and Russell 1000 Growth Index returned 6.7 percent and 1.0 percent, respectively. The Federal Reserve raised interest rates at its December meeting, increasing the target federal funds rate to a range of 0.50 - 0.75 percent. The U.S. dollar rose 6.4 percent on a trade weighted basis, creating a large return gap between hedged and unhedged international exposures. The MSCI EAFE Index returned (0.7) percent on an unhedged basis and 7.3 percent hedged.

During the third quarter of the fiscal year, the global economy exhibited a coordinated pickup in economic activity. In March, the Federal Reserve increased the target federal funds rate by 0.25 percent. The move resulted in the U.S. Treasury curve flattening moderately as short-term interest rates increased and long-term rates remained materially unchanged. Growth equities rebounded

relative to value equities. The Russell 1000 Growth Index returned 8.9 percent, while the Russell 1000 Value Index returned 3.3 percent. The U.S. dollar fell 3.6 percent on a trade-weighted basis providing a boost to unhedged international equity exposures. The MSCI EAFE Index was up 7.2 percent for the quarter. In emerging markets, investors benefited from stabilizing currencies and commodity prices as well as higher growth outlooks. The MSCI EM Index finished the quarter up 11.4 percent.

Risk assets continued to move higher over the quarter ending June 30, finishing broadly up for the fiscal year. U.S. equities benefited from strong earnings growth; the blended year-over-year growth rate for Q1 earnings of S&P 500 companies was 9.3 percent. In June 2017, the Federal Reserve raised the target federal funds rate to a range of 1.00 - 1.25 percent, and the Federal Open Market Committee (FOMC) minutes revealed the committee could start unwinding the $4.5 trillion balance sheet by the end of the calendar year. In Europe, European Central Bank President Mario Draghi surprised markets with comments perceived as relatively hawkish. Subsequently, the Euro appreciated 2.3 percent against the U.S. dollar, and developed global rates moved upward. International equities outperformed domestic equities over the fourth quarter of the fiscal year, with the MSCI ACWI ex U.S. Index returning 5.8 percent relative to 3.1 percent for the S&P 500 Index.

Plan Performance[1]

The INPRS consolidated defined benefit investment portfolio (the Portfolio) earned an 8.0 percent return net of fees for the fiscal year ending June 30, 2017. This return outperformed the policy target index[2] return by 1.5 percent and the long-term actuarial assumed return of 6.75 percent, by 1.25 percent. Portfolio risk as measured by standard deviation, fell from 8.5 percent at the beginning of the fiscal year to 7.3 percent in June. Total portfolio active risk remained below 2.0 percent, moving from 1.5 percent down to nearly 1.0 percent throughout fiscal year 2017.

The steady global upswing that occurred over the fiscal year led to strong performance from the portfolio's public equity, private markets, real estate, and absolute return assets on an absolute basis. On a relative basis, the Portfolio's public equity, both fixed income portfolios, real estate, and absolute return assets exceeded their respective composite benchmarks. Public equity strategies returned 21.0 percent in aggregate, beating the benchmark by 2.0 percent. The fixed income – ex inflation-linked portfolio returned 1.9 percent, outperforming the benchmark by 1.3 percent. While the fixed income - inflation-linked bond portfolio was down (0.2) percent for the fiscal year, it outperformed the benchmark by 1.1 percent. The real estate portfolio was up 10.4 percent for the fiscal year, finishing 3.0 percent above its benchmark. Absolute return assets generated a return of 7.8 percent, outperforming the benchmark by 2.9 percent.

[1]Rates of return are net of fees and based on calculations made by the System's custodian, Bank of New York Mellon, and are presented using a time weighted rate of return methodology based upon fair value.
[2]The target index weights for each asset class benchmark are set by the target asset allocation. The return for Risk Parity, Real Estate, and Private Markets are equal to the asset class returns and not the benchmark.

While the private markets portfolio was up 12.7 percent for the fiscal year, it underperformed the public market equivalent benchmark by 8.8 percent. During prolonged equity bull markets, private markets assets tend to underperform their public market counterparts. Risk parity strategies generated a 4.6 percent return for the period, while commodities lost 6.7 percent.

On an annualized basis, the Portfolio has performed well relative to the policy index. For the three years ending June 30, 2017, the Portfolio returned 3.0 percent, outperforming the target index by 0.4 percent. Over the five-year period, the Portfolio returned 5.7 percent, outperforming the target index by 0.4 percent. For the trailing ten-year period, the Portfolio returned 2.9 percent, which was neutral with the policy dynamic index returned also returning 2.9 percent over the same time period.

Plan Activity

During the 2017 fiscal year, Verus and INPRS' investment staff collaborated on a number of comprehensive projects. Together we performed a thorough review of the Investment Policy Statement (IPS). We also incorporated a governance process into the liquidity management framework. Verus and INPRS' investment staff evaluated the market for risk parity managers in order to continue to diversify the existing manager roster within the risk parity portfolio. Additionally, Verus worked with investment staff to retain an independent transaction cost analysis provider to assist INPRS in fulfilling its fiduciary obligations to measure and monitor the trading practices of investment managers. Analysis and evaluation of the active management environment took place in an effort to determine how and where active management can be used and how active risk impacts total portfolio risk. A benchmark audit was conducted to review benchmarks used from the custodian, the performance reporting system, and the risk system. Focused analysis on investment management fees was performed for traditional asset classes relative to peers. Verus and INPRS' investment staff continued to measure and monitor the major drivers of risk within the portfolio and further developed a framework for managing portfolio risk.

All of us here at Verus appreciate the opportunity to assist the INPRS Board in meeting the Plan's investment objectives. We are confident in the direction of the Portfolio given the System's demographics and fiscal strength. We look forward to continuing our partnership as we navigate ever-changing capital markets.

Sincerely,

Jeffrey J. MacLean
Chief Executive Officer

INPRS' Defined Benefit Investment Imperatives[1]

Established in fiscal year 2012, three long-term imperatives that are vital to the continued health of the System's defined benefit plans have served as the guide for the investment team. Every strategic, tactical, and operational decision that is made must have the expectation of positively contributing to at least one of these imperatives:

1. Achieve the long-term rate of return assumption. Effective fiscal year 2013, INPRS' Board set the long-term rate of return assumption at 6.75 percent, and in fiscal year 2015, the Board reaffirmed 6.75 percent as the appropriate long-term assumption. In order for the System to maintain a healthy funded status, it is essential to achieve this rate of return over the long-term (defined as 10+ years in INPRS' Investment Policy Statement).

2. Accomplish the first imperative as effectively and efficiently as possible. While it is important to establish an asset allocation that is expected to meet the target rate of return over a long time horizon, as fiduciaries, it is also important to maintain focus on maximizing the return per unit of risk, limiting return volatility, and maximizing cost efficiency.

3. Maintain enough liquidity to make retirement payments on time. As the System matures, retirement payments will be a greater cash outflow each year. As a result, it is critical to maintain an appropriate level of liquidity to ensure payments are made on time and without causing undue stress to the investment portfolio.

The Year in Review[2]

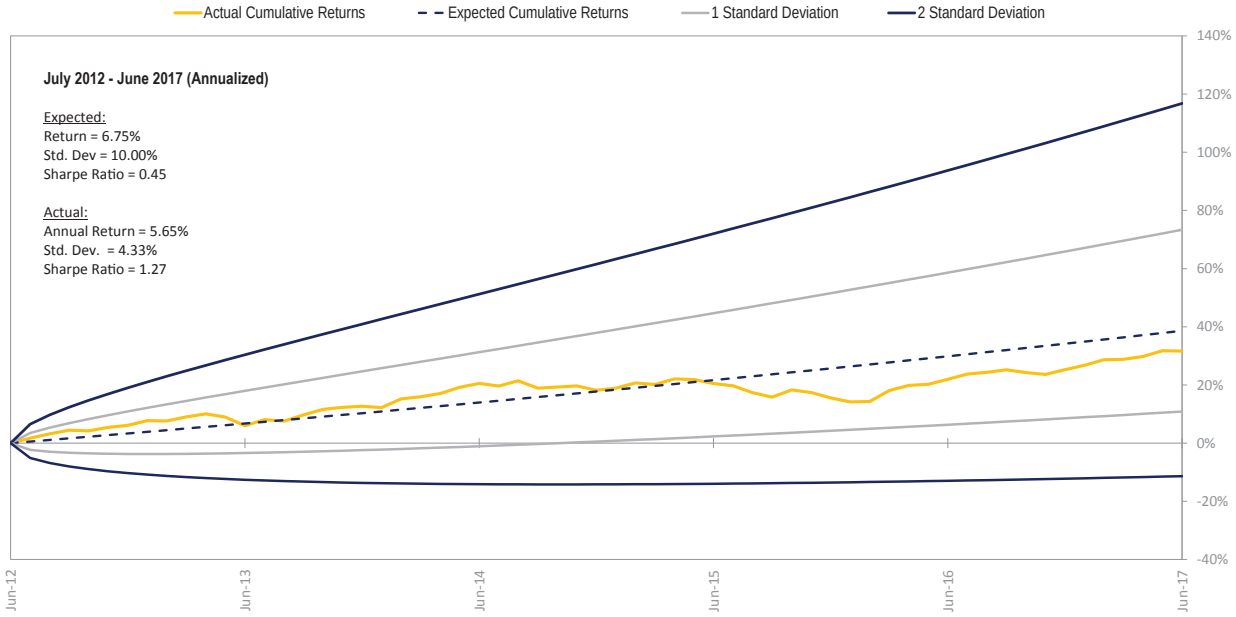
The consolidated defined benefit assets returned 8.0 percent net of all fees over the past fiscal year and ended with a fair value of $26.4 billion. Led by strong performance from higher risk, higher potential reward strategies (e.g. public equities, private markets, and real estate) as well as absolute return strategies, the portfolio marched higher throughout the year without many speed bumps along the way and surpassed the 6.75 percent return target. With a multitude of political and central bank headlines over the course of the year, one may have expected the environment to be ripe for wild swings across asset classes, and thus, the portfolio. Yet, markets tended to brush-off these events as a source of noise rather than long-term shifts in fundamentals, and as a result, the lack of volatility that has been a hallmark across most markets following the 2008 financial crisis continued in fiscal year 2017.

It is in these benign environments that the pressure to hold a larger allocation in those asset classes performing best continues to mount and our resolve in holding a diversified strategy is tested most. At INPRS, we believe the high level of uncertainty regarding the global economy's future calls for prudence, and we remain prudent by constructing a portfolio that does not have a concentrated allocation to any one asset class, regardless of how strong its performance has been over the most recent history.

Based on extensive research of the various asset classes and their performance in different economic environments through time, it was determined in 2012 that a new risk-balanced framework better fit our first two imperatives. Developed from that research, the chart on the following page illustrates the projected range of outcomes for INPRS' asset allocation around the 6.75 percent return target (blue dotted line). This visual is meant to track the cumulative performance of the actual portfolio (yellow solid line) versus those expectations along the way. Although the portfolio has underperformed the return target since adopting the new asset allocation strategy in 2012, the cumulative return is well within our range of expected outcomes.

[1]For more detail, see the INPRS' Investment Policy Statement, Section 4 – Guiding Principles.
[2]Rates of return specific to INPRS' portfolio are based on calculations made by INPRS' custodian, Bank of New York Mellon, and are presented using a time-weighted rate of return methodology based upon fair value.

INPRS Net of Fee Cumulative Return



The following table shows INPRS' annual net-of-fees returns over the same time period. Since inception of the revised strategy, the portfolio has generated an annual return of 5.5 percent above the return of cash and outperformed the average historical spread for the asset allocation over cash by 4.5 percent[3].

INPRS Annual Returns (Net of Fees)

	Excess Return	+	Cash Return	=	Total Return
FY2013	5.9 %		0.1 %		6.0 %
FY2014	13.6		0.1		13.7
FY2015	0.0		0.0		0.0
FY2016	1.0		0.2		1.2
FY2017	7.5		0.5		8.0
INPRS Annual Return	5.5		0.2		5.7
Avg. Annual Return of INPRS Target Asset Allocation (since 1937)[4]	4.5		3.6		8.1

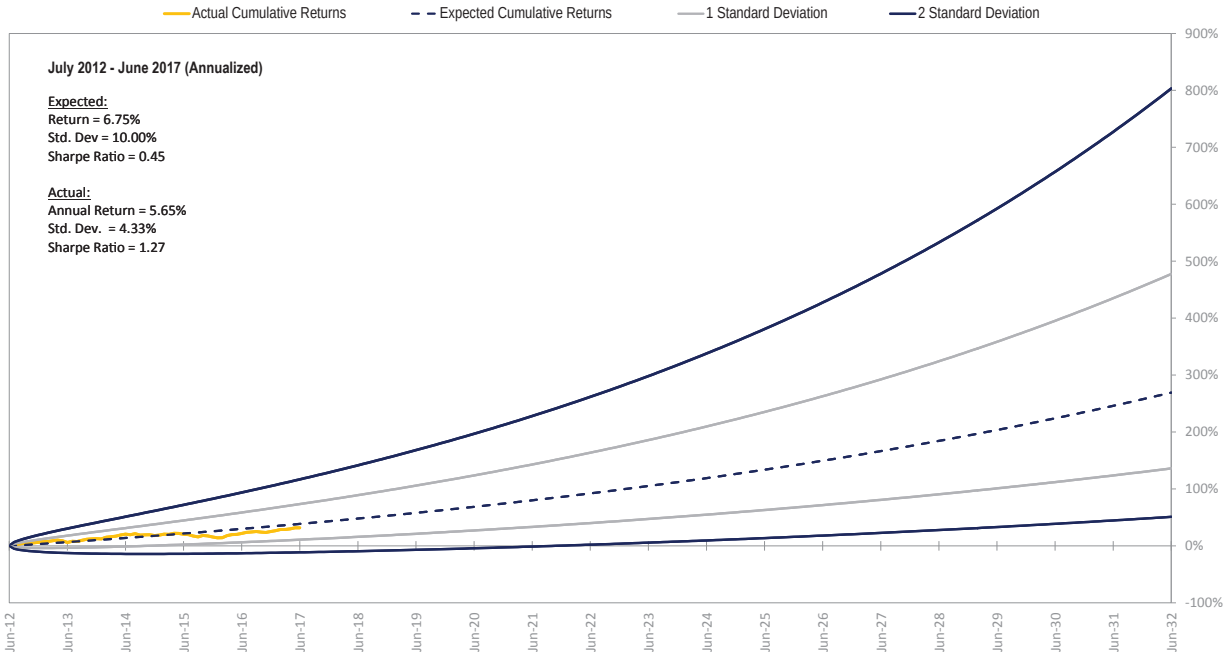
The prior charts highlight the near-term challenges resulting from today's low interest rate (and cash return) environment as the Plan's total performance has fallen short of the target rate of return assumption of 6.75 percent since 2012. However, the target rate of return was established based on a much longer time horizon. As such, the asset allocation that was constructed to meet the return objective will ultimately be measured over decades rather than a few years.

[3]Cash return based on Citigroup 3-month Treasury Bill (Source: INPRS' custodian, Bank of New York Mellon).
[4]INPRS' current target asset allocation was approximated historically using available indices. (Source: Verus, INPRS Board meeting - June 2015). Cash return based on the one-month US Treasury bill return from 1937 - 2016 (Source: Dimensional Fund Advisors' Matrix Book 2017 of Historical Returns Data).

Report from the Chief Investment Officer, continued

The chart below is better aligned with that long-term focus as it shows the expected range of outcomes for the investment portfolio over twenty years. As you can see, we are very early into the period over which the asset allocation was selected to produce, but the short-term results allow us to be optimistic that we are on the correct path.

INPRS Net of Fees Cumulative Return



Performance Attribution

Looking closer at fiscal year 2017, the returns of INPRS' separate asset classes are shown in the chart on the following page. A majority of asset classes had positive returns while asset classes that tend to perform poorly when inflation is lower than expected – commodities and inflation-linked bonds – struggled. Equities (public and private) as well as real estate continued to post strong returns net of all fees as economic growth surprised to the upside. Investors have also been increasingly willing to pay-up for these higher risk asset classes in hopes of higher yields, and they have been rewarded over the past few years as central banks have flooded the global economy with liquidity and corporate earnings have improved. Finally, absolute return strategies were also accretive to the 6.75 percent return target net of all fees while providing a return that has been less correlated with cheaper equity and fixed income exposures over time.[5]

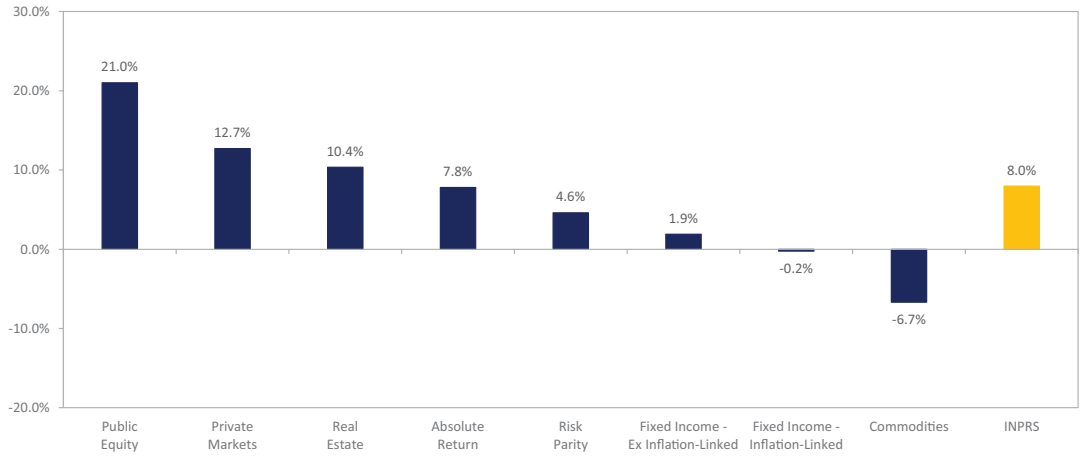
After OPEC[6] and Russia agreed to a production freeze in the first quarter of fiscal year 2017 and optimism for a pick-up off of the low levels of inflation experienced over the past decade increased following the U.S. election, the commodities portfolio was yielding a positive return. However, those returns and then some were given back in the second half of the year with increased U.S. oil production, elevated global inventories, and lower inflation than expected by market participants in the final four months of the fiscal year (as measured by CPI).[7]

[5]From July 2014 – June 2017, INPRS' absolute return portfolio has had a 0.40 correlation to equities (MSCI ACWI Index) and (0.38) correlation to bonds (Barclays Global Aggregate Index).
[6]Organization of the Petroleum Exporting Countries
[7]Headline inflation slowed from 2.7 percent in February to 1.6 percent in May; while, Core inflation slowed from 2.2 to 1.7 percent (Source: Bureau of Labor Statistics, June 2016).

Report from the Chief Investment Officer, continued

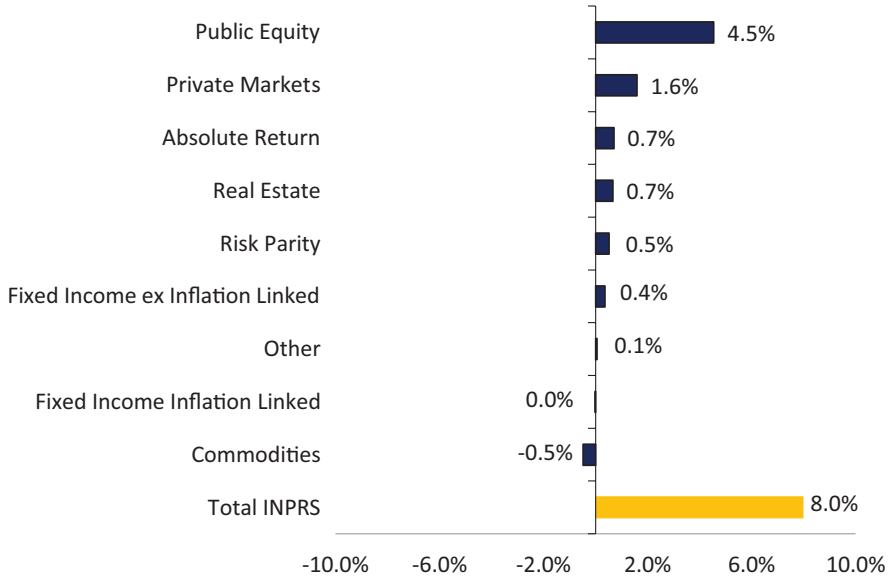
The risk parity portfolio has been constructed with the most diversified collection of public asset classes available. The allocation of risk within these strategies can take many forms, including by asset class, factor, or economic environment. Regardless of the implementation, the risk contribution of each element to the overall portfolio is predetermined and controlled. Given this diversification and the fact that equities were the only major public asset class with a return greater than low single digits, the risk parity portfolio underperformed the 6.75 percent return target over the past fiscal year.

1-Year Asset Class Returns as of June 30, 2017



The chart above provides an incomplete picture, though, as it does not reflect the modifications we have made to our allocation across asset classes to better balance their varying levels of risk. The following chart adjusts for this by taking into account the weight of each asset class in the portfolio as well as its return over the past year. By linking these components, we are able to observe the contribution to total return that each asset class provided. This view serves as a better representation of performance given that our risk-balanced strategy produces an allocation that invests less in more volatile asset classes (e.g. commodities) and more in less volatile asset classes (e.g. fixed income).

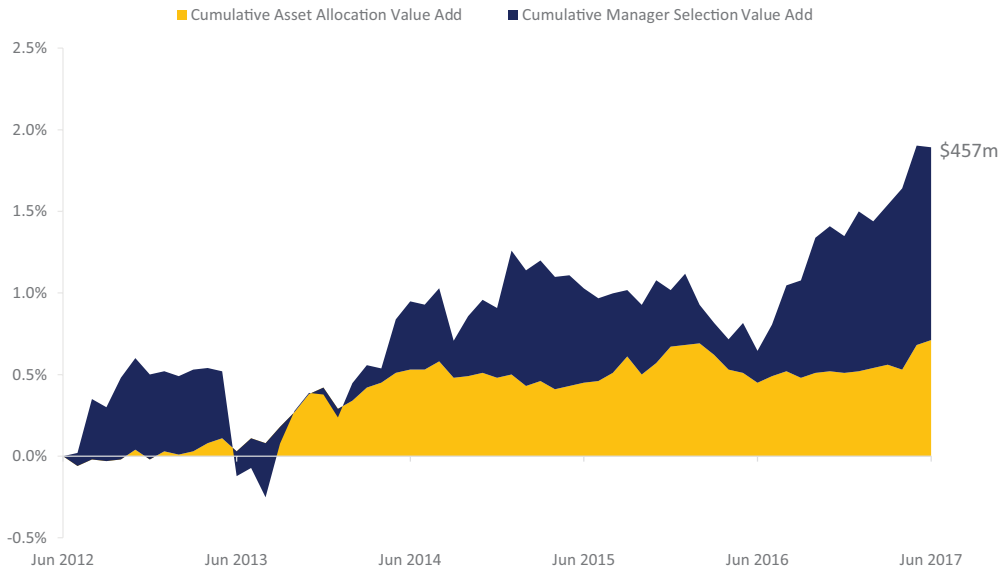
Fiscal YTD Contribution to Total Return (As of 6/30/17)



Report from the Chief Investment Officer, continued

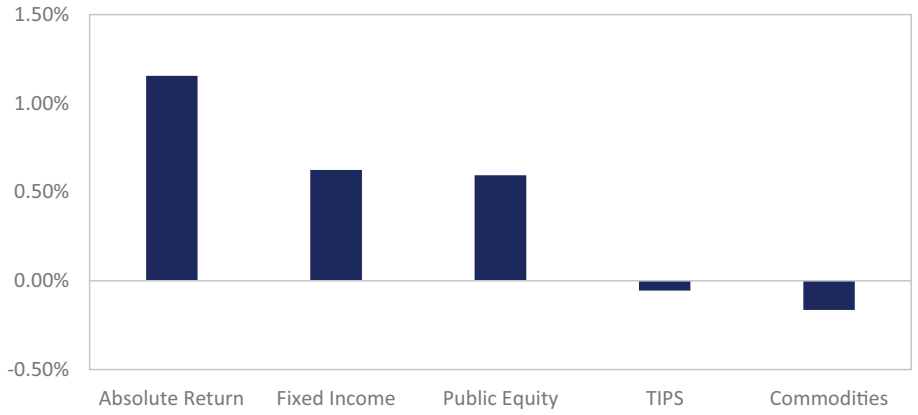
In fiscal year 2017, the investment team achieved a return that was 1.5 percent above the target asset allocation benchmark, net of all fees. The benchmark is meant to reflect what performance would have been had the plan been at target weights in each asset class the entire year and invested in passive strategies (e.g. index funds). Both the tactical asset allocation and manager selection decisions made by the team this year added value to the plan. This has continued the positive trend of the past five years as the outperformance generated by the investment team has produced approximately $457 million in added value (asset allocation + manager selection) over a portfolio of merely passive investments since July 2012. To put this into perspective, these additional returns have been large enough to cover half of the PERF retirement payments made in fiscal year 2017.

Cumulative Excess Returns over the Target Allocation (Net of Fees)



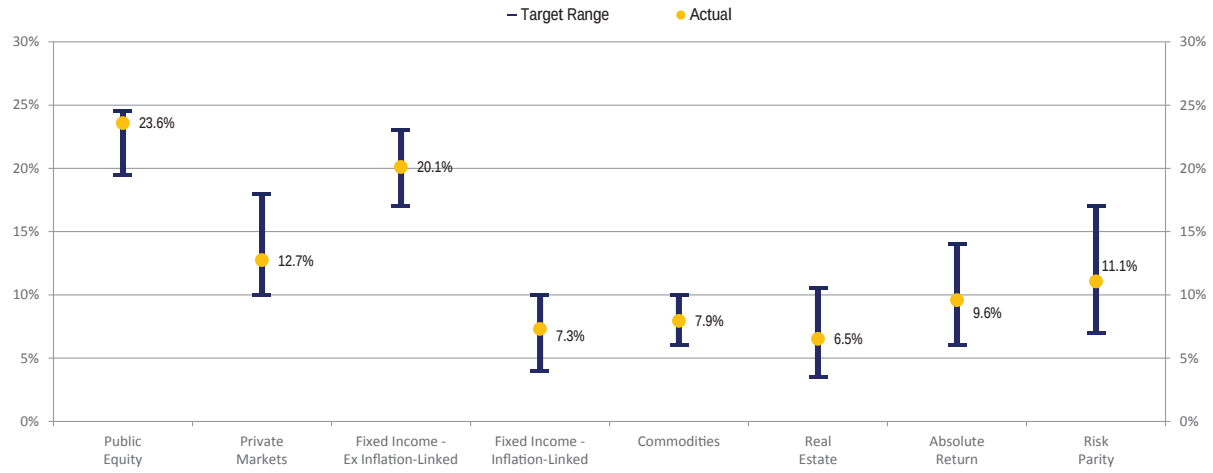
Breaking that result down further, you can see that the outperformance over the past five years has largely been a result of positive manager selection across a majority of asset classes.

Annualized Performance Relative to Benchmarks July 2012 - June 2017



Current Portfolio Exposures

As previously mentioned, the System set out on a course seeking more balance across economic and market environments starting in fiscal year 2012 with the approval of a new asset allocation strategy. Despite slight revisions to the asset allocation during the last asset-liability study in fiscal year 2015 that resulted in a marginally higher expected return and return-risk ratio, the outcome reaffirmed the path of diversification INPRS had previously chosen and continues to pursue. As such, INPRS rebalanced as needed over the course of the fiscal year to stay within the Board-approved allocation bands for each asset class. The allocation as of June 30, 2017 can be found in the chart below.



With a Liability-Focused Portfolio: The Path of Returns are Important

The investment process for any individual or institution begins with the determination of that person's or entity's specific goals and risk tolerance. At INPRS, the process we have gone through, and continue to go through, has been no different. It is easy to get side-tracked by complicated actuarial analysis, short-term investment results, and a myriad of other distractions, but to avoid this trap, we focus on the basic economics of our expectations for future cash inflows and outflows to establish our plan's objectives.

The analysis begins with a projection of the liabilities based on the expected timing and magnitude of future retirement payments. It is then assumed that the funding for these liabilities is projected to come from two primary sources: employer/employee contributions and investment returns. While contributions provide the ongoing support for expected cash out flows, they also serve as the back-stop in case the investment returns fall short of expectations or actuarial assumptions prove to be incorrect.

As a result of the factors outlined above, it is important to note that no two pension plans are exactly alike. For INPRS' specific plans, we believe there are additional considerations that require further attention: (1) the interrelationship between the funding sources and investment portfolio and (2) the negative effect of drawdowns given our cash flow profile.

Report from the Chief Investment Officer, continued

First, two fundamental linkages between employer contributions and investment returns exist within INPRS' consolidated defined benefit plan:

1. **Although INPRS smooth's investment returns over five years for actuarial purposes, employer contributions can still become more volatile as investment performance is more volatile.** The more return volatility the portfolio experiences the less predictable and stable the contribution requirements will be for employers. While the five-year smoothing does reduce some variability, it does not eliminate it. As a result, it is still critical to minimize portfolio drawdowns as much as possible while targeting a 6.75 percent rate of return.

2. **Employers' fiscal health and traditional investment portfolios (e.g. 60 percent equities and 40 percent bonds) are generally biased toward environments where growth is better than expected.** The income growth that fuels the tax base for INPRS' employers is frequently a result of higher economic growth. A traditional portfolio is also highly dependent on the rate of growth given that equities largely determine its performance. Consequently, it may be advantageous to reduce the correlation of the investment performance to economic growth so that both the portfolio and employers are not going through rough patches at the same time.

Second, intuition would lead one to believe that as long as the target rate of return was eventually achieved, drawdowns should be manageable for a pension plan with our long time horizon. But this is not always the case. **Negative cash flows can produce a scenario where any significant loss in the investment portfolio can prohibit the plan from getting back to a healthy funded status within a reasonable period of time.**

To illustrate this dynamic, consider the following example of a pension plan with an 85 percent funded status:

ASSETS $85		LIABILITIES $100

Annual Employer/Employee Contributions 3% of assets	-	Annual Retirement Payments 5% of assets	=	Annual Net Cash Outflow (2% of assets)

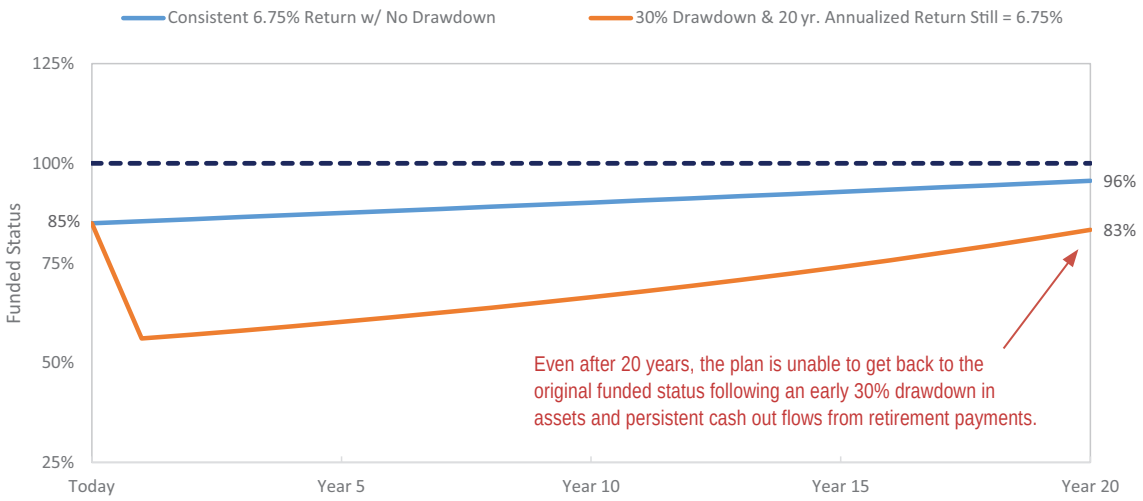
Annual Investment Return over 20 yrs. 6.75%	Annual Liability Growth over 20 yrs. 4%

In this example, the funded status will grow from 85.0 percent to 96.0 percent over twenty years if the plan is able to achieve a 6.75 percent return every year without any variation in the return from year-to-year. As we all know, unfortunately, investment markets are not this tranquil. Every asset class is susceptible to poor performance that can last months, years, or even decades.

In the face of this uncertainty, it is important to understand the effect a surprise portfolio drawdown may have on our funded status. For example, let's assume the portfolio has a 30.0 percent sell-off in the first year (not an unusual occurrence for a traditional portfolio historically[8]), but then, we are able to earn a 9.2 percent investment return the remaining nineteen years of the time period. As a result of this turnaround in performance, we are able to show a 6.75 percent annualized return over the full twenty years despite the year one drawdown.

[8]A typical pension fund portfolio has had a 30 percent or greater drawdown in 45 percent of rolling 10-year periods since 1925 (Source: Verus, INPRS Board Meeting - Feb. 2015).

When we translate these returns into actual cash flows and combine them with the assumed 2.0 percent cash outflow each year mentioned earlier, the future outcome is not as bright as it initially seems (see the chart below). While in the base case, the funded status reaches 96.0 percent in year 20. The 30.0 percent drawdown case fails to get back to the original 85.0 percent funded status. This surprising result happens because the positive returns in years two through twenty are accruing off of a lower base each year than they would have been if there were: (1) no drawdown and (2) if there was no cash coming out of the plan each year.



This example is not meant to forecast a significant sell-off in the next year or illustrate our exact situation at INPRS across each plan that we manage[9], but it is meant to highlight the need for our plan to be prepared for such possibilities given that we have negative cash flows across many plans and mitigate such drawdowns so that we continue to improve the financial strength of our various pension funds over time. One way we can do this is by reducing the reliance on any single asset class to provide the majority of our returns. While a concentrated allocation may provide adequate returns for a certain period of time, drawdowns in the chosen asset class are inevitable, and we need to avoid being caught in a position where a majority of our asset allocation is experiencing a material drawdown, thus creating a greater chance of a 30.0 percent loss or worse.

INPRS' asset allocation may look different than one that merely targets return without regard for risk. However, analyzing and planning for the inherent risks across the assets and liabilities are critical in ensuring we can make the required retirement payments when they come due. As a result, our plan has sought a more diversified approach to strategic asset allocation guided by our understanding of INPRS' specific funding sources and cash flows.

Defined Contribution Plans

While the majority of this letter has focused on topics related to the portfolio of the defined benefit plans at INPRS, another critical aspect of the investment process is the establishment and ongoing management of the defined contribution investment fund line-up. Known as the Annuity Savings Account (ASA), My Choice: Retirement Savings Plan for Public Employees (My Choice)[10], and Legislators' Defined Contribution Fund, the defined contribution plans at INPRS provide members the ability to select their own asset allocation from a line-up of investment options approved by the Board.

[9]*In practice, the funded status may not be as low as shown in the example if employer contributions are increased to make-up for any investment return shortfall. Examples of INPRS' forecasted net cash flows from FY2018 – 2027: PERF = (2.8) percent, TRF Pre-'96 = (4.2) percent, TRF '96 = 1.1 percent, '77 Fund = (1.0) percent, JRS = (2.8) percent.*

[10]*Formerly known as the ASA Only plan.*

Just as there have been imperatives established to guide the investment process of the defined benefit plan, we believed it was critical to establish specific imperatives for the defined contribution plans at INPRS, as well. In fiscal year 2017, the investment team collaborated with INPRS' defined contribution general consultant, Capital Cities, and the Board to establish the following imperatives:

1. Provide a simple and diversified default option ("Allocate it for me" – Target Date Options). Effective fiscal year 2011, INPRS' Board changed the default investment option for the ASA and My Choice plans to target date funds. This fund line-up was established to provide members with an auto-pilot allocation that targets an appropriate risk and return profile for their particular time horizon and automatically becomes more conservative as they approach retirement. Given how many members rely on INPRS to make their asset allocation for them by defaulting to this option, it is crucial that we construct a target date fund line-up that is easy to understand yet sophisticated enough to help members achieve their savings goals.

2. Provide a simple and diversified menu of stand-alone options ("Allocate it myself" – Core and Specialty Options). For those members that want to select an allocation that is different than those offered in the target date funds, INPRS offers investment options for individual asset classes. This line-up of options allows members to construct an asset allocation that better suits their specific needs and objectives.

3. Leverage the defined benefit asset base to provide low cost investment options. One reason the multiple retirement plans under INPRS' management were originally consolidated was to reduce fees for all plans. As a result, it is critical that we maintain focus on utilizing the large asset base across the defined benefit and defined contribution plans to continually drive costs lower.

In addition to the ongoing monitoring and operation of the investment options, the investment team also formally conducts quarterly reviews of the defined contribution plans that culminates in an annual update presentation to the Board. This annual review process includes comparisons of INPRS' fees to the peer universe, fund performance relative to expectations, as well as defined contribution industry trends. One of the biggest takeaways from this year's review was the competitiveness of the funds offered across INPRS' platform in terms of fees. Based on data from Callan Associates, it is estimated that our members save approximately $15 million per year versus similar investment fund offerings from institutional providers.

In fiscal year 2017, the investment team also undertook an in-depth review of the target date funds. The review began with a survey of our members that gauged their risk tolerance as well as satisfaction with the current investment options. The analysis was also conducted within the context of the Department of Labor's best practices for plan fiduciaries. Based on these data points and others, it was determined that INPRS' target date funds were still a good fit with the plans' specific circumstances, and no changes were made to the current line-up.

Investment Team and Culture

There has been an evolution in culture over the past several years as the investment team has conscientiously dedicated more attention to risk management across each function of the investment process. In fiscal year 2017, the latest improvements were focused on how the structure and depth of our team could further enhance this transformation.

The defined benefit and defined contribution portfolios have grown in complexity through time as they have become larger and more global in nature. For example, today, the $26.4 billion defined benefit portfolio consists of 15,992 securities across 335 managers. One can imagine the attention a portfolio of this scale as well as multiple defined contribution plans necessitates on a daily basis. Recognizing this constant need, we created a functional group within the investment team

that would become experts in each of the operational processes that follow the asset allocation and manager selection decisions. The diagram below summarizes the primary steps of our investment process that the newly created Investment Risk and Operations group will lead going forward (highlighted in blue).

And just as our middle and back office functions can continually improve, we think there are always improvements to be made on the front-end, as well. One of the guiding principles in INPRS' investment policy statement states that "the asset allocation is the most important determinant of long-term investment results." In-line with this belief, we made a few changes in fiscal year 2017 in hopes of further improving the cross collaboration amongst the team and, thus, the asset allocation through time. The list below highlights the primary modifications we made:

- Investment directors are now responsible for at least one public and one "alternative" asset class. While it is important that we maintain expertise in "alternative" asset classes (e.g. private markets, real estate, absolute return, etc.), we believe it is just as important for our directors to consistently gauge the relative opportunity set between public and "alternative" markets.

- Investment analysts are now generalists rather than specializing in one asset class. We believe that increasing our analysts' breadth of knowledge will accelerate their development and the impact they have on the asset allocation decisions the team makes going forward.

- The investment team meets monthly to share asset allocation research and ideas. No matter whether a team member is a first-year analyst or a long-time director, we want the best ideas on asset allocation to surface and make their way into the portfolio. We believe this new forum provides another avenue for these thoughts to be heard.

Navigating the Continuously Uncertain Future

The calls for lower returns going forward have become widespread among market participants. Even if that does play out as expected over the next decade, the winners and losers as well as the path of returns are still unknown. The mosaic of the global economy makes forecasting individual asset class returns (and even whether the sign should be positive or negative) extremely difficult; however, the one thing an investor can do is prepare for multiple outcomes. As Elroy Dimson from the London Business School has said, "Risk means more things can happen than will happen." Our investment team believes we have a portfolio strategy and process that is better prepared for multiple "futures," but we are relentlessly focused on finding even better ways to diversify the portfolio and improve our investment process in the face of these unknowns going forward.

Sincerely,

Scott B. Davis, CFA
Chief Investment Officer

Outline of Investment Policies

The Indiana Public Retirement System's (INPRS) Board of Trustees (Board) serves as the ultimate fiduciary of INPRS. Indiana Code, Article 5-10.5 provides that a nine-member Board of Trustees will oversee INPRS. The nine trustees shall be appointed by the Governor, four of whom must be members of INPRS. The INPRS Board of Trustees appoints the executive director of INPRS.

The Board establishes investment policies; however, Indiana law establishes guidelines on the investment of the Fund's assets. At all times, INPRS must invest its assets in accordance with the "Prudent Investor" standard. Under this standard, investment decisions are based upon the same degree of care that a prudent person acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of a similar character with similar aims.

The objective of the Board's Investment Policy Statement (IPS) is to maintain adequate funding for each retirement fund and pension system in order to provide for the payment of such fund's actuarially determined liabilities over time in a cost-effective manner. The purpose of the IPS is to support this general objective by:

- Setting forth the investment policies which the Board judges to be appropriate and prudent, in consideration of the needs and legal requirements applicable to direct investment of the assets;
- Making a clear distinction between the roles and responsibilities of the Board, Staff, and each Service Provider;
- Establishing formalized criteria to measure, monitor and evaluate the performance results of the Investment Managers;
- Communicating the investment policies, objectives, guidelines, and performance criteria of the Board to the Staff, Investment Managers, Consultants, Service Providers, employers, members and all other interested parties; and
- Serving as a review document to guide the ongoing oversight of the investments by the System and demonstrating that the Board is fulfilling its fiduciary responsibilities in the administration and management of each Retirement Fund's assets solely in the interests of such Retirement Fund's members and beneficiaries.

The Board intends for the IPS to be a dynamic document, and, as such, expects to conduct periodic reviews utilizing input from INPRS staff, consultants and other knowledgeable parties. The Board anticipates approving changes from time to time to reflect changes in any or all of: economic and market conditions, investment opportunities, the System's investment strategy, benefit provisions, and the INPRS' governance.

The Board recognizes that the allocation of assets is the most important determinant of investment rates of returns over long periods of time. The procedure for determining the allocation will consider the relevant characteristics of the liabilities and the potential assets of the Fund. An asset liability study will be conducted no less than every five years and will analyze the expected returns of various asset classes, projected liabilities, risks associated with alternative asset mix strategies and their effect on the projected fair value of assets, funded status, and contributions to the Fund.

With a long-term investment focus, the portfolio is invested across the following asset classes: Public Equity, Private Markets (i.e. Private Equity and Private Credit), Fixed Income - Ex Inflation-Linked, Fixed Income - Inflation-Linked, Commodities, Real Estate, Absolute Return, and Risk Parity. On December 16, 2016, the Board approved a revision to the Investment Policy Statement incorporating a change to the asset allocation targets. In addition, the private equity asset class was renamed to private markets to include the approved allocation to private credit.

Outline of Investment Policies, continued

INPRS Asset Allocation	Target Allocation	Target Range	Benchmark
Public Equity	22.0 %	19.5 to 24.5 %	*MSCI All Country World IMI Index*
Private Markets	14.0	10.0 to 18.0	*Custom Benchmarks*
Fixed Income – Ex Inflation-Linked	20.0	17.0 to 23.0	*Custom Benchmark*
Fixed Income – Inflation-Linked	7.0	4.0 to 10.0	*Custom Benchmark*
Commodities	8.0	6.0 to 10.0	*Custom Benchmark*
Real Estate	7.0	3.5 to 10.5	*NCREIF NFI-ODCE*
Absolute Return	10.0	6.0 to 14.0	*HFRI Fund of Funds Composite*
Risk Parity	12.0	7.0 to 17.0	*Custom Benchmark*

The Board employs investment managers to implement the asset allocation through a selective and thorough search process that embodies the principles of procedural due diligence. It is the intent of the Board to encourage the participation of all qualified organizations in this process. The Board encourages investment managers to develop long-term investment strategies consistent with the guidelines outlined in the IPS, as well as governing Indiana statutes. Additionally, investment managers will adhere to and comply with the CFA Institute Global Investment Performance Standards in calculating and reporting investment performance. Performance of each manager is measured against the rate of return associated with appropriate market index benchmarks and an appropriate universe or style peer group of investment managers.

Annuity Savings Accounts (ASA) are accounts established for each member. A member's account is credited with the legislated 3.0 percent mandatory contribution (either paid by the member or by the employer). The ASA produces an additional separate benefit from the fixed-formula employer funded pension benefit to the member. The member can self-direct their investment between several options or may leave their contributions invested in the default target date retirement fund. The ASA investment options currently include:

1. Large Cap Equity Index Fund;
2. Small/Mid Cap Equity Fund;
3. International Equity Fund;
4. Fixed Income Fund;
5. Inflation Linked Fixed Income Fund;
6. Target-Date Retirement Funds;
7. Money Market Fund;
8. Stable Value Fund;
9. Consolidated Defined Benefit Assets (Legislators' Plan only);

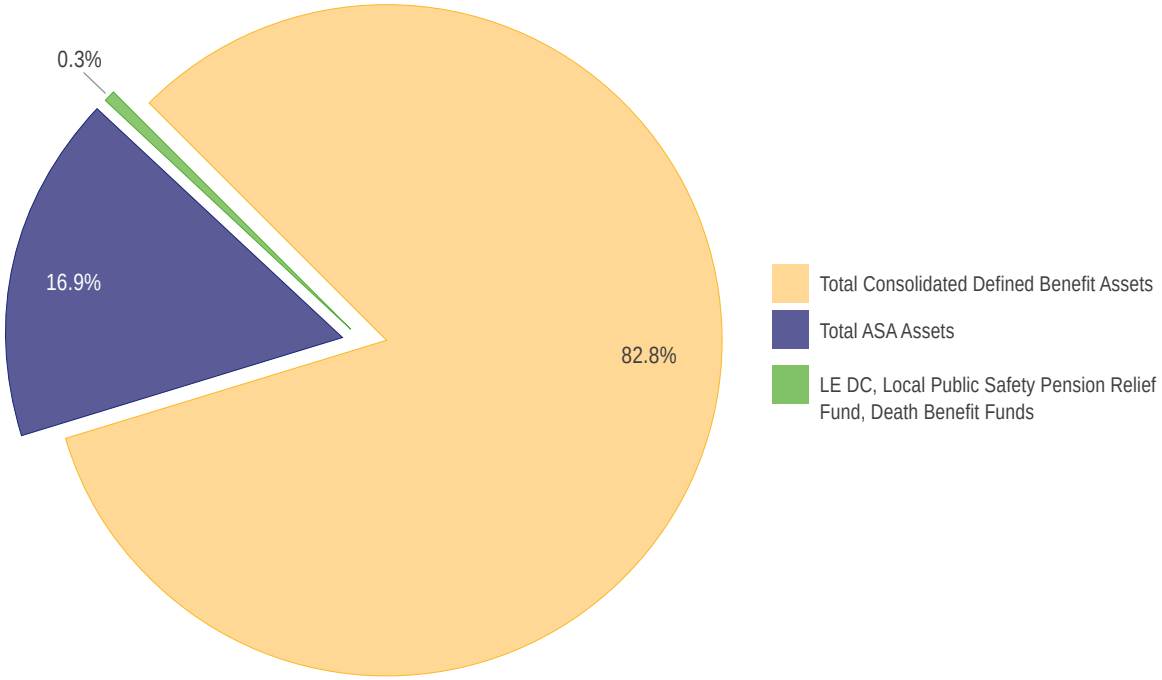
The number and types of investment funds offered will be periodically reviewed by the Board in order to ensure diversity of investment alternatives, adequate and reasonable availability of investment types, and clarity and usefulness of the investment choices. ASA performance data is included in the Investment Highlights of this section.

Fund Fact Sheets for the aforementioned ASA investment options, are available online at:
http://www.in.gov/inprs/fundfactsheets.htm

Investment Summary
As of June 30, 2017

(dollars in millions)	Actual Assets	Percent
Consolidated Defined Benefit Assets		
Defined Benefit Retirement Plans' Assets	$ 26,355.3	82.8 %
Legislators' Defined Contribution Fund (LE DC)[1]	9.2	-
Total Consolidated Defined Benefit Assets	26,364.5	82.8
Annuity Savings Accounts (ASA) Assets[2]		
Public Employees' Retirement Fund (PERF)	2,771.0	8.7
Teachers' Pre-1996 Account (TRF Pre-'96)	1,242.8	3.9
Teachers' 1996 Account (TRF '96)	1,377.1	4.3
Total Annuity Savings Accounts Assets	5,390.9	16.9
Legislators' Defined Contribution Fund[3]	21.1	0.1
Local Public Safety Pension Relief Fund[4]	30.9	0.1
Death Benefit Funds[5]	15.0	0.1
Total Investments[6]	$ 31,822.4	100.0 %

[1]Self-directed investment option by LE DC members.
[2]Self-directed investment options by PERF, TRF Pre-'96 and TRF '96 members outside the Consolidated Defined Benefit Assets.
[3]Self-directed investments options by LE DC members outside the Consolidated Defined Benefit Assets.
[4]Assets are invested in high-quality, short-term money market instruments, including, but not limited to commercial paper and securities issued or guaranteed by the U.S. government.
[5]Includes State Employees' Death Benefit Fund and Public Safety Officers' Special Death Benefit Fund.
[6]Includes Investment Receivables, Foreign Exchange Contracts Receivables, Interest and Dividend Receivables, Securities Lending Collateral, Investment Payables, Foreign Exchange Contracts Payables, Securities Lending Obligations, and Obligations Under Reverse Repurchase Agreements.

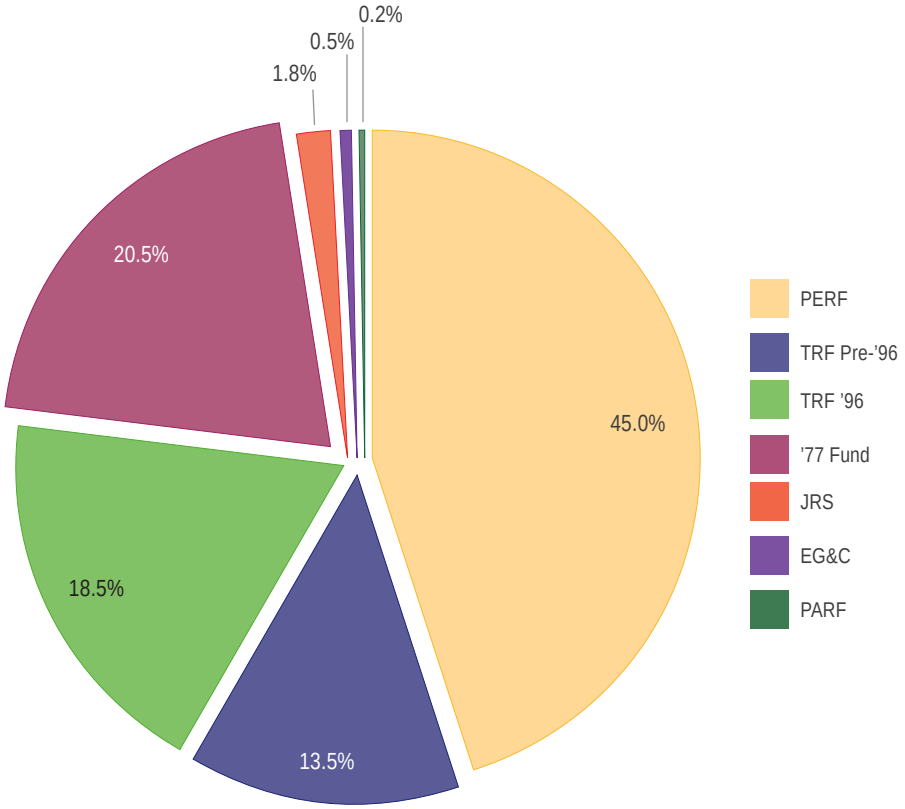


Assets by Retirement Plan
As of June 30, 2017

(dollars in millions)

Retirement Plan	Amount	Percent
Public Employees' Retirement Fund (PERF)	$ 11,861.3	45.0 %
Teachers' Pre-1996 Account (TRF Pre-'96)	3,571.8	13.5
Teachers' 1996 Account (TRF '96)	4,870.2	18.5
1977 Police Officers' and Firefighters' Retirement Fund ('77 Fund)	5,398.5	20.5
Judges' Retirement System (JRS)	475.0	1.8
Excise, Gaming and Conservation Officers' Retirement Fund (EG&C)	120.0	0.5
Prosecuting Attorneys' Retirement Fund (PARF)	55.6	0.2
Legislators' Defined Benefit Fund (LE DB)	2.9	-
Legislators' Defined Contribution Fund (LE DC)	9.2	-
Total Consolidated Defined Benefit Assets[1]	$ 26,364.5	100.0 %

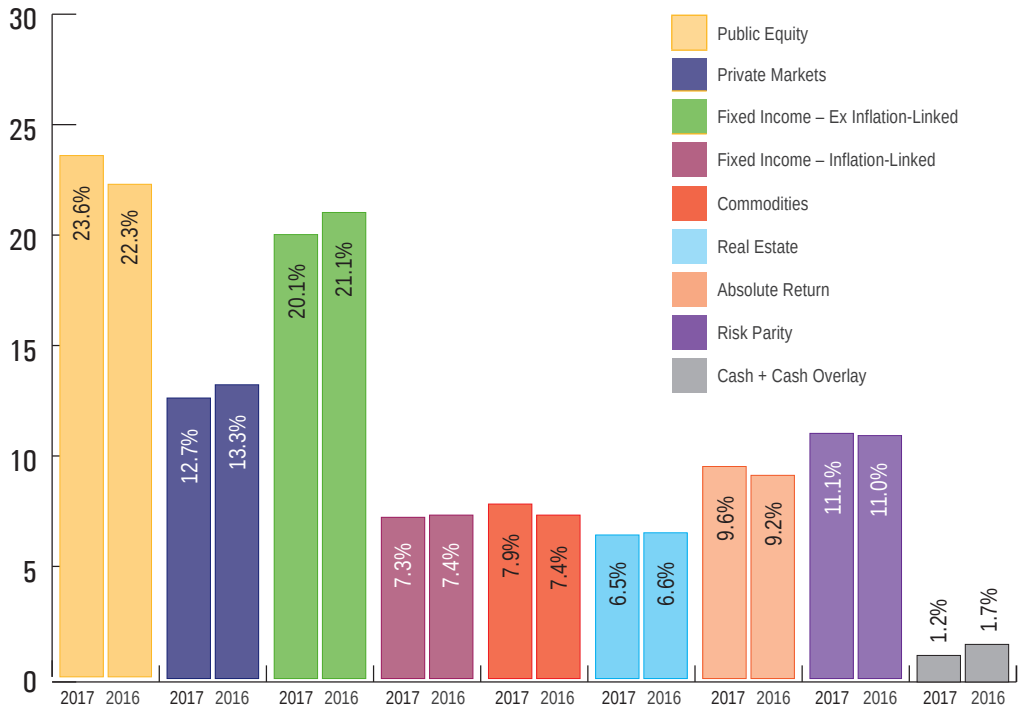
[1]*Includes Investment Receivables, Foreign Exchange Contracts Receivables, Interest and Dividend Receivables, Securities Lending Collateral, Investment Payables, Foreign Exchange Contracts Payables, Securities Lending Obligations, and Obligations Under Reverse Repurchase Agreements.*



Asset Allocation Summary: June 30, 2017 Actual vs. June 30, 2016 Actual

(dollars in millions)	June 30, 2017		June 30, 2016	
Asset Class	Amount	Percent	Amount	Percent
Public Equity	$ 6,213.6	23.6 %	$ 5,511.8	22.3 %
Private Markets	3,358.3	12.7	3,304.5	13.3
Fixed Income - Ex Inflation-Linked	5,300.5	20.1	5,216.4	21.1
Fixed Income - Inflation-Linked	1,920.9	7.3	1,838.0	7.4
Commodities	2,092.2	7.9	1,822.0	7.4
Real Estate	1,717.7	6.5	1,629.8	6.6
Absolute Return	2,523.8	9.6	2,279.0	9.2
Risk Parity	2,914.6	11.1	2,736.4	11.0
Cash + Cash Overlay[1]	322.9	1.2	437.7	1.7
Total Consolidated Defined Benefit Assets[2]	$ 26,364.5	100.0 %	$ 24,775.6	100.0 %

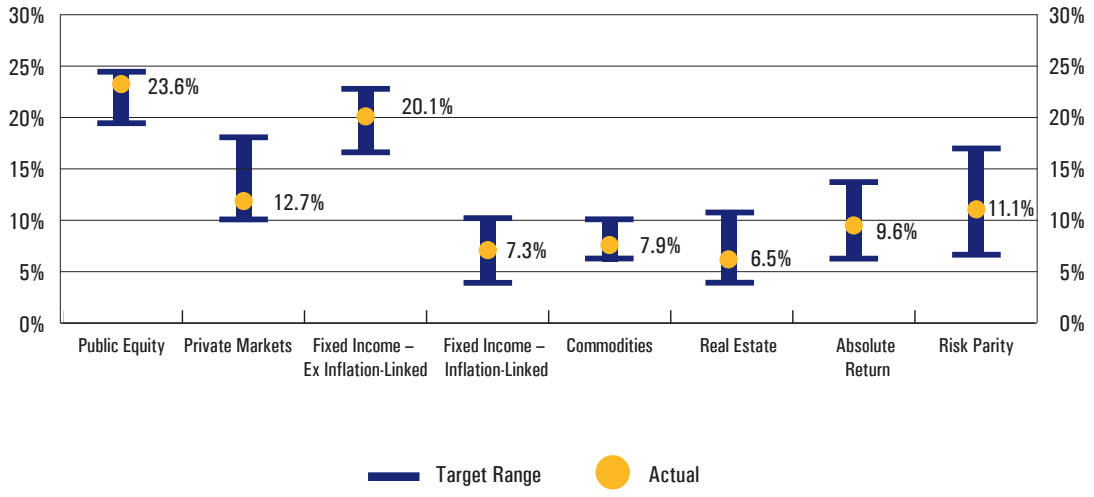
[1]Includes an accrued liability relative to the legacy Guaranteed Fund.
[2]Amounts disclosed above will agree to the Pooled Unit Trust Investments in the Financial Section in Note 2 (H) Summary of Significant Accounting Policies. The amounts disclosed above are shown by investment strategy and will differ from the Statement of Net Position and the Summary of Investments Held in the Financial Section Note 3 (D) Cash and Investments, due to the investment strategy disclosure being related to a systematic plan to achieve returns and diversification and the Summary of Investments Held disclosure summarized by 1) the legal structure of the investments and 2) excluding Investment Receivables, Foreign Exchange Contracts Receivables, Interest and Dividend Receivables, Securities Lending Collateral, Investment Payables, Foreign Exchange Contracts Payables, Securities Lending Obligations, and Obligations Under Reverse Repurchase Agreements.



Asset Allocation Summary: June 30, 2017 Actual vs. Target

Asset Class	June 30, 2017 Actual	Target	Allowable Range for Investments
Public Equity	23.6 %	22.0 %	19.5 to 24.5 %
Private Markets	12.7	14.0	10.0 to 18.0
Fixed Income - Ex Inflation-Linked	20.1	20.0	17.0 to 23.0
Fixed Income - Inflation-Linked	7.3	7.0	4.0 to 10.0
Commodities	7.9	8.0	6.0 to 10.0
Real Estate	6.5	7.0	3.5 to 10.5
Absolute Return	9.6	10.0	6.0 to 14.0
Risk Parity	11.1	12.0	7.0 to 17.0
Cash + Cash Overlay[1]	1.2	N/A	
Total Consolidated Defined Benefit Assets	100.0 %	100.0 %	

[1]Includes cash, cash equivalents, and cash overlay. INPRS does not have a target allocation to cash as an asset class.



Note: Cash + Cash Overlay is not represented in the above chart as INPRS does not have a target allocation to cash as an asset class.

Annualized Time-Weighted Rate of Return by Asset Class vs. Benchmark Returns
For the Year Ended June 30, 2017

Asset Class	1-Year[1] Actual Return[2]	1-Year[1] Benchmark Return[2]	1-Year[1] Actual Over / (Under) Benchmark	Benchmark
Public Equity	21.0 %	19.0 %	2.0	*MSCI All Country World IMI Index (MSCI ACWI)*
Private Markets	12.7	21.5	(8.8)	*Russell 3000 Index Plus 300 Basis Points*
Fixed Income - Ex Inflation-Linked	1.9	0.6	1.3	*Custom Benchmark[3]*
Fixed Income - Inflation-Linked	(0.2)	(1.3)	1.1	*Custom Benchmark[4]*
Commodities	(6.7)	(7.5)	0.8	*Custom Benchmark[5]*
Real Estate	10.4	7.4	3.0	*NCREIF Open End Diversified Core Equity Index (ODCE)*
Absolute Return	7.8	4.9	2.9	*HFRI Custom Benchmark[6]*
Risk Parity	4.6	10.9	(6.3)	*Custom Benchmark[7]*
Cash + Cash Overlay	4.9	6.8	(1.9)	*Custom Benchmark[8]*
Total Consolidated Defined Benefit Assets	8.0	6.5	1.5	*Custom Target Benchmark*

[1]Based on calculations made by the System's custodian, Bank of New York Mellon. Time-weighted rates of return have been reported for fiscal year 2017.
[2]Net of fees.
[3]Benchmark represents the sub-asset class target allocation within the fixed income portfolio over time.
[4]Global Inflation 70/30 is a 70 percent weight to Global Inflation-Linked Bonds (including U.S.) and a 30 percent weight to U.S. Inflation-Linked Bonds.
[5]50 percent Bloomberg Commodity Index / 50 percent Goldman Sachs Commodity Index and the collateral component is a 75/25 blend of Global Inflation Linked Bonds (ILB's) and 90-day Treasury Bills respectively.
[6]Weighted average of INPRS' exposure to representative HFRI sub-strategy indices.
[7]60 percent MSCI ACWI IMI Index (Equities) / 40 percent Barclays Global Aggregate Bond Index (Bonds).
[8]Benchmark represents the allocation to sub-asset class targets for the cash overlay starting in April 2016; prior to that, the 3-month LIBOR was the benchmark for cash.

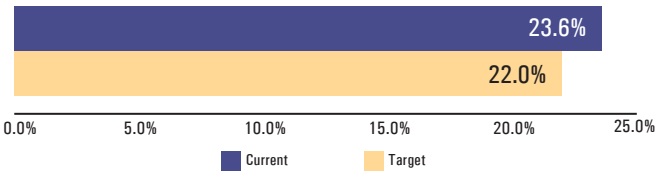
Asset Class Summary: *Public Equity*

Fair Value as of 06/30/2017	INPRS 1-Year Net Performance[1]	MSCI All Country World IMI Index 1-Year Performance
$6,213.6 Million	21.0%	19.0%

Portfolio Objective

The public equity portfolio seeks to provide long-term capital appreciation and income through exposure to public equity securities. INPRS uses a variety of external managers to create a globally diversified portfolio within the asset class. Historically, public equities have performed well in environments when actual economic growth came in higher than expectations and/or when actual inflation came in lower than expectations.

INPRS Allocation



Performance Attribution

INPRS' public equity portfolio had a return of 21.0 percent for fiscal year 2017. The portfolio outperformed the benchmark by 2.0 percent. The domestic segment outperformed the benchmark by 0.2 percent and the international segment outperformed the benchmark by 2.7 percent.

Market Overview

Over the past year, global equities, as represented by the MSCI All Country World IMI Index, were up 19.0 percent. Based on the Russell 3000 Index, domestic equities were up 18.5 percent over the fiscal year. International equities were up 20.4 percent based on the MSCI ACWI ex US IMI Index.

For the first quarter of the fiscal year, INPRS' global equity portfolio was up 6.7 percent. Global equity markets rallied following the late June Brexit vote which had sent markets lower. Internationally, both the European Central Bank and Bank of Japan maintained economically stimulative measures.

In the second quarter of the fiscal year, INPRS' global equity portfolio was up 1.0 percent. The U.S. equity market advanced following the presidential election and finished the quarter ahead. International markets did not collectively participate in this move higher and finished lower for the quarter.

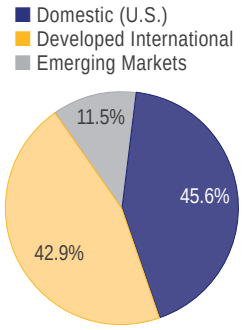
In the third quarter of the fiscal year, INPRS' global equity portfolio was up 6.8 percent. Developed economies continued a steady yet modest expansion with moderate inflation. Globally, equity markets moved higher as earnings growth improved in many regions.

In the fourth quarter of the fiscal year, INPRS' global equity portfolio was up 5.2 percent. Globally, markets advanced as economic growth accelerated in the U.S. and Europe. The U.S. equity market experienced relatively low volatility during the quarter.

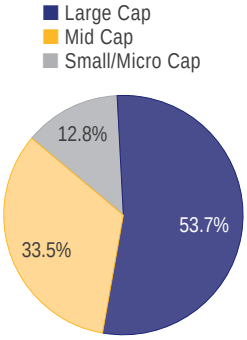
[1]Investment performance is based on calculations made by the system's custodian, BNY Mellon, and are time weighted rates of return.

Portfolio Structure

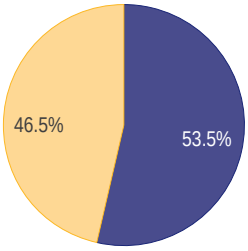
Regional Exposure



Market Cap Exposure



Investment Strategy



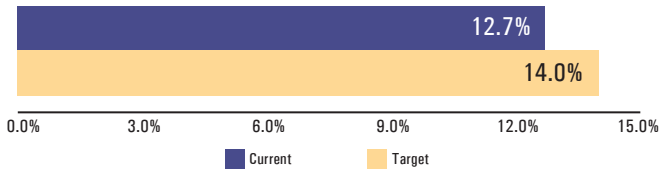
Asset Class Summary: *Private Markets*

Fair Value as of 06/30/2017	INPRS 1-Year Net Performance[1]	Russell 3000 plus 300 basis points 1-Year Performance
$3,358.3 Million	12.7%	21.5%

Portfolio Objective

The private markets portfolio seeks to provide risk adjusted returns in excess of the public equity markets while simultaneously decreasing the volatility of the investment portfolio through diversification. The private equity portion of portfolio is invested in the following sub-asset classes: venture and growth capital, buyout, energy, and debt related strategies. Implementation of private credit investments is expected to commence for fiscal year 2018. Private markets refer to private equity investments ("Private Equity") as well as private credit investments ("Private Credit").

INPRS Allocation



Performance Attribution

The private markets portfolio returned 12.7 percent for fiscal year 2017, which was accretive to the INPRS target rate of return of 6.75 percent but underperformed its public market benchmark. The private markets portfolio has outperformed the Cambridge Associates Pooled IRR for the one year period, 13.4 percent versus 12.8 percent, respectively, and since inception (December 2002), 11.3 percent versus 10.5 percent, respectively. The portfolio has returned a TVPI[2] of 1.5x and DPI[3] of 0.8x since inception.

North American investments have generated the highest rate of return for the private markets portfolio totaling 12.3 percent since inception; while, European investments have fared the worst at 4.4 percent since inception.

Buyout investments have led the way for the private markets portfolio returning 12.4 percent inception to date. Venture capital, growth capital, real assets (energy), and special situations all proved to be accretive to the overall plan return generating 11.9 percent, 7.2 percent, 10.9 percent, and 10.5 percent, respectively, since inception.

Co-investments have been the strongest performing investment structure with a return of 35.4 percent since inception followed by secondary interests returning 14.6 percent, primary commitments at 11.6 percent, and fund of funds at 9.1 percent.

Portfolio Overview

The private markets portfolio continues to maintain a home continent bias with 83.9 percent of portfolio net asset value located in North America. Investments are well diversified by sub-asset class with buyout and venture / growth capital accounting for the largest portions of the portfolio at 47.7 percent and 22.6 percent, respectively.

Primary commitments maintain the largest exposure of net asset value at 80.9 percent, however, co-investment exposure is growing and now accounts for 4.0 percent of the private markets portfolio. The portfolio continues to mature with 18.7 percent of net asset value now coming from pre-2008 funds and a weighted average fund age of 7.5 years.

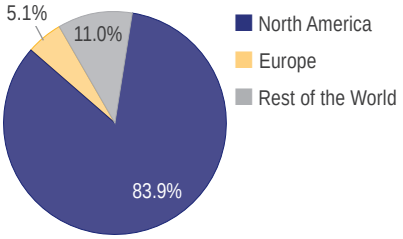
Distributions to and contributions from the INPRS' private markets portfolio totaled $762 million and $520 million, respectively, accounting for positive net cash flows of $242 million for fiscal year 2017. Distributions and net cash flows in fiscal year 2017 were higher than any previous fiscal year for the private markets portfolio.

In fiscal year 2017, INPRS committed capital to seven managers across eight investments, totaling approximately $416 million of new commitments. Commitments were made to managers in the buyout, growth, real assets, and special situations sub-asset classes.

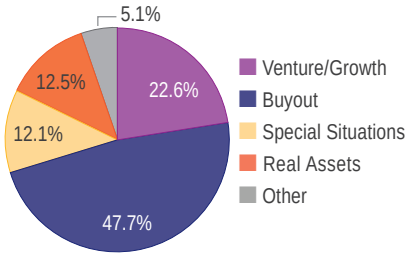
[1]Investment performance is based on calculations made by the system's custodian, BNY Mellon, and are time weighted rates of return.
[2]Total value paid-in or investment multiple.
[3]Distributions to paid-in or realization multiple.

Portfolio Structure

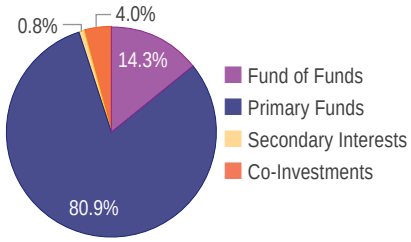
Investment by Region



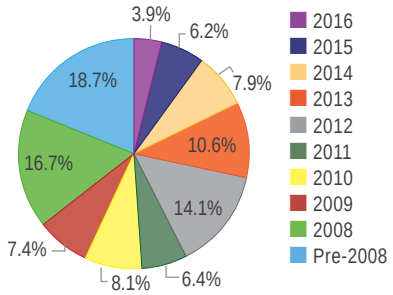
Investment by Sub-Asset Class



Investment by Structure



Investment by Vintage Year



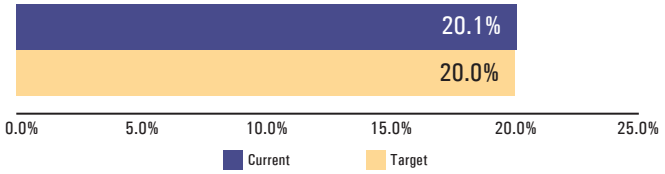
Asset Class Summary: *Fixed Income – Ex Inflation-Linked*

Fair Value as of 6/30/2017	INPRS 1-Year Net Performance[1]	Custom Benchmark[2]
$5,300.5 Million	1.9%	0.6%

Portfolio Objective

The fixed income - ex inflation-linked portfolio seeks to generate current income and long-term risk-adjusted return, in excess of the custom benchmark ("Benchmark"), through the investment in debt securities. A focus is placed on preservation of capital. To minimize the probability of substantial principal loss, INPRS staff seeks to reduce the volatility of the portfolio and enhance return from both contractual income and capital appreciation--in part, by investing in certain actively managed strategies

INPRS Allocation



Performance Attribution

For fiscal year 2017, the fixed income - ex inflation-linked portfolio returned 1.9 percent, outperforming its benchmark by 1.3 percent. Active management within unconstrained strategies, long duration bonds, opportunistic credit, and emerging market debt were the main drivers of the outperformance.

Market Overview

Fiscal year 2017 was marked with challenges as investors continued to endure historically low yields, the emergence of populism in major nations such as the U.S. and U.K., and the early stages of a shift from highly accommodative monetary policy. Economies broadly improved during the period and major central banks began to consider tightening monetary policy through rate increases and tapering of asset purchases. Given low yields, tight corporate spreads, and a potential shift in central bank policy, INPRS staff maintained a generally cautious view on the markets.

During the first quarter, markets initially responded to the U.K.'s unexpected decision to leave the European Union with high volatility. In response, equities sold off in favor of safe-haven assets; however, in the proceeding weeks, equities and rates moved moderately higher overall as uncertainty diminished and growth showed signs of acceleration. Despite these developments, the Fed left rates unchanged at its September meeting, seeking additional progress on labor and inflation objectives. The fixed income - ex inflation-linked portfolio returned 1.8 percent during the period, led by strong performance in credit and, most notably, the opportunistic credit portfolio.

In the second quarter, strong autumn economic data paired with the unexpected U.S. presidential election outcome pushed rates higher. Markets also priced in a higher likelihood of a Fed rate increase. The Fed met expectations by increasing rates 0.25 percent during its December meeting. The fixed income - ex inflation-linked portfolio returned (4.1) percent during the period led by substantial declines in U.S. long duration bonds.

During the third quarter, the Fed again raised interest rates 0.25 percent on the back of improving employment data. The fixed income-ex inflation-linked portfolio returned 1.8 percent during the period, driven, in part, by a strong rebound in emerging markets debt–which benefited, to some extent, from more moderate expectations regarding potential U.S. protectionism.

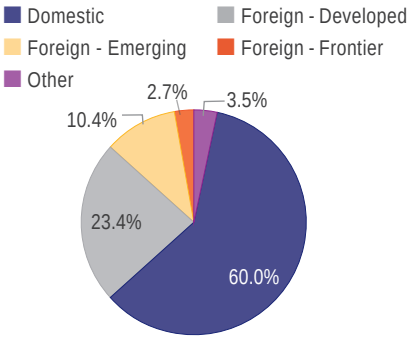
During the fourth quarter, the Fed again increased rates by 0.25 percent and introduced a plan to reduce its massive amount of security holdings, while other central banks hinted at moving away from accommodative monetary policy in light of an improving global economy. As a result, inflation remained generally weak, and breakevens, particularly in the U.S., fell considerably during the quarter. As such, U.S. long duration bonds performed well and overall, the fixed income-ex inflation-linked portfolio returned 2.6 percent over the time period.

[1]Investment performance is based on calculations made by the system's custodian, BNY Mellon, and are time-weighted rates of return.
[2]Represents sub-asset class target allocations within the Fixed Income - Ex Inflation-Linked portfolio over time.
[3]Derivative exposure is included in Government.

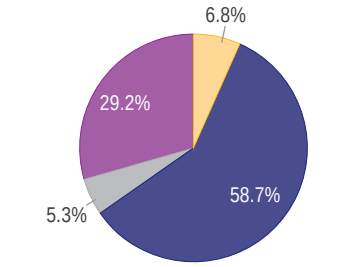
Portfolio Overview

	INPRS	Benchmark
Duration to worst:	9.8 yrs	9.7 yrs
Yield to worst:	2.9%	3.1%
Credit quality:	A1 / A	A1

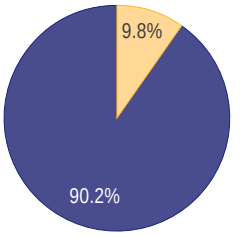
Regional Exposure



Sector Exposure[3]



Management Style



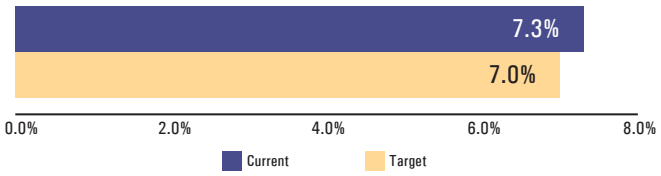
Asset Class Summary: *Fixed Income – Inflation-Linked*

Fair Value as of 6/30/2017	INPRS 1-Year Net Performance[1]	Custom Benchmark 1-Year Performance[2]
$1,920.9 Million	(0.2)%	(1.3)%

Portfolio Objective

The INPRS Fixed Income - Inflation-Linked portfolio seeks, primarily via passive management, to generate a long-term risk-adjusted return similar to that of the custom global inflation index ("Benchmark") and to, more broadly, provide protection against unanticipated inflation.

INPRS Allocation



Portfolio Overview

	INPRS
Duration to worst:	17.9 yrs
Yield to worst:	2.3%
Credit quality:	Aaa / AA+

Performance Attribution

For fiscal year 2017, the INPRS Fixed Income - Inflation-Linked portfolio returned (0.2) percent, outperforming its Benchmark by 1.1 percent. An overweighting of global inflation-linked bonds and the alpha overlay drove the outperformance.

Market Overview

During fiscal year 2017, inflation prints remained rather benign relative to expectations despite positive growth and an improving labor situation. Real yields increased throughout much of the fiscal year, pressuring absolute performance.

During the first quarter, breakevens increased throughout most of the developed world and real yields mostly declined, driving a 3.1 percent benchmark return and a 3.3 percent return in the INPRS Fixed Income - Inflation-Linked portfolio.

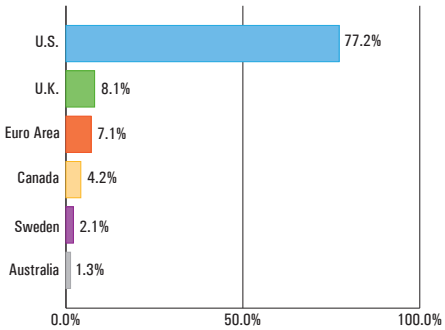
During the second quarter, weak U.S. TIPS performance drove a (5.4) benchmark return, as real yields increased significantly largely following the U.S. election in November. In December, the Fed increased rates by 0.25 percent. The INPRS Fixed Income - Inflation-Linked portfolio returned (4.3) percent during the period.

During the third quarter, employment data improved, inflation remained muted, and in March the Fed increased rates by 0.25 percent. The INPRS Fixed Income - Inflation-Linked portfolio returned 1.7 percent during the period due mostly to a modest recovery in U.S. TIPS and outperformed the benchmark by 0.1 percent.

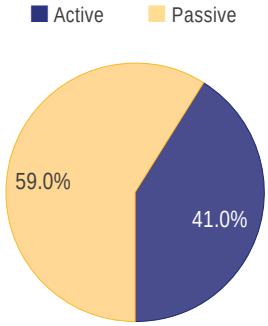
During the fourth quarter, the Fed again increased rates by 0.25 percent and introduced a plan to reduce its massive amount of security holdings, while other central banks hinted at moving away from accommodative monetary policy in light of an improving global economy. That said, inflation remained generally weak, and breakeven, particularly in the U.S., fell considerably during the quarter. The INPRS Fixed Income - Inflation-Linked portfolio returned (0.7) percent during the period while the benchmark returned (0.3) percent.

[1]Investment performance is based on calculations made by the system's custodian, BNY Mellon, and are time weighted rates of return.
[2]Represents sub-asset class target allocations within the Fixed Income - Inflation-Linked portfolio over time.

Country Exposure



Management Style



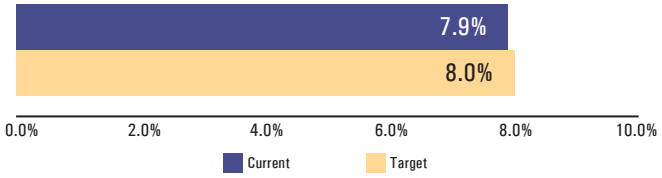
Asset Class Summary: *Commodities*

Fair Value as of 6/30/2017	INPRS 1-Year Net Performance[1]	Custom Benchmark 1-Year Performance[2]
$2,092.2 Million	(6.7)%	(7.5)%

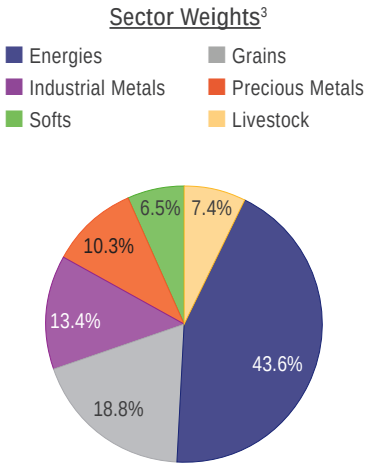
Portfolio Objective

The purpose of the commodity portfolio is to enhance long-term risk-adjusted returns by preserving investment capital and lowering overall volatility. The portfolio should also act as a hedge against unanticipated inflation. Commodity investments have historically delivered returns that are less correlated with equity and fixed income markets which may provide an opportunity to enhance returns and/or reduce volatility.

INPRS Allocation



Portfolio Structure



Performance Attribution

The commodities portfolio one-year total return exceeded its benchmark by 0.8 percentage points. Commodities' total return is comprised of two components: 1) commodity futures return and 2) collateral return. The one-year return for each of these components was approximately (7.7) percent and 1.0 percent respectively.

Market Overview

INPRS' commodity exposure is approximately equal to a 50/50 blend of the Bloomberg Commodity Index (BCOM) and the S&P Goldman Sachs Commodity Index (GSCI). For the fiscal year, the two indices returned (6.5) percent and (9.0) percent respectively.

The story of fiscal 2017 is that of the reversal of the post-election reflation trade. The U.S. dollar round-tripped over the course of the year on the back of surging optimism over anticipated reflationary and economically-stimulating policy changes. However, disappointment came in the form of a fragmented course of action and congressional headwinds. Commodities in aggregate were in a choppy trading pattern for much of the first quarter of the fiscal year, but found support and notched significant gains after the presidential election through early February 2017. In late February, cracks in the effort to repeal and replace Obamacare led to doubts being cast across the entirety of the new administrations efforts, which resulted in a reversal in inflation expectations and commodities prices declined accordingly throughout the remainder of the fiscal year.

In the first quarter of the fiscal year, energy prices were volatile but found support late in the quarter on news of a potential OPEC production cut. Agricultural commodities continued their slide as benign growing conditions led to strong crop yields.

The surprise outcome in the U.S. presidential elections in the second quarter resulted in the market rallying behind prospective growth- and inflation-positive policy initiatives. The U.S. Dollar surged and precious metals declined. Soft commodities continued their decline, but industrial metals and energies rallied. Oil was helped by U.S. production cuts.

In the third quarter, industrial and precious metals outperformed energies, agricultures, and softs as the U.S. dollar reversed course but global growth notched gains, particularly in ex-U.S. markets.

The reflation trade reversal continued throughout the fourth quarter as inflation expectations disappointed, which resulted in weakness broadly across the commodities complex. The declining U.S. dollar was unable to provide support as it was outweighed by idiosyncratic pressures.

[1]Investment Returns are based on calculations made by the system's custodian, BNY Mellon, and are time weighted rates of return.
[2]Custom Benchmark is a 50/50 blend of the Bloomberg Commodity Index and the Goldman Sachs Commodity Index. The collateral component is a 75/25 blend of global inflation-linked bond indices and 90-day Treasury Bills respectively.
[3]Approximate.

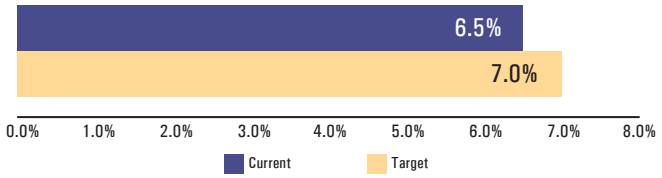
Asset Class Summary: *Real Estate*

Fair Value as of 6/30/2017	INPRS 1-Year Net Performance[1]	NCREIF Open End Diversified Core Equity Index ("ODCE") 1-Year Performance
$1,717.7 Million	10.4%	7.4%

Portfolio Objective

The real estate portfolio is mostly comprised of investments in private real estate partnerships, and the underlying exposures are a mix of debt and equity holdings. The portfolio seeks to generate attractive risk-adjusted returns by providing stable current income and preserving investment capital. The portfolio should also reduce volatility by providing a hedge against inflation and through the diversification benefits provided by real estate investments.

INPRS Allocation



Performance Attribution

For fiscal year 2017, the real estate portfolio exceeded its benchmark by 3.0 percentage points. Both the real estate equity and debt portfolios exceeded the benchmark's performance with returns of 10.5 percent and 9.8 percent, respectively. Value-add debt strategies were particularly strong contributors, returning 15.7 percent for the fiscal year, while opportunistic debt strategies (currently winding down and at a miniscule weighting within the portfolio at 1.0 percent of portfolio assets) were the only category to detract from performance with a (1.0) percent return for the period.

Market Overview

Capital continued to flow into private real estate during the fiscal year, as evidenced by another year of strong performance. Appreciation was once again the largest contributor to total return. This trend slowed significantly during the year, however, as income exceeded appreciation in the fourth quarter.

The NFI-ODCE Index returned 7.9 percent gross of fees and 6.9 percent net of fees over the fiscal year ending June 30, 2017. Continuing the trend from last year, income has remained fairly steady at approximately 1.1 percent per quarter while appreciation has been trending lower at 0.6 percent for the final quarter of the fiscal year as compared to 1.0 percent a year prior.[3]

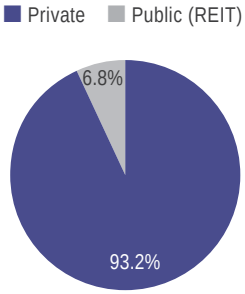
When comparing the trailing three-year returns to the trailing twelve months, income contributions to total NFI-ODCE returns has remained fairly consistent at 4.4 percent to 4.7 percent. Appreciation, however, has declined from 6.5 percent over the trailing three years to 3.3 percent over the trailing twelve months. Since the ODCE's inception approximately forty years ago, appreciation has averaged 1.4 percent per annum, which equates to 16.0 percent of the 8.7 percent annualized gross returns of the index. Over this period, U.S. ten year bond yields declined from 7.8 percent to 2.3 percent, albeit not on a smooth downward sloping path, resulting in lower discount rates, and cap rate spreads/risk premiums to government bonds have oscillated around long-term averages as is normal for risk premiums as they relate to liquidity and business cycles. Given the recent strong relative outperformance of appreciation as discount rates and the risk premiums have compressed post crisis, it is potentially unwise to expect that tailwind to continue, as recent trends are indicating that the benefit is ebbing.

With respect to specific property types, major developments include the downfall of big box retail as the extent of Amazon's disruptive ability is weighed by market participants. A clear beneficiary of this disruption is industrial, as it has become a proxy for retail/consumption in the online shopping era. Multifamily supply increases in central business districts have weighed on incomes and valuations. So, the continuity of economic growth will determine whether there will be a correction or just a pause in an otherwise strong secular trend.

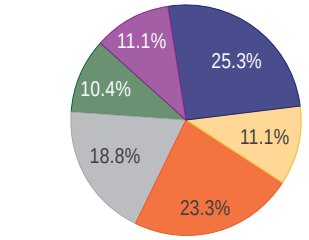
[1]Investment performance is based on calculations made by the system's custodian, BNY Mellon, and are time weighted rates of return.
[2]Exclusive of REIT mandate.
[3]Based on preliminary results as published by NCREIF.

Portfolio Structure

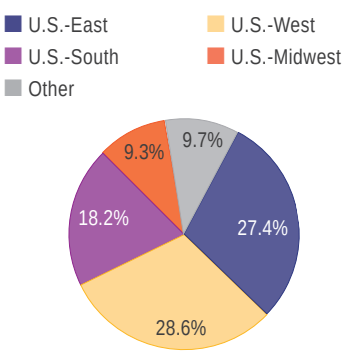
Market Type



Property Type



Property Location[2]



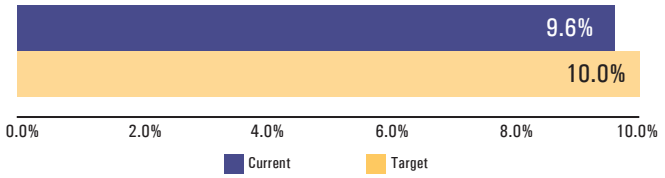
Asset Class Summary: *Absolute Return*

Fair Value as of 6/30/2017	INPRS 1-Year Net Performance[1]	HFRI Custom Benchmark[2]
$2,523.8 Million	7.8%	4.9%

Portfolio Objective

The purpose of the absolute return strategies program is to enhance the long-term risk adjusted returns of the plan by delivering alpha, providing diversification benefits, and preserving capital. Absolute return strategies generate returns by exploiting mispricing and inefficiencies in global capital markets, while attempting to reduce exposures to primary market factors (e.g. interest rates and equities) through various hedging techniques.

INPRS Allocation



Performance Attribution

INPRS outperformed the HFRI custom benchmark by 2.9 percent resulting from a combination of strategy selection and individual manager performance in event driven, global macro, and relative value strategies.

Market Overview

During the fiscal year, the portfolio was impacted by a combination of political uncertainty across Europe and the U.S., diverging monetary and fiscal policies across the developed world, and historically low levels of volatility.

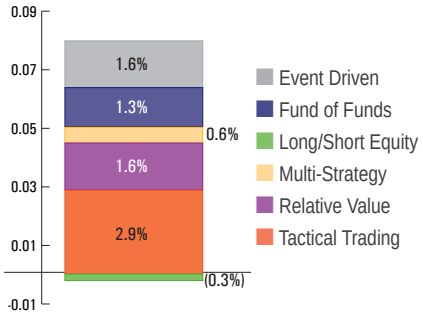
The portfolio's strategies exhibited a wide range of results over the fiscal year, with a range of total returns from (13.6) to 21.9 percent. The average positive performing investments (eighteen in total) had a starting allocation of $94.2 million and returned 9.8 percent. The average negative performing investments (two in total) had a starting allocation of $96.1 million and returned (11.4) percent over the fiscal year. In summary, the numerous positive performers had slightly lower returns on slightly lower initial allocations than the few offsetting negative performers.

The portfolio also exhibited little beta to traditional asset classes over the fiscal year: 0.1 to the MSCI ACWI, (0.2) to the Barclays Global Aggregate Index, and 0.0 to the S&P GSCI. The average pairwise correlation of fund returns across the entire roster of hedge funds was 0.1, with the maximum average pairwise correlation of any single investment to other fund investments at 0.2. The low realized correlation to traditional asset classes indicates that the portfolio has been successful in generating attractive returns while providing valuable diversification benefits to the INPRS consolidated defined benefit plan.

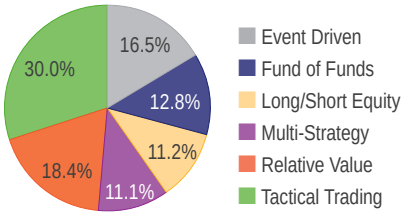
INPRS' fund-of-funds portfolio, which was a 12.8 percent allocation at the end of the fiscal year, gained 11.3 percent in aggregate over the fiscal year. Exposure to residential mortgages, event-driven, and special situations strategies were accretive to total performance.

[1]Investment performance is based on calculations made by the systems custodian, BNY Mellon, and are time-weighted rates of return.
[2]HFRI Custom benchmark is a weighted average of INPRS' exposure to representative HRFI sub-strategy indices.
[3]The sum total of sub-strategy returns may differ from the reported portfolio-level return due to rounding at the sub-strategy and portfolio levels.
[4]May not total 100 percent due to transition cash balance, allocations as of June 2017.

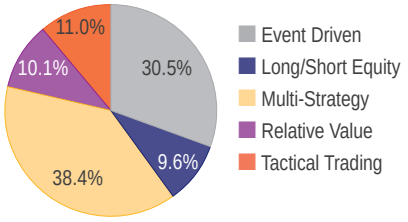
Contribution to Performance by Strategy[3]



Portfolio Composition



Fund of Funds – Look-Through[4]



Asset Class Summary: *Risk Parity*

Fair Value as of 6/30/2017	INPRS 1-Year Net Performance[1]	Custom Benchmark 1-Year Performance[2]
$2,914.6 Million	4.6%	10.9%

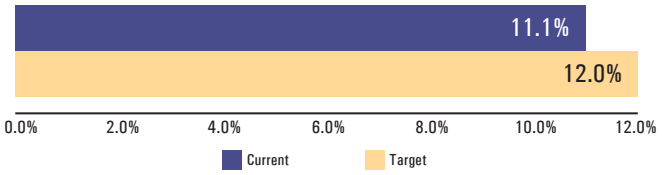
Portfolio Objective

The risk parity portfolio seeks to create a risk balanced exposure that is capable of delivering consistent risk adjusted returns in several macro-economic environments. Unlike a traditional asset allocation that is highly dependent on positive equity returns, the risk parity portfolio is constructed to accrue various asset class risk premiums, including equity, without long-term dominance from any single asset class. As a result, the underperformance of a given asset class in a particular environment may be offset by the outperformance of another asset with an opposing sensitivity to the environment.

The risk parity portfolio rests on the following key tenets:

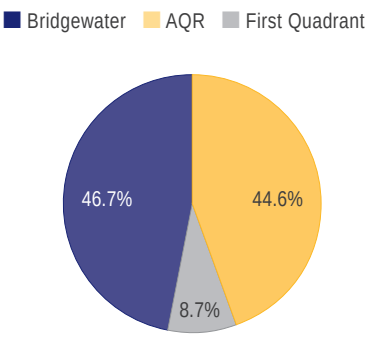
1. Over a full market cycle, most asset classes provide investors with a positive risk premium in excess of cash instruments to encourage investment.
2. The main drivers of returns are growth and inflation factors and changes in risk premiums; asset classes will perform differently depending on their sensitivity to such factors and macroeconomic conditions.
3. The return of a particular asset class is proportional to its risk over long periods of time (i.e., different asset classes produce roughly similar Sharpe ratios over the long term).
4. The moderate use of leverage enables one to increase the risk allocation to lower-volatility asset classes that provide additional diversification and balance to various macroeconomic environments. The use of leverage enables to the portfolio to be constructed in a more diversified way without sacrificing equity-like rates of return over a full cycle.

INPRS Allocation

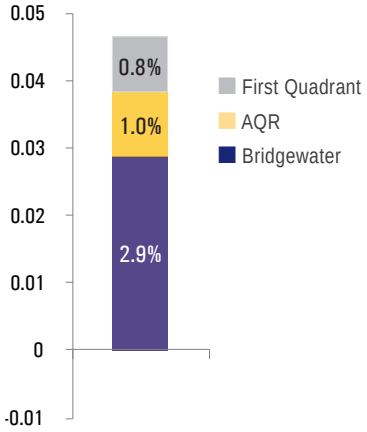


Portfolio Structure

Manager Allocation



Contribution to Performance by Manager[3]



Performance Attribution

Lacking a passive market equivalent for the risk parity portfolio, INPRS continues to use the traditional portfolio of 60 percent global equities and 40 percent global bonds (60/40 portfolio) as a benchmark for long-term return and risk comparisons, despite expectations of significant tracking error. For fiscal year 2017, the risk parity portfolio underperformed a 60/40 portfolio by 6.3 percent as the benefits of diversification were overwhelmed by strong equity market performance.

Over the past few years, equity risk concentrated or 60/40 portfolios have benefited from low volatility and high equity market returns. The same was true in fiscal year 2017. The risk parity portfolio benefitted from exposure to equities and inflation-linked bonds during the fiscal year, while commodities and nominal bonds were a drag on performance.

Market Overview

High equity returns drove performance throughout fiscal year 2017, especially after the U.S. presidential election in November 2016. Markets anticipated higher economic growth and inflation from the new administration's prospective policies, which benefited the performance of equities and inflation-linked bonds but detracted from the performance of nominal bonds. As these policies failed to quickly materialize, market expectations of growth and inflation reverted somewhat, but equity performance continued its strong positive trend. Commodities continued to be a drag on performance throughout the fiscal year.

[1]Based on calculations made by the system's custodian, BNY Mellon, and are time weighted rates of return.
[2]Comprised of 60 percent MSCI ACWI IMI Index (equities) & 40 percent Barclays Global Aggregate Bond Index (bonds).
[3]Sum total of manager contribution may differ from the reported portfolio level return due to rounding at the manager and portfolio levels.

Historical Comparative Investment Results[1]
As of June 30, 2017

	Percent of Portfolio	Annualized Time-Weighted Rates of Return		
		1-Year[2,3]	3-Year[2,3]	5-Year[2,3]
Total Consolidated Defined Benefit Assets	100.0 %	8.0 %	3.0 %	5.7 %
vs. BNY Mellon Public Universe Median[4]		12.4	5.4	8.8
Target Reference Index[5]		6.5	2.6	5.2
Total Domestic Equity	11.2	18.7	8.2	13.7
vs. BNY Mellon Public Universe Median		18.1	8.7	14.4
Russell 3000 Index		18.5	9.1	14.6
Total International Equity	12.4	23.1	3.1	8.9
vs. BNY Mellon Public Universe Median		20.8	2.4	8.7
MSCI ACWI ex U.S. IMI Net		20.4	1.1	7.6
Total Domestic Fixed Income	11.5	0.5	4.1	4.2
vs. BNY Mellon Public Universe Median		1.7	3.2	3.1
Barclays U.S. Aggregate Bond Index		(0.3)	2.5	2.2
Total International Fixed Income	6.6	1.3	3.1	(0.1)
vs. BNY Mellon Public Universe Median		5.5	(1.5)	2.2
Barclays Global Aggregate ex-USD (USDH)		(0.7)	3.8	4.0

[1]As the investment objectives and resulting portfolio construction of INPRS may differ from those in the listed peer universes, the most relevant evaluation of INPRS' performance will be against the investment imperatives outlined in the report from the Chief Investment Officer and the cited benchmarks for each asset class.
[2]Net of fees.
[3]Investment performance is based on calculations made by the system's custodian, Bank of New York Mellon. The 1-year, 3-year, and 5-year performance returns are time-weighted rates of return based on the market rates of return.
[4]Universe of Public Funds.
[5]The target index weights for each asset class benchmark are set by the target asset allocation. The return for Risk Parity, Real Estate, and Private Markets are equal to the asset class returns and not the benchmark.

Ten-Year Time-Weighted Investment Rates of Return[1]
For the Year Ended June 30

(dollars in millions)

		Fair Value of Assets	Rate of Return[2]	Actuarial Assumed Rate
2017	INPRS[3]	$ 26,364.5	8.0 %	6.75 %
2016	INPRS	24,775.6	1.2	6.75
2015	INPRS	24,629.8	0.0	6.75
2014	INPRS	24,560.3	13.7	6.75
2013	INPRS	21,488.7	6.0	6.75
2012	INPRS	19,708.9	0.7	7.00
2011	PERF CRIF[4]	15,796.6	20.1	7.00
	TRF DB Assets[5]	5,984.0	18.2	7.00
2010	PERF CRIF	13,314.0	13.9	7.25
	TRF DB Assets	5,073.0	14.8	7.50
2009	PERF CRIF	11,795.1	(20.6)	7.25
	TRF DB Assets	4,236.0	(18.0)	7.50
2008	PERF CRIF	14,851.0	(7.6)	7.25
	TRF DB Assets	5,252.0	(6.0)	7.50

[1] Returns from 2008 - 2011 presented as previously reported; returns 2012 and thereafter are based on calculations made by the System's custodian, Bank of New York Mellon. All returns are time-weighted rates of return.
[2] Net of fees; 2008-2011 reported as gross of fees.
[3] INPRS Consolidated Defined Benefit Assets.
[4] PERF Consolidated Retirement Investment Fund.
[5] TRF Defined Benefit Assets.

Statistical Performance
As of June 30, 2017

Statistic	1-Year	3-Years	5-Years	10-Years
Annualized Time-Weighted Rate of Return	8.0 %	3.0 %	5.7 %	2.9 %
Annualized Standard Deviation	2.7	4.3	4.3	9.3
Annualized Sharpe Ratio[1]	2.7	0.7	1.3	0.3
Beta[2]	0.2	0.3	0.3	0.6
Correlation[2]	0.5	0.7	0.7	0.9
Annualized Alpha[3]	1.3	0.2	0.1	0.0

[1]Risk Free Proxy is the Citigroup 3 Month T-Bill.
[2]Market Proxy is the S&P 500.
[3]Market Proxy is INPRS' Custom Dynamic Benchmark.

Definition of Key Terms:

Standard Deviation: A statistic used to measure the dispersion in a distribution. Dispersion is measured relative to the mean, or average of the distribution. The greater the dispersion, the higher the risk associated with the pattern of observations. One standard deviation describes two-thirds of the observations in a normal or bell-shaped distribution. In an asset allocation context, standard deviation is a conventional proxy for risk or volatility.

Sharpe Ratio: Ratio used to measure risk-adjusted performance. The Sharpe Ratio is calculated by subtracting a risk-free rate (proxy) from the rate of return for a portfolio and dividing the result by the standard deviation of the portfolio returns. The Sharpe Ratio provides insight on excess risk held in the portfolio. The greater a portfolio's Sharpe Ratio, the better its risk-adjusted performance has been. A negative Sharpe Ratio indicates that a risk-less asset would perform better than the security being analyzed.

Beta: A measure of the volatility, or systematic risk, of a security or portfolio in comparison to the market as a whole. Beta is the tendency of a security's return to respond to swings in the market. A Beta of less than one indicates less volatility than the market. A Beta of greater than one indicates greater volatility than the market.

Correlation: A statistical measure of how two securities move in relation to each other. A correlation of positive 1.0 indicates similar magnitude and direction of change. A correlation of negative (1.0) indicates similar magnitude, but opposite direction. A correlation of zero indicates the relationship is purely random.

Alpha: A measure of relative performance. Alpha is the difference between the actual performance of the fund and the performance which should have been achieved given the market's performance and the fund's risk posture.

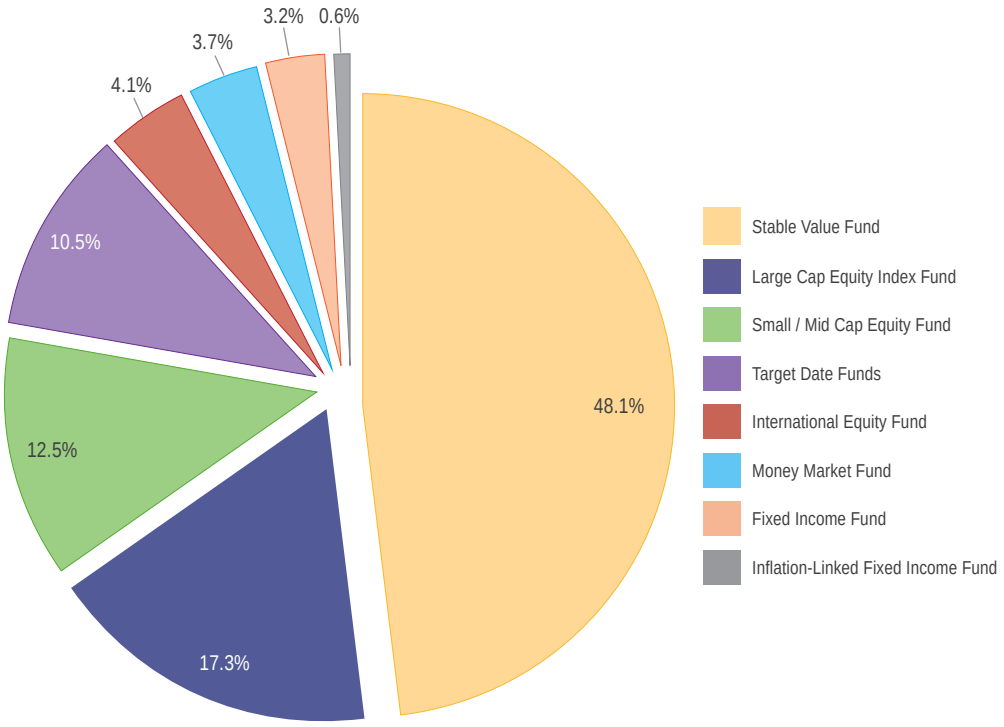
Investment Results – Annuity Savings Accounts, My Choice and Legislators' Defined Contribution Fund

Assets by Investment Option
As of June 30, 2017

(dollars in millions)

Investment Option	ASA & LE DC Plan Assets[1]	Percent of Self-Directed Investments
Large Cap Equity Index Fund	$ 938.6	17.3 %
Small / Mid Cap Equity Fund	676.1	12.5
International Equity Fund	218.9	4.1
Fixed Income Fund	172.2	3.2
Inflation-Linked Fixed Income Fund	33.0	0.6
Money Market Fund	197.7	3.7
Stable Value Fund	2,605.3	48.1
Target Date Funds[2]	570.2	10.5
Total ASA and LE DC Plan Assets[3]	$ 5,412.0	100.0 %

[1]Assets include all PERF, TRF Pre-'96, and TRF '96 ASA assets and the LE DC account balances allocated outside of the Consolidated Defined Benefit Assets option.
[2]Consolidated fair values of all Target Date Funds.
[3]Includes Investment Receivables, Foreign Exchange Contracts Receivables, Interest and Dividend Receivables, Investment Payables, Foreign Exchange Contracts Payables, and Obligations Under Reverse Repurchase Agreements.



Investment Results – Annuity Savings Accounts, My Choice and Legislators' Defined Contribution Fund

Historical Annualized Time-Weighted Rate of Return by Investment Option vs. Benchmark Returns For the Year Ended June 30, 2017

Investment Option	1-Year[1,2]	3-Year[1,2]	5-Year[1,2]
Large Cap Equity Index Fund	17.9 %	9.6	14.6 %
S&P 500 Index	*17.9*	*9.6*	*14.6*
Small / Mid Cap Equity Fund	21.6	6.6	13.9
Russell Small Cap Completeness Index	*21.8*	*7.0*	*14.4*
International Equity Fund	22.1	2.5	8.5
MSCI ACWI ex US Index	*20.5*	*0.8*	*7.2*
Fixed Income Fund	0.7	2.5	2.6
Barclays U.S. Aggregate Bond Index	*(0.3)*	*2.5*	*2.2*
Inflation-Linked Fixed Income Fund	(0.5)	0.4	0.3
Barclays U.S. TIPS Index	*(0.6)*	*0.6*	*0.3*
Money Market Fund	0.8	0.4	0.3
Citigroup 3 Month T-Bill Index	*0.5*	*0.2*	*0.2*
Stable Value Fund	1.6	1.5	2.2
Citigroup 3 Month T-Bill Index	*0.5*	*0.2*	*0.2*
Target Date Funds[3]:			
Retirement Fund	2.5	2.0	2.7
Retirement Fund Index	*1.6*	*1.7*	*2.0*
Retirement Fund 2020	4.0	2.5	4.2
2020 Fund Index	*3.2*	*2.1*	*3.6*
Retirement Fund 2025	5.9	3.0	5.5
2025 Fund Index	*5.0*	*2.7*	*5.0*
Retirement Fund 2030	8.6	3.5	7.0
2030 Fund Index	*7.7*	*3.2*	*6.6*
Retirement Fund 2035	12.4	4.2	8.2
2035 Fund Index	*11.5*	*3.7*	*7.7*
Retirement Fund 2040	14.1	4.5	8.5
2040 Fund Index	*13.2*	*3.9*	*8.0*
Retirement Fund 2045	14.3	4.6	8.6
2045 Fund Index	*13.4*	*4.0*	*8.0*
Retirement Fund 2050	14.3	4.6	8.6
2050 Fund Index	*13.4*	*4.0*	*8.0*
Retirement Fund 2055	14.3	4.6	8.6
2055 Fund Index	*13.4*	*4.0*	*8.0*
Retirement Fund 2060	14.3	4.6	8.6
2060 Fund Index	*13.4*	*4.0*	*8.0*

[1]Return net of fees.
[2]Based on performance calculations made by the system's record keeper, Conduent. The 1-year, 3-year, and 5-year performance returns are time-weighted rates of return for the fiscal year ended June 30, 2017.
[3]Target Date Fund benchmarks are comprised of performance data using a passive strategy with the same asset allocation of each Target Date Fund.

Historical Annual Interest Crediting Rates
For the Year Ended June 30

	Annual Interest Crediting Rate[1]			
	'77 Fund	JRS	EG&C	PARF
2017	2.4 %	2.4 %	2.4 %	2.4 %
2016	1.8	1.8	1.8	1.8
2015	1.9	1.9	1.9	1.9
2014	2.7	2.7	2.7	2.7
2013	1.9	1.9	1.9	1.9
2012	5.5	-	0.3	5.5
2011	5.5	-	3.5	5.5
2010	5.5	-	3.5	5.5
2009	5.5	-	3.5	5.5
2008	5.5	-	3.5	5.5

[1]Annual interest crediting rates are used to calculate interest on the sum of contributions to the fund for members who are not eligible for a retirement benefit. Interest rates are approved by the INPRS Board of Trustees on an annual basis.

Top Ten Equity Holdings by Fair Value
As of June 30, 2017[1]

(dollars in thousands)

Company	Shares	Fair Value
Microsoft Corp.	1,089,358	$ 75,089
Apple Inc.	469,000	67,545
Samsung Electronics Co. Ltd	28,073	58,322
Nestle SA	544,951	47,487
Taiwan Semiconductor Manufacturing	6,261,494	42,917
Alphabet Inc. Class C Capital Stock	44,509	40,447
Visa Inc.	427,162	40,059
Alphabet Inc. Class A Common Stock	40,915	38,038
Amazon.com Inc.	36,173	35,015
Johnson & Johnson	248,403	32,861

[1]A complete list of portfolio holdings is available upon request.

Top Ten Fixed Income Holdings by Fair Value
As of June 30, 2017[1]

(dollars in thousands)

Description	Coupon Rate	Maturity Date	Par Value	Fair Value
U.S. Treasury - CPI Inflation Index Bond	2.125 %	2/15/41	$ 173,762	$ 217,094
U.S. Treasury Bond	3.000	5/15/47	171,760	177,262
U.S. Treasury - CPI Inflation Index Bond	1.375	2/15/44	157,209	171,010
U.S. Treasury Bond	3.000	2/15/47	156,835	161,785
U.S. Treasury - CPI Inflation Index Bond	0.750	2/15/42	163,594	155,650
U.S. Treasury - CPI Inflation Index Bond	0.625	2/15/43	162,171	149,182
U.S. Treasury Note	2.375	5/15/27	147,850	148,786
U.S. Treasury - CPI Inflation Index Bond	0.750	2/15/45	155,880	146,188
U.S. Treasury - CPI Inflation Index Bond	2.125	2/15/40	111,765	139,003
U.S. Treasury - CPI Inflation Index Bond	1.000	2/15/46	137,043	136,920

[1]A complete list of portfolio holdings is available upon request.

Top Ten Brokers' Commission Fees
For the Year Ended June 30, 2017

(dollars in thousands)

Broker	Amount Paid in Fees
Morgan Stanley & Co. Inc.	$ 993
Goldman Sachs & Co.	653
Newedge USA LLC	457
Merrill Lynch Pierce Fenner & Smith Inc.	209
Credit Suisse, New York	132
Pershing LLC, Jersey City	131
Jefferies & Co. Inc., New York	111
Sanford C. Bernstein & Co.	87
Merrill Lynch International	80
Instinet Europe Limited, London	78
Top Ten Brokers' Commission Fees	2,931
Other Brokers	1,287
Total Brokers' Commission Fees	$ 4,218

Investment Management Fees
For the Year Ended June 30, 2017

(dollars in thousands)

Asset Class	Investment Management Fees
Consolidated Defined Benefit Assets	
Public Equity	$ 15,739
Private Markets	44,080
Fixed Income – Ex Inflation-Linked	21,444
Fixed Income – Inflation-Linked	3,197
Commodities	7,205
Real Estate	18,087
Absolute Return	62,069
Risk Parity	7,940
Cash + Cash Overlay	280
Total Consolidated Defined Benefit Assets	180,041
Special Death Benefit Fund Assets	9
Annuity Savings Accounts Assets	5,950
Total Investment Management Fees	$ 186,000

Investment Professionals

Consolidated Defined Benefit Assets

Custodian

Bank of New York Mellon

Consultants

Aksia (Absolute Return)
Mercer (Real Estate)
Torrey Cove (Private Markets)
Verus (General: Defined Benefit)

Public Equity

Altrinsic Global Advisors, LLC
Arrowstreet Capital, LP
Artisan Partners Limited Partnership
Baillie Gifford & Company
BlackRock Institutional Trust
Disciplined Growth Investors
Jackson Square Partners
Leading Edge Investment Advisors
RhumbLine Advisers
Schroders
Times Square Capital Management, LLC

Private Markets

A.M. Pappas & Associates
ABRY Partners
Accel Partners
Accent Equity Partners AB
Actis Capital
Advanced Technology Ventures
Advent International
Aisling Capital
AlpInvest Partners
American Securities
AnaCap Financial Partners
Apax Partners
Apollo Management
ARCH Venture Partners
Ares Management
Arle Capital Partners
Austin Ventures
Avenue Capital Group
Bain Capital Partners
Baring Private Equity
Bay Partners
Bertram Capital
Black Diamond Capital Management
Bregal Sagemount
Brentwood Associates
Butterfly Equity Partners, LLC
Caltius Capital Management
Cardinal Partners
Catterton Partners
Centerfield Capital Partners
Century Park Capital Partners
Cerberus Capital Management
Charterhouse Capital Partners
CID Capital
Cinven
Clarity China
Close Brothers Private Equity
Code, Hennessy & Simmons
Coller Capital
Columbia Capital
Court Square Capital Partners
Crescent Capital Partners
Crestview Partners
CVC Capital Partners
Doll Capital Management
Elevation Partners
EnCap Investments
Energy Capital Partners
Enhanced Capital Partners
Escalate Capital Partners
Falcon Investment Advisors
First Reserve Corporation
Forbion Capital Partners
Fortress
Gamut Capital Management
Gilde Buyout Partners
Globespan Capital Partners
GSO Capital Partners
GTCR Golder Rauner
H2 Equity Partners
Hammond Kennedy Whitney & Co
Hellman & Friedman
Herkules Capital
High Road Capital Partners
Horsley Bridge

Investment Professionals, continued

Consolidated Defined Benefit Assets

Private Markets, cont.

Insight Venture Partners
Institutional Venture Partners
JFM Management
Khosla Ventures
KPS Special Situations Funds
Landmark Partners
Leonard Green & Partners
Lexington Partners
Lightyear Capital
Lindsay Goldberg
Lion Capital
MBK Partners
Merit Capital Partners
Mill Road Capital
Neuberger Berman
New Enterprise Associates
New Mountain Capital
NGP Energy Capital Management
Oak Hill Advisors
Oak Hill Capital Management
Oak Investment Partners
Oaktree Capital Management
Opus Capital Venture Partners
Panda Power Funds
Parthenon Capital Partners
Peninsula Capital Partners
Permira Advisers
Platinum Equity
Rho Capital Partners
RJD Partners
SAIF Management II
Sankaty Advisors
Scale Venture Partners
Silver Cup
Silver Lake Partners
StepStone Group
Sumeru Equity Partners
Sun Capital Partners
TA Associates
Technology Crossover Ventures
Technology Partners
Terra Firma Capital Partners
The Blackstone Group
The Jordan Company (TJC)
TowerBrook Financial
TPG Capital
Trilantic Capital Partners
Trinity Ventures
Triton Partners
True Ventures
TSG Consumer Partners
Veritas Capital Management
Veronis, Suhler & Associates
Vestar Capital Partners
Vintage Venture Partners
Vision Capital
Vista Equity Partners
Walden Group of Venture Capital Funds
Warburg Pincus
Warwick Energy Investment Group
Wayzata Investment Partners
Weston Presidio Capital
White Deer Management
Windjammer
WL Ross & Co.
Xenon Private Equity
York Capital Management

Fixed Income - Ex Inflation Linked

Goldman Sachs Asset Management, LP
Income Research + Management
Oak Hill Advisors, LP
Oak Tree Capital Management, LP
Pacific Investment Management Company (PIMCO)
Reams Asset Management
State Street Global Advisors
Stone Harbor
TCW
Wellington

Fixed Income - Inflation Linked

Bridgewater Associates, Inc.
Northern Trust Global Investments

Commodities

CoreCommodity Management
Goldman Sachs Asset Management, LP
Gresham Investment Management, LLC

Investment Professionals, continued

Consolidated Defined Benefit Assets

Real Estate

Abacus Capital Group, LLC
BlackRock Financial Management
Blackstone Property Partners
Blackstone Real Estate Partners
Colony Capital, LLC
Exeter Property Group, LLC
Greenfield Partners, LLC
H/2 Capital Partners
Harrison Street Real Estate Capital, LLC
House Investments
JDM Partners
LaSalle Investment Management
Lone Star Funds
Mesa West Capital
Prima Capital Advisors, LLC
Related Fund Management LLC
Rockpoint Group LLC
Stockbridge Capital Group
TA Realty Associates
Walton Street Capital, LLC
WestRiver Capital, LLC

Absolute Return

AQR Capital Management
Aeolus Capital Management
Black River Asset Management
Blackstone Alternative Asset Management (BAAM)
Blackstone Tactical Opportunities Advisors
Brevan Howard Asset Management
Bridgewater Associates, Inc.
Davidson Kempner Capital Management
D.E. Shaw Multi-Asset Manager
Emerging Sovereign Group
Garda Capital Partners
Highfields Capital Management
Ionic Capital Management
Kepos Capital LP
King Street Capital Management
Man Investments (USA) Corporation
Nephila Capital
Oceanwood Capital Management
Oxford Asset Management
Pacific Alternative Asset Management Company (PAAMCO)
Perella Weinberg Partners
Pharo Global Advisors
Rokos Global Macro Limited
Tilden Park Associates
Two Sigma Advisers

Risk Parity

AQR Capital Management
Bridgewater Associates, Inc
First Quadrant

Cash Overlay

Russell Investments

Investment Professionals, continued

Annuity Savings Account & Legislators' Defined Contribution Fund Assets

Public Employees' Retirement Fund (PERF)

Teachers' Pre-1996 Account (TRF Pre-'96)

Teachers' 1996 Account (TRF '96)

Legislators' Defined Contribution Fund (LE DC)

Consultant
Cap Cities (General: Defined Contribution)

Large Cap Equity Index Fund
BlackRock Institutional Trust

Small/Mid Cap Equity Fund
Rhumbline Advisers
Times Square Capital Management, LLC

International Equity Fund
Altrinsic Global Advisors, LLC
Arrowstreet Capital, LP
Baillie Gifford & Company
BlackRock Institutional Trust

Fixed Income Fund
Loomis Sayles & Company
Northern Trust Global Investments
Pacific Investment Management Company (PIMCO)

Inflation-Linked Fixed Income Fund
BlackRock Institutional Trust

Money Market Fund
Bank of New York Mellon

Stable Value Fund
Galliard Capital Management (Fund Advisor)
Income Research + Management (Fund Sub-Advisor)
Logan Circle (Fund Sub-Advisor)
Loomis Sayles (Fund Sub-Advisor)
Reams Asset Management (Fund Sub-Advisor)
TCW (Fund Sub-Advisor)

Local Public Safety Pension Relief Fund
Bank of New York Mellon

Special Death Funds
BlackRock Financial Management