

**PENSION RESERVES INVESTMENT MANAGEMENT (“PRIM”) BOARD
PENSION RESERVES INVESTMENT TRUST (“PRIT”) FUND COMPOSITE
ANNUAL DISCLOSURE PRESENTATION**

Period	Year End	Total Firm Assets (Billions)	Composite Assets (Billions)	Annual Performance Net	Total Core Benchmark Returns	Composite 3 Yr Std Dev	Total Core Benchmark 3 Yr Std Dev
2017 July-2018 June	FY18	\$72	\$72	9.5%	8.1%	5.5%	5.4%
2016 July-2017 June	FY17	\$67	\$67	12.8%	12.0%	5.3%	5.5%
2015 July-2016 June	FY16	\$61	\$61	1.9%	1.5%	5.9%	6.0%
2014 July-2015 June	FY15	\$61	\$61	3.5%	2.8%	4.6%	4.6%
2013 July-2014 June	FY14	\$61	\$61	17.1%	14.9%	7.7%	7.9%
2012 July-2013 June	FY13	\$53	\$53	12.3%	10.9%	8.6%	8.8%
2011 July-2012 June	FY12	\$49	\$49	-0.5%	-0.6%	9.9%	10.0%
2010 July-2011 June	FY11	\$50	\$50	21.9%	19.9%	14.1%	14.3%
2009 July-2010 June	FY10	\$41	\$41	12.4%	9.0%	N/A ¹	N/A ¹
2008 July-2009 June	FY09	\$38	\$38	-24.3%	-17.4%	N/A ¹	N/A ¹

N/A¹- The three-year annualized standard deviation measures the variability of the composite and the benchmark returns over the preceding 36-month period. The three-year annualized standard deviation is not presented for FY09 and FY10 due to less than 36 months of composite and benchmark data.

PRIM claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. PRIM has been independently verified for the periods July 1, 2008 through June 30, 2018. The verification reports are available upon request.

Verification assesses whether (1) the firm has complied with all the composite construction requirements of the GIPS standards on a firm-wide basis and (2) the firm’s policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. Verification does not ensure the accuracy of any specific composite presentation.

PRIT Composite: The PRIM Board is charged with the general oversight of the PRIT Fund. The PRIM Board seeks to maximize the return on investments within acceptable levels of risk and cost for an approximately 60% funded public pension fund, by broadly diversifying its investment portfolio, capitalizing on economies of scale to achieve cost-effective operations, and gaining access to high quality, innovative investment management firms, all under the management of a professional staff and members of the PRIM Board. The PRIM Board’s overall investment performance goal is to achieve an annual rate of return that exceeds the targeted actuarial rate of return used in determining the Commonwealth of Massachusetts’ pension obligations. The composite is compared against the Total Core Benchmark. The benchmark is calculated by applying the investment performance of the asset class benchmarks to the Fund’s asset allocation targets. The benchmark components, weightings as of June 30, 2018, and descriptions can be found on the following pages. The PRIT Composite was created September 2018.

For purposes of complying with the GIPS standards, the “Firm” is defined as Pension Reserves Investment Management Board (“PRIM”). PRIM manages the Pension Reserves Investment Trust Fund (“PRIT”), created by legislation (Chapter 661 of the Acts of 1983) to accumulate assets through investment earnings and other revenue sources in order to assist the Commonwealth in reducing its unfunded pension liability. PRIM assists local participating retirement systems to meet their pension obligations. Because the PRIT Composite represents 100% of the assets managed by PRIM, this presentation represents PRIM’s list of composite descriptions.

Composite and benchmark performance are presented net of foreign withholding taxes. Past performance is not indicative of future results.

The U.S. Dollar is the currency used to express performance. Total fund net-of-fee returns are net of actual investment management costs (internal and external). Investment management costs include internal investment department staffing costs, actual external manager fees, data valuation fees, investment research services, custodian fees, performance measurement services, consultant advisory fees, administrative fees, and the allocation of technology service and other overhead costs and expenses, such as human resources. Subadvisors have been used for the entire period shown. The PRIT Composite includes all individual portfolios that are combined into one aggregate portfolio. The performance of the combined portfolio reflects the overall mandate of the plan. Because the PRIT Composite is one aggregate portfolio for all periods, no measure of internal dispersion of annual portfolio returns is presented. Policies for valuing portfolios, calculating performance, and preparing compliant presentations are available upon request.

Benchmark Components and Weightings:

40% Global Equities:		11% Private Equity:	
<i>44% Total Domestic Equity:</i>		7YR Annualized Russell 3000 + 3%	84.0%
S&P 500 [†]	78.9%	7YR Annualized MSCI EUROPE IMI + 3%	16.0%
Total Small/SMID Cap:	21.1%	10% Real Estate:	
· Russell 2000 Growth Index* [‡]	10.1%	NCREIF Property 1Q in Arrears [†]	80.0%
· Russell 2000 Value Index* [‡]	21.2%	FTSE EPRA NAREIT Developed Index Net	20.0%
· Russell 2500 Growth Index* [‡]	6.0%	4% Timberland:	
· Russell 2500 Index* [‡]	62.7%	NCREIF Timberland Index 1Q in Arrears [†]	100.0%
<i>40% Total International Equity:</i>		13% Portfolio Completion Strategies:	
MSCI WORLD EX-US IMI Net DIVS [‡]	41.0%	<i>62.46% Total Hedge Fund*:</i>	
MSCI EAFE Net DIVS [‡]	50.0%	HFRI Fund-of-Funds Composite Index*	16.5%
EAFE SMALL CAP Net DIVS [‡]	9.0%	HFRI Credit Index*	2.7%
<i>16% Total Emerging Markets Equity:</i>		HFRI EH: Equity Market Neutral Index*	3.2%
MSCI EM IMI Net DIVS [‡]	25.0%	HFRI EH: Multi-Strategy Index*	5.6%
MSCI EM Net DIVS	64.0%	HFRI Equity Hedge (Total) Index (Asset Weighted)*	2.7%
MSCI EM Small Cap Net DIVS [‡]	7.0%	HFRI ED: Distressed/Restructuring Index*	18.2%
MSCI FM 15% Country Capped Index Net DIVS [‡]	4.0%	HFRI Event-Driven (Total) Index (Asset Weighted)*	14.7%
12% Fixed Income:		HFRI Macro: Systematic Diversified Index*	7.9%
Bloomberg Barclays US Aggregate Bond Index	41.6%	HFRI Macro (Total) Index (Asset Weighted)*	9.6%
Bloomberg Barclays Global Inflation-Linked: U.S. TIPS Index	25.0%	HFRI RV: Fixed Income-Asset Backed Index*	11.9%
Bloomberg Barclays World Govt Inflation-Linked All Maturities	16.0%	HFRI Relative Value (Total) Index (Asset Weighted)*	0.0%
Bloomberg Barclays US Strips 20+ Years Index	16.7%	Russell 3000 Index*0.25*	7.0%
10% Value-Added Fixed Income:		<i>6.38% Total Risk Premia*:</i>	
ML Master II High Yield Constrained Index*	18.9%	LIBOR 1M + 3%	6.4%
S&P LSTA Leveraged Loan Index*	32.7%	<i>6.61% Real Assets*:</i>	
JP Morgan Emerging Markets Bond Index Global*	14.4%	NCREIF Farmland Index 1Q in Arrears * [†]	54.1%
JP Morgan GBI-Emerging Markets Global Diversified*	11.4%	Eurekahedge ILS Advisers Insurance Linked Securities*	41.0%
3Yr Annualized Altman NYU Solomon Center Combined		50% LIBOR 1M + 3% / 50% ML Master II HY Constrained Ind 5.0%	
Defaulted Public Bond & Bank Loan*	19.7%	<i>24.55% Total Equity Hedge*:</i>	
OCO BM*:	2.8%	S&P 500	80.0%
· NCREIF Apartment Index 1Q in Arrears* [†]	5.7%	LIBOR	20.0%
· S&P LSTA US Leveraged Loan 100 Index*	94.3%		

*The index is dynamically weighted monthly. The weightings are determined by BNY Mellon on a monthly basis based upon the beginning adjusted market value asset weights within each composite benchmark.

[†] The index experiences a quarter lag.

[‡] The benchmark has been customized to exclude Tobacco, Iran, and Sudan.

All other benchmarks are rebalanced to their static weight on a monthly basis.

Historical Benchmark Changes:

Start Date	End Date	Benchmark Name	Start Date	End Date	Benchmark Name
Total Core Benchmark			Private Equity		
July 2008	July 2009	Russell 3000 Index	July 2008		7YR Annualized Russell 3000 + 3%
July 2008	July 2009	MSCI EAFE Net Dividend Index	July 2017		7YR Annualized MSCI EUROPE IMI + 3%
July 2008	July 2009	MSCI Emerging Markets Net Dividend Index	Real Estate		
Global Equities			July 2008	June 2009	FTSE EPRA Nareit Developed USD Index
August 2009	April 2010	MSCI All Country World Net Index	July 2008	April 2012	FTSE Nareit All Equity REITs Perf Only
May 2010	December 2010	MSCI All Country World Investable Market Net Index	July 2008	April 2012	FTSE EPRA Nareit Developed ex US Index
January 2011	October 2011	MSCI All Country World IMI Net Dividends [‡]	July 2008		NCREIF Property 1Q Lag
November 2011	June 2014	S&P 500 - Total Return Index	May 2012		FTSE EPRA NAREIT Developed Index Net
November 2011	August 2014	MSCI World ex US IMI Net Dividends [‡]	Timberland		
November 2011	August 2014	MSCI Emerging Markets IMI Net Dividends [‡]	July 2008	December 2015	Lipper Global Natural Resource Index
November 2011	June 2016	Russell 2500 Index	September 2008	December 2015	PE Natural Resource
Total Domestic Equity			July 2008		NCREIF Timberland Index 1Q in Arrears
July 2014	June 2016	Russell 2000 Growth Index	Portfolio Completion Strategies		
July 2014	June 2016	Russell 2000 Value Index	July 2008	December 2009	ICE BofAML US 3 Month Treasury Bill Index GOO1 + 4%
July 2014	June 2016	Russell 2500 Growth Index	January 2010	February 2011	HFRI Fund of Funds Composite Index
July 2014	June 2016	S&P 500 - Total Return Index	March 2011	December 2011	HFRI Fund of Funds Composite Index (Flash Update Only)
July 2016		S&P 500 [‡]	Total Hedge Fund		
Total Small/SMID Cap			January 2012		HFRI Fund of Funds Composite Index
July 2016		FTSE Russell Custom PRIM 2000 Growth Index	July 2017		HFRI Relative Value (Total) Index (Asset Weighted)
July 2016		Russell 2000 Value Index	July 2017		HFRI ED: Distressed/Restructuring Index
July 2016		FTSE Russell Custom PRIM 2500 Growth Index	July 2017		HFRI EH: Equity Market Neutral Index
July 2016		FTSE Russell Custom PRIM 2500 Index	July 2017		HFRI Macro: Systematic Diversified Index
Total International Equity			July 2017		HFRI RV: Fixed Income-Asset Backed Index
September 2014		MSCI WORLD EX-US IMI Net DIVS [‡]	July 2017		HFRI Credit Index
September 2014		MSCI EAFE Net DIVS [‡]	July 2017		HFRI EH: Multi-Strategy Index
September 2014		EAFE SMALL CAP Net DIVS [‡]	July 2017		HFRI Macro (Total) Index (Asset Weighted)
Total Emerging Markets Equity			July 2017		HFRI Equity Hedge (Total) Index (Asset Weighted)
September 2014		MSCI EM IMI Net DIVS [‡]	July 2017		HFRI Event-Driven (Total) Index (Asset Weighted)
September 2014		MSCI EM Net DIVS	July 2017		Russell 3000 Index*0.25
September 2014		MSCI EM Small Cap Net DIVS [‡]	Total Risk Premia		
September 2014		MSCI FM 15% Country Capped Index Net DIVS [‡]	January 2015		LIBOR 1M + 3%
Fixed Income			Real Assets		
July 2008	July 2009	Bloomberg Barclays World Govt Inflation-Linked All Maturities	April 2017		NCREIF Farmland Index 1Q in Arrears
July 2008	July 2009	Bloomberg Barclays Global Inflation-Linked: U.S. TIPS Index	April 2016		Eurekahedge ILS Advisers Insurance Linked Securities
July 2008		Bloomberg Barclays US Aggregate Bond Index	June 2016		50% LIBOR 1M + 3% / 50% ML Master II HY Constrained Index
August 2010		Bloomberg Barclays World Govt Inflation-Linked All Maturities	Total Equity Hedge		
August 2010		Bloomberg Barclays Global Inflation-Linked: U.S. TIPS Index	July 2017		S&P 500
March 2014		Bloomberg Barclays US Strips 20+ Years Index	July 2017		LIBOR
Value-Added Fixed Income			Portable Alpha		
January 2010	June 2017	Altman Kuehne Combined Bank Loan and Public Bond Index	July 2008	July 2009	Russell 3000 Index
July 2008		ML Master II High Yield Constrained Index	August 2009	December 2009	ICE BofAML 3 Month LIBOR Index (LUS3)/USD + 3%
July 2008		JP Morgan Emerging Markets Bond Index Global	January 2010	February 2011	HFRI Fund of Funds Composite Index
July 2008		S&P LSTA Leveraged Loan Index	March 2011	April 2011	HFRI Fund of Funds Composite Index (Flash Update Only)
May 2012		JP Morgan GBI-Emerging Markets Global Diversified			
		3Yr Annualized Altman NYU Solomon Center Combined Defaulted Public Bond & Bank Loan			
July 2017		S&P LSTA US Leveraged Loan 100 Index			
December 2017		NCREIF Apartment Index 1Q in Arrears			
March 2018					

‡ The benchmark has been customized to exclude Tobacco, Iran, and Sudan.

Benchmark Descriptions:

Global Equities: *All benchmarks listed in this section are customized to exclude investments in Tobacco, Iran, and Sudan.*

- **S&P 500:** The S&P 500 is an American stock market index based on the market capitalizations of 500 large companies having common stock listed on the NYSE or NASDAQ.
- **FTSE Russell 2000 Growth Index:** The Russell 2000 Growth Index is based on roughly 2,000 small-cap companies located in the United States that exhibit growth properties.
- **FTSE Russell 2000 Value Index:** The Russell 2000 Value Index is based on roughly 2,000 small-cap companies located in the United States that exhibit value properties.
- **FTSE Russell 2500 Growth Index:** The Russell 2500 Growth Index is designed to measure the performance of those Russell 2500 companies with higher price-to-book ratios and higher forecasted growth values.
- **FTSE Russell 2500 Index:** The Russell 2500 Index is a broad index, featuring 2,500 stocks that cover the small- and mid-cap market capitalizations. The Russell 2500 is a market cap-weighted index that includes the smallest 2,500 companies covered in the Russell 3000 universe of United States-based listed equities.
- **MSCI World EX-US IMI Net Dividends:** The MSCI World ex USA Investable Market Index (IMI) captures large, mid and small cap representation across 22 of 23 Developed Markets (DM) countries-excluding the United States.
- **MSCI EAFE Net Dividends:** The MSCI EAFE Index is an equity index which captures large and mid-cap representation across 21 Developed Markets countries around the world, excluding the US and Canada.
- **MSCI EAFE Small-Cap Net Dividends:** The MSCI EAFE Small-Cap Index is an equity index which captures small-cap representation across Developed Markets countries around the world, excluding the US and Canada.
- **MSCI Emerging Markets IMI Net Dividends:** The MSCI Emerging Markets Investable Market Index (IMI) captures large, mid and small cap representation across 24 Emerging Markets (EM) countries.
- **MSCI Emerging Markets Net Dividends:** The MSCI Emerging Markets Index captures large and mid-cap representation across 24 Emerging Markets (EM) countries.
- **MSCI Emerging Markets Small Cap Net Dividends:** The MSCI Emerging Markets Small Cap Index includes small-cap representation across 24 Emerging Markets countries.
- **MSCI FM 15% Country Capped Index Net Dividends:** The MSCI FM 15% Country Capped Index groups the constituents of the Frontier Markets Index (its parent index) by country and applies a maximum 15% weight for any one country in the parent index.

Fixed Income:

- **Barclays Capital US Aggregate Bond Index:** The Barclays Capital US Aggregate Bond Index is a broad bond index covering most US traded bonds and some foreign bonds traded in the US. The index consists of approximately 17,000 bonds.
- **Bloomberg Barclays Global Inflation-Linked: U.S. TIPS Index:** This index measures the performance of the US Treasury Inflation Protected Securities (TIPS) market. Federal Reserve holdings of US TIPS are not index eligible and are excluded from the face amount outstanding of each bond in the index.
- **Bloomberg Barclays World Govt Inflation-Linked All Maturities:** This index measures the performance of investment grade, government inflation-linked debt from 12 different developed market countries.
- **Barclays Capital US Treasury STRIPS 20+ Yr Index:** This index measures the investment return of Treasury STRIPS with maturities of 20+ years.

Value-Added Fixed Income:

- **Merrill Lynch Master II High Yield Constrained Index:** The index is a market value-weighted index of all domestic and yankee high-yield bonds, including deferred interest bonds and payment-in-kind securities.
- **S&P LSTA Leveraged Loan Index:** The index tracks the current outstanding balance and spread over LIBOR for fully funded term loans. The facilities included represent a broad cross section of leveraged loans syndicated in the U.S., including dollar-denominated loans to overseas issuers.
- **JP Morgan EMBI Global Index:** The Index tracks total returns for traded external debt instruments in the emerging markets. The index includes U.S.dollar-denominated Brady Bonds, loans, and Eurobonds with an outstanding face value of at least \$500 million.
- **JP Morgan GBI-EM Global Diversified Index:** The Index tracks total returns for traded external debt instruments in the emerging markets. In addition, it limits the weights of those index countries with larger debt stocks by only including a specified portion of these countries eligible current face amounts of debt outstanding.
- **3Yr Annualized Altman NYU Solomon Center Combined Defaulted Public Bond & Bank Loan Index:** This index includes defaulted bond and bank loan prices on a monthly basis from the default month until last price available (usually emergence from Chapter 11 or liquidation) from 1987 to present. Defaulted bank loan prices on a monthly basis available from 1996 to the present on over 750 bank loan facilities.
- **NCREIF Apartment Index:** This is a sub-index of the NCREIF Property Index, focused specifically on a large pool of apartments acquired in the private market for investment purposes only.
- **S&P LSTA Leveraged Loan 100 Index:** The S&P/LSTA U.S. Leveraged Loan 100 Index is designed to reflect the performance of the largest facilities in the leveraged loan market.

Private Equity:

- **Russell 3000:** The Russell 3000 Index is a capitalization-weighted stock market index, maintained by FTSE Russell, that seeks to be a benchmark of the entire U.S stock market.
- **MSCI Europe IMI:** The MSCI Europe Investable Market Index (IMI) captures large, mid and small cap representation across 15 Developed Markets countries in Europe.

Real Estate:

- **NCREIF Property Index:** The NCREIF Property Index (NPI) is a quarterly, unleveraged composite total return for private commercial real estate properties held for investment purposes only. All properties in the NPI have been acquired, at least in part, on behalf of tax-exempt institutional investors and held in a fiduciary environment.
- **FTSE EPRA NAREIT Developed Net Total Return Index:** The FTSE EPRA Nareit Global Real Estate Index Series is designed to represent general trends in eligible real estate equities worldwide. Relevant activities are defined as the ownership, disposal and development of income-producing real estate. The index series now covers Global, Developed and Emerging indices, as well the UK's AIM market.

Timberland:

- **NCREIF Timber Index:** The NCREIF Timberland Index is a quarterly time series composite return measure of investment performance of a large pool of individual timber properties acquired in the private market for investment purposes only. All properties in the Timberland Index have been acquired, at least in part, on behalf of tax-exempt institutional investors - the great majority being pension funds. As such, all properties are held in a fiduciary environment.

Portfolio Completion Strategies:

- **HFRI Indices** – Broadly constructed indices designed to capture the breadth of hedge fund performance trends across all strategies and regions. Strategy-based indices are used as a comparison to investments made in similarly managed hedge funds.
- **LIBOR:** LIBOR is a benchmark rate that represents the interest rate at which banks offer to lend funds to one another in the international interbank market for short-term loans. LIBOR is an average value of the interest-rate which is calculated from estimates submitted by the leading global banks on a daily basis.
- **NCREIF Farmland Index:** The NCREIF Farmland Index is a quarterly time series composite return measure of investment performance of a large pool of individual farmland properties acquired in the private market for investment purposes only. All properties in the Farmland Index have been acquired, at least in part, on behalf of tax-exempt institutional investors - the great majority being pension funds. As such, all properties are held in a fiduciary environment.
- **Eurekahedge ILS Advisers Insurance Linked Securities:** The Eurekahedge ILS Advisers Index tracks the performance of participating Insurance Linked Investment funds. It is the first benchmark that allows a comparison between different insurance-linked securities fund managers in the insurance-linked securities, reinsurance and catastrophe bond investment space.