



Quarterly Investment Performance Analysis

Wyoming State Treasurer's Office

Period Ended: September 30, 2019





Memorandum

To	Wyoming State Loan and Investment Board
From	RVK, Inc.
Subject	Investment Performance Analysis Commentary
Date	September 30, 2019

Outlined below please find a summary of significant observations regarding performance of the State's Funds for the period ended September 30, 2019. We hope this summary will facilitate your review of our Investment Performance Analysis Report.

The Total Fund returned 1.0% net of fees during the third quarter as fixed income, broad US equity, and real estate assets produced positive returns. Long-term performance for the Total Fund remains strong, with the State earning returns of 4.5% and 5.3% per annum over the trailing seven- and ten-year periods.

Absolute results were positive for all of the State's investment pools, with each pool outperforming, or keeping pace with, their respective benchmarks during the quarter. The State's permanent funds with larger strategic allocations to long duration fixed income investments generated higher returns on an absolute basis, but similar returns on a relative basis, compared to the State's non-permanent funds.

The Bloomberg US Aggregate Bond Index increased by 2.3%, aided by US Treasury rates declining across all maturities in the third quarter. Diversification away from core US bonds had mixed results as long duration outperformed the broad market, while EMD, intermediate government and low duration underperformed. The State's core fixed income managers slightly outperformed the broad market index, collectively returning 2.4%. Low duration and emerging markets debt fixed income modestly trailed their respective benchmarks while long duration modestly outperformed its benchmark.

US equity markets delivered mixed returns across market capitalizations and styles during the third quarter. Large-cap US equity indices finished the quarter in positive territory, with the Russell 3000 Index returning 1.2% for the quarter. The State's All Cap US equity composite had positive returns during the third quarter, modestly outperforming the index. The small cap composite had a negative return, but kept pace with the index.

Developed international markets outperformed emerging markets during the quarter, with the MSCI EAFE Index returning -1.1% and the MSCI Emerging Markets Index returning -4.2%. The State's international equity composite

PORTLAND OFFICE
1211 SW 5th Avenue
Suite 900
Portland, Oregon 97204
MAIN 503.221.4200

CHICAGO OFFICE
30 N LaSalle Street
Suite 3900
Chicago, Illinois 60602
MAIN 312.445.3100

NEW YORK OFFICE
1 Penn Plaza
Suite 2128
New York, New York 10119
MAIN 646.805.7075



returned -1.6% during the quarter, outperforming the MSCI ACW Ex US Index by 0.2%. Passively managed strategies within the State's international equity portfolio kept pace with their respective benchmarks, while Arrowstreet outperformed its respective benchmark by 0.3%.

Mixed assets, including preferred stock and MLPs, generated mixed absolute returns during the quarter. Cohen & Steers returned 3.7% in the quarter and kept pace with its benchmark. Harvest returned -5.2% as MLPs declined in the third quarter.

Core real estate generated a positive return during the quarter. The capital appreciation component of returns increased from the prior quarter, but the income component remains in line with historical levels. The State's core real estate composite earned 1.1% in the third quarter, matching the NCREIF ODCE Index. Clarion earned a positive return of 1.5%, while UBS returned 0.7%.

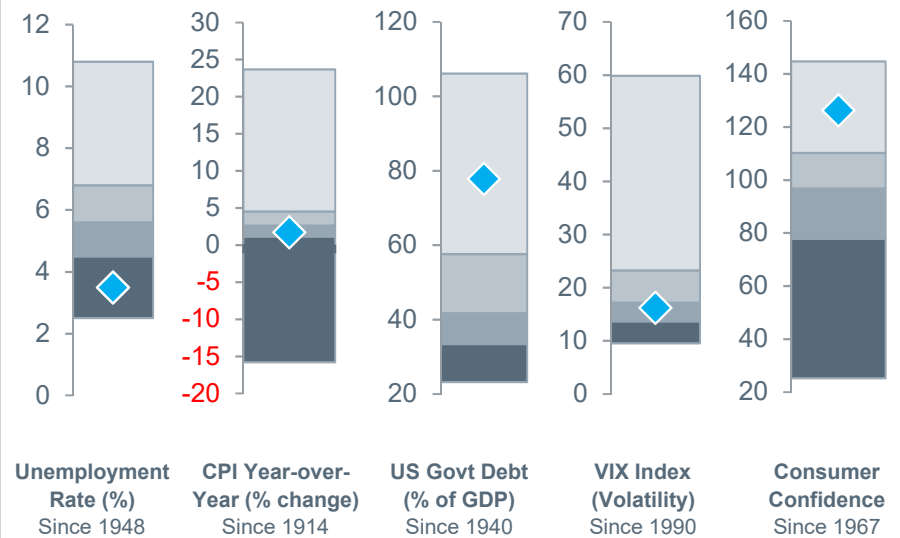
Diversified hedge funds returned 0.3% during the quarter, outperforming the HFRI FOF Composite Index by 1.2%. Grosvenor Diversified Hedge Funds and Internal Diversified Hedge Funds returned 0.5% and 0.3%, respectively. The PAAMCO - Jackalope Fund also trailed the index.

Third Quarter Economic Environment

Key Economic Indicators

Financial markets experienced bouts of volatility during Q3 as dominant market themes from the past few quarters persisted. Market participants noted that investor sentiment continued to be significantly influenced by signs of global economic weakness, geopolitical concerns largely stemming from ongoing tariffs and trade wars, and expectations for central bank policy actions. Specifically, trade tensions were cited by the International Monetary Fund as a key reason for recently lowering its estimate for global growth in 2019 from 3.2% down to 3.0%. The US equity market ended the quarter higher, while economic headwinds and conflict escalations outside the US led international equity markets lower. Yields on fixed income assets declined as growth and inflation expectations weakened. The 10-year Treasury yield reached near record lows, and the Treasury yield curve experienced continued inversion between multiple maturity points. Global central bank policy also captured investor attention during the period. The Federal Reserve took steps to mitigate developing concerns of weakening inflation and growth expectations, primarily by cutting policy rates by 0.25% at the September FOMC meeting.

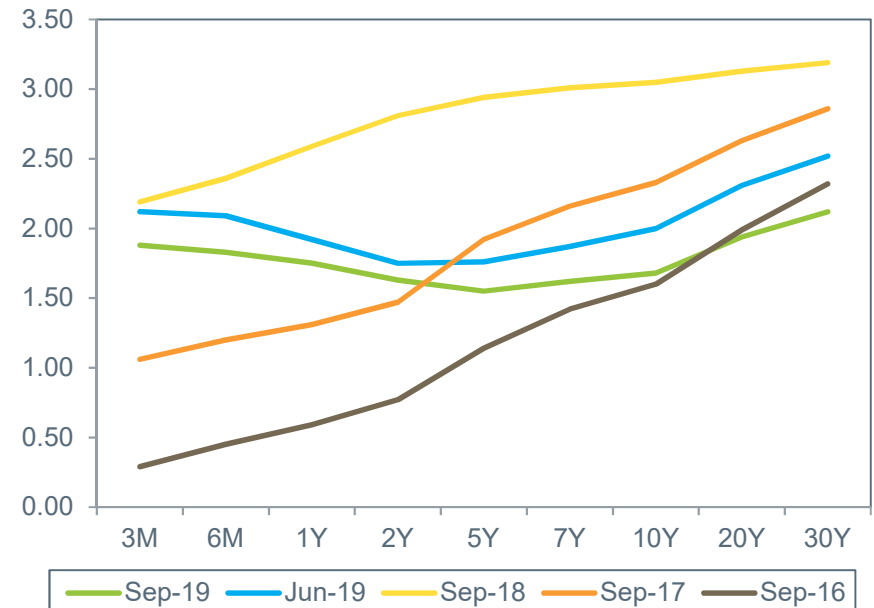
Key Economic Indicators



Economic Indicators	Sep-19	Jun-19	Sep-18	Sep-16	20 Yr
Federal Funds Rate (%)	1.90 ▼	2.40	2.18	0.29	1.84
Breakeven Infl. - 5 Yr (%)	1.35 ▼	1.54	2.03	1.49	1.85
Breakeven Infl. - 10 Yr (%)	1.52 ▼	1.70	2.14	1.61	2.03
CPI YoY (Headline) (%)	1.7 ▲	1.6	2.3	1.5	2.2
Unemployment Rate (%)	3.5 ▼	3.7	3.7	5.0	5.9
Real GDP YoY (%)	2.0 ▼	2.3	3.1	1.6	2.2
PMI - Manufacturing	47.8 ▼	51.7	59.5	51.3	52.8
USD Total Wtd Idx	93.25 ▲	90.86	90.11	89.93	86.12
WTI Crude Oil per Barrel (\$)	54.1 ▼	58.5	73.3	48.2	61.5
Gold Spot per Oz (\$)	1,472 ▲	1,410	1,191	1,316	920

Market Performance (%)	QTD	CYTD	1 Yr	5 Yr	10 Yr
S&P 500 (Cap Wtd)	1.70	20.55	4.25	10.84	13.24
Russell 2000	-2.40	14.18	-8.89	8.19	11.19
MSCI EAFE (Net)	-1.07	12.80	-1.34	3.27	4.90
MSCI EAFE SC (Net)	-0.44	12.05	-5.93	6.02	7.45
MSCI Emg Mkts (Net)	-4.25	5.90	-2.02	2.33	3.37
Bloomberg US Agg Bond	2.27	8.52	10.30	3.38	3.75
ICE BofAML 3 Mo US T-Bill	0.56	1.81	2.38	0.98	0.54
NCREIF ODCE (Gross)	1.31	3.77	5.59	9.34	10.86
FTSE NAREIT Eq REIT (TR)	7.80	26.96	18.42	10.26	13.03
HFRI FOF Comp	-0.95	5.15	-0.05	1.94	2.67
Bloomberg Cmtty (TR)	-1.84	3.13	-6.57	-7.18	-4.32

Treasury Yield Curve (%)



Third Quarter Review

Broad Market

US markets saw varied results during Q3 amid ongoing economic growth concerns, uncertainty surrounding US-China trade negotiations, and political risks spurred by the recently announced impeachment proceedings. The month of September was positive for most indexes, as key economic fundamentals continued to be reported at better than expected levels.

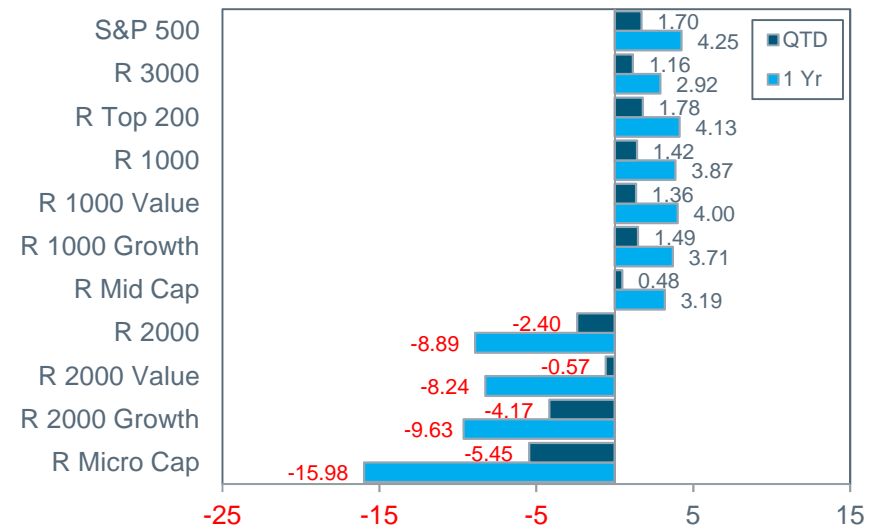
Market Cap

Large-cap stocks were the only size segment to experience positive returns across all styles, with the S&P 500 Index returning 1.7%. Conversely, small-cap markets saw negative returns across all styles, with the Russell 2000 Index returning -2.4%.

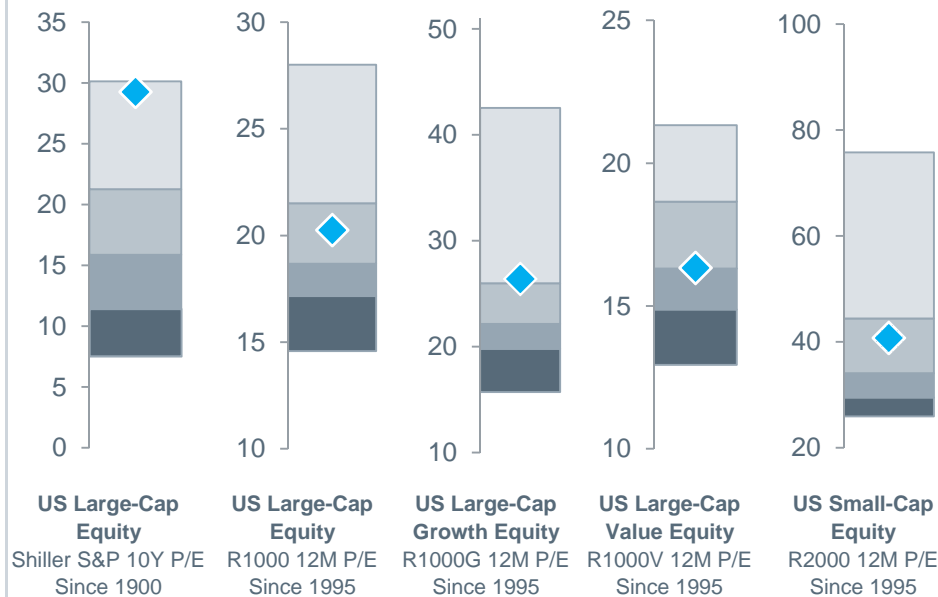
Style and Sector

Despite positive performance across large-cap indexes, active management generally struggled in this segment during the quarter. In addition, core and value-tilted managers performed relatively better than growth managers.

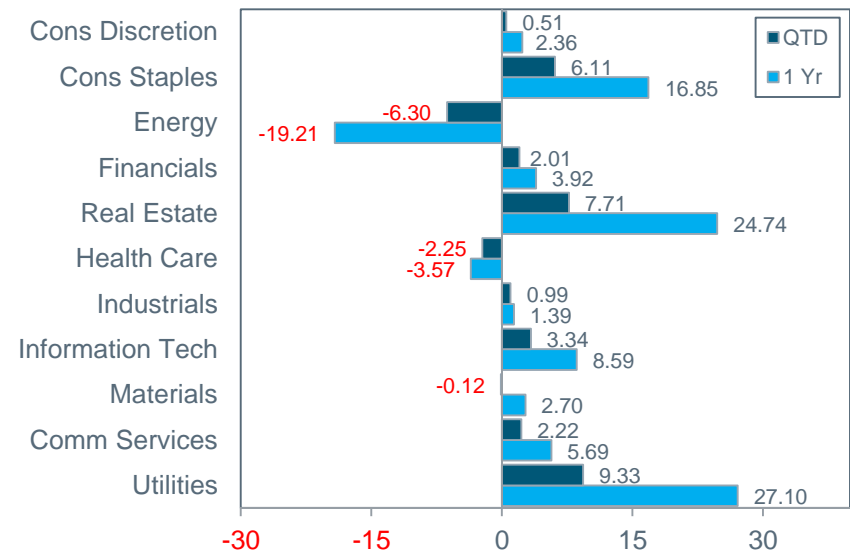
Style and Capitalization Market Performance (%)



Valuations



S&P 500 Index Sector Performance (%)



Third Quarter Review

Developed Markets

Developed international equity markets finished Q3 in negative territory, in contrast to the US market. Japan provided the highest positive returns, as second quarter growth figures announced in August revealed that it had grown at an annualized rate of 1.8%, which easily beat estimates. On the other hand, weakness in manufacturing drove the Purchasing Managers Index in Europe to its lowest level since 2013.

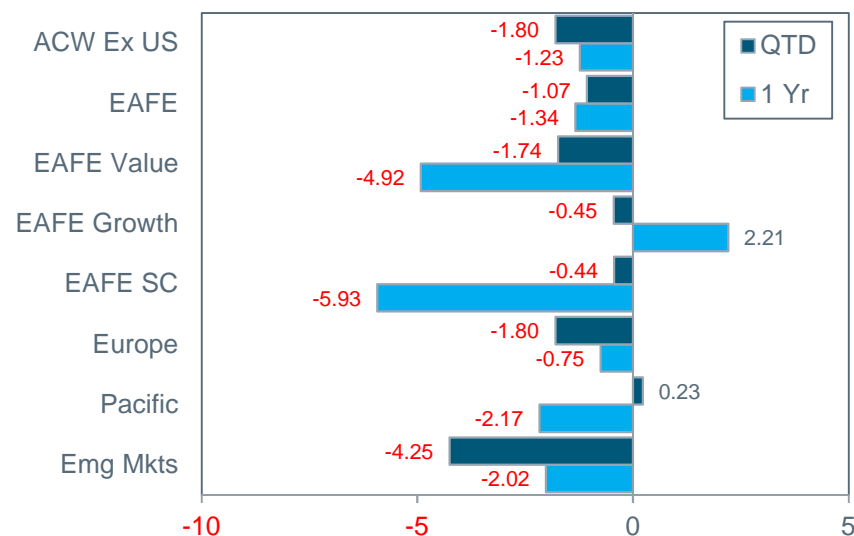
Emerging Markets

Emerging markets fared worse than developed markets during the quarter. Returns continue to be driven by trade tensions between the US and China, and market trends reversed numerous times in reaction to new tariff announcements and indications of short-term postponement.

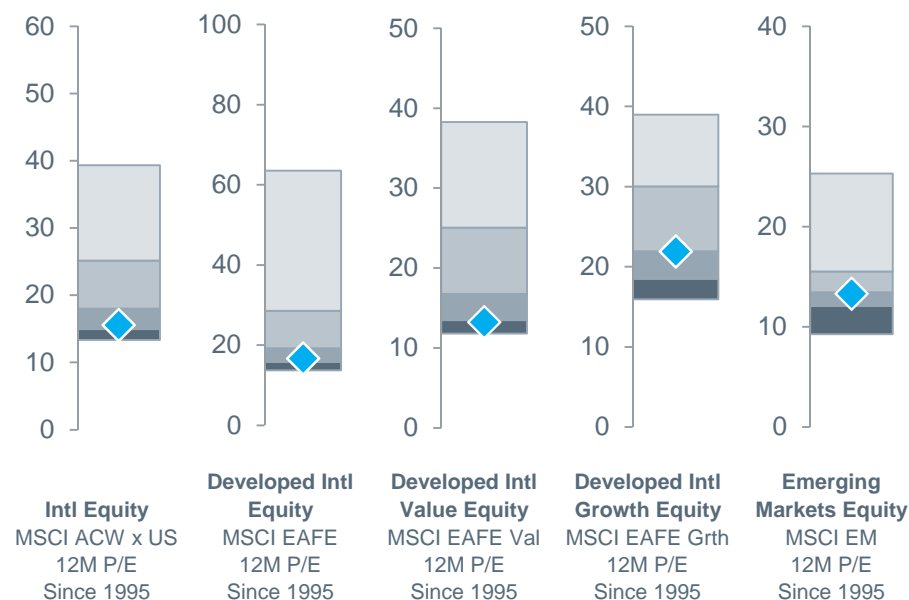
Market Cap & Style

During the quarter, value stocks continued to underperform growth stocks, and small-cap stocks outperformed their larger counterparts, in both the developed international markets and emerging markets.

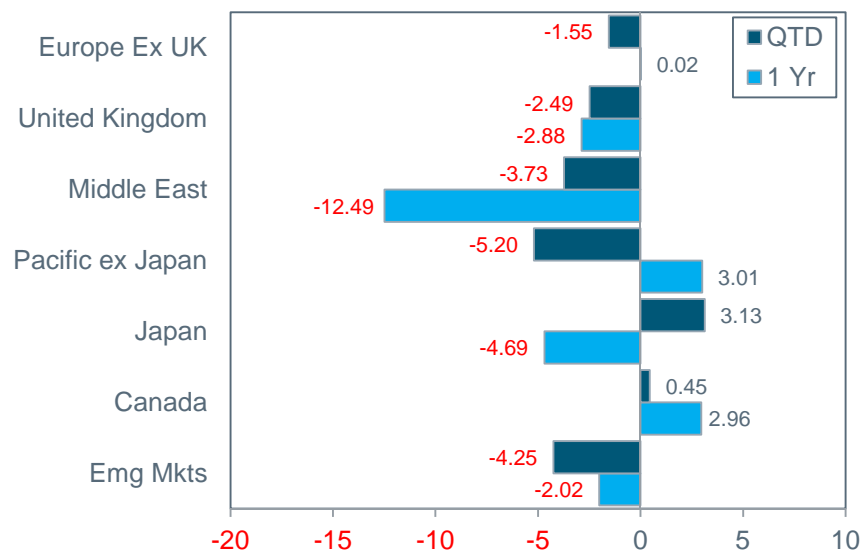
MSCI Style and Capitalization Market Performance (%)



Valuations



MSCI Region Performance (%)



Valuation data courtesy of Bloomberg Professional Service.

P/E metrics shown represent the 5th through 95th percentiles to minimize the effect of outliers. All returns are shown net of foreign taxes on dividends.

Third Quarter Review

Broad Market

Bonds registered another strong quarter, with the Bloomberg US Aggregate Bond Index returning 2.3% for Q3. US Treasury yields fell across the curve, most notably in the longer-dated maturities. Concerns for economic growth increased investor focus on the behavior between shorter- and longer-term maturities along the Treasury yield curve. The spread between 2- and 10-year US Treasury maturities ended August 27th in negative territory.

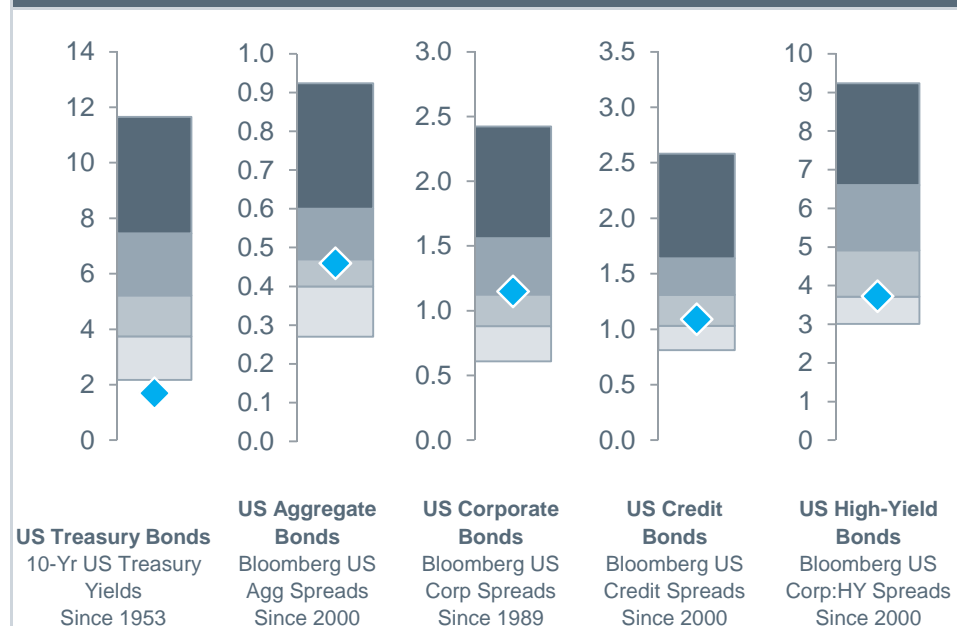
Credit Market

US investment-grade corporate spreads were volatile over the quarter, yet they ended exactly where they began. With assistance from the decline in Treasury rates, the Bloomberg US Corporate Index returned 3.1%.

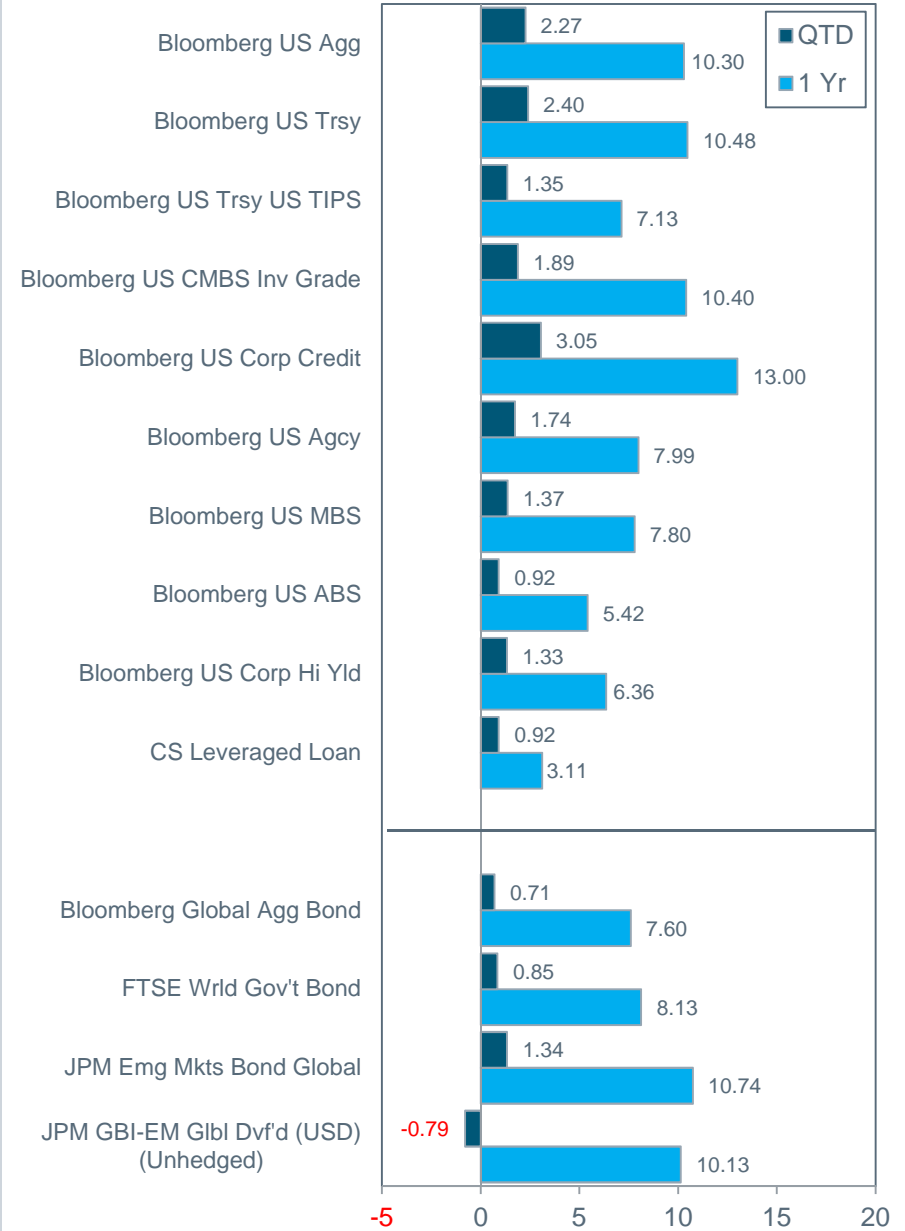
Emerging Market Debt

Hard currency emerging market debt continued to add to the gains experienced during Q1 and Q2 of 2019. Country specific risks heavily impacted certain pockets of the asset class in Q3, however the hard currency JPM EMBI Global Diversified Index still generated positive returns of 1.5%.

Valuations



Fixed Income Performance (%)



Valuation data courtesy of Bloomberg Professional Service.

Valuations shown represent the 5th through 95th percentiles to minimize the effect of outliers.

Third Quarter Review - Absolute Return

General Market - Hedge Funds

Following the industry's best first half performance since 2009, hedge funds produced lackluster returns during Q3, albeit with considerable dispersion across strategies. The Fund of Hedge Funds ("FoHF") strategies RVK follows closely produced returns between 0% and -1% during the quarter with year-to-date returns ranging from 3.0% to 8.0%.

General Market - Global Tactical Asset Allocation (GTAA)

GTAA managers posted mixed and wide-ranging returns during Q3—both on an absolute basis and relative to a blend of 60% US equity and 40% US fixed income. Managers that saw positive returns, both on an absolute basis and relative to peers, generally held higher dedicated allocations to large-cap US equity markets. Other strategies that performed well against peers included managers with more idiosyncratic positions within international developed or emerging market currency, credit, and interest rates.

Third Quarter Review - Real Assets

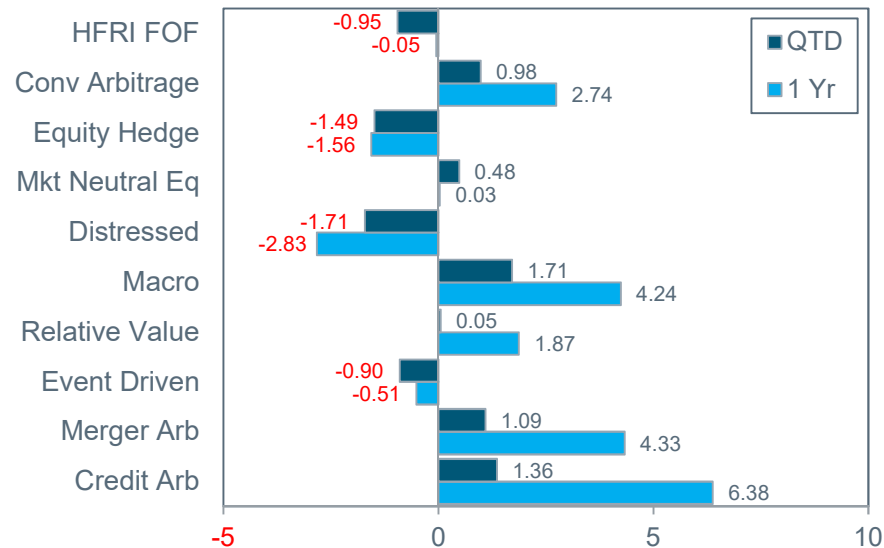
General Market - Diversified Inflation Strategies (DIS)

Most DIS managers posted positive absolute returns during Q3. Performance ranged widely amongst managers RVK tracks and was once again bifurcated with the stronger performing managers generally having significantly larger allocations to REITs and, to a lesser extent, global listed infrastructure. Both of those asset classes saw positive returns during Q3 and have seen strong returns so far in 2019.

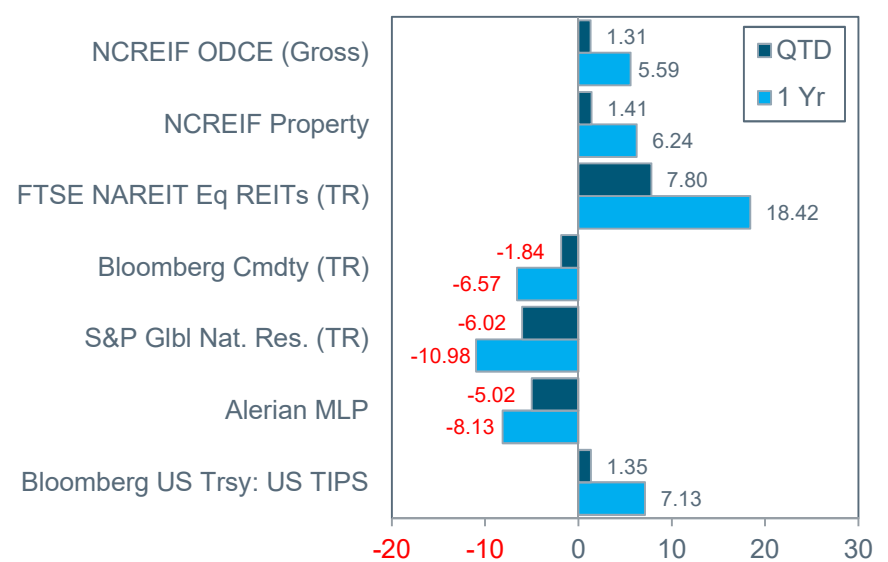
General Market - Real Estate

Core private real estate returned 1.3% during Q3, as reported by the NCREIF-ODCE Index, with the total gross return comprised of 1.1% income and 0.3% price appreciation. While the income component remained in-line with historical levels, price appreciation increased by 26 basis points from the prior quarter. Investors in publicly traded real estate significantly outperformed their private market counterparts, returning 7.2% during the quarter, as measured by the FTSE/NAREIT All REITs Index.

HFRI Hedge Fund Performance (%)



Real Asset Performance (%)



Annual Asset Class Performance

As of September 30, 2019

Calendar Year Performance												Annualized Statistics (01/2006 - 09/2019)			
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	CYTD (As of 09/19)		Return	Standard Deviation	Sharpe Ratio
<div>Best</div> <div>↑</div> <div>↓</div> <div>Worst</div>	78.79	35.17	15.99	18.64	38.82	14.07	15.02	21.95	27.19	10.18	20.55	S&P 500 Index - US Large Cap	8.78	15.08	0.55
	51.62	26.85	14.47	16.83	32.39	13.69	5.64	21.31	21.83	8.35	15.04	Russell 2000 Index - US Small Cap	7.57	19.13	0.42
	45.01	21.85	11.22	16.76	29.75	12.50	5.47	13.31	17.89	1.87	14.18	International Equity Custom Index - International	3.31	17.93	0.20
	32.46	16.36	7.84	16.35	21.51	11.37	1.38	11.96	15.21	0.44	12.12	Cambridge US PE Index - Private Equity	12.00	8.24	1.29
	27.17	15.68	2.11	16.00	15.29	7.66	0.55	10.16	14.65	0.01	11.56	NCREIF ODCE Index - Real Estate	6.82	7.42	0.78
	26.46	15.06	1.52	13.45	13.94	5.97	0.18	9.94	9.11	-4.02	9.76	HFRI FOF Comp Index	2.31	6.38	0.19
	21.98	14.99	0.66	10.94	8.96	4.89	-0.27	8.77	7.77	-4.25	8.52	S&P U.S. Preferred Stock Index	5.27	18.47	0.30
	13.39	10.17	-1.16	9.66	5.29	3.37	-0.69	4.50	7.62	-4.38	7.86	MLP Custom Index	7.16	20.79	0.38
	11.47	9.28	-1.75	4.95	0.12	1.60	-4.41	2.65	4.12	-6.21	6.79	Bloomberg US Agg Bond Index - Fixed Income	4.34	3.26	0.94
	5.93	6.54	-4.18	4.79	-0.17	0.18	-5.66	1.94	3.54	-11.01	5.15	S&P LSTA Lvgd Loan Index - Bank Loans	4.69	10.06	0.38
	1.17	5.70	-5.72	4.21	-2.02	-3.87	-14.92	0.51	0.84	-11.67	3.77	JPM GBI-EM Gbl Dvf'd Index (USD) - EMD	4.99	10.89	0.39
	-29.76	0.73	-13.71	0.26	-8.98	-5.72	-35.07	0.38	-5.58	-14.20	2.00	JP Morgan Cash Custom Index - Cash Equiv	1.57	0.88	1.17

The International Equity Custom Index consists of the MSCI EAFE Index (USD) (Gross) through July 2010 and the MSCI ACW Ex US Index (USD) (Net) thereafter.

The MLP Custom Index consists of the S&P MLP Index (TR) through 06/30/2019, the Alerian MLP Index through 12/31/2019, and 50% Alerian MLP Index / 50% Alerian Midstream Energy Index thereafter.

The JP Morgan Cash Custom Index is calculated monthly using beginning of the month investment weights applied to each corresponding primary benchmark return.

The primary benchmark for JP Morgan Cash is the ICE BofAML 3 Mo US T-Bill Index and for JP Morgan Extd is the JP Morgan Blended Index through 06/30/2019, and the ICE BofAML 3 Mo US T-Bill Index thereafter.

The Cambridge US Private Equity Index is shown for informational purposes only. Due to availability of data, current quarter performance assumes a 0.00% return.

Calculations are based on a quarterly periodicity.

ASSET CLASS SUMMARY

US Equity: The **US Equity** structure employs a core-satellite approach, which gains passive, low-cost beta exposure at its core. The core component of the portfolio utilizes passive management coupled with low beta, minimum volatility strategies that are intended to outperform a market-capitalization weighted index at a similar absolute risk level. The single Small Cap investment manager is an exchange-traded fund designed to track the Small Cap market benchmark.

International Equity: The **International Equity** structure follows an ACWI Ex US approach, which offers coverage of the broad international equity market, including developed and emerging markets. The International Equity portfolio is comprised of both passive and active management styles. The mix of passive and active management helps to minimize costs, while striving to maximize the probability of alpha generation at a similar absolute risk level.

Private Equity: The **Private Equity** asset class has primarily been accessed through fund of funds and customized fund of one structures. Investments also include exposure to direct co-investments and secondaries. Recent commitments within this asset class have added global diversification to the portfolio.

Real Estate: The **Real Estate** portfolio currently consists of Core and Non-Core Real Estate investments. The overall asset class structure has remained relatively conservative with regard to asset types and the use of financial leverage. Core Real Estate has historically been focused on diversified US markets, lower leverage and higher occupancy rates, while Non-Core Real Estate investments allow for greater investment flexibility.

Diversified Hedge Funds: The **Diversified Hedge Funds** structure historically consisted of multi-Hedge Fund of Fund investments. In 2015, the portfolio began a transition to a core-satellite approach, utilizing a single Fund of Fund manager and satellite direct Hedge Funds. Initial funding was completed in July 2018 for a custom fund of one, consisting of a discretionary multi-strategy FoF portfolio and a non-discretionary portfolio of direct hedge funds managed by the Treasurer's Office. An increase in the use of direct Hedge Funds is anticipated to lower external management expenses and allow for greater control over the program.

Preferred Stock: The **Preferred Stock** portfolio consists of a single, specialized preferred stock investment manager. The portfolio invests in a diversified portfolio of preferred securities including exchange-traded and over-the-counter preferreds and contingent convertibles (CoCos). The investment team seeks to take advantage of the various term structures of preferreds in order to optimize the yield and interest rate sensitivity of the portfolio.

MLPs: The **MLPs** portfolio consists of a single, specialized investment manager. The portfolio investment objective is to deliver both high yield and stable growth through the disciplined application of its fundamental bottom-up analysis as well as its trading strategies and investments in MLP and energy infrastructure assets.

Fixed Income: The **Fixed Income** portfolio employs a core-satellite approach. Serving as "the anchor" to the portfolio, Core Fixed Income aims to preserve capital, by providing relatively "safe" investments and stable income. The Internally Managed Portfolio also provides liquidity and safety of capital. The satellite portfolios serve as dedicated specialists. Bank Loans provide diversification from traditional fixed income investments and the potential for enhanced return. Investments in Emerging Market Debt (Local Currency) diversify US Dollar exposure and provide opportunities to capitalize on global growth trends. Opportunistic Fixed Income is employed to capitalize on severe market dislocations, such as European Debt.

INDEX GLOSSARY

MSCI ACW: The **MSCI All Country World Index** is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets. The index consists of the 23 developed countries that make up the MSCI World Index as well as the following emerging market countries: *Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Russia, Qatar, South Africa, Taiwan, Thailand, Turkey, and United Arab Emirates.*

Russell 3000: The **Russell 3000 Index** is a market-capitalization weighted index of 3,000 widely held equity securities designed to measure performance of the entire US stock market.

State Street All Cap Custom Index: The **State Street All Cap Custom Index** consists of 69% Russell 3000 Index, 24% FTSE RAFI US 1000 Index, and 7% MSCI US Min Vol Index (USD) (Gross) through 02/27/2020, State Street All Cap account performance on 02/28/2020, and the S&P 500 Index thereafter.

S&P 500: The **S&P 500 Index (Cap Wtd)** is a commonly recognized, market-capitalization weighted index of 500 widely held equity securities designed to measure broad US equity performance.

All Cap US Equity Custom Index: The **All Cap US Equity Custom Index** consists of the Russell 3000 Index through 02/29/2020, and the S&P 500 Index thereafter.

Russell 2000: The **Russell 2000 Index** measures the performance of the small-cap segment of the US equity market. It includes approximately 2,000 of the smallest securities by market cap from the Russell 3000 Index.

International Equity Custom Index: The **International Equity Custom Index** consists of the MSCI EAFE Index through July 2010 and the MSCI ACW Ex US Index thereafter.

MSCI EAFE: The **MSCI EAFE (Europe, Australasia, Far East) Index** is designed to measure equity market performance of 21 developed countries, excluding the US & Canada: *Australia, Austria, Belgium, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, and the United Kingdom.*

MSCI ACW Ex US: The **MSCI ACW (All Country World) Ex US Index** consists of large cap and mid cap representation within the same countries that comprise the MSCI ACW Index, excluding the United States.

MSCI ACW Ex US IM: The **MSCI ACW (All Country World) Ex US Investable Market Index** consists of large cap, mid cap, and small cap representation within the same countries that comprise the MSCI ACW Index, excluding the United States.

S&P US Preferred Stock: The **S&P US Preferred Stock Index** covers the US market of capital stock that pays dividends at a specified rate and has a preference over common stock in the payment of dividends and the liquidation of assets.

S&P MLP: The **S&P MLP Index** is a float-adjusted, cap-weighted index of energy MLPs and publicly traded limited liability companies, which have a similar legal structure to MLPs and share the same tax benefits. Constituents must have a minimum float-adjusted market cap of USD 300 million.

MLP Custom Index: The **MLP Custom Index** consists of the S&P MLP Index (TR) through 06/30/2019, the Alerian MLP Index through 12/31/2019, and 50% Alerian MLP Index / 50% Alerian Midstream Energy Index thereafter.

Alerian MLP Index: The **Alerian MLP Index** is an index of energy infrastructure Master Limited Partnerships (MLPs). It is a capped, float-adjusted, capitalization-weighted index, whose constituents represent approximately 85% of the total float-adjusted market capitalization.

Alerian Midstream Energy Index: The **Alerian Midstream Energy Index** is an index of energy infrastructure Master Limited Partnerships (MLPs), whose constituents earn the majority of their cash flow from midstream activities involving energy commodities.

NCREIF ODCE: The **NCREIF ODCE (Open End Diversified Core) Index** is an index of investment returns reporting on both a historical and current basis the results of 38 open-end commingled funds pursuing a core investment strategy, some of which have performance histories dating back to the 1970s. The NCREIF ODCE Index is capitalization-weighted and performance is time-weighted.

NCREIF Property: The **NCREIF Property Index** prepared by the National Council of Real Estate Investment Fiduciaries is a quarterly time series composite return measure for over 6,000 individual commercial real estate properties acquired in the private market for investment purposes. Total performance represents returns from appreciation and income, and includes multi-family, office, retail, and industrial properties.

HFRI FOF Comp Index: The **HFRI FOF (Fund of Funds) Comp Index** average is created by Hedge Fund Research, Inc. and contains over 800 funds of hedge funds that are each invested in multiple investment strategies.

Bloomberg US Agg Bond: The **Bloomberg US Aggregate Bond Index** covers the US dollar-denominated, investment-grade, fixed-rate, taxable bond market of SEC-registered securities: US Treasury and agency bonds, domestic corporate debt, and mortgage-backed securities.

Bloomberg US Agg Int Index: The **Bloomberg US Aggregate Intermediate Index** covers the subsection of the Bloomberg US Aggregate Bond Index with remaining maturities between one and ten years.

PIMCO Custom Index: The **PIMCO Custom Index** consists of the Bloomberg US Agg Bond Index through February 2018, the Bloomberg US Agg Int Index through June 2019, the Bloomberg US Agg Bond Index through 03/26/2020, account performance from 03/27/2020 through 04/03/2020, and the Bloomberg US Agg Bond Index thereafter.

Payden & Rygel Custom Index: The **Payden & Rygel Custom Index** consists of the Bloomberg US Corp Inv Grade Index through 03/25/2020, account performance from 03/26/2020 through 03/31/2020, and Bloomberg US Corp Inv Grade Index thereafter.

Internal Intermediate Govt Fixed Income Portfolio Index: The **Internal Intermediate Govt Fixed Income Portfolio Index** currently consists of the Bloomberg US Treasury Index. November 2019 performance consists of the Internal Intermediate Govt Fixed Income Portfolio. Prior to November 2019, the index consists of Bloomberg US Gov't Int Term Bond Index. Prior to December 2009, the index consisted of the Bloomberg US Gov't Crdt Bond Index.

S&P/LSTA Leveraged Loan: The **S&P/LSTA Leveraged Loan Index** reflects the market-weighted performance of institutional leveraged loans in the US loan market.

CS Western European Hi Yld: The **Credit Suisse Western European High Yield Index** is designed to mirror the investable universe of the Western European high yield debt market. The index includes issues denominated in \$US and Western European currencies.

EMD Custom Index: The **EMD Custom Index** consists of the JPM GBI-EM Gbl Dvf'd Index through 02/29/2020 and 70% JPM GBI-EM Gbl Dvf'd Index / 30% JPM CEMBI Brd Dvf'd Index thereafter.

JP Morgan GBI-EM Gbl Dv'd: The **JPMorgan GBI-EM Global Diversified Total Return Index (Unhedged)** is a global emerging markets index that consists of regularly traded, liquid fixed-rate, domestic currency government bonds.

JP Morgan CEMBI Broad Diversified Index: The **JP Morgan CEMBI Broad Diversified Index** is an index that is comprised of the corporate segment of emerging markets debt.

Bloomberg US Govt/Credit: Long Trm Bond: The **Bloomberg US Gov't/Credit Long Term Bond Index** covers the non-securitized component of the US Aggregate Index, with maturities of 10 years or more. It includes investment grade, US dollar-denominated, fixed-rate Treasuries, government-related and corporate securities.

Bloomberg US Govt: Long Trm Bond: The **Bloomberg US Gov't Long Term Bond Index** covers public US government obligations with remaining maturities of ten years or more.

Bloomberg US Credit: Long Trm Bond: The **Bloomberg US Credit Long Term Bond Index** covers public US investment grade corporate bonds with remaining maturities of ten years or more.

Bloomberg US Govt: Int Trm Bond: The **Bloomberg US Gov't Intermediate Term Bond Index** covers public US government obligations with remaining maturities between one and ten years.

Bloomberg US Corp Int Trm Bond: The **Bloomberg US Corporate Intermediate Term Bond Index** covers US investment grade corporate bonds with remaining maturities between one and ten years.

Bloomberg US Gov't/Credit 1-3 Yr Bond Index: The **Bloomberg US Gov't/Credit 1-3 Year Bond Index** covers all medium and larger issues of U.S. government, investment-grade corporate, and investment-grade international dollar-denominated bonds that have maturities of between one and three years and are publicly issued.

Bloomberg US Gov't 1-3 Yr Bond Index: The **Bloomberg US Gov't 1-3 Year Bond Index** covers public US government obligations with remaining maturities between one and three years.

Bloomberg US Credit 1-3 Yr Bond Index: The **Bloomberg US Credit 1-3 Year Bond Index** covers public investment-grade corporate, and investment-grade international dollar-denominated bonds that have maturities of between one and three years.

Bloomberg US MBS Index: The **Bloomberg US MBS Index** covers the public U.S. mortgage backed securities market.

Bloomberg US Corp Inv Grade Index: The **Bloomberg US Corp Inv Grade Index** covers the public U.S. investment grade corporate bond market.

Low Duration Fixed Income Custom Index: The **Low Duration Fixed Income Custom Index** consists of the Bloomberg US Gov't Crdt 1-3 Yr Bond Index through 06/30/2019 and the Bloomberg US Gov't 1-3 Yr Bond Index thereafter.

JP Morgan Cash Custom Index: The **JP Morgan Cash Custom Index** is calculated monthly using beginning of the month investment weights applied to each corresponding primary benchmark return. The primary benchmark for JP Morgan Cash is the ICE BofAML 3 Mo US T-Bill Index and for JP Morgan Extd is the JP Morgan Blended Index through 06/30/2019, and the ICE BofAML 3 Mo US T-Bill Index thereafter.

JP Morgan Blended Index: The **JP Morgan Blended Index** consists of an equal-weighted allocation to the ICE BofAML 1-3 Year US Treasury Index, ICE BofAML 1-3 Year Agencies Index, and ICE BofAML 0-3 Year Weighted Average Life Mortgage Index.

Total Fund Performance

	Allocation		Performance (%)							
	Market Value (\$)	%	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years
Total Fund	21,232,382,007	100.0	1.0	1.0	7.9	5.2	4.7	4.2	4.5	5.3
Wyoming State Custom Index			0.9	0.9	8.2	5.7	4.5	4.2	4.5	5.1
Difference			0.1	0.1	-0.3	-0.5	0.2	0.0	0.0	0.2
Permanent Funds	15,374,598,655	72.4	1.2	1.2	9.4	5.5	5.6	4.8	5.5	6.2
Non-Permanent Funds	5,857,783,352	27.6	0.7	0.7	4.6	4.6	2.2	2.5	2.0	3.1

Asset Class Performance

	Allocation		Performance (%)							
	Market Value (\$M)	%	QTD	FYTD	1 Year	3 Years	5 Years	10 Years		
All Cap US Equity	1,680	7.9	1.7	1.7	3.5	11.7	N/A	N/A		
Russell 3000 Index			1.2	1.2	2.9	12.8	10.4	13.1		
Difference			0.5	0.5	0.6	-1.1	N/A	N/A		
Small Cap US Equity	156	0.7	-2.3	-2.3	-9.0	4.4	N/A	N/A		
Russell 2000 Index			-2.4	-2.4	-8.9	8.2	8.2	11.2		
Difference			0.1	0.1	-0.1	-3.8	N/A	N/A		
Int'l Equity	2,050	9.7	-1.6	-1.6	-0.8	6.4	3.3	4.7		
Int'l Equity Custom Index			-1.8	-1.8	-1.2	6.3	2.9	4.1		
Difference			0.2	0.2	0.4	0.1	0.4	0.6		
Hybrid Assets	667	3.1	-3.4	-3.4	-4.0	N/A	N/A	N/A		
Core Real Estate	1,003	4.7	1.1	1.1	3.0	5.7	8.1	9.5		
NCREIF ODCE Index (AWA)			1.1	1.1	4.6	6.3	8.4	9.8		
Difference			0.0	0.0	-1.6	-0.6	-0.3	-0.3		
Diversified Hedge Funds	754	3.5	0.3	0.3	-0.3	2.5	1.2	3.6		
HFRI FOF Comp Index			-1.0	-1.0	0.0	3.1	1.9	2.7		
Difference			1.3	1.3	-0.3	-0.6	-0.7	0.9		
Core Fixed Income	3,567	16.8	2.4	2.4	9.6	3.0	3.4	N/A		
BB US Agg Bond Index			2.3	2.3	10.3	2.9	3.4	3.7		
Difference			0.1	0.1	-0.7	0.1	0.0	N/A		
Int. Gov't Fixed Income	1,938	9.1	1.5	1.5	7.1	2.5	2.5	2.5		
BB US Gov't Int Trm Index			1.2	1.2	7.5	1.8	2.2	2.4		
Difference			0.3	0.3	-0.4	0.7	0.3	0.1		
Opportunistic Fixed Income	133	0.6	1.3	1.3	3.9	7.2	6.3	N/A		
CS Western Euro Hi Yld Index			2.1	2.1	8.0	7.1	6.3	8.7		
Difference			-0.8	-0.8	-4.1	0.1	0.0	N/A		
Bank Loans	1,090	5.1	N/A	N/A	N/A	N/A	N/A	N/A		
S&P/LSTA Lvg'd Loan Index			1.0	1.0	3.1	4.5	4.0	5.2		
Difference			N/A	N/A	N/A	N/A	N/A	N/A		
EMD	196	0.9	-1.3	-1.3	8.3	2.0	-0.7	N/A		
JPM GBI-EM Gbl Dvf'd Index			-0.8	-0.8	10.1	3.1	0.6	2.5		
Difference			-0.5	-0.5	-1.8	-1.1	-1.3	N/A		
Long Duration Fixed Income	831	3.9	6.6	6.6	N/A	N/A	N/A	N/A		
BB US Gov't Crdt LT Bond Index			6.6	6.6	21.9	5.6	6.8	7.4		
Difference			0.0	0.0	N/A	N/A	N/A	N/A		

Market Value by Investment Pool

	Market Value (\$)	Allocation (%)
Permanent Mineral Trust	7,981,028,191	37.6
Common School Permanent Land Fund	4,172,217,991	19.7
Permanent Land Fund	203,083,022	1.0
University Permanent Land Fund	21,925,133	0.1
Hathaway Scholarship	600,609,385	2.8
Higher Education	120,835,345	0.6
Workers Compensation Fund	2,274,899,588	10.7
Pool A	241,697,466	1.1
State Agency Pool	4,029,072,345	19.0
LSRA	1,587,013,542	7.5

Schedule of Inv. Assets - Total Fund Ex Public Purpose Investments

Period Ending	Beginning MV (\$)	Net Cash Flow (\$)	Gain/Loss (\$)	Ending MV (\$)	% Return
FYTD	21,114,239,217	-359,217,696	212,311,435	20,967,332,956	1.0

Asset Class Performance (Cont.)

	Allocation		Performance (%)							
	Market Value (\$M)	%	QTD	FYTD	1 Year	3 Years	5 Years	10 Years		
Laddered Treasury	1,500	7.1	N/A	N/A	N/A	N/A	N/A	N/A		
Low Duration Fixed Income	999	4.7	0.6	0.6	N/A	N/A	N/A	N/A		
Low Duration FI Custom Index			0.6	0.6	4.5	1.8	1.6	1.5		
Difference			0.0	0.0	N/A	N/A	N/A	N/A		
Cash Equivalents	3,608	17.0	0.5	0.5	2.5	1.5	1.0	0.7		
JPM Cash Custom Index			0.6	0.6	2.7	1.6	1.1	0.7		
Difference			-0.1	-0.1	-0.2	-0.1	-0.1	0.0		
Public Purpose Investments	265	1.2	N/A	N/A	N/A	N/A	N/A	N/A		

Performance shown is net of fees and excludes Public Purpose Investments. Pooled investment performance and market values shown reflect State Agency participation and are calculated on a capital-weighted basis using beginning-period allocations. Hybrid Assets includes preferred stock and MLPs. Performance for Private Equity and Non-Core Real Estate is calculated on an IRR basis.

Wyoming State Treasurer's Office
Asset Allocation & Performance

As of September 30, 2019

	Allocation		Performance (%)									
	Market Value (\$)	%	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Incep.	Inception Date
Permanent Funds	15,374,598,655	72.4	1.2	1.2	9.4	5.5	5.6	4.8	5.5	6.2	6.0	07/01/2002
Permanent Mineral Trust	7,981,028,191	37.6	0.8	0.8	8.7	4.4	5.5	4.8	5.6	6.3	5.9	06/01/2001
Permanent Mineral Trust - Actual Allocation Index			0.6	0.6	8.9	4.7	5.5	4.8	5.6	6.0	5.4	
Difference			0.2	0.2	-0.2	-0.3	0.0	0.0	0.0	0.3	0.5	
Common School Permanent Land Fund	4,172,217,991	19.7	1.1	1.1	9.2	4.9	5.6	4.9	5.7	6.5	6.2	06/01/2001
Common School - Actual Allocation Index			0.9	0.9	9.3	5.2	5.6	4.9	5.7	6.2	5.4	
Difference			0.2	0.2	-0.1	-0.3	0.0	0.0	0.0	0.3	0.8	
Permanent Land Fund	203,083,022	1.0	0.7	0.7	8.4	4.4	5.4	4.7	5.5	6.2	5.2	02/01/2006
Permanent Land Fund - Actual Allocation Index			0.5	0.5	8.6	4.7	5.4	4.7	5.5	5.9	4.9	
Difference			0.2	0.2	-0.2	-0.3	0.0	0.0	0.0	0.3	0.3	
University Permanent Land Fund	21,925,133	0.1	1.1	1.1	9.6	4.7	6.3	5.3	6.0	6.4	5.2	05/01/2006
University PLF - Actual Allocation Index			0.9	0.9	10.0	5.1	6.4	5.4	6.0	6.3	5.1	
Difference			0.2	0.2	-0.4	-0.4	-0.1	-0.1	0.0	0.1	0.1	
Hathaway Scholarship	600,609,385	2.8	0.7	0.7	8.7	4.5	4.9	4.4	4.9	5.8	5.3	09/01/2007
Hathaway Scholarship - Actual Allocation Index			0.5	0.5	9.0	4.9	5.0	4.6	5.1	5.6	5.1	
Difference			0.2	0.2	-0.3	-0.4	-0.1	-0.2	-0.2	0.2	0.2	
Higher Education	120,835,345	0.6	1.1	1.1	9.4	4.9	5.0	4.5	5.0	5.8	5.2	09/01/2007
Higher Education - Actual Allocation Index			0.9	0.9	9.6	5.3	5.0	4.6	5.1	5.6	5.0	
Difference			0.2	0.2	-0.2	-0.4	0.0	-0.1	-0.1	0.2	0.2	
Workers Compensation Fund	2,274,899,588	10.7	3.0	3.0	12.2	10.7	5.8	4.9	4.8	5.6	5.7	06/01/2001
Workers Compensation - Actual Allocation Index			2.9	2.9	12.5	11.3	5.7	4.9	4.9	5.3	5.4	
Difference			0.1	0.1	-0.3	-0.6	0.1	0.0	-0.1	0.3	0.3	
Non-Permanent Funds	5,857,783,352	27.6	0.7	0.7	4.6	4.6	2.2	2.5	2.0	3.1	3.8	07/01/2002
Pool A	241,697,466	1.1	1.3	1.3	7.0	6.6	2.8	3.1	2.5	3.8	4.3	01/01/2000
Pool A - Actual Allocation Index			1.0	1.0	7.5	7.3	2.3	3.0	2.5	3.6	5.0	
Difference			0.3	0.3	-0.5	-0.7	0.5	0.1	0.0	0.2	-0.7	
LSRA	1,587,013,542	7.5	0.5	0.5	N/A	N/A	N/A	N/A	N/A	N/A	0.5	07/01/2019
LSRA - Actual Allocation Index			0.3	0.3	N/A	N/A	N/A	N/A	N/A	N/A	0.3	
Difference			0.2	0.2	N/A	N/A	N/A	N/A	N/A	N/A	0.2	
State Agency Pool	4,029,072,345	19.0	0.8	0.8	4.6	4.6	2.2	2.5	2.0	3.1	3.9	06/01/2001
State Agency Pool - Actual Allocation Index			0.7	0.7	5.0	5.1	1.8	2.5	2.1	3.0	3.8	
Difference			0.1	0.1	-0.4	-0.5	0.4	0.0	-0.1	0.1	0.1	
Total Fund	21,232,382,007	100.0	1.0	1.0	7.9	5.2	4.7	4.2	4.5	5.3	5.4	10/01/1996
Wyoming State Custom Index			0.9	0.9	8.2	5.7	4.5	4.2	4.5	5.1	5.4	
Difference			0.1	0.1	-0.3	-0.5	0.2	0.0	0.0	0.2	0.0	

Performance shown is net of fees. Wyoming State Treasurer's Office fiscal year ends on June 30th.

Wyoming State Treasurer's Office
Asset Allocation & Performance

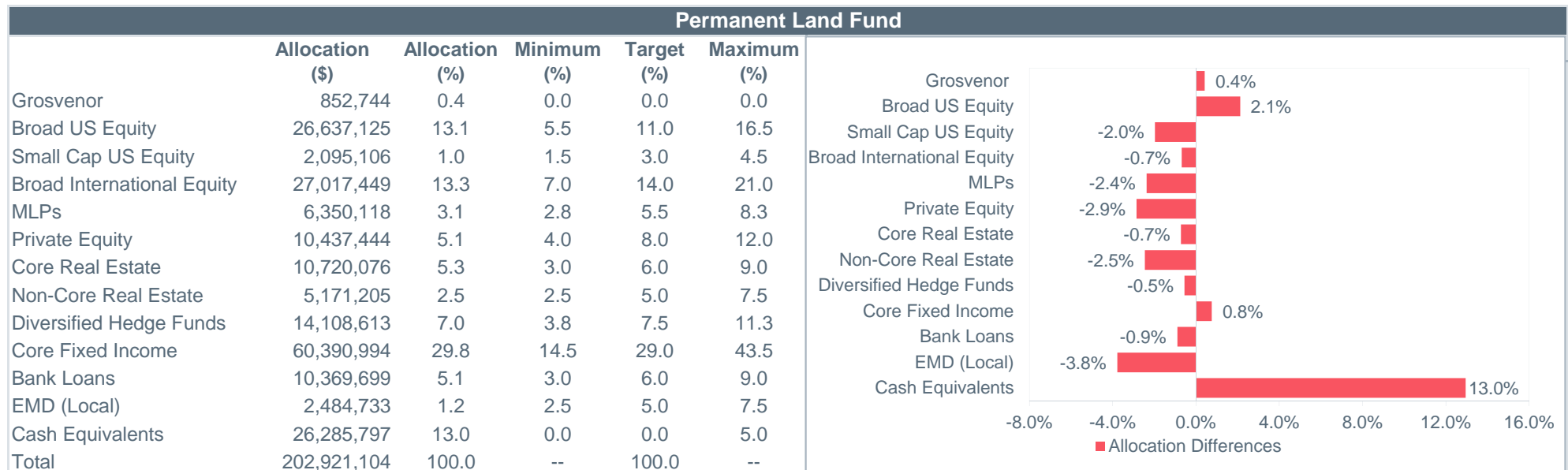
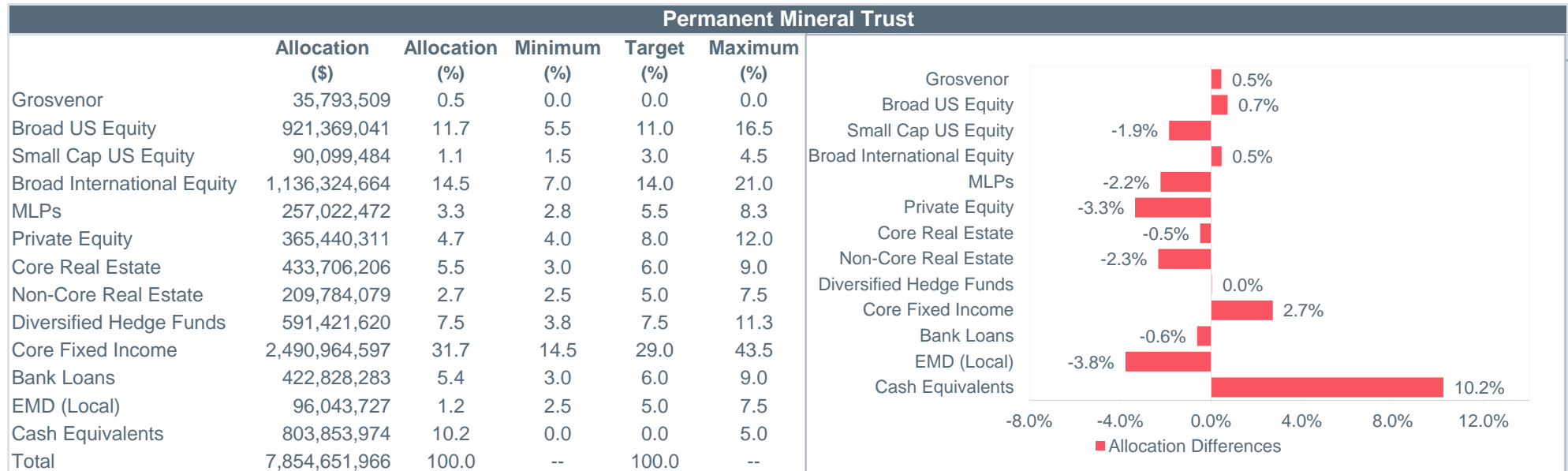
As of September 30, 2019

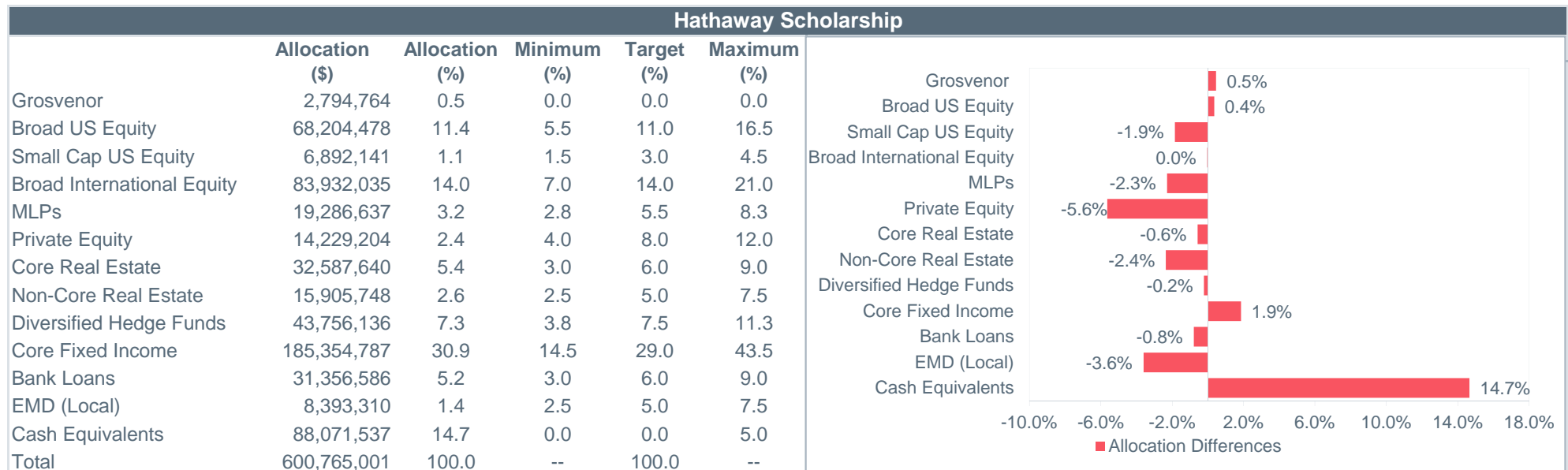
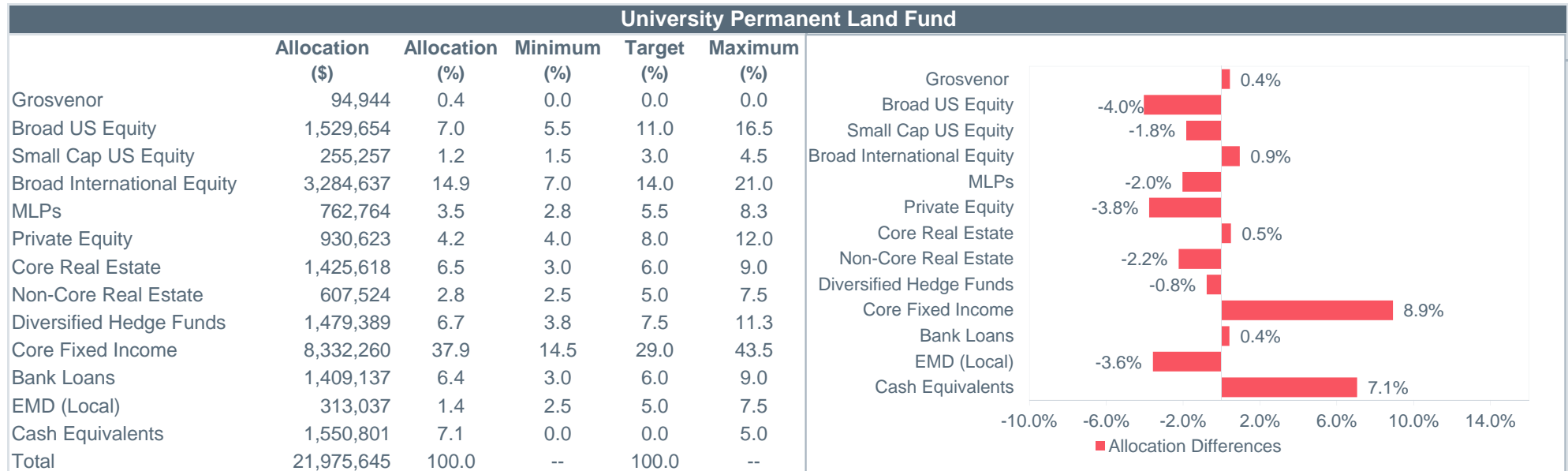
	Allocation	Performance (%)									
	Market Value (\$)	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Incep.	Inception Date
Permanent Funds	15,374,598,655	1.2	1.2	9.4	5.5	5.6	4.8	5.5	6.2	6.0	07/01/2002
Permanent Mineral Trust	7,981,028,191	0.8	0.8	8.7	4.4	5.5	4.8	5.6	6.3	5.9	06/01/2001
Permanent Mineral Trust - Target Allocation Index		0.5	0.5	9.7	5.2	5.8	5.2	6.0	6.5	N/A	
Difference		0.3	0.3	-1.0	-0.8	-0.3	-0.4	-0.4	-0.2	N/A	
Common School Permanent Land Fund	4,172,217,991	1.1	1.1	9.2	4.9	5.6	4.9	5.7	6.5	6.2	06/01/2001
Common School - Target Allocation Index		0.7	0.7	9.3	5.9	5.2	4.9	5.7	6.4	N/A	
Difference		0.4	0.4	-0.1	-1.0	0.4	0.0	0.0	0.1	N/A	
Permanent Land Fund	203,083,022	0.7	0.7	8.4	4.4	5.4	4.7	5.5	6.2	5.2	02/01/2006
Permanent Land Fund - Target Allocation Index		0.5	0.5	9.7	5.2	5.8	5.2	6.0	6.5	N/A	
Difference		0.2	0.2	-1.3	-0.8	-0.4	-0.5	-0.5	-0.3	N/A	
University Permanent Land Fund	21,925,133	1.1	1.1	9.6	4.7	6.3	5.3	6.0	6.4	5.2	05/01/2006
University PLF - Target Allocation Index		0.5	0.5	9.7	5.2	5.8	5.2	6.0	6.5	N/A	
Difference		0.6	0.6	-0.1	-0.5	0.5	0.1	0.0	-0.1	N/A	
Hathaway Scholarship	600,609,385	0.7	0.7	8.7	4.5	4.9	4.4	4.9	5.8	5.3	09/01/2007
Hathaway Scholarship - Target Allocation Index		0.5	0.5	9.7	5.2	5.7	5.1	5.6	6.3	N/A	
Difference		0.2	0.2	-1.0	-0.7	-0.8	-0.7	-0.7	-0.5	N/A	
Higher Education	120,835,345	1.1	1.1	9.4	4.9	5.0	4.5	5.0	5.8	5.2	09/01/2007
Higher Education - Target Allocation Index		0.7	0.7	9.3	5.9	5.1	4.7	5.4	6.1	N/A	
Difference		0.4	0.4	0.1	-1.0	-0.1	-0.2	-0.4	-0.3	N/A	
Workers Compensation Fund	2,274,899,588	3.0	3.0	12.2	10.7	5.8	4.9	4.8	5.6	5.7	06/01/2001
Workers Compensation - Target Allocation Index		2.8	2.8	13.7	11.7	5.8	5.1	5.1	5.6	N/A	
Difference		0.2	0.2	-1.5	-1.0	0.0	-0.2	-0.3	0.0	N/A	
Non-Permanent Funds	5,857,783,352	0.7	0.7	4.6	4.6	2.2	2.5	2.0	3.1	3.8	07/01/2002
Pool A	241,697,466	1.3	1.3	7.0	6.6	2.8	3.1	2.5	3.8	4.3	01/01/2000
Pool A - Target Allocation Index		1.3	1.3	10.0	7.3	3.1	3.5	2.9	3.9	N/A	
Difference		0.0	0.0	-3.0	-0.7	-0.3	-0.4	-0.4	-0.1	N/A	
LSRA	1,587,013,542	0.5	0.5	N/A	N/A	N/A	N/A	N/A	N/A	0.5	07/01/2019
State Agency Pool	4,029,072,345	0.8	0.8	4.6	4.6	2.2	2.5	2.0	3.1	3.9	06/01/2001

Performance shown is net of fees. Wyoming State Treasurer's Office fiscal year ends on June 30th.

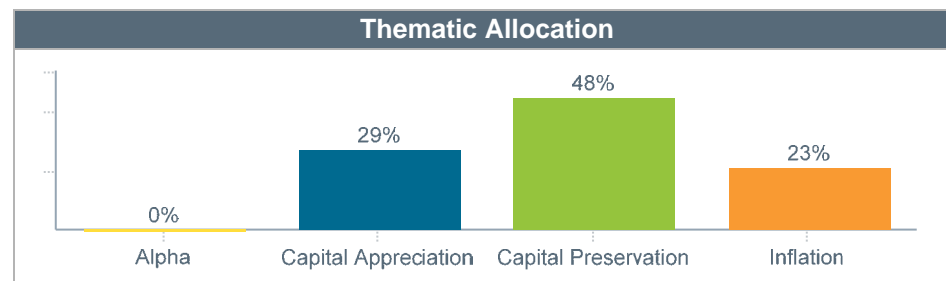
Investment Profile					Long-Term Target Allocation								
<p>Fund Type: Permanent Fund</p> <p>Main Objective: Produce maximized long-term investment income and capital gains while providing an appropriate level of safety and liquidity.</p> <p>Primary Investment Goals: Capital appreciation, total return, and protection against inflation. Capital preservation and liquidity are important secondary goals.</p> <p>Maximum Equity Allocation: 70%</p> <p>Current Long-Term Target Equity Allocation: 60%</p> <p>Spending Policy</p> <ul style="list-style-type: none">• Permanent Mineral Trust Fund: 5% of the five-year trailing average market value, calculated on the first day of the fiscal year. In fiscal year 2023, the spending rate will be 4.75%. In fiscal year 2024 and thereafter, the spending rate will be 4.5%.• Hathaway Scholarship: The amount necessary to fully fund scholarships awarded under W.S. 21-16-1301 <i>et seq.</i>					Minimum Range (%)		Target (%)		Maximum Range (%)				
					Permanent Mineral Trust		-		100.00		-		
					Broad US Equity		5.50		11.00		16.50		
					Small Cap US Equity		1.50		3.00		4.50		
					International Equity		7.00		14.00		21.00		
					MLPs		2.75		5.50		8.25		
					Private Equity		4.00		8.00		12.00		
					Core Real Estate		3.00		6.00		9.00		
					Non-Core Real Estate		2.50		5.00		7.50		
					Diversified Hedge Funds		3.75		7.50		11.25		
					Core Fixed Income		14.50		29.00		43.50		
					Bank Loans		3.00		6.00		9.00		
					Opportunistic Fixed Income		0.00		0.00		5.00		
					EMD		2.50		5.00		7.50		
					Cash (inv. in SAP)		0.00		0.00		5.00		
Thematic Allocation					Risk Metrics								
					5 Years				10 Years				
					PMTF	PLF	UPLF	Hath	PMTF	PLF	UPLF	Hath	
					Sharpe Ratio	0.9	0.9	0.9	0.8	1.0	1.1	1.1	1.0
					Standard Deviation	4.3	4.2	4.7	4.1	5.5	5.3	5.5	5.0
					Beta	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Comparative Performance													
Allocation					Performance (%)								
	Market Value (\$)	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years				
Permanent Mineral Trust	7,981,028,191	0.8	0.8	8.7	4.4	5.5	4.8	5.6	6.3				
PMTF Actual Allocation Index		0.6	0.6	8.9	4.7	5.5	4.8	5.6	6.0				
Difference		0.2	0.2	-0.2	-0.3	0.0	0.0	0.0	0.3				
Permanent Land Fund	203,083,022	0.7	0.7	8.4	4.4	5.4	4.7	5.5	6.2				
PLF Actual Allocation Index		0.5	0.5	8.6	4.7	5.4	4.7	5.5	5.9				
Difference		0.2	0.2	-0.2	-0.3	0.0	0.0	0.0	0.3				
University Permanent Land Fund	21,925,133	1.1	1.1	9.6	4.7	6.3	5.3	6.0	6.4				
UPLF Actual Allocation Index		0.9	0.9	10.0	5.1	6.4	5.4	6.0	6.3				
Difference		0.2	0.2	-0.4	-0.4	-0.1	-0.1	0.0	0.1				
Hathaway Scholarship	600,609,385	0.7	0.7	8.7	4.5	4.9	4.4	4.9	5.8				
Hathaway Actual Allocation Index		0.5	0.5	9.0	4.9	5.0	4.6	5.1	5.6				
Difference		0.2	0.2	-0.3	-0.4	-0.1	-0.2	-0.2	0.2				

Performance shown is net of fees and annualized for periods greater than one year. Wyoming State Treasurer's Office fiscal year ends on June 30th. Beta is calculated relative to the MSCI ACW Index (Net). Calculations are based on quarterly periodicity. Allocations shown may not sum up to 100% exactly due to rounding. Thematic Allocation shown represents the Permanent Mineral Trust.





Investment Profile
Fund Type: Permanent Fund Main Objective: Produce maximized long-term investment income and capital gains while providing an appropriate level of safety and liquidity. Primary Investment Goals: Income generation, capital appreciation, total return, and protection against inflation. Capital preservation and liquidity are important secondary goals. Maximum Equity Allocation: 70% Current Long-Term Target Equity Allocation: 44%
Spending Policy <ul style="list-style-type: none"> • Common School Permanent Land Fund: 5% of the five-year trailing average market value, calculated on the first day of the fiscal year. In fiscal year 2025, the spending rate will be 4.75%. In fiscal year 2026 and thereafter, the spending rate will be 4.5%. • Higher Education: 4.75% of the five-year trailing average market value, calculated on the first day of the fiscal year.

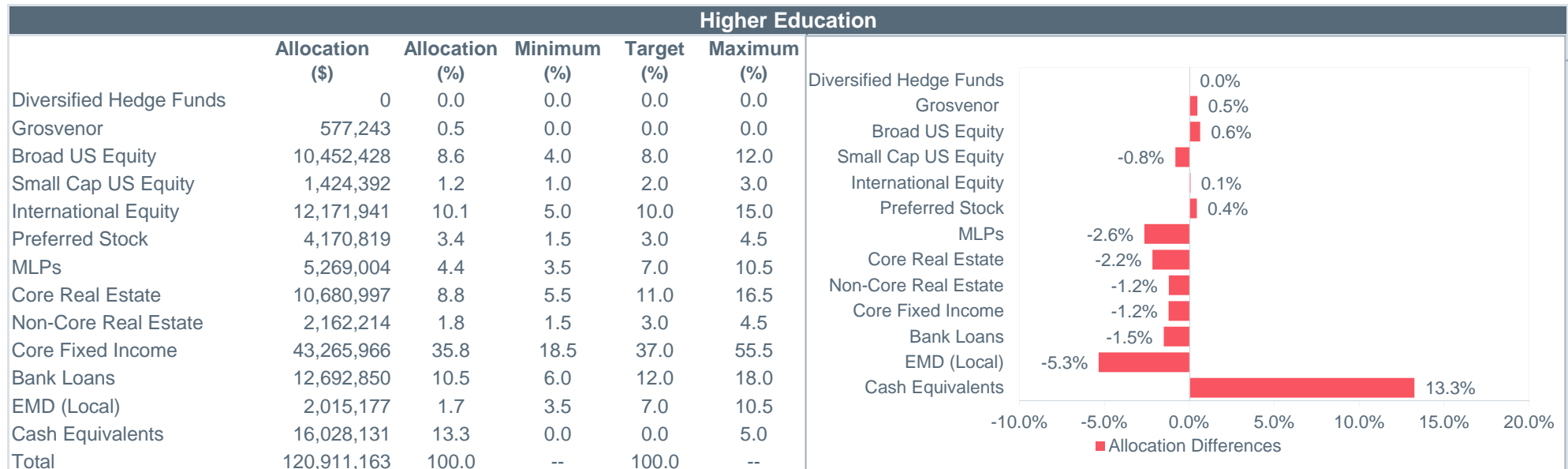
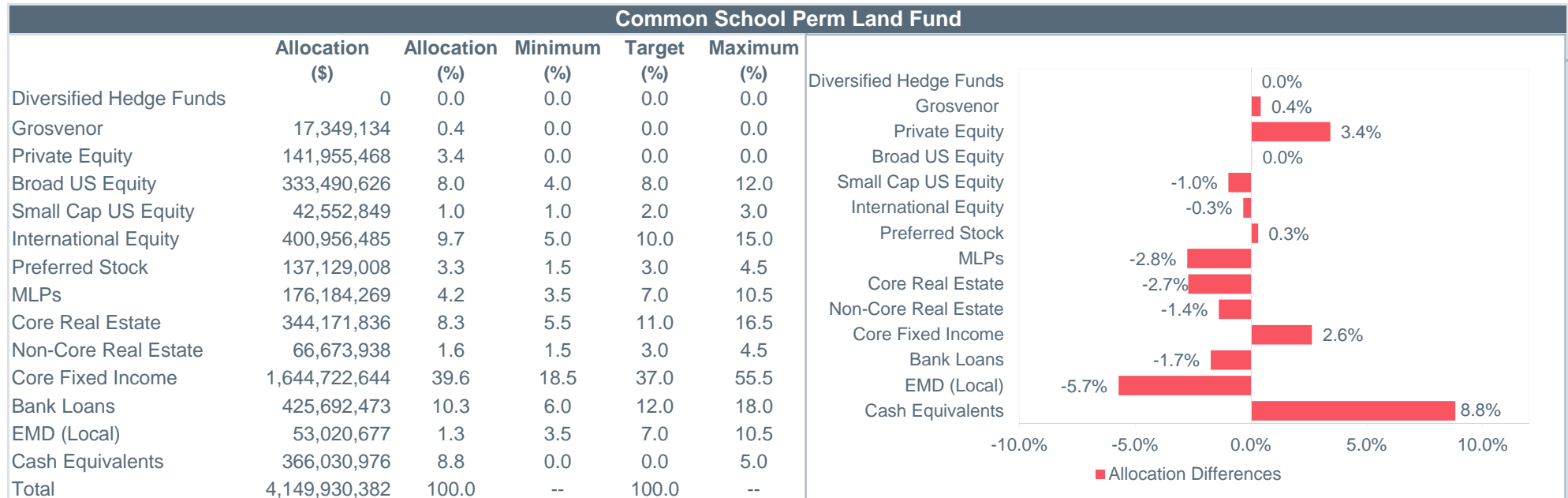


Long-Term Target Allocation			
	Minimum Range (%)	Target (%)	Maximum Range (%)
Common School PLF	-	100.00	-
Broad US Equity	4.00	8.00	12.00
Small Cap US Equity	1.00	2.00	3.00
International Equity	5.00	10.00	15.00
Preferred Stock	1.50	3.00	4.50
MLPs	3.50	7.00	10.50
Core Real Estate	5.50	11.00	16.50
Non-Core Real Estate	1.50	3.00	4.50
Core Fixed Income	18.50	37.00	55.50
Bank Loans	6.00	12.00	18.00
Opportunistic Fixed Income	0.00	0.00	5.00
EMD	3.50	7.00	10.50
Cash (inv. in SAP)	0.00	0.00	5.00

Risk Metrics				
	5 Years		10 Years	
	CSPLF	HiEd	CSPLF	HiEd
Sharpe Ratio	0.9	0.8	1.1	1.0
Standard Deviation	4.3	4.3	5.6	5.0
Beta	0.4	0.4	0.4	0.4

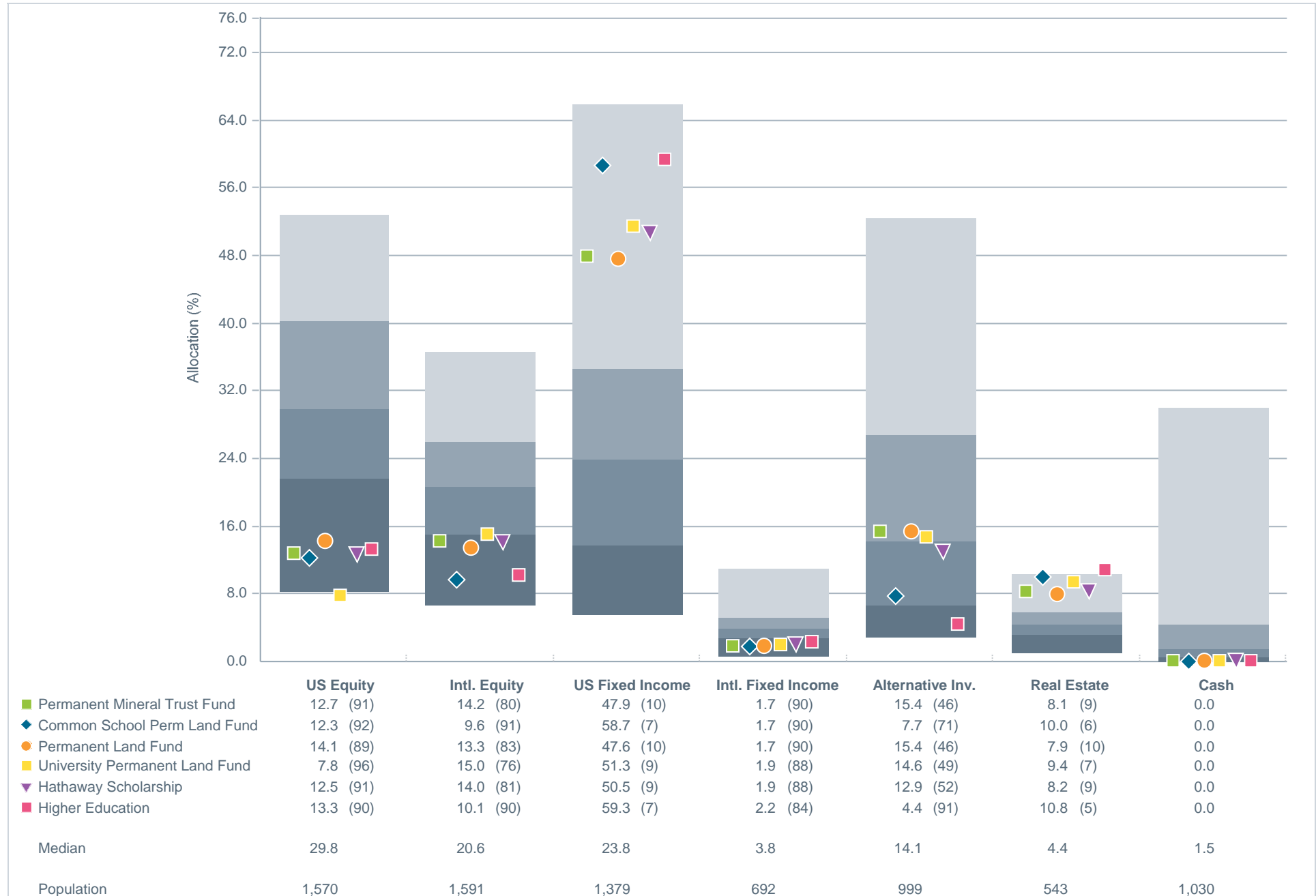
Comparative Performance									
	Allocation	Performance (%)							
	Market Value (\$)	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years
Common School Perm Land Fund	4,172,217,991	1.1	1.1	9.2	4.9	5.6	4.9	5.7	6.5
CSPLF - Actual Allocation Index		0.9	0.9	9.3	5.2	5.6	4.9	5.7	6.2
Difference		0.2	0.2	-0.1	-0.3	0.0	0.0	0.0	0.3
Higher Education	120,835,345	1.1	1.1	9.4	4.9	5.0	4.5	5.0	5.8
Higher Education - Actual Allocation Index		0.9	0.9	9.6	5.3	5.0	4.6	5.1	5.6
Difference		0.2	0.2	-0.2	-0.4	0.0	-0.1	-0.1	0.2

Performance shown is net of fees and annualized for periods greater than one year. Wyoming State Treasurer's Office fiscal year ends on June 30th. Beta is calculated relative to the MSCI ACW Index (Net). Calculations are based on quarterly periodicity. Allocations shown may not sum up to 100% exactly due to rounding. Thematic Allocation shown represents the Common School Permanent Land Fund.



Wyoming State Treasurer's Office
Permanent Funds vs. All Endowment&Foundation-Total Fund

As of September 30, 2019



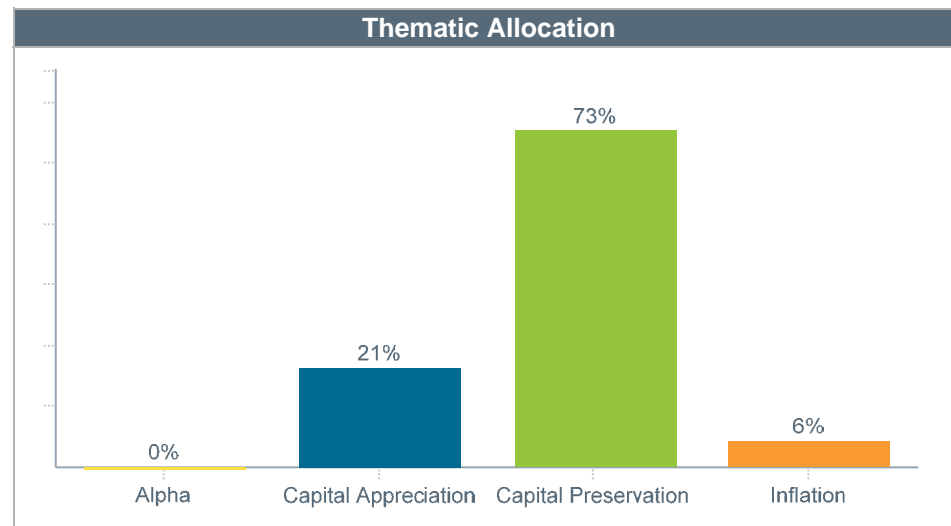
Parentheses contain percentile ranks. US Fixed Income allocation shown includes Convertibles and Cash (inv. in SAP).

Wyoming State Treasurer's Office
Permanent Funds - Workers' Compensation Fund

As of September 30, 2019

Investment Profile
Fund Type: Permanent Fund Main Objective: Provide a return that assures the Workers' Compensation Fund will be self-funding or nearly self-funding in order to substantially reduce or eliminate the need for employer contributions. Primary Investment Goals: Long-term return, safety of capital, yield and capital appreciation. Maximum Equity Allocation: 70% Current Long-Term Target Equity Allocation: 38% Actuarial Discount Rate: 3.5%* Funded Status: >100%* Duration of Liabilities: 11.6 years*
*As of the most recent report.

Long-Term Target Allocation			
	Minimum Range (%)	Target (%)	Maximum Range (%)
Workers Compensation Fund	-	100.00	-
Broad US Equity	4.00	8.00	12.00
Small Cap US Equity	1.00	2.00	3.00
International Equity	5.00	10.00	15.00
MLPs	2.25	4.50	6.75
Core Real Estate	2.25	4.50	6.75
Non-Core Real Estate	2.00	4.00	6.00
Liability Driven Fixed Income	31.00	62.00	93.00
Opportunistic Fixed Income	0.00	0.00	5.00
EMD	2.50	5.00	7.50
Cash (inv. in SAP)	0.00	0.00	5.00



Fixed Income Characteristics vs. BB US Agg Bond Index		
	Portfolio	Benchmark
Effective Duration	11.8	5.8
Avg. Quality	Aa2	Aa1/Aa2
Yield To Maturity (%)	2.8	2.3
Coupon Rate (%)	3.6	3.2

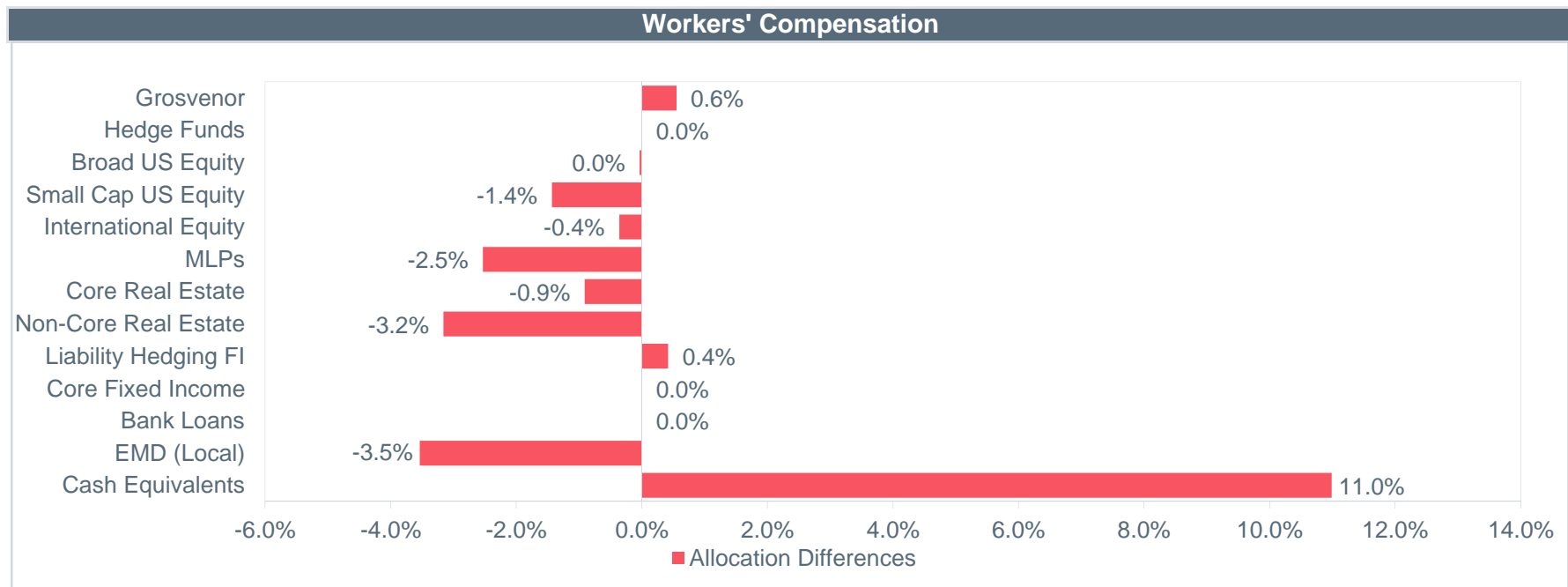
Risk Metrics		
	5 Years	10 Years
Sharpe Ratio	1.1	1.3
Standard Deviation	3.5	3.8
Beta	0.2	0.2

Comparative Performance									
	Allocation	Performance (%)							
	Market Value (\$)	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years
Workers' Compensation Fund	2,274,899,588	3.0	3.0	12.2	10.7	5.8	4.9	4.8	5.6
WC - Actual Allocation Index		2.9	2.9	12.5	11.3	5.7	4.9	4.9	5.3
Difference		0.1	0.1	-0.3	-0.6	0.1	0.0	-0.1	0.3

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Wyoming State Treasurer's Office
Permanent Funds - Workers' Compensation Fund
Asset Allocation vs. Long-Term Target

As of September 30, 2019



	Market Value	Allocation	Minimum	Target	Maximum
	(\$)	(%)	(%)	(%)	(%)
Grosvenor	12,582,921	0.6	0.0	0.0	0.0
Hedge Funds	0	0.0	0.0	0.0	0.0
Broad US Equity	181,445,399	8.0	4.0	8.0	12.0
Small Cap US Equity	12,954,450	0.6	1.0	2.0	3.0
International Equity	219,599,420	9.6	5.0	10.0	15.0
MLPs	44,841,539	2.0	2.3	4.5	6.8
Core Real Estate	81,785,764	3.6	2.3	4.5	6.8
Non-Core Real Estate	19,144,455	0.8	2.0	4.0	6.0
Liability Hedging FI	1,421,891,206	62.4	31.0	62.0	93.0
Core Fixed Income	0	0.0	0.0	0.0	0.0
Bank Loans	0	0.0	0.0	0.0	0.0
EMD (Local)	33,377,592	1.5	2.5	5.0	7.5
Cash Equivalents	250,328,802	11.0	0.0	0.0	5.0
Total	2,277,951,547	100.0	--	100.0	--

Wyoming State Treasurer's Office
Pool A Investment Account

As of September 30, 2019

Investment Profile

Fund Type: Non-Permanent Fund

Main Objective: Provide a diverse array of securities including equities, while maintaining adequate liquidity, stability, and return on investment.

Primary Investment Goal: Pool A is intended to be moderately liquid and safely invested but also be invested for return and growth.

Maximum Equity Allocation: 60%

Current Target Equity Allocation: 36%

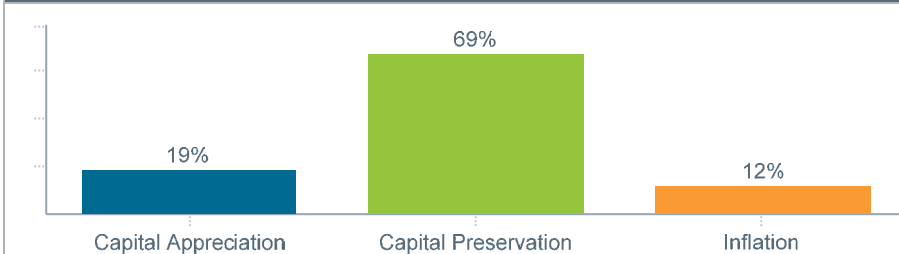
Participating Funds:

- Tobacco Settlement Trust Fund
- Wildlife and Natural Resource Trust Account
- Cultural Trust Fund
- Public Television Matching Fund Account
- Game and Fish Fund Trust Account

Risk Metrics

	5 Years	10 Years
Sharpe Ratio	0.8	1.2
Standard Deviation	2.7	2.8
Beta	0.1	0.0

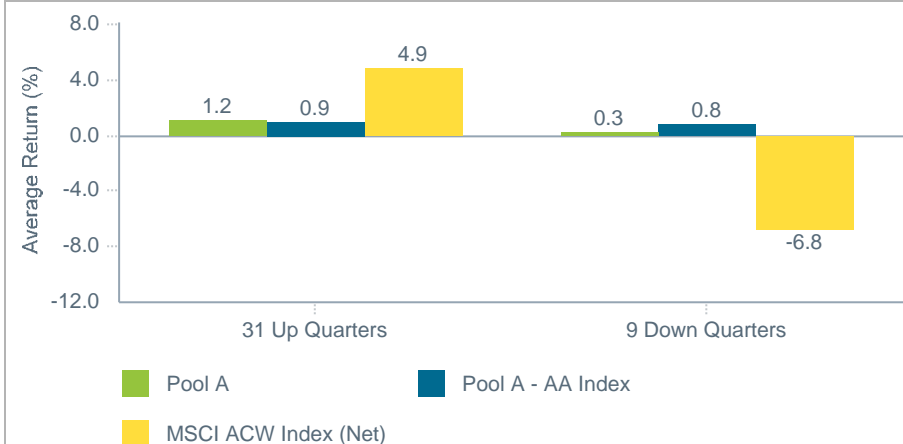
Thematic Allocation



Long-Term Target Allocation

	Minimum Range (%)	Target (%)	Maximum Range (%)
Pool A	-	100.00	-
Broad US Equity	3.75	7.50	11.25
Small Cap US Equity	0.50	1.00	1.50
International Equity	3.75	7.50	11.25
Preferred Stock	3.50	7.00	10.50
MLPs	2.50	5.00	7.50
Non-Core Real Estate	4.00	8.00	12.00
Core Fixed Income	24.50	49.00	73.50
Bank Loans	5.00	10.00	15.00
Cash (inv. in SAP)	2.50	5.00	7.50

Up/Down Markets - 10 Years



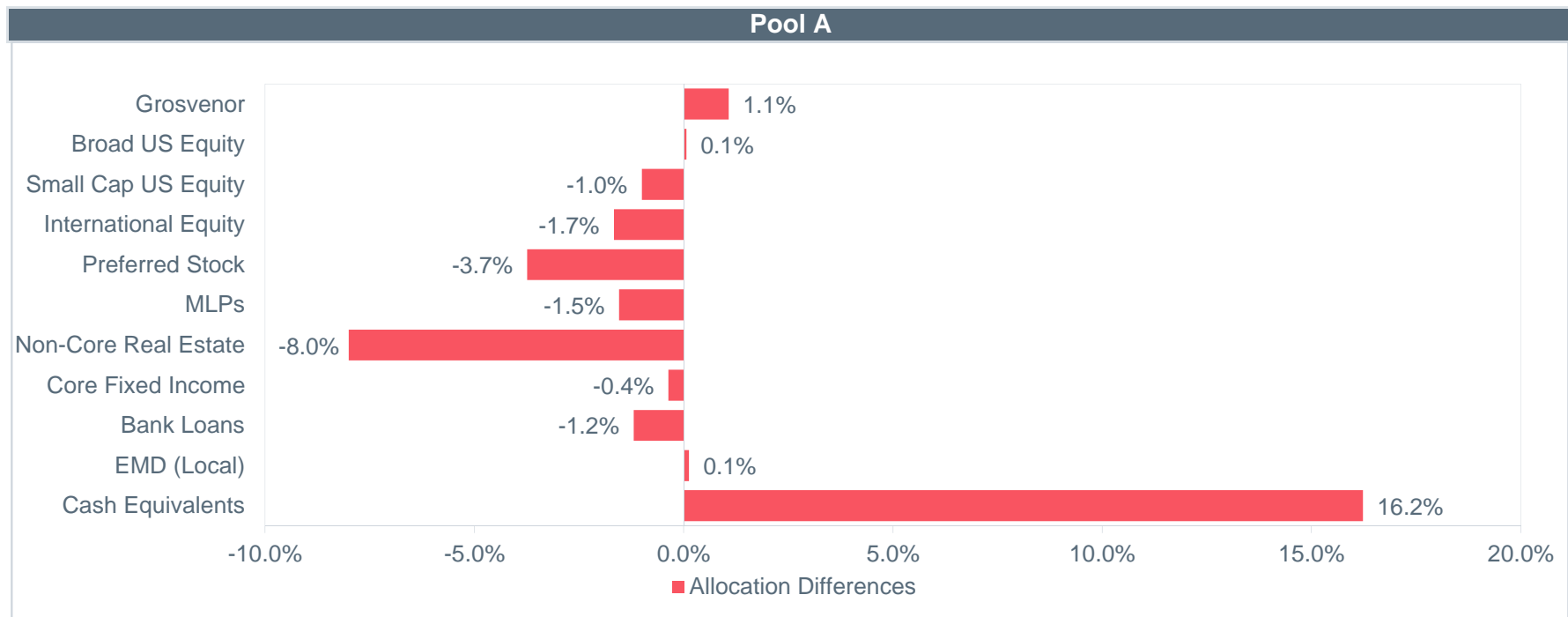
Comparative Performance

	Allocation	Performance (%)							
	Market Value (\$)	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years
Pool A	241,697,466	1.3	1.3	7.0	6.6	2.8	3.1	2.5	3.8
Pool A - Actual Allocation Index		1.0	1.0	7.5	7.3	2.3	3.0	2.5	3.6
Difference		0.3	0.3	-0.5	-0.7	0.5	0.1	0.0	0.2

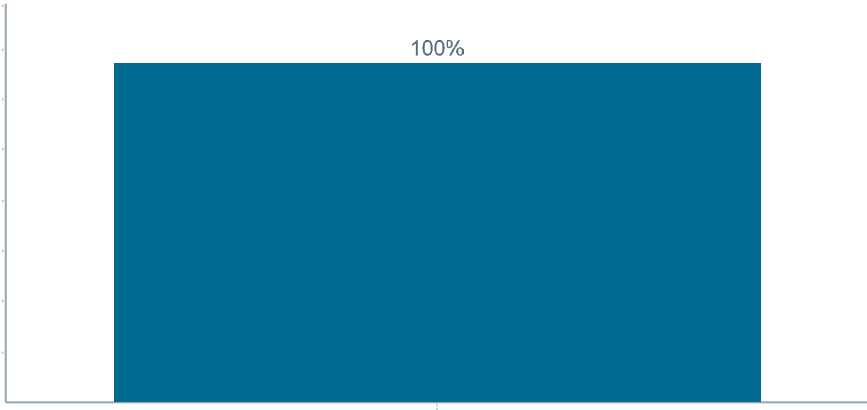
Performance shown is net of fees and annualized for periods greater than one year. Wyoming State Treasurer's Office fiscal year ends on June 30th. Beta is calculated relative to the MSCI ACW Index (Net). Calculations are based on quarterly periodicity. Allocations shown may not sum up to 100% exactly due to rounding.

Pool A

Asset Allocation vs. Long-Term Target



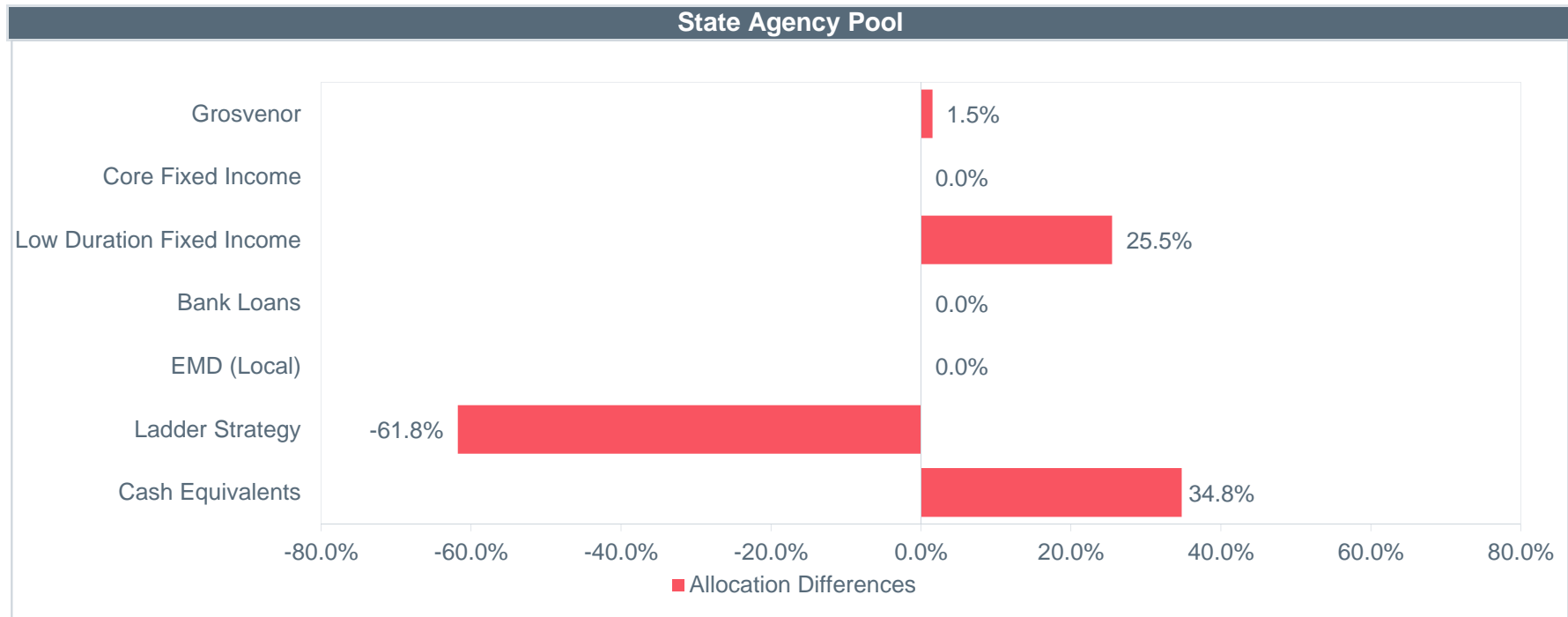
	Market Value	Allocation	Minimum	Target	Maximum
	(\$)	(%)	(%)	(%)	(%)
Grosvenor	2,616,274	1.1	0.0	0.0	0.0
Broad US Equity	18,345,891	7.6	3.8	7.5	11.3
Small Cap US Equity	0	0.0	0.5	1.0	1.5
International Equity	14,147,203	5.8	3.8	7.5	11.3
Preferred Stock	7,902,485	3.3	3.5	7.0	10.5
MLPs	8,375,619	3.5	2.5	5.0	7.5
Non-Core Real Estate	0	0.0	4.0	8.0	12.0
Core Fixed Income	117,910,455	48.6	24.5	49.0	73.5
Bank Loans	21,350,252	8.8	5.0	10.0	15.0
EMD (Local)	305,930	0.1	0.0	0.0	0.0
Cash Equivalents	51,467,974	21.2	2.5	5.0	7.5
Total	242,422,082	100.0	--	100.0	--

Investment Profile					Long-Term Target Allocation				
Fund Type: Non-Permanent Fund Main Objective: Produce an investment return so that State agencies have the advantage of better income from their invested funds, while maintaining stability. Primary Investment Goal: Capital preservation, yield, and liquidity Liquidity Constraints: The Fund must meet the day-to-day cash flow needs of the State Maximum Equity Allocation: 0% Current Target Equity Allocation: 0%						Minimum Allocation (%)	Target Allocation (%)	Maximum Allocation (%)	
					State Agency Pool Excluding PPI	-	100.00	-	
					Laddered Short-Term Treasury	100.00	100.00	100.00	
					Core Fixed Income	0.00	0.00	0.00	
					Int. Govt. Fixed Income	0.00	0.00	0.00	
					Low Duration Fixed Income	0.00	0.00	0.00	
					Bank Loans	0.00	0.00	0.00	
					Credit Fixed Income	0.00	0.00	0.00	
					Opportunistic Fixed Income	0.00	0.00	0.00	
					EMD	0.00	0.00	0.00	
					Cash Equivalents	0.00	0.00	0.00	
Thematic Allocation					Fixed Income Characteristics vs. BB US Agg Bond Index				
 <p>100%</p> <p>Capital Preservation</p>						Portfolio	Benchmark		
					Effective Duration	1.6	5.8		
					Avg. Quality	Aaa	Aa1/Aa2		
					Yield To Maturity (%)	1.7	2.3		
					Coupon Rate (%)	1.4	3.2		
					Risk Metrics				
						5 Years	10 Years		
					Sharpe Ratio	0.7	1.2		
					Standard Deviation	2.1	2.2		
					Beta	0.1	0.0		
Comparative Performance									
		Allocation			Performance (%)				
		Market Value (\$)	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	10 Years
State Agency Pool		4,029,072,345	0.8	0.8	4.6	4.6	2.2	2.5	2.0
State Agency Pool - Actual Allocation Index			0.7	0.7	5.0	5.1	1.8	2.5	3.0
Difference			0.1	0.1	-0.4	-0.5	0.4	0.0	-0.1

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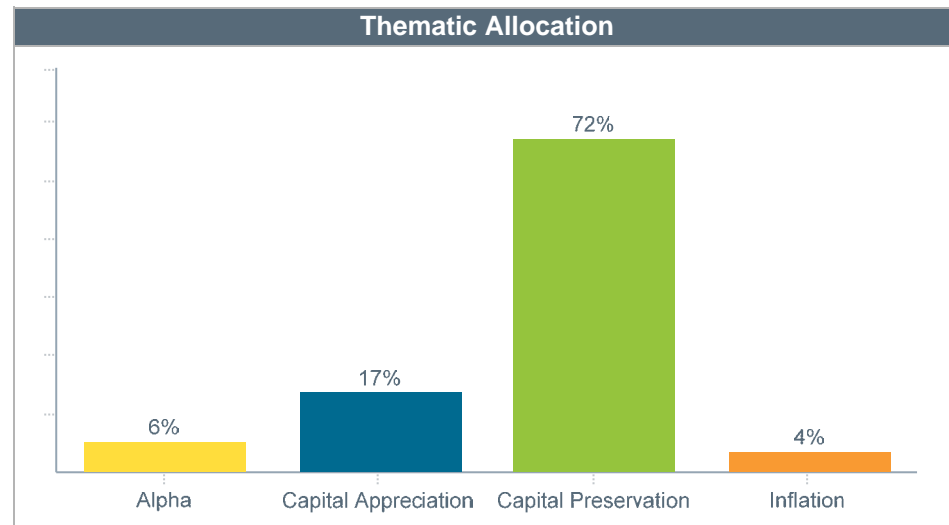
Wyoming State Treasurer's Office
State Agency Pool
Asset Allocation vs. Long-Term Target

As of September 30, 2019



	Market Value (\$)	Allocation (%)	Minimum (%)	Target (%)	Maximum (%)
Grosvenor	59,891,450	1.5	0.0	0.0	0.0
Core Fixed Income	0	0.0	0.0	0.0	0.0
Low Duration Fixed Income	999,418,973	25.5	0.0	0.0	0.0
Bank Loans	0	0.0	0.0	0.0	0.0
EMD (Local)	0	0.0	0.0	0.0	0.0
Ladder Strategy	1,499,603,483	38.2	100.0	100.0	100.0
Cash Equivalents	1,364,490,763	34.8	0.0	0.0	0.0
Total	3,923,404,669	100.0	--	100.0	--

Investment Profile
Fund Type: Non-Permanent Fund Main Objective: LSRA will be invested to obtain the highest possible return while seeking to preserve the balance necessary to address potential budget shortfalls or a budget deficit. Primary Investment Goal: liquidity, capital preservation, and capital appreciation. Maximum Equity Allocation: 36% Current Target Equity Allocation: 29.17% Spending Policy: Legislative Appropriation Participating Funds: <ul style="list-style-type: none"> • Long Term Reserve • Intermediate Term Reserve • Short Term Reserve



Long-Term Target Allocation			
	Minimum Range (%)	Target (%)	Maximum Range (%)
LSRA Long Term Reserve	-	100.00	-
Broad US Equity	17.00	22.00	27.00
Small Cap US Equity	4.00	6.00	8.00
International Equity	21.00	28.00	35.00
Bank Loans	10.00	12.50	15.00
MLPs	10.00	12.50	15.00
Diversified Hedge Funds	15.00	19.00	23.00
Cash (inv. in SAP)	0.00	0.00	0.00

Risk Metrics		
	Since Incep.	Inception Date
Standard Deviation	0.0	07/01/2019
Beta	N/A	
Sharpe Ratio	N/A	

Comparative Performance									
	Allocation	Performance (%)							
	Market Value (\$)	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years
LSRA	1,587,013,542	0.5	0.5	N/A	N/A	N/A	N/A	N/A	N/A
LSRA - Actual Allocation Index		0.3	0.3	N/A	N/A	N/A	N/A	N/A	N/A
Difference		0.2	0.2	N/A	N/A	N/A	N/A	N/A	N/A

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Wyoming State Treasurer's Office
Total LSRA
Asset Allocation vs. Long-Term Target

As of September 30, 2019

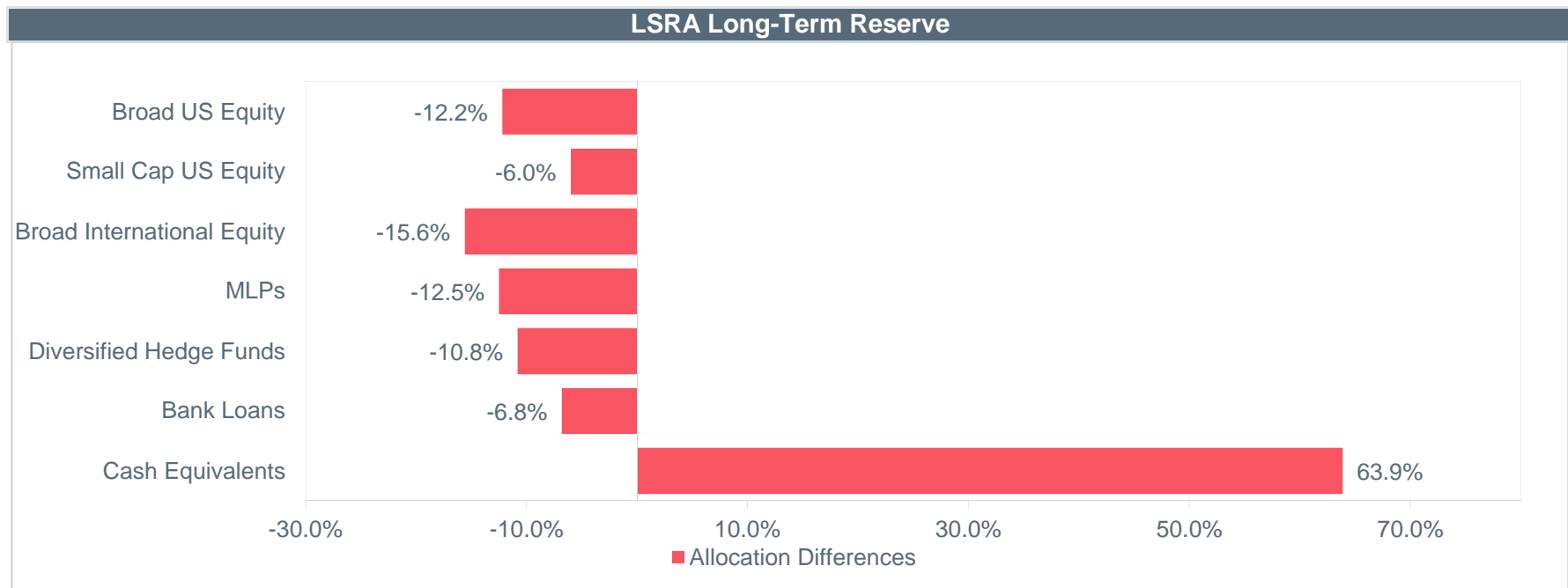
Total LSRA			
	Market Value (\$)	Allocation (%)	Target (%)
Broad US Equity	120,270,736	7.6	N/A
Small Cap US Equity	0	0.0	N/A
Broad International Equity	152,236,391	9.6	N/A
MLPs	0	0.0	N/A
Diversified Hedge Funds	100,540,840	6.3	N/A
Core Fixed Income	364,186,167	22.9	N/A
Low Duration Fixed Income	0	0.0	N/A
Bank Loans	69,941,945	4.4	N/A
Cash Equivalents	783,759,634	49.3	N/A
Total	1,590,935,714	100.0	N/A

Market values were provided by the Treasurer's Office and may differ from the rest of the report.

The Total LSRA pool has no target allocation.

Wyoming State Treasurer's Office
LSRA Long-Term Reserve
Asset Allocation vs. Long-Term Target

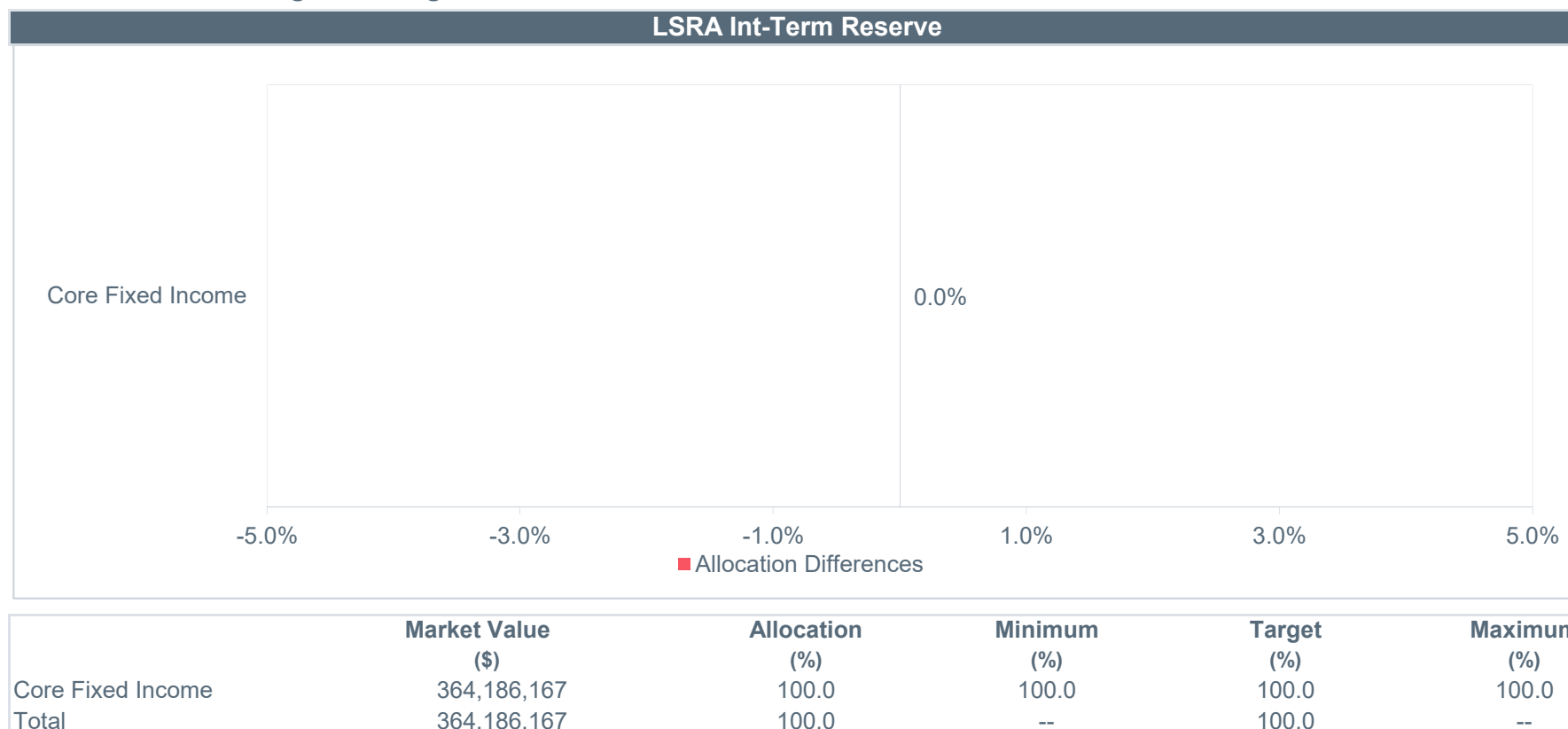
As of September 30, 2019



	Market Value (\$)	Allocation (%)	Minimum (%)	Target (%)	Maximum (%)
Broad US Equity	120,270,736	9.8	17.0	22.0	27.0
Small Cap US Equity	0	0.0	4.0	6.0	8.0
Broad International Equity	152,236,391	12.4	21.0	28.0	35.0
MLPs	0	0.0	10.0	12.5	15.0
Diversified Hedge Funds	100,540,840	8.2	15.0	19.0	23.0
Bank Loans	69,941,945	5.7	10.0	12.5	15.0
Cash Equivalents	783,759,634	63.9	0.0	0.0	0.0
Total	1,226,749,546	100.0	--	100.0	--

Market values were provided by the Treasurer's Office and may differ from the rest of the report.

Targets shown for LSRA represent the long-term reserve.



Market values were provided by the Treasurer's Office and may differ from the rest of the report.

Wyoming State Treasurer's Office
Asset Allocation & Performance

As of September 30, 2019

	Allocation		Performance (%)										
	Market Value (\$)	%	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2018	Since Incep.	Inception Date
All Cap US Equity	1,680,289,641	7.9	1.7	1.7	20.2	3.5	11.7	N/A	N/A	N/A	-6.2	10.7	11/01/2014
Russell 3000 Index			1.2	1.2	20.1	2.9	12.8	10.4	13.0	13.1	-5.2	10.0	
Difference			0.5	0.5	0.1	0.6	-1.1	N/A	N/A	N/A	-1.0	0.7	
Small Cap US Equity	156,273,679	0.7	-2.3	-2.3	14.1	-9.0	4.4	N/A	N/A	N/A	-18.3	4.3	11/01/2014
Russell 2000 Index			-2.4	-2.4	14.2	-8.9	8.2	8.2	10.4	11.2	-11.0	6.9	
Difference			0.1	0.1	-0.1	-0.1	-3.8	N/A	N/A	N/A	-7.3	-2.6	
Int'l Equity	2,049,670,224	9.7	-1.6	-1.6	12.9	-0.8	6.4	3.3	5.3	4.7	-14.7	5.4	01/01/2004
International Equity Custom Index			-1.8	-1.8	11.6	-1.2	6.3	2.9	5.0	4.1	-14.2	5.0	
Difference			0.2	0.2	1.3	0.4	0.1	0.4	0.3	0.6	-0.5	0.4	
Preferred Stock	149,202,312	0.7	3.7	3.7	15.7	11.6	N/A	N/A	N/A	N/A	N/A	10.5	07/01/2018
S&P US Preferred Stock Index			3.7	3.7	15.0	8.5	5.0	5.7	6.0	7.7	-4.3	7.0	
Difference			0.0	0.0	0.7	3.1	N/A	N/A	N/A	N/A	N/A	3.5	
MLPs	518,092,422	2.4	-5.2	-5.2	14.4	-9.4	N/A	N/A	N/A	N/A	N/A	-8.7	08/01/2018
MLP Custom Index			-5.0	-5.0	12.1	-7.8	-1.1	-8.2	0.0	7.0	-11.7	-6.6	
Difference			-0.2	-0.2	2.3	-1.6	N/A	N/A	N/A	N/A	N/A	-2.1	
Private Equity	548,263,634	2.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
S&P 500 Index+5%			2.9	2.9	25.0	9.5	19.1	16.4	18.9	18.9	0.4	14.2	
Difference			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Core Real Estate	1,002,730,183	4.7	1.1	1.1	1.3	3.0	5.7	8.1	8.8	9.5	7.7	5.6	01/01/2006
NCREIF ODCE Index (AWA) (Net)			1.1	1.1	3.1	4.6	6.3	8.4	9.3	9.8	7.4	5.8	
Difference			0.0	0.0	-1.8	-1.6	-0.6	-0.3	-0.5	-0.3	0.3	-0.2	
Non-Core Real Estate	244,926,868	1.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
NCREIF ODCE Index (AWA) (Net)			1.1	1.1	3.1	4.6	6.3	8.4	9.3	9.8	7.4	4.6	
Difference			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Diversified Hedge Funds	753,671,292	3.5	0.3	0.3	2.3	-0.3	2.5	1.2	3.3	3.6	-0.8	2.2	12/01/2007
HFRI FOF Comp Index			-1.0	-1.0	5.1	0.0	3.1	1.9	3.2	2.7	-4.0	1.0	
Difference			1.3	1.3	-2.8	-0.3	-0.6	-0.7	0.1	0.9	3.2	1.2	
Core Fixed Income	3,567,473,116	16.8	2.4	2.4	8.0	9.6	3.0	3.4	N/A	N/A	0.5	2.8	01/01/2013
Bloomberg US Agg Bond Index			2.3	2.3	8.5	10.3	2.9	3.4	2.7	3.7	0.0	2.8	
Difference			0.1	0.1	-0.5	-0.7	0.1	0.0	N/A	N/A	0.5	0.0	

Performance shown is net of fees and excludes Public Purpose Investments (PPIs). Wyoming State Treasurer's Office fiscal year ends on June 30th.

Wyoming State Treasurer's Office
Asset Allocation & Performance

As of September 30, 2019

	Allocation		Performance (%)										
	Market Value (\$)	%	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2018	Since Incep.	Inception Date
Intermediate Govt Fixed Income	1,938,409,792	9.1	1.5	1.5	5.0	7.1	2.5	2.5	2.0	2.5	1.8	4.6	10/01/1996
Bloomberg US Gov't: Int. Term Bond Index			1.2	1.2	5.2	7.5	1.8	2.2	1.6	2.4	1.4	4.6	
Difference			0.3	0.3	-0.2	-0.4	0.7	0.3	0.4	0.1	0.4	0.0	
Bank Loans	1,089,595,212	5.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.4	09/01/2019
S&P/LSTA Lvg'd Loan Index			1.0	1.0	6.8	3.1	4.5	4.0	4.1	5.2	0.4	0.5	
Difference			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0.1	
Opportunistic Fixed Income	133,470,486	0.6	1.3	1.3	5.1	3.9	7.2	6.3	N/A	N/A	4.1	6.1	07/01/2014
CS Western Euro Hi Yld Index			2.1	2.1	11.6	8.0	7.1	6.3	7.3	8.7	-1.1	5.8	
Difference			-0.8	-0.8	-6.5	-4.1	0.1	0.0	N/A	N/A	5.2	0.3	
Emerging Market Debt	195,648,253	0.9	-1.3	-1.3	7.1	8.3	2.0	-0.7	N/A	N/A	-9.1	-2.2	04/01/2013
JPM GBI-EM Gbl Dvf'd Index (USD) (TR) (Unhedged)			-0.8	-0.8	7.9	10.1	3.1	0.6	-0.4	2.5	-6.2	-1.0	
Difference			-0.5	-0.5	-0.8	-1.8	-1.1	-1.3	N/A	N/A	-2.9	-1.2	
Laddered Treasury	1,499,603,483	7.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10/01/2019
Long Duration Fixed Income	831,136,169	3.9	6.6	6.6	21.0	N/A	N/A	N/A	N/A	N/A	N/A	21.0	01/01/2019
Bloomberg US Gov't Crdt Lng Trm Bond Index			6.6	6.6	20.9	21.9	5.6	6.8	5.3	7.4	-4.7	20.9	
Difference			0.0	0.0	0.1	N/A	N/A	N/A	N/A	N/A	N/A	0.1	
Low Duration Fixed Income	999,418,973	4.7	0.6	0.6	3.1	N/A	N/A	N/A	N/A	N/A	N/A	3.8	12/01/2018
Low Duration Fixed Income Custom Index			0.6	0.6	3.3	4.5	1.8	1.6	1.3	1.5	1.6	4.1	
Difference			0.0	0.0	-0.2	N/A	N/A	N/A	N/A	N/A	N/A	-0.3	
Public Purpose Investments	265,049,052	1.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Cash Equivalents	3,608,075,014	17.0	0.5	0.5	1.9	2.5	1.5	1.0	0.8	0.7	1.9	1.5	01/01/2006
JP Morgan Cash Custom Index			0.6	0.6	2.0	2.7	1.6	1.1	0.8	0.7	1.9	1.6	
Difference			-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	0.0	0.0	0.0	-0.1	
Total Fund	21,232,382,007	100.0	1.0	1.0	7.9	5.2	4.7	4.2	4.5	5.3	-1.3	5.4	10/01/1996
Wyoming State Custom Index			0.9	0.9	8.2	5.7	4.5	4.2	4.5	5.1	-1.6	5.4	
Difference			0.1	0.1	-0.3	-0.5	0.2	0.0	0.0	0.2	0.3	0.0	

Performance shown is net of fees and excludes Public Purpose Investments (PPIs). Wyoming State Treasurer's Office fiscal year ends on June 30th.

Wyoming State Treasurer's Office
Asset Allocation & Performance

As of September 30, 2019

	Allocation	Performance (%)									
	Market Value (\$)	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Incep.	Inception Date
Public Equity											
All Cap US Equity Composite	1,680,289,641	1.67	1.67	20.16	3.47	11.65	N/A	N/A	N/A	10.69	11/01/2014
Russell 3000 Index		1.16	1.16	20.09	2.92	12.83	10.44	13.00	13.08	10.02	
Difference		0.51	0.51	0.07	0.55	-1.18	N/A	N/A	N/A	0.67	
State Street All Cap	1,680,289,641	1.67	1.67	20.06	3.83	12.53	N/A	N/A	N/A	9.64	01/01/2015
State Street All Cap Custom Index		1.51	1.51	19.93	3.47	12.44	10.26	12.94	12.98	9.62	
Difference		0.16	0.16	0.13	0.36	0.09	N/A	N/A	N/A	0.02	
UW Portfolio Mgmt Program	1,382,204	1.45	1.45	16.48	-2.34	10.27	8.85	10.82	9.03	5.11	04/01/2006
S&P 500 Index (Cap Wtd)		1.70	1.70	20.55	4.25	13.39	10.84	13.26	13.24	8.62	
Difference		-0.25	-0.25	-4.07	-6.59	-3.12	-1.99	-2.44	-4.21	-3.51	
Small Cap US Equity Composite	156,273,679	-2.33	-2.33	14.08	-9.03	4.40	N/A	N/A	N/A	4.29	11/01/2014
Russell 2000 Index		-2.40	-2.40	14.18	-8.89	8.23	8.19	10.43	11.19	6.93	
Difference		0.07	0.07	-0.10	-0.14	-3.83	N/A	N/A	N/A	-2.64	
Internal Equity Russell 2000	156,273,679	-2.33	-2.33	14.08	-9.03	N/A	N/A	N/A	N/A	-10.33	09/01/2018
Russell 2000 Index		-2.40	-2.40	14.18	-8.89	8.23	8.19	10.43	11.19	-10.27	
Difference		0.07	0.07	-0.10	-0.14	N/A	N/A	N/A	N/A	-0.06	
International Equity Composite	2,049,670,224	-1.57	-1.57	12.91	-0.79	6.45	3.26	5.31	4.65	5.38	01/01/2004
International Equity Custom Index		-1.80	-1.80	11.56	-1.23	6.33	2.90	5.01	4.12	4.99	
Difference		0.23	0.23	1.35	0.44	0.12	0.36	0.30	0.53	0.39	
Northern Trust	1,349,004,213	-1.64	-1.64	11.78	-0.89	6.59	3.06	5.17	N/A	4.95	08/01/2010
MSCI ACW Ex US Index (Net)		-1.80	-1.80	11.56	-1.23	6.33	2.90	5.01	4.46	4.80	
Difference		0.16	0.16	0.22	0.34	0.26	0.16	0.16	N/A	0.15	
Arrowstreet	700,666,011	-1.43	-1.43	11.68	-3.20	N/A	N/A	N/A	N/A	-4.21	03/01/2018
MSCI ACW Ex US IM Index (Net)		-1.72	-1.72	11.39	-1.84	6.10	3.05	5.17	4.66	-3.60	
Difference		0.29	0.29	0.29	-1.36	N/A	N/A	N/A	N/A	-0.61	

Performance shown is net of fees. The International Equity Custom Index consists of the MSCI EAFE Index (Gross) through July 2010 and the MSCI ACW Ex US Index (Net) thereafter. The SSGA Custom Index consists of 69% Russell 3000, 24% FTSE RAFI US 1000, and 7% MSCI US Min Vol Index. Wyoming State Treasurer's Office fiscal year ends on June 30th. Since Inception date shown represents the first full month following initial funding.

Wyoming State Treasurer's Office
Asset Allocation & Performance

As of September 30, 2019

	Allocation	Performance (%)									
	Market Value (\$)	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Incep.	Inception Date
Hybrid Assets											
Cohen & Steers	149,202,312	3.69	3.69	15.67	11.60	N/A	N/A	N/A	N/A	10.54	07/01/2018
S&P US Preferred Stock Index		3.71	3.71	15.04	8.55	4.98	5.71	5.95	7.65	6.96	
Difference		-0.02	-0.02	0.63	3.05	N/A	N/A	N/A	N/A	3.58	
Harvest Fund Advisors	518,092,422	-5.20	-5.20	14.38	-9.44	N/A	N/A	N/A	N/A	-8.73	08/01/2018
MLP Custom Index		-5.02	-5.02	12.12	-7.84	-1.14	-8.21	0.00	6.97	-6.56	
Difference		-0.18	-0.18	2.26	-1.60	N/A	N/A	N/A	N/A	-2.17	
Real Estate											
Core Real Estate Composite	1,002,730,183	1.08	1.08	1.29	3.03	5.71	8.09	8.75	9.54	5.63	01/01/2006
NCREIF ODCE Index (AWA) (Net)		1.08	1.08	3.08	4.64	6.34	8.36	9.29	9.84	5.84	
Difference		0.00	0.00	-1.79	-1.61	-0.63	-0.27	-0.54	-0.30	-0.21	
Clarion Lion	655,867,691	1.52	1.52	4.68	6.62	7.73	9.84	10.25	10.93	5.53	01/01/2006
NCREIF ODCE Index (AWA) (Net)		1.08	1.08	3.08	4.64	6.34	8.36	9.29	9.84	5.84	
Difference		0.44	0.44	1.60	1.98	1.39	1.48	0.96	1.09	-0.31	
UBS Trumbull	269,942,035	0.72	0.72	-2.68	-1.18	3.31	5.86	6.84	7.92	5.05	07/01/2006
NCREIF ODCE Index (AWA) (Net)		1.08	1.08	3.08	4.64	6.34	8.36	9.29	9.84	5.50	
Difference		-0.36	-0.36	-5.76	-5.82	-3.03	-2.50	-2.45	-1.92	-0.45	
SC Capital	76,920,457	-1.40	-1.40	6.67	10.91	5.58	N/A	N/A	N/A	6.91	09/01/2016
NCREIF ODCE Index (AWA) (Net)		1.08	1.08	3.08	4.64	6.34	8.36	9.29	9.84	6.79	
Difference		-2.48	-2.48	3.59	6.27	-0.76	N/A	N/A	N/A	0.12	

Performance shown is net of fees. Wyoming State Treasurer's Office fiscal year ends on June 30th. Since Inception date shown represents the first full month following initial funding.

Wyoming State Treasurer's Office
Asset Allocation & Performance

As of September 30, 2019

	Allocation	Performance (%)									
	Market Value (\$)	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Incep.	Inception Date
Diversified Hedge Funds											
Diversified Hedge Funds Composite	753,671,292	0.28	0.28	2.34	-0.33	2.54	1.17	3.26	3.64	2.25	12/01/2007
HFRI FOF Comp Index		-0.95	-0.95	5.15	-0.05	3.14	1.94	3.17	2.67	1.03	
Difference		1.23	1.23	-2.81	-0.28	-0.60	-0.77	0.09	0.97	1.22	
Grosvenor Diversified Hedge Funds	247,735,498	0.50	0.50	3.05	-1.01	N/A	N/A	N/A	N/A	-0.17	07/01/2018
HFRI FOF Comp Index		-0.95	-0.95	5.15	-0.05	3.14	1.94	3.17	2.67	0.15	
Difference		1.45	1.45	-2.10	-0.96	N/A	N/A	N/A	N/A	-0.32	
Internal Diversified Hedge Funds	496,537,439	0.28	0.28	4.52	4.53	N/A	N/A	N/A	N/A	4.32	07/01/2018
HFRI FOF Comp Index		-0.95	-0.95	5.15	-0.05	3.14	1.94	3.17	2.67	0.15	
Difference		1.23	1.23	-0.63	4.58	N/A	N/A	N/A	N/A	4.17	

Performance shown is net of fees. Wyoming State Treasurer's Office fiscal year ends on June 30th. Since Inception date shown represents the first full month following initial funding.

Wyoming State Treasurer's Office
Asset Allocation & Performance

As of September 30, 2019

	Allocation	Performance (%)									
	Market Value (\$)	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Incep.	Inception Date
Fixed Income											
Core Fixed Income Composite	3,567,473,116	2.44	2.44	7.97	9.64	2.96	3.38	N/A	N/A	2.75	01/01/2013
Bloomberg US Agg Bond Index		2.27	2.27	8.52	10.30	2.92	3.38	2.72	3.75	2.79	
Difference		0.17	0.17	-0.55	-0.66	0.04	0.00	N/A	N/A	-0.04	
C.S. McKee	1,297,781,514	2.22	2.22	7.78	9.36	3.07	3.44	N/A	N/A	2.78	01/01/2013
C.S. McKee Custom Index		2.27	2.27	7.43	9.36	2.83	3.32	2.68	3.72	2.75	
Difference		-0.05	-0.05	0.35	0.00	0.24	0.12	N/A	N/A	0.03	
PIMCO	2,269,691,601	2.56	2.56	7.68	9.30	3.03	3.47	N/A	N/A	2.73	01/01/2013
PIMCO Custom Index		2.27	2.27	7.11	9.03	2.58	3.17	2.57	3.64	2.64	
Difference		0.29	0.29	0.57	0.27	0.45	0.30	N/A	N/A	0.09	
Intermediate Govt Fixed Income											
Internal Intermediate Govt Fixed Income Portfolio	1,938,409,792	1.47	1.47	5.04	7.07	2.48	2.49	1.99	2.46	4.64	10/01/1996
Bloomberg US Gov't: Int. Term Bond Index		1.18	1.18	5.18	7.52	1.82	2.18	1.60	2.35	4.63	
Difference		0.29	0.29	-0.14	-0.45	0.66	0.31	0.39	0.11	0.01	
Opportunistic Fixed Income											
Grosvenor Silvery Lupine Fund	133,470,486	1.30	1.30	5.05	3.88	7.20	6.33	N/A	N/A	6.15	07/01/2014
CS Western Euro Hi Yld Index		2.06	2.06	11.60	7.96	7.10	6.30	7.31	8.71	5.82	
Difference		-0.76	-0.76	-6.55	-4.08	0.10	0.03	N/A	N/A	0.33	
Bank Loans Composite	1,089,595,212	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.45	09/01/2019
S&P/LSTA Lvg'd Loan Index		0.99	0.99	6.79	3.10	4.53	3.98	4.11	5.22	0.47	
Difference		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0.02	
Credit Suisse	591,506,524	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.52	09/01/2019
S&P/LSTA Lvg'd Loan Index		0.99	0.99	6.79	3.10	4.53	3.98	4.11	5.22	0.47	
Difference		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.05	
Octagon	404,134,699	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.63	09/01/2019
S&P/LSTA Lvg'd Loan Index		0.99	0.99	6.79	3.10	4.53	3.98	4.11	5.22	0.47	
Difference		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.16	

Performance shown is net of fees. At 09/30/2019, the Internal Intermediate Gov't Fixed Income Portfolio Index consists of the Bloomberg US Gov't: Int. Term Bond Index; prior to December 2009 the index consisted of the Bloomberg US Gov't/Credit Bond Index. The C.S. McKee Custom Index consists of the Bloomberg US Agg Bond Index through January 2018, the Bloomberg US Agg Int Index through May 2019, and the Bloomberg US Agg Bond Index thereafter. The PIMCO Custom Index consists of the Bloomberg US Agg Bond Index through February 2018, the Bloomberg US Agg Int Index through June 2019, the Bloomberg US Agg Bond Index through 03/26/2020, account performance from 03/27/2020 through 04/03/2020, and the Bloomberg US Agg Bond Index thereafter.

Wyoming State Treasurer's Office
Asset Allocation & Performance

As of September 30, 2019

	Allocation	Performance (%)									
	Market Value (\$)	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Incep.	Inception Date
Emerging Market Debt Fixed Income Composite	195,648,253	-1.32	-1.32	7.13	8.34	1.96	-0.69	N/A	N/A	-2.24	04/01/2013
JPM GBI-EM Gbl Dvf'd Index (Unhedged)		-0.79	-0.79	7.86	10.13	3.06	0.55	-0.37	2.47	-1.00	
Difference		-0.53	-0.53	-0.73	-1.79	-1.10	-1.24	N/A	N/A	-1.24	
Investec	195,648,253	-1.32	-1.32	7.68	8.70	2.80	-0.22	N/A	N/A	-1.62	04/01/2013
JPM GBI-EM Gbl Dvf'd Index (Unhedged)		-0.79	-0.79	7.86	10.13	3.06	0.55	-0.37	2.47	-1.00	
Difference		-0.53	-0.53	-0.18	-1.43	-0.26	-0.77	N/A	N/A	-0.62	
Laddered Treasury Composite	1,499,603,483	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10/01/2019
Internal Ladder Portfolio	1,499,603,483	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10/01/2019
Long Duration Fixed Income Composite	831,136,169	6.65	6.65	21.03	N/A	N/A	N/A	N/A	N/A	21.03	01/01/2019
Bloomberg US Gov't Crdt Lng Trm Bond Index		6.58	6.58	20.93	21.88	5.56	6.81	5.33	7.42	20.93	
Difference		0.07	0.07	0.10	N/A	N/A	N/A	N/A	N/A	0.10	
Internal Long Duration Govt Fixed Income Portfolio	428,357,123	7.55	7.55	19.41	N/A	N/A	N/A	N/A	N/A	19.41	01/01/2019
Bloomberg US Gov't Lng Trm Bond Index		7.83	7.83	19.61	24.58	4.11	6.73	4.76	6.86	19.61	
Difference		-0.28	-0.28	-0.20	N/A	N/A	N/A	N/A	N/A	-0.20	
Logan Circle	402,779,045	5.71	5.71	22.22	N/A	N/A	N/A	N/A	N/A	24.64	11/01/2018
Bloomberg US Lng Crdt Index		5.62	5.62	21.92	19.91	6.46	6.90	5.73	7.78	24.41	
Difference		0.09	0.09	0.30	N/A	N/A	N/A	N/A	N/A	0.23	
Low Duration Fixed Income Composite	999,418,973	0.57	0.57	3.06	N/A	N/A	N/A	N/A	N/A	3.79	12/01/2018
Low Duration Fixed Income Custom Index		0.59	0.59	3.31	4.53	1.78	1.57	1.32	1.51	4.11	
Difference		-0.02	-0.02	-0.25	N/A	N/A	N/A	N/A	N/A	-0.32	
Internal Low Duration Govt Fixed Income Portfolio	999,418,973	0.57	0.57	2.91	4.14	N/A	N/A	N/A	N/A	3.05	03/01/2018
Bloomberg US Gov't 1-3 Yr Bond Index		0.59	0.59	3.07	4.42	1.54	1.34	1.08	1.21	3.16	
Difference		-0.02	-0.02	-0.16	-0.28	N/A	N/A	N/A	N/A	-0.11	

Performance shown is net of fees. The Low Duration Fixed Income Custom Index consists of the Bloomberg US Gov't Crdt 1-3 Yr Bond Index through 06/30/2019 and the Bloomberg US Gov't 1-3 Yr Bond Index thereafter.

Wyoming State Treasurer's Office
Asset Allocation & Performance

As of September 30, 2019

	Allocation	Performance (%)									
	Market Value (\$)	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Incep.	Inception Date
Cash Equivalents											
JP Morgan Cash Composite	3,608,075,014	0.54	0.54	1.90	2.55	1.53	1.04	0.77	0.68	1.55	01/01/2006
JP Morgan Cash Custom Index		0.56	0.56	2.00	2.66	1.55	1.07	0.80	0.74	1.57	
Difference		-0.02	-0.02	-0.10	-0.11	-0.02	-0.03	-0.03	-0.06	-0.02	
Wyo-Star Cash Composite	669,174,348	0.59	0.59	2.14	2.88	1.52	1.06	0.81	0.73	3.24	10/01/1996
Wyo-Star Cash Custom Index		0.61	0.61	2.32	3.07	1.58	1.12	0.86	0.82	2.66	
Difference		-0.02	-0.02	-0.18	-0.19	-0.06	-0.06	-0.05	-0.09	0.58	
WYO STAR II Total Fund	30,244,103	0.89	0.89	4.16	N/A	N/A	N/A	N/A	N/A	4.16	01/01/2019
Bloomberg US Corp 1-3 Yr Index		0.96	0.96	4.40	5.21	2.54	2.26	2.08	2.63	4.40	
Difference		-0.07	-0.07	-0.24	N/A	N/A	N/A	N/A	N/A	-0.24	

Performance shown is net of fees.

Wyoming State Treasurer's Office
Investment Values by Fund
September 30, 2019

	Total Investment Value	Fiscal Year Ending 06/30/19 Market Value	Current Market Value	% of MV
Wyoming State Total Fund	\$20,149,530,640	\$21,444,953,937	\$21,232,382,007	100.0%
Permanent Mineral Trust	\$7,438,322,074	\$7,971,971,056	\$7,981,028,191	100.0%
US Equity	\$796,625,110	\$1,005,361,041	\$1,011,468,525	12.7%
International Equity	\$1,076,472,629	\$1,159,848,536	\$1,136,324,664	14.2%
MLPs	\$287,840,223	\$275,600,089	\$257,022,472	3.2%
Private Equity	\$248,660,572	\$384,982,809	\$375,873,638	4.7%
Real Estate	\$546,372,882	\$581,077,046	\$649,941,484	8.1%
Diversified Hedge Funds	\$591,188,026	\$591,606,799	\$593,235,973	7.4%
Fixed Income	\$3,072,619,517	\$3,647,250,124	\$3,059,301,520	38.3%
Public Purpose Investments	\$118,654,111	\$119,504,982	\$118,839,314	1.5%
Cash Equivalents (Liquidated Managers)	\$0	\$7,262,727	\$75,646,596	0.9%
Cash (invested in State Agency Pool)	\$699,889,003	\$199,476,903	\$703,374,005	8.8%
Common School Perm Land Fund	\$3,901,304,338	\$4,078,488,970	\$4,172,217,991	100.0%
US Equity	\$279,043,933	\$374,104,474	\$376,043,476	9.0%
International Equity	\$375,021,201	\$409,406,113	\$400,956,485	9.6%
Preferred Stock	\$114,718,559	\$132,252,837	\$137,129,008	3.3%
MLPs	\$196,835,228	\$188,918,891	\$176,184,269	4.2%
Private Equity	\$92,075,967	\$152,097,948	\$146,132,101	3.5%
Real Estate	\$369,730,660	\$234,141,119	\$415,566,787	10.0%
Diversified Hedge Funds	\$0	\$0	\$0	0.0%
Fixed Income	\$2,135,025,510	\$2,490,208,719	\$2,146,733,415	51.5%
Public Purpose Investments	\$18,359,738	\$18,359,738	\$18,359,738	0.4%
Cash Equivalents (Liquidated Managers)	\$0	\$3,298,790	\$33,023,317	0.8%
Cash (invested in State Agency Pool)	\$320,493,543	\$75,700,340	\$322,089,397	7.7%
Permanent Land Fund	\$189,399,768	\$194,691,580	\$203,083,022	100.0%
US Equity	\$23,277,748	\$23,867,892	\$28,732,231	14.1%
International Equity	\$25,665,380	\$27,583,182	\$27,017,449	13.3%
MLPs	\$7,130,126	\$6,809,105	\$6,350,118	3.1%
Private Equity	\$7,366,616	\$11,031,512	\$10,718,210	5.3%
Real Estate	\$13,486,205	\$14,416,934	\$16,051,086	7.9%
Diversified Hedge Funds	\$14,102,688	\$14,111,986	\$14,151,582	7.0%
Fixed Income	\$74,897,517	\$87,421,704	\$74,476,206	36.7%
Cash Equivalents (Liquidated Managers)	\$0	\$190,109	\$1,995,767	1.0%
Cash (invested in State Agency Pool)	\$23,473,489	\$9,259,157	\$23,590,372	11.6%
University Permanent Land Fund	\$21,102,410	\$26,193,894	\$21,925,133	100.0%
US Equity	\$2,132,866	\$6,445,924	\$1,711,377	7.8%
International Equity	\$3,155,331	\$3,357,492	\$3,284,637	15.0%
MLPs	\$852,953	\$817,896	\$762,764	3.5%
Private Equity	\$639,276	\$967,444	\$957,130	4.4%
Real Estate	\$1,745,002	\$1,696,960	\$2,053,854	9.4%
Diversified Hedge Funds	\$1,482,428	\$1,479,925	\$1,483,716	6.8%
Fixed Income	\$9,767,389	\$11,361,121	\$10,191,153	46.5%
Cash Equivalents (Liquidated Managers)	\$0	\$21,415	\$146,730	0.7%
Cash (invested in State Agency Pool)	\$1,327,166	\$45,717	\$1,333,774	6.1%

Wyoming State Treasurer's Office
Investment Values by Fund
September 30, 2019

	Total Investment Value	Fiscal Year Ending 06/30/19 Market Value	Current Market Value	% of MV
Wyoming State Total Fund	\$20,149,530,640	\$21,444,953,937	\$21,232,382,007	100.0%
Hathaway Scholarship	\$565,508,951	\$591,871,445	\$600,609,385	100.0%
US Equity	\$59,259,053	\$74,650,590	\$75,096,618	12.5%
International Equity	\$79,658,193	\$85,692,479	\$83,932,035	14.0%
MLPs	\$21,552,986	\$20,680,678	\$19,286,637	3.2%
Private Equity	\$10,891,974	\$14,557,053	\$14,582,555	2.4%
Real Estate	\$40,807,649	\$45,012,657	\$48,979,566	8.2%
Diversified Hedge Funds	\$43,753,701	\$43,771,735	\$43,889,939	7.3%
Fixed Income	\$231,971,740	\$290,418,309	\$229,273,614	38.2%
Cash Equivalents (Liquidated Managers)	\$0	\$631,552	\$7,568,298	1.3%
Cash (invested in State Agency Pool)	\$77,613,655	\$16,456,391	\$78,000,122	13.0%
Higher Education	\$114,162,636	\$120,309,188	\$120,835,345	100.0%
US Equity	\$8,806,176	\$11,818,524	\$11,876,820	9.8%
International Equity	\$11,365,495	\$12,431,046	\$12,171,941	10.1%
Preferred Stock	\$3,492,219	\$4,022,509	\$4,170,819	3.5%
MLPs	\$5,894,594	\$5,649,849	\$5,269,004	4.4%
Real Estate	\$11,297,896	\$8,260,669	\$12,990,790	10.8%
Diversified Hedge Funds	\$0	\$0	\$0	0.0%
Fixed Income	\$59,427,758	\$73,451,983	\$58,843,343	48.7%
Cash Equivalents (Liquidated Managers)	\$0	\$132,692	\$1,565,025	1.3%
Cash (invested in State Agency Pool)	\$13,878,497	\$4,541,917	\$13,947,603	11.5%
Workers Compensation Fund	\$2,095,379,034	\$2,234,257,336	\$2,274,899,588	100.0%
US Equity	\$159,123,643	\$193,066,261	\$194,399,849	8.5%
International Equity	\$211,926,744	\$224,283,899	\$219,599,420	9.7%
MLPs	\$50,135,520	\$48,082,691	\$44,841,539	2.0%
Real Estate	\$88,424,910	\$68,996,557	\$102,073,484	4.5%
Diversified Hedge Funds	\$0	\$0	\$0	0.0%
Fixed Income	\$1,361,359,007	\$1,630,435,565	\$1,473,663,911	64.8%
Cash Equivalents (Liquidated Managers)	\$0	\$1,665,041	\$14,794,760	0.7%
Cash (invested in State Agency Pool)	\$224,409,211	\$67,727,322	\$225,526,626	9.9%
Pool A	\$244,405,501	\$243,277,587	\$241,697,466	100.0%
US Equity	\$17,108,060	\$18,175,266	\$18,345,891	7.6%
International Equity	\$13,720,880	\$14,444,908	\$14,147,203	5.9%
Preferred Stock	\$16,789,223	\$7,621,480	\$7,902,485	3.3%
MLPs	\$9,010,215	\$8,981,010	\$8,375,619	3.5%
Fixed Income	\$142,976,382	\$186,588,163	\$144,043,761	59.6%
Cash Equivalents (Liquidated Managers)	\$0	\$450,213	\$3,858,686	1.6%
Cash (invested in State Agency Pool)	\$44,800,742	\$7,016,546	\$45,023,821	18.6%
LSRA	\$1,570,836,395	\$1,554,768,810	\$1,587,013,542	100.0%
US Equity	\$112,155,845	\$119,152,165	\$120,270,736	7.6%
International Equity	\$147,646,806	\$155,571,843	\$152,236,391	9.6%
Fixed Income	\$435,488,089	\$0	\$434,128,112	27.4%
Diversified Hedge Funds	\$99,939,460	\$100,627,859	\$100,910,082	6.4%
Cash (invested in State Agency Pool)	\$775,606,195	\$1,179,416,944	\$779,468,220	49.1%
State Agency Pool	\$4,009,109,533	\$4,429,124,071	\$4,029,072,345	100.0%
Fixed Income	\$1,721,803,668	\$1,974,803,380	\$1,699,399,795	42.2%
Public Purpose Investments	\$82,797,236	\$142,626,490	\$82,797,236	2.1%
Cash Equivalents	\$2,204,508,629	\$2,311,694,200	\$2,246,875,314	55.8%

Wyoming State Treasurer's Office
Investment Values by Manager
September 30, 2019

	Total Investment Value	Fiscal Year Ending 06/30/19 Market Value	Current Market Value	% of MV
Wyoming State Total Fund	\$20,149,530,640	\$21,444,953,937	\$21,232,382,007	100.0%
US Equity	\$1,457,532,433	\$1,826,642,137	\$1,837,945,523	8.7%
State Street All Cap	\$1,291,605,451	\$1,664,662,199	\$1,680,289,641	
UW Portfolio Management Program	\$1,000,000	\$1,436,620	\$1,382,204	
Internal Equity Russell 2000	\$164,926,982	\$160,543,319	\$156,273,679	
International Equity	\$1,944,632,659	\$2,092,619,499	\$2,049,670,224	9.7%
Northern Trust	\$1,260,462,063	\$1,381,786,102	\$1,349,004,213	
Arrowstreet	\$684,170,596	\$710,833,396	\$700,666,011	
Mixed Assets	\$714,251,845	\$699,437,035	\$667,294,734	3.1%
Cohen & Steers	\$135,000,000	\$143,896,826	\$149,202,312	
Harvest	\$579,251,845	\$555,540,208	\$518,092,422	
Private Equity	\$359,634,404	\$563,636,766	\$548,263,634	2.6%
Access Venture Partners II	\$2,449,913	\$1,865,656	\$1,829,077	
Cheyenne Capital	\$114,670,841	\$211,623,592	\$191,872,820	
Hamilton Lane Nowood	\$127,307,779	\$151,720,725	\$151,021,888	
Neuberger Berman Sauger	\$115,205,871	\$198,426,794	\$203,539,848	
Real Estate	\$1,071,865,204	\$953,601,941	\$1,247,657,051	5.9%
Clarion Lion	\$563,182,780	\$354,681,028	\$655,867,691	
UBS Trumbull	\$241,303,630	\$270,503,057	\$269,942,035	
Cornerstone	\$1,880,170	\$1,821,910	\$1,830,685	
Heitman	\$1,759,375	\$19,469	\$19,598	
M&G	\$58,658,443	\$47,744,275	\$40,608,782	
Northwood	\$104,589,306	\$146,601,385	\$149,036,697	
SC Capital	\$72,071,663	\$78,983,905	\$76,920,457	
TA Realty	\$1,578,185	\$35,742	\$33,824	
WestRiver	\$26,841,651	\$53,211,171	\$53,397,281	
Diversified Hedge Funds	\$750,466,303	\$751,598,303	\$753,671,292	3.5%
PAAMCO - Jackalope	\$13,466,303	\$9,952,532	\$9,398,355	
Grosvenor Diversified Hedge Funds	\$250,000,000	\$246,497,039	\$247,735,498	
Internal Diversified Hedge Funds	\$487,000,000	\$495,148,732	\$496,537,439	
Fixed Income	\$9,945,703,220	\$8,671,474,240	\$10,254,755,484	48.3%
C.S. McKee	\$1,257,239,101	\$1,286,501,718	\$1,297,781,514	
PIMCO	\$2,193,570,781	\$2,230,795,802	\$2,269,691,601	
Credit Suisse	\$586,618,499	\$0	\$591,506,524	
Octagon	\$402,552,523	\$0	\$404,134,699	
Seix	\$69,636,763	\$949,531,882	\$93,953,989	
Grosvenor Silvery Lupine Fund	\$97,553,806	\$166,179,246	\$133,470,486	
Investec	\$238,350,175	\$200,205,291	\$195,648,253	
Internal Long Duration Govt Portfolio	\$367,019,560	\$404,443,766	\$428,357,123	
Logan Circle	\$353,000,000	\$393,795,617	\$402,779,045	
Internal Int. Duration Govt Portfolio	\$1,900,616,081	\$1,918,424,288	\$1,938,409,792	
Internal Low Duration Govt Portfolio	\$979,545,933	\$1,121,596,630	\$999,418,973	
Wyoming Internal Ladder Portfolio	\$1,500,000,000	\$0	\$1,499,603,483	
Public Purpose Investments	\$264,863,849	\$330,714,719	\$265,049,052	1.2%
Cash & Cash Equivalents	\$3,640,580,722	\$5,555,229,297	\$3,608,075,014	17.0%
Epoch	\$0	\$0	-	
Fisher Investments	\$0	\$2,558,658	\$1,352,571	
Allianz Global Investors	\$0	\$7,410,494	\$37,092	
JP Morgan Core	\$117,247,147	\$1,454,650,728	\$119,838,589	
Neuberger Berman Credit	\$75,826,631	\$796,482,423	\$32,569,116	
State Street TIPS	\$3,565,316	\$891,039	\$555,218	
State Street Low Duration	\$25,000,000	\$163,834,297	\$25,432,530	
Stone Harbor	\$14,885,619	\$14,992,922	\$14,697,268	
JP Morgan Cash Composite	\$3,404,056,009	\$3,114,408,736	\$3,413,592,629	

State of Wyoming
State Loan and Investment Board
Investment Policy Objective Review

September 30, 2019

Investment Policy Guidelines	Meeting Objective			Explanation
	Yes	No	N/A	
1. Total Fund				
Exceed the rate of inflation (C.P.I.) over a market cycle of 5-years.	✓			Wyoming returned 4.2% vs. 1.5% for the C.P.I. for the current 5-year period
Exceed a weighted index of the total fund's asset allocation and component benchmarks over rolling 5-year periods by an appropriate amount.	✓			Wyoming returned 4.2% vs. 4.2% for the Actual Allocation Index for the current 5-year period
Not more than 1% of the outstanding common shares of any corporation shall be owned by the State. An exception may be made for Alternative Investments.	✓			
Not more than 1.5% of the total book value of permanent funds shall be invested in the common stock of any corporation. An exception may be made for Alternative Investments.	✓			

	Yes	No	N/A	Explanation
2. Investment Funds				
a) Permanent Mineral Trust Fund				
Exceed a weighted index of the Fund's asset allocation and component benchmarks over a full market cycle, approximated by the most recent 5-year period.		✗		5-year: Permanent Mineral Trust Fund return was 4.8% vs. 5.2% for the Target Allocation Index
b) Common School Permanent Land Fund				
Exceed a weighted index of the Fund's asset allocation and component benchmarks over a full market cycle, approximated by the most recent 5-year period.	✓			5-year: Common School Permanent Land Fund return was 4.9% vs. 4.9% for the Target Allocation Index
c) Permanent Land Fund				
Exceed a weighted index of the Fund's asset allocation and component benchmarks over a full market cycle, approximated by the most recent 5-year period.		✗		5-year: Permanent Land Fund return was 4.7% vs. 5.2% for the Target Allocation Index
d) University Permanent Land Fund				
Exceed a weighted index of the Fund's asset allocation and component benchmarks over a full market cycle, approximated by the most recent 5-year period.	✓			5-year: University Permanent Land Fund return was 5.3% vs. 5.2% for the Target Allocation Index
e) Hathaway Scholarship Endowment Fund				
Exceed a weighted index of the Fund's asset allocation and component benchmarks over a full market cycle, approximated by the most recent 5-year period.		✗		5-year: Hathaway Scholarship Endowment Fund return was 4.4% vs. 5.1% for the Target Allocation Index
f) Higher Education Endowment Fund				
Exceed a weighted index of the Fund's asset allocation and component benchmarks over a full market cycle, approximated by the most recent 5-year period.		✗		5-year: Higher Education Endowment Fund return was 4.5% vs. 4.7% for the Target Allocation Index
g) Workers Compensation Fund				
Exceed a weighted index of the Fund's asset allocation and component benchmarks over a full market cycle, approximated by the most recent 5-year period.		✗		5-year: Workers Compensation Fund return was 4.9% vs. 5.1% for the Target Allocation Index
h) Pool A				
Exceed a weighted index of the Fund's asset allocation and component benchmarks over a full market cycle, approximated by the most recent 5-year period.		✗		5-year: Pool A return was 3.1% vs. 3.5% for the Target Allocation Index
i) LSRA				
Exceed a weighted index of the Fund's asset allocation and component benchmarks over a full market cycle, approximated by the most recent 5-year period.			N/A	LSRA was funded during 2019.
j) State Agency Pool				
No public and/or private equities are permitted.	✓			
Exceed a weighted index of the Fund's asset allocation and component benchmarks over a full market cycle, approximated by the most recent 5-year period.	✓			5-year: State Agency Pool return was 2.5% vs. 2.5% for the Actual Allocation Index

	Yes	No	N/A	Explanation
3. US Equity Portfolios				
a) State Street Global Advisors – All Cap – Passive				
A maximum of 5% or the benchmark weighting + 2%, whichever is greater, of the total stock portfolio of the investment manager be invested in any one company.	✓			Largest Holding: Apple Inc = 3.38%
A maximum of 1% of the outstanding float of shares shall be held in companies with market capitalizations of \$5 Billion or greater at the time of purchase. For companies with market capitalizations of less than \$5 Billion, a maximum of 5% shall apply.	✓			
The maximum allowable in any sector, as defined by Global Industry Classification System Level 1, is 2.5 times the respective benchmark weighting.	✓			
A minimum number of 20 securities shall be held.	✓			
Meet performance of the State Street All Cap Custom Index, net of fees, over a full market cycle, approximated by the most recent five-year period.			N/A	Inception date: 01/2015
	Yes	No	N/A	Explanation
b) Internal Equity Russell 2000 – Small Cap - Passive				
A maximum of 5% or the benchmark weighting + 2%, whichever is greater, of the total stock portfolio of the investment manager be invested in any one company.	✓			Largest Holding: Novocure Ltd = 0.34%
A maximum of 1% of the outstanding float of shares shall be held in companies with market capitalizations of \$5 Billion or greater at the time of purchase. For companies with market capitalizations of less than \$5 Billion, a maximum of 5% shall apply.	✓			
The maximum allowable in any sector, as defined by Global Industry Classification System Level 1, is 2.5 times the respective benchmark weighting.	✓			
A minimum number of 20 securities shall be held.	✓			
Meet performance of the Russell 2000 Index, net of fees, over a full market cycle, approximated by the most recent five-year period.			N/A	Inception date: 09/2018

	Yes	No	N/A	Explanation
4. International Equity Portfolios				
a) Northern Trust – Int'l – Passive				
A maximum of 5% or the benchmark weighting + 2%, whichever is greater, of the total stock portfolio of the investment manager be invested in any one company.	✓			Largest Holding: Nestle SA = 1.72%
A maximum of 1% of the outstanding float of shares shall be held in companies with market capitalizations of \$5 Billion or greater at the time of purchase. For companies with market capitalizations of less than \$5 Billion, a maximum of 5% shall apply.	✓			
The maximum allowable in any sector, as defined by Global Industry Classification System Level 1, is 2.5 times the respective benchmark weighting.	✓			
A minimum number of 20 securities shall be held.	✓			
Meet performance of the MSCI ACW Ex US Index (Net), before fees, over a full market cycle, approximated by the most recent five-year period.	✓			5-year: Northern Trust gross of fees return was 3.1% vs. 2.9% for the MSCI ACW Ex US Index (Net)
	Yes	No	N/A	Explanation
b) Arrowstreet – Int'l Active				
A maximum of 5% or the benchmark weighting + 2%, whichever is greater, of the total stock portfolio of the investment manager be invested in any one company.	✓			Largest Holding: Roche Holding AG = 2.59%
A maximum of 1% of the outstanding float of shares shall be held in companies with market capitalizations of \$5 Billion or greater at the time of purchase. For companies with market capitalizations of less than \$5 Billion, a maximum of 5% shall apply.	✓			
The maximum allowable in any sector, as defined by Global Industry Classification System Level 1, is 2.5 times the respective benchmark weighting.	✓			
A minimum number of 20 securities shall be held.	✓			
Outperform the MSCI ACW Ex US IM Index (Net), net of fees, over a full market cycle, approximated by the most recent five-year period.			N/A	Inception date: 03/2018
Performance should rank in the top 40th percentile of peer manager universe as measured by the State's Consultant, gross of fees, over a full market cycle, approximated by the most recent five-year period.			N/A	Inception date: 03/2018

	Yes	No	N/A	Explanation
5. Preferred Stock				
a) Cohen & Steers				
Minimum issue credit rating for preferred stock at the time of purchase will be BB or equivalent.	✓			The portfolio currently holds securities which are rated below BB. Retention of these securities in the portfolio is permitted pursuant to Section 7.2 of the Investment Policy.
A maximum of 35% of the total portfolio of the investment manager may be invested in securities rated below investment grade.	✓			
A maximum of 10% of the total portfolio of the investment manager may be invested in any one issuer.	✓			
Outperform the S&P U.S. Preferred Stock Index, net of fees, over a full market cycle, approximated by the most recent five-year period.			N/A	Inception date: 07/2018
	Yes	No	N/A	Explanation
6. MLPs				
a) Harvest				
A maximum of 15% or the benchmark weighting + 2%, whichever is greater, of the total portfolio may be invested in any one company.	✓			
Outperform the MLP Custom Index, net of fees, over a full market cycle, approximated by the most recent five-year period.			N/A	Inception date: 08/2018

	Yes	No	N/A	Explanation
7. Alternative Strategies				
Core Real Estate				
a) Clarion Lion				
Outperform the NCREIF Fund Index – Open-End Diversified Core Equity (ODCE), net of fees, over a full market cycle, approximated by the most recent 5-year period.	✓			5-year: Clarion Lion net of fees return was 9.8% vs. 8.4% for the NCREIF ODCE Index (Net) (AWA)
b) UBS Trumbull				
Outperform the NCREIF Fund Index – Open-End Diversified Core Equity (ODCE), net of fees, over a full market cycle, approximated by the most recent 5-year period.		✗		5-year: UBS Trumbull net of fees return was 5.9% vs. 8.4% for the NCREIF ODCE Index (Net) (AWA)
Absolute Return				
c) Grosvenor Diversified Hedge Funds				
Outperform the HFRI FOF Comp Index, net of fees, over a full market cycle, approximated by the most recent 5-year period.			N/A	Inception date: 07/2018
d) Internal Diversified Hedge Funds				
Outperform the HFRI FOF Comp Index, net of fees, over a full market cycle, approximated by the most recent 5-year period.			N/A	Inception date: 07/2018

	Yes	No	N/A	Explanation
8. Fixed Income Portfolios				
a) C.S. McKee – Core				
Obligations issued or guaranteed by the U.S. government, U.S. agencies or U.S. government-sponsored corporations and agencies are eligible without limit.	✓			
All other issuers are subject to a 5% per issuer limit excluding investments in commingled vehicles.	✓			
Non-U.S. dollar denominated securities are permitted, but shall comprise no more than 10% of the portfolio market value.	✓			
Private mortgage-backed and asset-backed securities are limited to 10% of the portfolio market value.	✓			
Commercial mortgage-backed securities are permitted but shall comprise no more than 10% of the portfolio market value.	✓			
Dollar denominated emerging market securities are permitted, but shall comprise no more than 10% of the portfolio market value.	✓			
Investments in mortgage interest only and principal only securities or their derivations are permitted, but shall comprise no more than 5% of the portfolio market value.	✓			
Commercial paper of all issuers shall not exceed \$500,000,000.	✓			
A minimum number of 25 securities shall be held.	✓			
Duration must fall in the range of +/- 20% of the manager's primary benchmark, but not to exceed the duration of the Bloomberg Barclays U.S. Aggregate Bond Index or the Bloomberg Barclays Intermediate U.S. Aggregate Bond Index by more than 20%.	✓			
Average portfolio credit quality must be at least A- or equivalent.	✓			
Minimum issue credit rating at time of purchase shall be: A1+ or equivalent for commercial paper; BBB- or equivalent for corporate bonds, Mortgage-Backed Securities, Commercial Mortgage-Backed Securities, Asset Backed Securities, Non-U.S. Dollar-Denominated Securities and Dollar-Denominated Emerging Market Securities.	✓			
Standalone private placements, including 144A securities, are not permitted as direct purchase is not currently allowed under regulations of the Securities and Exchange Commission.	✓			
Outperform its Custom Index, net of fees, over a full market cycle, approximated by the most recent 5-year period.	✓			5-year: C.S. McKee net of fees return was 3.4% vs. 3.3% for the C.S. McKee Custom Index
Performance should rank in the top 40th percentile of peer manager universe as measured by the State's Consultant, gross of fees, over a full market cycle, approximated by the most recent five-year period.		✗		5-year: C.S. McKee ranked in the 62nd percentile for Core Fixed Income

	Yes	No	N/A	Explanation
b) PIMCO – Core				
Obligations issued or guaranteed by the U.S. government, U.S. agencies or U.S. government-sponsored corporations and agencies are eligible without limit.	✓			
All other issuers are subject to a 5% per issuer limit excluding investments in commingled vehicles.	✓			
Non-U.S. dollar denominated securities are permitted, but shall comprise no more than 10% of the portfolio market value.	✓			
Private mortgage-backed and asset-backed securities are limited to 10% of the portfolio market value.	✓			
Commercial mortgage-backed securities are permitted but shall comprise no more than 10% of the portfolio market value.	✓			
Dollar denominated emerging market securities are permitted, but shall comprise no more than 10% of the portfolio market value.	✓			
Investments in mortgage interest only and principal only securities or their derivations are permitted, but shall comprise no more than 5% of the portfolio market value.	✓			
Commercial paper of all issuers shall not exceed \$500,000,000.	✓			
A minimum number of 25 securities shall be held.	✓			
Duration must fall in the range of +/- 20% of the manager's primary benchmark, but not to exceed the duration of the Bloomberg Barclays U.S. Aggregate Bond Index or the Bloomberg Barclays Intermediate U.S. Aggregate Bond Index by more than 20%.	✓			
Average portfolio credit quality must be at least A- or equivalent.	✓			
Minimum issue credit rating at time of purchase shall be: A1+ or equivalent for commercial paper; BBB- or equivalent for corporate bonds, Mortgage-Backed Securities, Commercial Mortgage-Backed Securities, Asset Backed Securities, Non-U.S. Dollar-Denominated Securities and Dollar-Denominated Emerging Market Securities.	✓			
Standalone private placements, including 144A securities, are not permitted as direct purchase is not currently allowed under regulations of the Securities and Exchange Commission.	✓			
Outperform its Custom Index, net of fees, over a full market cycle, approximated by the most recent 5-year period.	✓			5-year: PIMCO net of fees return was 3.5% vs. 3.2% for the PIMCO Custom Index
Performance should rank in the top 40th percentile of peer manager universe as measured by the State's Consultant, gross of fees, over a full market cycle, approximated by the most recent five-year period.		✗		5-year: PIMCO ranked in the 61st percentile for Core Fixed Income

	Yes	No	N/A	Explanation
c) Internal Int. Govt Fixed Income Portfolio – Intermediate Govt Fixed Income				
Obligations issued or guaranteed by the U.S. government, U.S. agencies or U.S. government-sponsored corporations and agencies are eligible without limit.	✓			
All other issuers are subject to a 5% per issuer limit excluding investments in commingled vehicles.	✓			
Non-U.S. dollar denominated securities are permitted, but shall comprise no more than 10% of the portfolio market value.	✓			
Private mortgage-backed and asset-backed securities are limited to 10% of the portfolio market value.	✓			
Commercial mortgage-backed securities are permitted but shall comprise no more than 10% of the portfolio market value.	✓			
Dollar denominated emerging market securities are permitted, but shall comprise no more than 10% of the portfolio market value.	✓			
Investments in mortgage interest only and principal only securities or their derivations are permitted, but shall comprise no more than 5% of the portfolio market value.	✓			
Commercial paper of all issuers shall not exceed \$500,000,000.	✓			
A minimum number of 25 securities shall be held.	✓			
Duration must fall in the range of +/- 20% of the manager's primary benchmark, but not to exceed the duration of the Bloomberg Barclays U.S. Aggregate Bond Index or the Bloomberg Barclays Intermediate U.S. Aggregate Bond Index by more than 20%.	✓			
Average portfolio credit quality must be at least A- or equivalent.	✓			
Minimum issue credit rating at time of purchase shall be: A1+ or equivalent for commercial paper; BBB- or equivalent for corporate bonds, Mortgage-Backed Securities, Commercial Mortgage-Backed Securities, Asset Backed Securities, Non-U.S. Dollar-Denominated Securities and Dollar-Denominated Emerging Market Securities.	✓			
Standalone private placements, including 144A securities, are not permitted as direct purchase is not currently allowed under regulations of the Securities and Exchange Commission.	✓			
Outperform the Internal Int. Gov Index, net of fees, over a full market cycle, approximated by the most recent 5-year period.	✓			5-year: Int. Govt Fixed Income Portfolio net of fees return was 2.5% vs. return of 2.2% for the Internal Int. Gov Index
Performance should rank in the top 40th percentile of peer manager universe as measured by the State's Consultant, gross of fees, over a full market cycle, approximated by the most recent five-year period.		✗		5-year: Int. Govt Fixed Income Portfolio ranked in the 53rd percentile for Government Fixed Income

	Yes	No	N/A	Explanation
d) Credit Suisse – Bank Loans				
Obligations of specific issuers are subject to a 5% per issuer limit, excluding investments in commingled vehicles.	✓			
Duration must not exceed + 1 year of the S&P/LSTA Leveraged Loan Index.	✓			
Average portfolio credit quality must be at least B or equivalent.	✓			
Minimum issue credit rating at the time of purchase shall be: a) CCC or equivalent for individual securities; and b) Securities that are not rated shall be, in the judgment of the investment manager, of credit quality equal or superior to the standards described above.	✓			
Standalone purchases of private placements, including 144A securities, are not permitted as direct purchase is not currently allowed under regulations of the Securities and Exchange Commission.	✓			
Outperform the S&P/LSTA Leveraged Loan Index, net of fees, over a full market cycle, approximated by the most recent 5-year period.			N/A	Inception date: 09/2019
Performance should rank in the top 40th percentile of peer manager universe as measured by the State's Consultant, gross of fees, over a full market cycle, approximated by the most recent five-year period.			N/A	Inception date: 09/2019

	Yes	No	N/A	Explanation
e) Octagon – Bank Loans				
Obligations of specific issuers are subject to a 5% per issuer limit, excluding investments in commingled vehicles.	✓			
Duration must not exceed + 1 year of the S&P/LSTA Leveraged Loan Index.	✓			
Average portfolio credit quality must be at least B or equivalent.	✓			
Minimum issue credit rating at the time of purchase shall be: a) CCC or equivalent for individual securities; and b) Securities that are not rated shall be, in the judgment of the investment manager, of credit quality equal or superior to the standards described above.	✓			
Standalone purchases of private placements, including 144A securities, are not permitted as direct purchase is not currently allowed under regulations of the Securities and Exchange Commission.	✓			
Outperform the S&P/LSTA Leveraged Loan Index, net of fees, over a full market cycle, approximated by the most recent 5-year period.			N/A	Inception date: 09/2019
Performance should rank in the top 40th percentile of peer manager universe as measured by the State's Consultant, gross of fees, over a full market cycle, approximated by the most recent five-year period.			N/A	Inception date: 09/2019

	Yes	No	N/A	Explanation
f) Grosvenor Silvery Lupine Fund – Opportunistic Fixed Income				
Outperform the CS Western European Hi Yld Index, net of fees, over a full market cycle, approximated by the most recent 5-year period.	✓			5-year: net of fees return of 6.3% vs 6.3% for the index
g) Investec – Emerging Market Debt (Local Currency)				
Obligations of individual sovereign/quasi-sovereign issuers are subject to a 25% per issuer limit.	✓			
The investment manager, as part of managing the account, can take net investment positions of up to 20% of the portfolio in currency and currency forwards.	✓			
Duration must be +/- 20% of the index.	✓			
Average portfolio credit quality must be BB+ or equivalent or better.	✓			
Minimum Issue Credit Rating at the time of purchase shall be: A1+ or equivalent for commercial paper; B- or equivalent for individual securities Where a security is not rated at the issue level, the issuer rating shall be relied upon.	✓			
Standalone private placements, including 144A securities, are not permitted as direct purchase is not currently allowed under regulations of the Securities and Exchange Commission.	✓			There are nine 144A securities held by this portfolio. Retention of these securities in the portfolio is permitted pursuant to Section 7.2 of the Investment Policy.
Outperform the JPM GBI-EM Gbl Dvf'd Index (USD) (TR) (Unhedged), net of fees, over a full market cycle, approximated by the most recent 5-year period.		✗		5-year: Investec net of fees return was -0.2% vs. the return of 0.6% for the JPM GBI-EM Gbl Dvf'd Index (USD) (TR) (Unhedged)
Performance should rank in the top 40th percentile of peer manager universe as measured by the State's Consultant, gross of fees, over a full market cycle, approximated by the most recent five-year period.		✗		5-year: Investec ranked in the 95th percentile for Emerging Market Debt (Local Currency)

	Yes	No	N/A	Explanation
h) Logan Circle – Long Duration Credit				
Obligations issued or guaranteed by the U.S. government, U.S. agencies or U.S. government-sponsored corporations and agencies are eligible without limit.	✓			
All other issuers are subject to a 5% per issuer limit excluding investments in commingled vehicles	✓			
A maximum of 30% of the portfolio may be invested in U.S. dollar denominated non-U.S. fixed income securities.	✓			
A maximum of 10% of the portfolio may be invested in U.S. dollar denominated emerging market securities.	✓			
A maximum of the appropriate benchmark plus 5% of the portfolio may be invested in convertible and municipal securities.	✓			
Average portfolio quality will be BBB+ or better. Securities shall be rated investment grade at time of purchase.	✓			
Outperform the Bloomberg US Long Credit Index, net of fees, over a full market cycle, approximated by the most recent 5-year period.			N/A	Inception date: 11/2018
Performance should rank in the top 40th percentile of peer manager universe as measured by the State's Consultant, gross of fees, over a full market cycle, approximated by the most recent five-year period.			N/A	Inception date: 11/2018
	Yes	No	N/A	Explanation
i) Internal Long Duration – Long Duration Government				
Obligations issued or guaranteed by the U.S. government, U.S. agencies or U.S. government-sponsored corporations and agencies are eligible without limit.	✓			
All other issuers are subject to a 5% per issuer limit excluding investments in commingled vehicles	✓			
A maximum of 30% of the portfolio may be invested in U.S. dollar denominated non-U.S. fixed income securities.	✓			
A maximum of 10% of the portfolio may be invested in U.S. dollar denominated emerging market securities.	✓			
A maximum of the appropriate benchmark plus 5% of the portfolio may be invested in convertible and municipal securities.	✓			
Average portfolio quality will be BBB+ or better. Securities shall be rated investment grade at time of purchase.	✓			
Outperform the Bloomberg US Gov Long Term Bond Index, net of fees, over a full market cycle, approximated by the most recent 5-year period.			N/A	Inception date: 01/2019
Performance should rank in the top 40th percentile of peer manager universe as measured by the State's Consultant, gross of fees, over a full market cycle, approximated by the most recent five-year period.			N/A	Inception date: 01/2019

	Yes	No	N/A	Explanation
j) Internal Low Duration – Low Duration Government				
Obligations issued or guaranteed by the U.S. government, U.S. agencies or U.S. government-sponsored corporations and agencies are eligible without limit.	✓			
All other issuers are subject to a 5% per issuer limit excluding investments in commingled vehicles	✓			
Corporate securities will be subject to a maximum limit of 20%.	✓			
Portfolio duration must be within plus or minus 30% of the Bloomberg Barclays US Gov't: 1-3 Year Bond Index.	✓			
Average portfolio quality will be AA or better.	✓			
Outperform the Bloomberg US Gov 1-3 Year Bond Index, net of fees, over a full market cycle, approximated by the most recent 5-year period.			N/A	Inception date: 03/2018
Performance should rank in the top 40th percentile of peer manager universe as measured by the State's Consultant, gross of fees, over a full market cycle, approximated by the most recent five-year period.			N/A	Inception date: 03/2018

	Yes	No	N/A	Explanation
9. Cash and Cash Equivalents Portfolios				
JP Morgan Cash Composite*				
a) JP Morgan Treasury Cash				
The portfolio's weighted average maturity shall not exceed 90 days.	✓			
All securities shall have a maximum maturity of 365 days.	✓			
The maximum average cash flow weighted duration of the portfolio shall not exceed 90 days.	✓			
The market value of the portfolio shall remain within +/- 0.5% of 1.0% of amortized cost.	✓			
A maximum of 5% of total assets may be placed in securities of one issuer except for government securities.	✓			
Investment in any single issuer must not exceed 5% of the outstanding issues of that issuer.	✓			
Investment performance must exceed Monitored Repurchase Agreement Rate and the cash equivalents allocation by the 90-day T-Bill rate, net of fees, over a full market cycle, approximated by the most recent 5-year period.		✗		5-year: JP Morgan Treasury Cash net of fees return was 0.9% vs. 1.0% for the ICE BofAML 3 Mo US T-Bill Index
b) JP Morgan Treasury Extended Cash				
Maximum average cash flow weighted duration is not to exceed 1 year.	✓			
Individual securities must not exceed a cash flow weighted duration of 2 years.	✓			
A maximum of 5% of total assets may be placed in securities of one issuer except for government securities.	✓			
Investment in any single issuer must not exceed 5% of the outstanding issues of that issuer.	✓			
Investment Performance must exceed an Equal Weighted Blend of the BofA Merrill Lynch 1-3 Year Agency, 1-3 Year Treasury, and a 0-3 Year Mortgage Index, net of fees, over a full market cycle, approximated by the most recent 5-year period.	✓			5-year: JP Morgan Treasury Extended Cash net of fees return was 1.6% vs. 1.5% for the Blended Index

*During the fourth quarter of 2011, JP Morgan Treasury Cash and JP Morgan Treasury Extended Cash were combined. Net of fees performance shown consists of performance calculated by RVK, Inc. prior to 12/31/2011 and performance calculated by JP Morgan thereafter.

	Yes	No	N/A	Explanation
JP Morgan Wyo-Star Cash Composite*				
c) JP Morgan Wyo-Star Cash				
The portfolio's weighted average maturity is not to exceed 90 days.	✓			
All securities must have a maximum maturity of 365 days.	✓			
The maximum average cash flow weighted duration of the portfolio must not exceed 90 days.	✓			
The market value of the portfolio must remain within +/- 0.5% of 1% of amortized cost.	✓			
A maximum of 5% of total assets may be placed in securities of one issuer except for government securities.	✓			
Investment performance must exceed Monitored Repurchase Agreement Rate and the cash equivalents allocation by the 90-day T-Bill rate, net of fees, over a full market cycle, approximated by the most recent 5-year period.		✗		5-year: JP Morgan Wyo-Star Cash net of fees return was 0.9% vs. 1.0% for the ICE BofAML 3 Mo US T-Bill Index
d) JP Morgan Wyo-Star Extended Cash				
Maximum average cash flow weighted duration is not to exceed 3 years.	✓			
Individual securities must not exceed a cash flow weighted duration of 5 years.	✓			
A maximum of 5% of total assets may be placed in securities of one issuer except for government securities.	✓			
Investment Performance must exceed an Equal Weighted Blend of the BofA Merrill Lynch 1-3 Year Agency, 1-3 Year Treasury, and a 0-3 Year Mortgage Index, net of fees, over a full market cycle, approximated by the most recent 5-year period.		✗		5-year: JP Morgan Wyo-Star Extended Cash net of fees return was 1.4% vs. 1.5% for the Blended Index
The extended portion of WYO-STAR may not exceed 35% of the market value of the portfolio at the time of purchase.	✓			

*During the fourth quarter of 2011, JP Morgan Wyo-Star Cash and JP Morgan Wyo-Star Extended Cash were combined. Net of fees performance shown consists of performance calculated by RVK, Inc. prior to 12/31/2011 and performance calculated by JP Morgan thereafter.

Custom Benchmark Comments

The Wyoming State Actual Allocation Index is calculated using beginning month asset class weights applied to the appropriate asset class benchmark return, using the Russell 3000 Index for US all cap equities, the Russell 2000 Index for US small cap equity, MSCI ACW Ex US Index (Net) for international equities, MLP Custom Index for MLPs, Bloomberg US Agg Bond Index for core fixed income, S&P/LSTA Lvg'd Loan Index for bank loans, EMD Blended Benchmark for EMD, NCREIF Open-End Diversified Core Equity Index (Gross) (AWA) for real estate, the State's actual private equity investment returns for private equity, HFRI FOF Comp Index for Diversified Hedge Funds, and ICE BofA Merrill Lynch 90 day US T-Bill rate for cash equivalents.

Pooled Fund actual allocation indices are calculated using beginning month asset class weights applied to the appropriate asset class benchmark return, using the Russell 3000 Index for US all cap equities, the Russell 2000 Index for US small cap equity, MSCI ACW Ex US Index (Net) for international equities, MLP Custom Index for MLPs, Bloomberg US Agg Bond Index for core fixed income, S&P/LSTA Lvg'd Loan Index for bank loans, EMD Blended Benchmark for EMD, NCREIF Open-End Diversified Core Equity Index for real estate, the State's actual private equity investment returns for private equity, HFRI FOF Comp Index for Diversified Hedge Funds, and the State Agency Pool Custom Index for the State Agency Pool allocation.

- The Wyoming State Custom Index is calculated using beginning month asset class weights applied to the appropriate asset class benchmark return through 12/31/2019. As of 01/01/2020, the Index is calculated using the weighted average of the respective Investment Funds' Target Allocation Indices.
- The All Cap US Equity Custom Index consists of the Russell 3000 Index through 02/29/2020, and the S&P 500 Index thereafter.
- The MLP Custom Index consists of the S&P MLP Index (TR) through 06/30/2019, the Alerian MLP Index through 12/31/2019, and 50% Alerian MLP Index / 50% Alerian Midstream Energy Index thereafter.
- The International Equity Custom Index consists of the MSCI EAFE Index (USD) (Gross) through July 2010 and the MSCI ACW Ex US Index (USD) (Net) thereafter.
- The Internal Intermediate Govt Fixed Income Portfolio Index currently consists of the Bloomberg US Treasury Index. November 2019 performance consists of the Internal Intermediate Govt Fixed Income Portfolio. Prior to November 2019, the index consists of Bloomberg US Gov't Int Term Bond Index. Prior to December 2009, the index consisted of the Bloomberg US Gov't Crdt Bond Index.
- The PIMCO Custom Index consists of the Bloomberg US Agg Bond Index through February 2018, the Bloomberg US Agg Int Index through June 2019, the Bloomberg US Agg Bond Index through 03/26/2020, account performance from 03/27/2020 through 04/03/2020, and the Bloomberg US Agg Bond Index thereafter.
- The Low Duration Fixed Income Custom Index consists of the Bloomberg US Gov't Crdt 1-3 Yr Bond Index through 06/30/2019 and the Bloomberg US Gov't 1-3 Yr Bond Index thereafter.
- The State Street All Cap Custom Index consists of 69% Russell 3000 Index, 24% FTSE RAFI US 1000 Index, and 7% MSCI US Min Vol Index (USD) (Gross) through 02/27/2020, State Street All Cap account performance on 02/28/2020, and the S&P 500 Index thereafter.
- The EMD Custom Index consists of the JPM GBI-EM Gbl Dvf'd Index through 02/29/2020 and 70% JPM GBI-EM Gbl Dvf'd Index / 30% JPM CEMBI Brd Dvf'd Index thereafter.
- The Payden & Rygel Custom Index consists of the Bloomberg US Corp Inv Grade Index through 03/25/2020, account performance from 03/26/2020 through 03/31/2020, and Bloomberg US Corp Inv Grade Index thereafter.
- Performance shown for the JP Morgan Cash Composite and the Wyo-Star Cash Composite consists of the respective operating and extended cash accounts.
- The JP Morgan Cash Custom Index is calculated monthly using beginning of the month investment weights applied to each corresponding primary benchmark return. The primary benchmark for JP Morgan Cash is the ICE BofAML 3 Mo US T-Bill Index and for JP Morgan Extd is the JP Morgan Blended Index through 06/30/2019, and the ICE BofAML 3 Mo US T-Bill Index thereafter.
- The Wyo-Star Cash Custom Index is calculated monthly using beginning of the month investment weights applied to each corresponding primary benchmark return. Currently, the primary benchmark for Wyo-Star Cash is the ICE BofAML 3 Mo US T-Bill Index and for Wyo-Star Extd is the JP Morgan Blended Index.

Performance & Holding Comments

RVK, Inc. shows performance beginning with the first full month following inception. Inception date shown for the Int'l Equity and JP Morgan Cash Composites represents the first date of performance calculated by RVK, Inc.

Performance shown for Pooled Funds is calculated on a capital-weighted basis using beginning-period allocations and does not reflect net cash flows.

Performance shown for the UW Portfolio Management Program prior to 07/01/2009 includes their participation in the State Agency Pool. Performance calculated for the UW Portfolio Management Program after 02/01/2013 has not been verified by RVK as the assets have been moved to a platform in which the custodian does not provide a reconcilable return.

Performance for the Internal Intermediate Govt Fixed Income Portfolio excludes distressed securities taken in-kind following the liquidation of WAMCO Core Plus.

Performance shown for the JP Morgan Cash Composite and the Wyo-Star Cash Composite consists of the respective operating and extended cash accounts.

Due to portfolio turnover, buy and hold attribution may not accurately represent quarterly performance relative to the benchmark.

Composite performance shown for Fixed Income is historically exclusive of convertibles.

Alternative Investment Comments

Reporting for Private Equity performance was changed from cost basis to the latest portfolio valuation adjusted for cash flows, consistent with the supplementary alternatives report. This methodology change involved reflecting the difference between cost value and the most recent valuation, resulting in a significant positive performance impact on the total fund during 2nd quarter 2008.

Valuations for non-core real estate and private equity were changed from a one-quarter lag to as of the most recent valuation, adjusted for subsequent cash flows. This methodology change involved reflecting all cash flows occurring during 4th quarter 2011 as of January 2012, resulting in a minor positive performance impact on the total fund during 1st quarter 2012. Investment (Cost) Values are not lagged.

Performance for non-core real estate and private equity investments is calculated on an IRR basis. For further analysis, please refer to the supplementary alternatives performance report.

Cheyenne Capital Fund valuations set forth herein could be materially different once underlying investments are realized. Market conditions at the time of exit could be substantially different than at the reporting period, resulting in valuations different than those represented above.

Miscellaneous Comments

Wyoming State Treasurer's Office fiscal year ends on June 30th.

Fixed Income style peer groups have low populations, and may cause ranks to change significantly from quarter to quarter.

"IM" is the acronym for Investment Metrics, the provider of peer group data used in ranking investment manager and asset class performance.

During the 4th quarter of 2012, WAMCO Core Plus, Neuberger Berman Core Plus, PIMCO Core Plus, PIMCO Mortgages, JP Morgan Mortgages, WAMCO Corporates, Logan Circle, and PIMCO Global/EM began the liquidation process to transition assets to the State's new fixed income asset class structure. The proceeds were used to fund State Street TIPS, C.S. McKee, JP Morgan Core, MacKay Shields, Neuberger Berman Core, PIMCO Core, and Wells Capital. During the 1st quarter of 2013, additional assets were transitioned to Neuberger Berman Credit, Seix, Investec, and Stone Harbor.

During the 4th quarter of 2014, State Street S&P 500 and Gabelli began the liquidation process to transition assets to the State's new US equity asset class structure. The proceeds were used to fund State Street All Cap, Epoch, Lazard, and RBC. During the 1st quarter of 2015, additional assets were transitioned to Arrowstreet.

During the 4th quarter of 2015, the Workers Compensation Fund was reclassified as a Permanent Fund.

During the 1st quarter of 2016, the State funded the Internal International Equity Portfolio, using proceeds from the liquidation of The Boston Company.

During the 3rd quarter of 2016, Bloomberg acquired the Barclays Global Family of Fixed Income Indices. Naming conventions have been updated to "Bloomberg" to reflect the acquisition.

During the 3rd quarter of 2016, MacKay Shields began the liquidation process, with proceeds used to increase allocations to C.S. McKee and the Internal Intermediate Govt Fixed Income Portfolio.

During the 1st quarter of 2017, Neuberger Berman Core and Wells Capital began their respective liquidation processes.

During the 2nd quarter of 2017, Manning & Napier began the liquidation process.

During the 4th quarter of 2017, Lazard began the liquidation process.

During the 4th quarter of 2017, Intercontinental Exchange (ICE) acquired the BofA Merrill Lynch Global Research FICC index platform. As a result, all BofA Merrill Lynch indices have been rebranded to "ICE BofA Merrill Lynch".

During the 1st quarter of 2018, Arrowstreet was reclassified as International Equity and the Internal Low Duration portfolio was funded.

During the 2nd quarter of 2018, Cohen & Steers, Grosvenor Diversified Hedge Funds, and Internal Diversified Hedge Funds were funded.

Miscellaneous Comments (Continued)

During the 2nd quarter of 2018, the Hybrid Assets Composite was created for convertibles, preferred stock, and MLPs.

During the 2nd quarter of 2018, RBC began the liquidation process.

During the 3rd quarter of 2018, Internal Equity Russell 2000 was funded.

During the 3rd quarter of 2018, Harvest was funded.

During the 4th quarter of 2018, Logan Circle, Internal Long Duration Fixed Income Portfolio, and State Street Low Duration were funded.

During the 1st quarter of 2019, Epoch began the liquidation process.

During the 2nd quarter of 2019, Allianz, Stone Harbor, Fisher, JPM Core, NB Credit, Seix, State Street TIPS, and State Street Low Duration began the liquidation process.

During the 3rd quarter of 2019, Credit Suisse, Octagon, and Internal Ladder Portfolio were funded.

During the 4th quarter of 2019, Harding Loevner, State Street Russell 2000, Harvest Passive, Payden & Rygel, and JPM MBS were funded, and CS McKee began the liquidation process.

Glossary

Active Return - The difference between the investment manager/composite performance relative to the performance of an appropriate market benchmark.

Active Share - Measures the degree to which the holdings of a fund differ from the holdings of the benchmark. Active share is calculated by taking the sum of the absolute value of the differences of the weight of each holding in the fund versus the weight of each holding in the benchmark and dividing by two.

Alpha - A measure of the difference between a portfolio's actual returns and its expected performance, given its level of risk as measured by beta. It is a measure of the portfolio's historical performance not explained by movements of the market or a portfolio's non-systematic return.

Alpha Ratio - A measure of a portfolio's non-systematic return per unit of downside risk. It is measured by dividing the alpha of a portfolio by the downside risk. The non-systematic return is a measure of a portfolio's historical performance not explained by movements of the market.

Average Quality - Bond quality ratings are reported using the investment managers' and the index providers' preferred rating agency. *Average Quality for managers unable to provide this statistic is instead provided by Morningstar; if unavailable on Morningstar, it has been estimated using a credit quality distribution provided by the manager.* There are two primary rating agencies in the US. *Moody's* assigns ratings on a system that employs up to four symbols (consisting of letters and numbers) such as, Aaa, Aa2, etc., with Aaa being the highest or safest rating. *Standard & Poor's (S&P)* employs a system that uses + and - along with letters such as AAA, AA+, etc. The two rating agencies' systems are summarized below:

<u>S&P</u>	<u>Moody's</u>	<u>Explanation</u>	<u>S&P</u>	<u>Moody's</u>	<u>Explanation</u>
Higher Credit Quality – Investment Grade			Lower Credit Quality – Below Investment Grade		
AAA	Aaa	Prime/Highest credit quality	BB+	Ba1	Speculative/Low credit quality
AA+	Aa1	High credit quality	BB	Ba2	
AA	Aa2		BB-	Ba3	
AA-	Aa3		B+	B1	Highly speculative
A+	A1	Upper-medium credit quality	B	B2	
A	A2		B-	B3	
A-	A3		CCC+	Caa1	Substantial credit/default risk
BBB+	Baa1	Lower-medium credit quality	CCC	Caa2	Extremely speculative
BBB	Baa2		CCC-	Caa3	
BBB-	Baa3		CC	Ca	Vulnerable to default
			C	Ca	
			D	C	In default

Benchmark Effect - The difference between the blended return of each respective managers' benchmark within a composite and the composite's benchmark return.

Beta - A measure of the sensitivity of a portfolio to the movements in the market. It is a measure of a portfolio's non-diversifiable or systematic risk.

Box Plots - A graphical representation of the distribution of observations. From top to bottom, the four boxes represent the spread between the maximum value and the minimum value in each quartile. A quartile represents the values that divide the observations into four quarters (i.e., 1st quartile, 2nd quartile, 3rd quartile, and 4th quartile). The median observation is where the 2nd quartile and 3rd quartile meet.

Buy and Hold Attribution - At the beginning of the time period under analysis, the manager and benchmark portfolios are broken down into segments (i.e., styles, sectors, countries, and regions) based on the desired type of attribution. The formula assumes zero turn-over to the manager and benchmark portfolios throughout the period and calculates the segment returns ("buy and hold returns") to arrive at performance attribution. Due to portfolio turnover, buy and hold attribution may not accurately represent quarterly performance relative to the benchmark. Country, region, sector, and style allocations are as of the date one quarter prior to the reporting date, and the returns shown are for those segments throughout the quarter reported. Due to disclosure guidelines set by each investment manager, equity characteristics shown are as of the most recent date available. The following is the methodology for segment classification:

Sector - Attribution is calculated using the Global Industry Classification Standard (GICS) which is a detailed and comprehensive structure for sector and industry analysis. Stocks are classified by their primary sector, as defined by S&P Capital IQ data.

Country/Region - Attribution is calculated using the Morgan Stanley Capital International (MSCI) region standards. Stocks are classified by their domicile country/region, as defined by S&P Capital IQ data.

Style - Stocks are classified into the following style boxes: large/mid/small vs. growth/neutral/value. Stocks are classified along large/mid/small categories at the time of the Russell index rebalancing, using the index market cap boundaries as cutoff points. Stocks are classified along growth/neutral/value categories at the time of the Russell index rebalancing, using the price/book ratio as supplied by S&P Capital IQ. Stocks in the Russell 3000 Index portfolio are sorted by price/book ratio; names with the highest price/book ratio that make up 1/3 of the total market capitalization are assigned to the growth category, names that make up the subsequent 1/3 of the total market capitalization are assigned to the neutral category, while the balance of the names are assigned to the value category. Stocks are unclassified when there is not enough data to determine a size and style metric.

Portfolio Characteristics and Buy and Hold Attribution reports utilize product-specific data for all mutual funds and commingled funds.

Capital Markets Review -

Breakeven Inflation - Measures the expected inflation rate at each stated maturity by taking the difference between the real yield of the inflation-linked maturity curve and the yield of the closest nominal Treasury maturity.

Consumer Confidence - Measures domestic consumer confidence as defined by the degree of optimism on the state of the economy that consumers express through saving and spending.

Consumer Price Index (CPI) - Measures the change in the price level of consumer goods and services.

Federal Funds Rate - The interest rate at which a depository institution lends funds maintained at the Federal Reserve to another depository institution overnight. It is one of the most influential interest rates in the US economy, since it affects monetary and financial conditions, which in turn have a bearing on key aspects of the broad economy including employment, growth and inflation.



Glossary

- Option-Adjusted Spread** - Measures the flat spread of an index or bond to the Treasury yield curve after removing the effect of any embedded options.
- Purchasing Managers Index (PMI)** - Measures economic activity by surveying purchasing managers on a monthly basis as to whether business conditions have improved, worsened, or stayed the same.
- Real Gross Domestic Product (Real GDP)** - An inflation-adjusted measure that reflects the value of all goods and services produced by an economy in a given year.
- US Dollar Total Weighted Index** - Measures the value of the US Dollar relative to a basket of other world currencies. It is calculated as the weighted geometric mean of the dollar's value versus the EUR, GBP, CAD, SEK, CHF, and JPY.
- Unemployment Rate** - The percentage of the total labor force that is unemployed but actively seeking employment.
- VIX** - Measures the implied volatility of S&P 500 Index options by looking at the market's expectation of the S&P 500 Index volatility over the next 30 day period. Commonly referred to as the "fear index" or the "fear gauge."
- Cash Flow Effect** - The composite's active return minus the sum of each managers' active return minus the benchmark effect.
- Consistency** - The percentage of quarters that a product achieved a rate of return higher than that of its benchmark. The higher the consistency figure, the more value a manager has contributed to the product's performance.
- Convexity** - A measure of the shape of the curve that describes the relationship between bond prices and bond yields.
- Correlation** - A statistical measure of the relationship between asset class returns. A value of 1.00 is a perfect correlation; that is, the asset classes always move in the same direction. A value of -1.00 indicates a perfect negative correlation, in which the asset classes always move in opposite directions of each other. A value of 0 indicates there is no relationship between the direction of returns of the two asset classes. Correlation calculations only consider the direction of changes relative to two variables and not the magnitude of those changes.
- Coupon Rate** - The percentage rate of interest paid on a bond or fixed income security; it is typically paid twice per year.
- Current Yield** - The annual income of a security divided by the security's current price.
- Down Market Capture** - Down market by definition is negative benchmark return and down market capture represents the ratio in % terms of the average portfolios return over the benchmark during the down market period. The lower the value of the down market capture the better the product's performance.
- Downside Risk** - A measure similar to standard deviation, but focuses only on the negative movements of the return series. It is calculated by taking the standard deviation of the negative returns for the selected periodicity. The higher the factor, the riskier the product.
- Earnings Per Share** - It is backward looking, calculated using the one year current EPS divided by the one year EPS five years ago.
- Effective Duration** - The approximate percentage change in a bond's price for a 100 basis point change in yield.
- Excess Return vs. Market** - Average of the monthly arithmetic difference between the manager's return and the benchmark return over a specified time period, shown on an annualized basis.
- Excess Return vs. Risk Free** - Average of the monthly arithmetic difference between the manager's return and the risk-free return (i.e., ICE BofAML 3 Mo US T-Bill Index unless specified otherwise) over a specified time period, shown on an annualized basis.
- Excess Risk** - A measure of the standard deviation of a portfolio's performance relative to the risk free return.
- Expense Ratios** - Morningstar is the source for mutual fund expense ratios.
- Gain/Loss** - The net increase or decrease in the market value of a portfolio excluding its Net Cash Flow for a given period.
- Indices** - All indices and related information are considered intellectual property and are licensed by each index provider. The indices may not be copied, used or distributed without the index provider's prior written approval. Index providers make no warranties and bear no liability with respect to the indices, any related data, their quality, accuracy, suitability and/or completeness.
- Information Ratio** - Measured by dividing the active rate of return by the tracking error. The higher the information ratio, the more value-added contribution by the manager.
- Liability Driven Investing (LDI)** - A method to optimally structure asset investments relative to liabilities. The change in liabilities is estimated by the Ryan Labs Generic PPA Index of appropriate duration for that Plan. This benchmark is based on generic data and is therefore an approximation. RVK is not an actuarial firm, and does not have actuarial expertise.
- Estimated Funded Status** - The estimated ratio of a Plan's assets relative to its future liabilities. This is calculated by dividing the Plan's asset market value by the estimated present value of its liabilities. The higher the estimated funded status, the better the Plan's ability to cover its projected benefit obligations. An estimated funded status of 100% indicates a Plan that is fully funded.
- Estimated PV of Liabilities** - An estimate of a Plan's future liabilities in present value terms. The beginning of the period liability is provided by the Plan's actuary. The period-end present value liability estimate provided in this report is derived by applying the estimated percentage change generated using the Ryan Labs Generic PPA Index with duration similar to that reported on the most recent actuarial valuation report.
- Duration of Liabilities** - The sensitivity of the value of a Plan's liabilities to changes in interest rates, as calculated by the Plan's actuary.
- Duration of Assets** - The dollar-weighted average duration of all the individual Plan assets.
- Estimated Plan Hedge Ratio** - The estimate of how well a Plan's investment portfolio is hedged against changes in interest rates - a primary driver of funded status movements. This is calculated by dividing the dollar-weighted values of both the Plan asset duration by the liability duration and multiplying by the estimated funded status. An estimated plan hedge ratio of zero indicates that the Plan's liabilities have not been hedged, whereas a value of one indicates fully hedged.

Glossary

Modified Duration - The approximate percentage change in a bond's price for a 100 basis point change in yield, assuming the bonds' expected cash flows do not change.

Mutual Fund Performance - Whenever possible, manager performance is extended for any share class that does not have 10 years of history. Using Morningstar's methodology, a single ticker within the same fund family (often the oldest share class) is chosen to append historical performance.

Net Cash Flow - The sum, in dollars, of a portfolio's contributions and withdrawals. This includes all management fees and expenses only when performance shown is gross of fees.

Peer Groups -

Plan Sponsor Peer Groups - RVK utilizes the Mellon Analytical Solutions Trust Universe along with the Investment Metrics Plan Sponsor Universe. The combined Mellon Analytical Solutions Trust Universe and Investment Metrics Plan Sponsor Universe is used for comparison of total fund composite results and utilizes actual client performance compiled from consultant and custodian data. The Plan Sponsor Peer Group database includes performance and other quantitative data for over 2,100 plans which include corporate, endowment, foundation, public, and Taft Hartley plans. Plan Sponsor Peer Groups are gross of fees.

Investment Manager Peer Groups - RVK utilizes Investment Metrics' Peer Groups for investment manager peer comparison and ranking. The Investment Metrics Peer Group database includes performance and other quantitative data for over 840 investment management firms and 29,000 investments products, across more than 160 standard peer groups. Mutual Fund Peer Groups are net of fees.

Percentile Rankings - Percentile rank compares an individual fund's performance with those of other funds within a defined peer group of managers possessing a similar investment style. Percentile rank identifies the percentage of a fund's peer group that has a higher return (or other comparative measurement) than the fund being ranked. Conversely, 100 minus the individual fund's ranking will identify the percentage of funds within the peer group that have a lower return than the fund being ranked.

1 - Highest Statistical Value

100 - Lowest Statistical Value

Example: American Funds AMCP;R-4 (RAFEX) is ranked in the 4th percentile within the IM US Equity Large-Cap Growth Funds (MF) Peer Group for the Sharpe Ratio. Within the IM US Equity Large-Cap Growth Funds peer group, 4% of the other funds performed better than American Funds AMCP;R-4 (RAFEX), while 96% of the funds performed worse.

Performance Methodology - RVK calculates performance for investment managers and composites using different methodologies.

Investment Managers - Performance is calculated for interim periods between all large external cash flows for a given month and geometrically linked to calculate period returns. An external cash flow is defined as cash, securities, or assets that enter or exit a portfolio. RVK defines a "large cash flow" as a net aggregate cash flow of $\geq 10\%$ of the beginning-period portfolio market value or any cash flow that causes RVK calculated performance to deviate from manager/custodian reported performance in excess of 5 basis points for a given month.

Composites - The Modified Dietz methodology is utilized to calculate asset class, sub-asset class, and total fund composite performance. The Modified Dietz method calculates a time-weighted total rate of return that considers the timing of external cash flows; however, it does not utilize interim period performance to mitigate the impact of significant cash in- and outflows to the composite.

RVK calculates performance beginning with the first full month following inception. Since inception performance may vary from manager reported performance due to RVK using the first full month of returns as the inception date. Performance for both managers and composites is annualized for periods greater than one year.

Portfolio Characteristics - Due to disclosure guidelines set by each investment manager, portfolio characteristics shown are as of the most recent date available.

Price to Earnings Ratio - The ratio of a company's share price to its per-share earnings

Private Equity Quartile Ranks - Private Equity quartile ranks are generated using vintage year peer group data provided by Thomson Reuters, and are based on each fund's annualized, since inception internal rate of return (IRR). Three Private Equity peer groups are available via Thomson Reuters: Buyout, Venture, and All Private Equity. Ranks are available quarterly, at a one-quarter lag.

Return - Compounded rate of return for the period.

% Return - The time-weighted rate of return of a portfolio for a given period.

R-Squared - The percentage of a portfolio's performance explained by the behavior of the appropriate benchmark. High R-Squared means a higher correlation of the portfolio's performance to the appropriate benchmark.

Risk Free Benchmark - ICE BofAML 3 Mo US T-Bill Index unless specified otherwise.

Glossary

RVK Liquidity Rating - A qualitative method for determining the relative amount of liquidity in a portfolio. The characteristics considered when determining relative liquidity include trading volume, gates for redemption, leverage, nature of transactions, and pricing mechanisms. The RVK Liquidity Rating is calculated using beginning of month investment weights applied to each corresponding asset class liquidity rating.

<u>Asset Class</u>	<u>RVK Liquidity Rating</u>	<u>Asset Class</u>	<u>RVK Liquidity Rating</u>
<u>Liquid Investments</u>		<u>Less Liquid Investments</u>	
T-Bills and Treasuries	100	Fixed Income Plus Sector	50
Cash Equivalents	98	Bank Loans	50
TIPS	95	Stable Value (Plan Sponsor Directed)	50
US Large Cap Equity	95	Absolute Return Strategies	35
Diversified Real Return	93		
Stable Value (Participant Directed)	91		
Non-US Large Cap Equity	90	<u>Not Liquid Investments</u>	
Global Tactical Asset Allocation	88	Core Real Estate	25
US Small Cap Equity	85	Core Plus Real Estate	15
REITS	85	Non-Core Real Estate	5
Non-US Small Cap Equity	85	Private Equity Funds of Funds	5
Emerging Markets Equity	85		
Core Fixed Income	85		
Core Plus Fixed Income	80		

Sector Allocation - Negative fixed income sector allocation reflects manager's use of derivatives, short selling, or interest rate swaps.

Sharpe Ratio - Represents the excess rate of return over the risk-free return (i.e., ICE BofAML 3 Mo US T-Bill Index unless specified otherwise), divided by the standard deviation of the excess return to the risk free asset. The result is the absolute rate of return per unit of risk. The higher the value, the better the product's historical risk-adjusted performance.

Simple Alpha - The difference between the manager's return and the benchmark's return.

Spread Duration - The approximate percentage change in a bond's price for a 100 basis point change in its spread over a Treasury of the same maturity.

Standard Deviation - A statistical measure of the range of a portfolio's performance. The variability of a return around its average return over a specified time period.

Time Period Abbreviations - **QTD** - Quarter-to-Date. **CYTD** - Calendar Year-to-Date. **FYTD** - Fiscal Year-to-Date. **YOY** - Year Over Year.

Thematic Classification - Represents dedicated manager allocations; as such, thematic allocations are approximations. RVK categorizes the following asset classes as Alpha, Capital Appreciation, Capital Preservation, and Inflation:

<u>Alpha</u>	<u>Capital Appreciation</u>	<u>Capital Preservation</u>	<u>Inflation</u>
Absolute Return Strategies	Public Equity	Core Fixed Income	TIPS
Currency Overlay	Private Equity	CMBS Fixed Income	Bank Loans
	Preferred Securities	Asset Backed Fixed Income	Core Real Estate
	High Yield	Domestic Core Plus Fixed Income	Real Return
	Convertible Fixed Income	Mortgage Backed Fixed Income	Inflation Hedges
	TALF Funds	International Developed Fixed Income	REITS
	Distressed Debt	Cash Equivalents	Commodities
	Emerging Market Fixed Income	Stable Value	
	Value Added Real Estate		
	Opportunistic Real Estate		

Total Fund Attribution - The Investment Decision Process (IDP) model provides an approach to evaluating investment performance that applies to all asset classes and investment styles. The IDP model is based on a top-down hierarchy framework of investment decisions, with each decision contributing to the overall profit or loss. The IDP approach starts from the strategic asset allocation and follows the flow of the investments down to the manager's skill.

Strategic Asset Allocation (SAA) - The percentage return gained or lost from the long-term strategic asset allocation decision, the most significant determinant of long-term performance. SAA is the product of the target asset allocation multiplied by the corresponding benchmark returns.

Tactical Asset Allocation (TAA) - The percentage return gained or lost from not having been precisely allocated at the target asset allocation mix, whether by deviations that are tactical in nature or a by-product of moving towards the target mix. TAA is the product of the actual asset allocation multiplied by the broad asset class benchmarks, less the SAA.

Style Selection (SS) - The percentage return gained or lost from intentional style biases within each asset class (e.g. value rather than core or overweight to emerging markets relative to benchmark). SS is the product of the actual manager allocation within each asset class multiplied by their specific benchmark, less TAA.

Manager's Skill (MS) - The percentage return gained or lost from manager value added relative to their specific benchmark. MS is the product of the actual manager allocation multiplied by their achieved excess return.

Total Fund Beta - Total Fund Beta is calculated using the S&P 500 as the benchmark. It represents a measure of the sensitivity of the total fund to movements in the S&P 500 and is a measure of the Total Fund's non-diversifiable or systematic risk.

Tracking Error - A measure of the standard deviation of a portfolio's performance relative to the performance of an appropriate market benchmark.

Glossary

Treynor Ratio - Similar to Sharpe ratio, but focuses on beta rather than excess risk (standard deviation). Treynor ratio represents the excess rate of return over the risk-free rate (i.e., ICE BofAML 3 Mo US T-Bill Index unless specified otherwise) divided by the beta. The result is the absolute rate of return per unit of risk. The higher the value, the better historical risk-adjusted performance.

Unit Value - The dollar value of a portfolio, assuming an initial nominal investment of \$100, growing at the compounded rate of %Return for a given period.

Up Market Capture - Up market by definition is positive benchmark return and up market capture represents the ratio in % terms of the average portfolios return over the benchmark during the up market period. The higher the value of the up market capture the better the product's performance.

Yield to Maturity - The rate of return achieved on a bond or other fixed income security assuming the security is bought and held to maturity and that the coupon interest paid over the life of the bond will be reinvested at the same rate of return. The 30-Day SEC Yield is similar to the Yield to Maturity and is reported for mutual funds.

Yield to Worst - The bond yield calculated by using the worst possible yield taking into consideration all call, put, and optional sink dates.

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