

# Investment Expenses Report FY 2020

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**December 2, 2020**

# Summary

- Total Investment Expenses increased from \$450 million in FY2019 to \$515 million in FY2020
  - Base Fees for External Managers declined from \$385 million to \$381 million
  - Profit Share for External Managers increased from \$40 million to \$106 million
  - Investment Office Expenses increased from \$24 million to \$28 million
- Total Investment Expenses increased from 0.82% of Net Total Fund NAV in FY2019 to 0.90% in FY2020
  - Base Fees for External Managers declined from 0.70% to 0.67%
- Annual savings from Internal Management increased from \$46 to \$50 million and Internally Managed NAV increased from \$25.1 to \$27.8 billion
- Progress continues on implementation of the Fee Reduction Plan presented to the Board in August 2018

# Framework

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- Total Investment Expenses = External Manager Expenses + Investment Office Expenses
- Evaluate the outperformance (Alpha) we earned over the Board-approved policy benchmarks against the investment expenses we paid

# Definition of Total Investment Expenses

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- Peers use their own definitions
  - No uniform reporting convention exists
  - No uniform analysis framework exists
  - No guidance has been issued by GASB, GIPS, GFOA, etc.
  - Public Pension Funds can and do report and disclose expenses differently
- Therefore, peer-to-peer comparisons of Total Investment Expenses are not “apples to apples”
  - They can be highly misleading if they are claimed to be “apples to apples”

# Definition of Total Investment Expenses

## **External Management Expenses**

- Traditional Investments
  - Base Fees
  - Profit Share
- Non-Traditional Investments
  - Base Fees
  - Profit Share in Absolute Return

## **+ Investment Office Expenses**

- Compensation and Benefits
- Technology Services
- Miscellaneous Service Providers
- Consultants (Aon Hewitt, Hamilton Lane, Aksia)
- Custodian

## **= Total Investment Expenses**

## Private Equity, Private Credit, & Private Real Estate Management Fees, Carried Interest, & Other Expenses

2018 Calendar Year	Net Management Fees	Net Carried Interest	Other Fund Expenses	Total
Private Equity	\$ 114	\$ 214	\$ 46	\$ 374
Private Credit	\$ 65	\$ 68	\$ 24	\$ 157
Private Real Estate	\$ 44	\$ 128	\$ 26	\$ 198
Total	\$ 223	\$ 410	\$ 96	\$ 729

2019 Calendar Year	Net Management Fees	Net Carried Interest	Other Fund Expenses	Total
Private Equity	\$ 100	\$ 279	\$ 48	\$ 427
Private Credit	\$ 63	\$ 54	\$ 25	\$ 142
Private Real Estate	\$ 42	\$ 115	\$ 16	\$ 172
Total	\$ 204	\$ 448	\$ 89	\$ 741

# Private Equity, Private Credit, & Private Real Estate Management Fees, Carried Interest, & Other Expenses

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- PSERS used a best efforts approach to gathering the data necessary for this presentation.
- PSERS canvassed our active funds for Carried Interest, Mgt Fee Offsets and Other Fund Expenses detail by fund. These amounts have not been tracked separately for inclusion in PSERS audited financial statements.
- PSERS added performance fees to Carried Interest estimates for Private Credit funds structured as “evergreen funds”. These fees are separately accounted for and disclosed within the CAFR. We included these fees in the analysis for comparative purposes.
- Note: It took more than 200 staff hours from PSERS and Hamilton Lane to provide this analysis.

# Total Investment Expenses: FY2020

	Year Ended June 30, 2020			
	Summary of Investment Expenses			
	Base	Profit Share	Other Expense	Total
<b>External Management</b>				
Domestic Equity	\$ 2	\$ 0	\$ -	\$ 2
International Equity	\$ 21	\$ 51	\$ -	\$ 72
Fixed Income	\$ 93	\$ 1	\$ -	\$ 94
Real Estate	\$ 50	\$ -	\$ -	\$ 50
Private Equity	\$ 100	\$ -	\$ -	\$ 100
Absolute Return	\$ 85	\$ 52	\$ -	\$ 137
Commodities	\$ 10	\$ -	\$ -	\$ 10
Midstream Energy	\$ 4	\$ -	\$ -	\$ 4
Infrastructure	\$ 4	\$ -	\$ -	\$ 4
Risk Parity	\$ 15	\$ 1	\$ -	\$ 16
Defined Contribution	\$ 0	\$ -	\$ -	\$ 0
<b>External Management Total</b>	<b>\$ 381</b>	<b>\$ 105</b>	<b>\$ -</b>	<b>\$ 487</b>
<b>Total Investment Office Expenses</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 28</b>	<b>\$ 28</b>
<b>Total Investment Expenses</b>	<b>\$ 381</b>	<b>\$ 105</b>	<b>\$ 28</b>	<b>\$ 515</b>



# Total Investment Expenses: FY 2014 – FY 2020

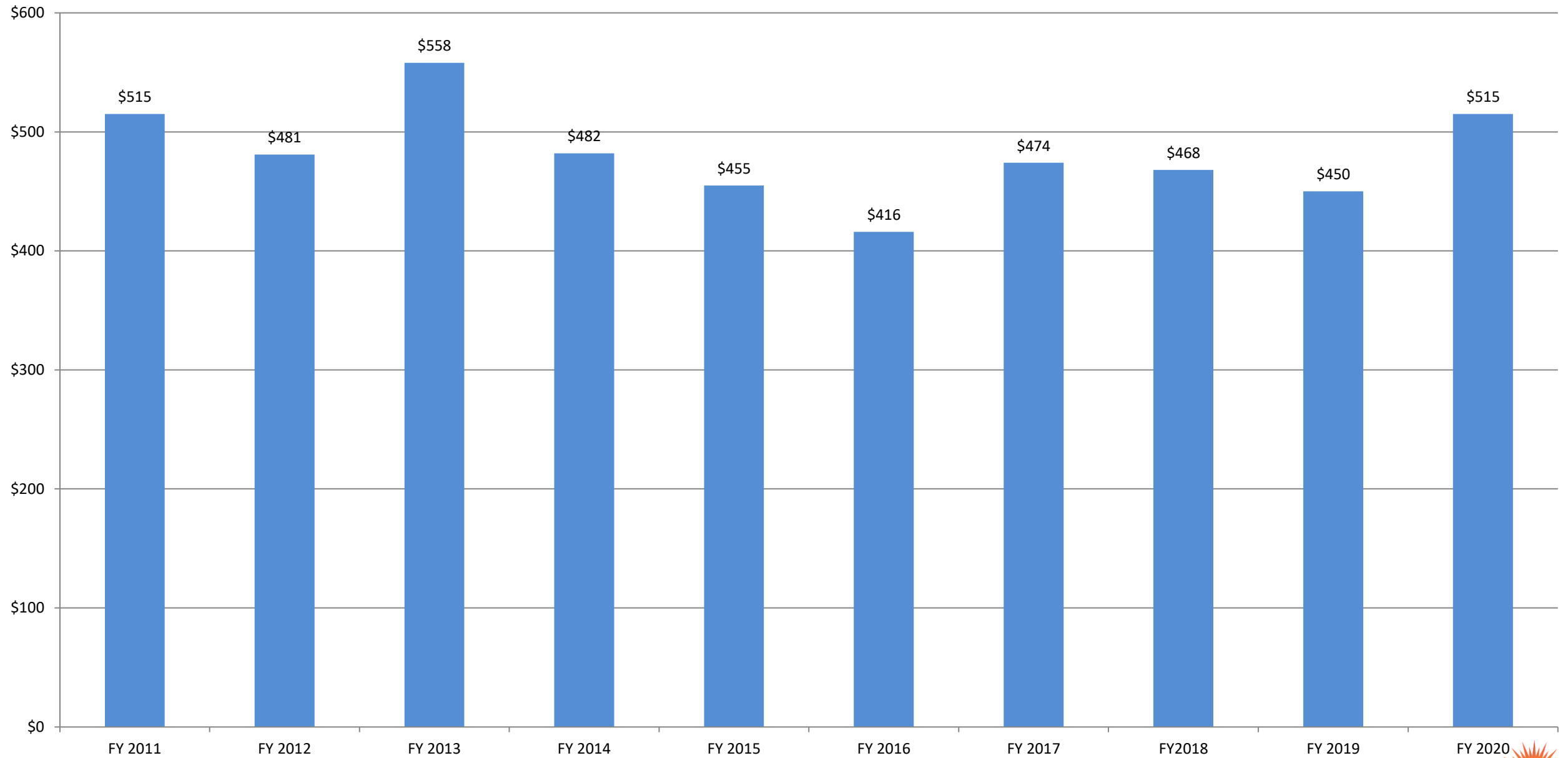
INVESTMENT EXPENSES BY ASSET CLASS							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
<b>External Management</b>							
Domestic Equity	\$ 3	\$ 3	\$ 3	\$ 3	\$ 2	\$ 3	\$ 2
International Equity	\$ 18	\$ 24	\$ 24	\$ 25	\$ 28	\$ 40	\$ 72
Fixed Income	\$ 82	\$ 84	\$ 82	\$ 109	\$ 111	\$ 101	\$ 94
Real Estate	\$ 74	\$ 69	\$ 52	\$ 51	\$ 50	\$ 48	\$ 50
Private Equity	\$ 117	\$ 102	\$ 99	\$ 103	\$ 98	\$ 96	\$ 100
Absolute Return	\$ 141	\$ 117	\$ 102	\$ 123	\$ 115	\$ 104	\$ 137
Commodities	\$ 11	\$ 8	\$ 6	\$ 10	\$ 10	\$ 5	\$ 10
Midstream Energy	\$ 11	\$ 12	\$ 8	\$ 9	\$ 9	\$ 8	\$ 4
Infrastructure	N/A	N/A	N/A	N/A	\$ 2	\$ 2	\$ 4
Risk Parity	\$ 6	\$ 13	\$ 18	\$ 23	\$ 22	\$ 17	\$ 16
Defined Contribution	N/A	N/A	N/A	N/A	N/A	N/A	\$ 0
<b>External Management Total</b>	<b>\$ 463</b>	<b>\$ 432</b>	<b>\$ 396</b>	<b>\$ 455</b>	<b>\$ 447</b>	<b>\$ 425</b>	<b>\$ 487</b>
<b>Total Investment Office Expenses</b>	<b>\$ 19</b>	<b>\$ 23</b>	<b>\$ 20</b>	<b>\$ 19</b>	<b>\$ 21</b>	<b>\$ 25</b>	<b>\$ 28</b>
<b>Total Investment Expenses</b>	<b>\$ 482</b>	<b>\$ 455</b>	<b>\$ 416</b>	<b>\$ 474</b>	<b>\$ 468</b>	<b>\$ 450</b>	<b>\$ 515</b>

Amounts in millions of dollars, totals may not sum due to rounding

# Breakdown of Profit Share FY 2020

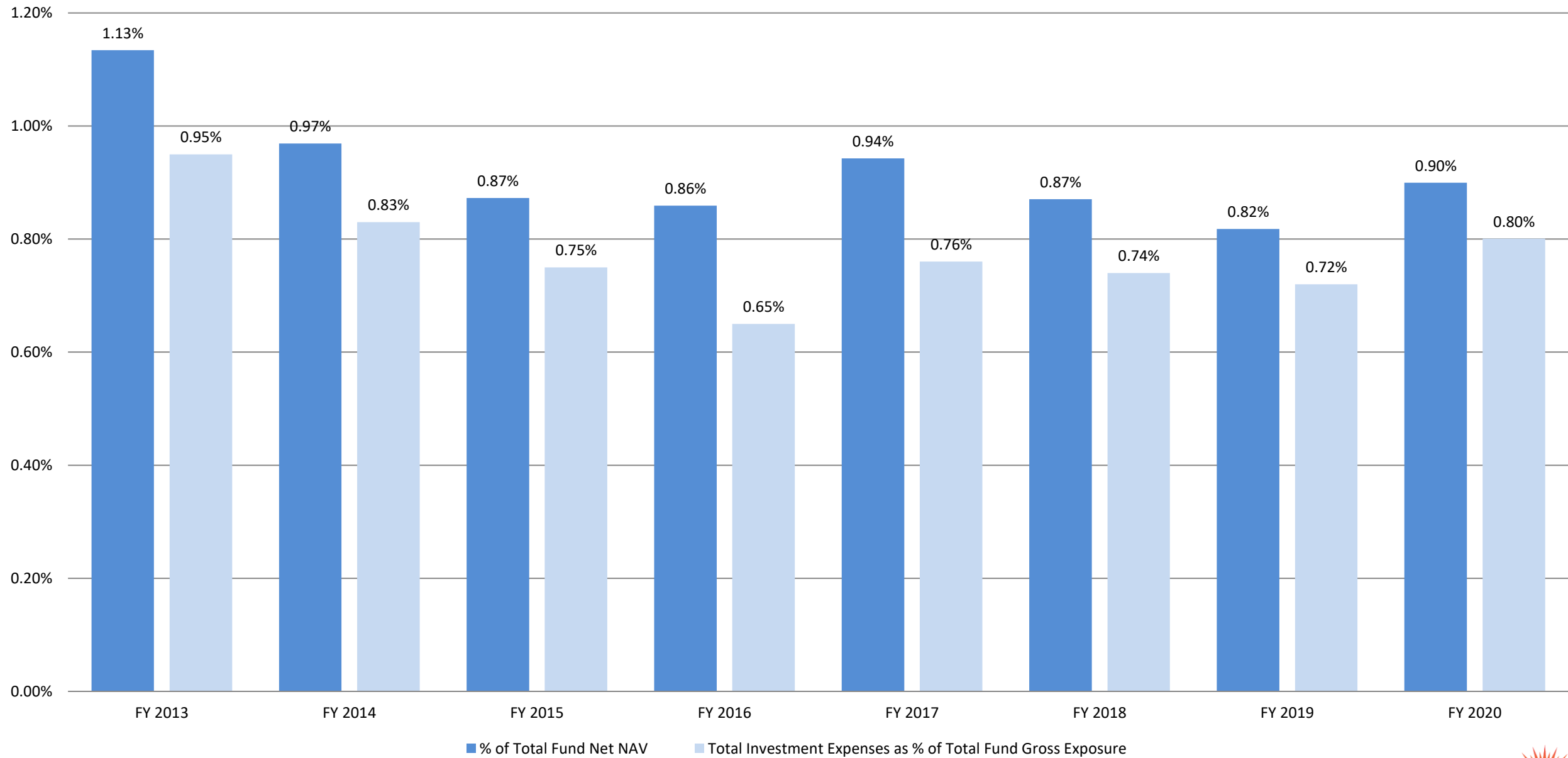
Manager	Average NAV FY 19-20	Portfolio Return	Benchmark Return	Net Alpha	Net Return in Dollars	Benchmark Return in Dollars	Net Alpha Earned in Dollars	Base Fees	Profit Share	Gross Alpha Earned in Dollars	Alpha Split
Radcliffe BDC	\$372.8	1.41%	2.43%	-1.02%	\$5.3	\$9.1	-\$3.8	\$1.6	\$.3	-\$1.9	N/A
<b>US Equity</b>	<b>\$372.8</b>				<b>\$5.3</b>	<b>\$9.1</b>	<b>-\$3.8</b>	<b>\$1.6</b>	<b>\$.3</b>	<b>-\$1.9</b>	<b>N/A</b>
Wasatch	\$335.0	9.33%	-9.85%	19.18%	\$31.3	-\$33.0	\$64.3	\$1.5	\$23.7	\$89.5	28%
Baillie Gifford	\$887.0	8.80%	-4.80%	13.60%	\$78.1	-\$42.6	\$120.6	\$2.2	\$9.2	\$132.1	9%
Cederberg	\$215.2	25.63%	9.89%	15.74%	\$55.2	\$21.3	\$33.9	\$.0	\$12.5	\$46.4	27%
TCI	\$494.1	5.31%	2.84%	2.47%	\$26.2	\$14.0	\$12.2	\$3.2	\$7.4	\$22.8	46%
<b>International Equity</b>	<b>\$1,931.3</b>				<b>\$190.7</b>	<b>-\$40.3</b>	<b>\$231.0</b>	<b>\$6.9</b>	<b>\$52.9</b>	<b>\$290.8</b>	<b>21%</b>
Garda Fixed Income	\$472.5	18.64%	1.73%	16.91%	\$88.1	\$8.2	\$79.9	\$7.1	\$18.9	\$105.9	25%
AKAZ	\$204.1	31.25%	1.73%	29.52%	\$63.8	\$3.5	\$60.3	\$2.6	\$21.0	\$83.8	28%
Aeolus	\$381.0	5.94%	1.73%	4.21%	\$22.6	\$6.6	\$16.0	\$7.6	\$4.7	\$28.4	43%
Oceanwood	\$237.7	2.99%	1.73%	1.26%	\$7.1	\$4.1	\$3.0	\$1.3	\$1.2	\$5.4	45%
Two Sigma	\$210.7	-11.70%	1.73%	-13.43%	-\$24.6	\$3.6	-\$28.3	\$1.1	\$.3	-\$26.9	N/A
Caspian Select	\$256.7	-2.97%	1.73%	-4.70%	-\$7.6	\$4.4	-\$12.1	\$1.6	\$.3	-\$10.2	N/A
DaVinci Reinsurance	\$59.2	12.58%	1.73%	10.85%	\$7.4	\$1.0	\$6.4	\$1.4	\$1.0	\$8.8	27%
RenRe Upsilon Diversified	\$90.8	6.93%	1.73%	5.20%	\$6.3	\$1.6	\$4.7	\$.9	\$.1	\$5.7	18%
Capula Global Relative	\$487.9	9.69%	1.73%	7.96%	\$47.3	\$8.4	\$38.8	\$7.5	\$11.5	\$57.8	33%
<b>Absolute Return</b>	<b>\$2,400.6</b>				<b>\$210.3</b>	<b>\$41.5</b>	<b>\$168.8</b>	<b>\$31.1</b>	<b>\$58.9</b>	<b>\$258.8</b>	<b>35%</b>
Bridgewater Optimal	\$408.8	-10.67%	10.51%	-21.18%	-\$43.6	\$43.0	-\$86.6	\$4.1	\$1.2	-\$81.3	N/A
<b>Risk Parity</b>	<b>\$408.8</b>				<b>-\$43.6</b>	<b>\$43.0</b>	<b>-\$86.6</b>	<b>\$4.1</b>	<b>\$1.2</b>	<b>-\$81.3</b>	<b>N/A</b>
Capula Libor Plus	\$42.8	16.84%	1.86%	14.98%	\$7.2	\$.8	\$6.4	\$.5	\$.7	\$7.7	16%
Penn Mutual	\$104.9	0.60%	1.86%	-1.26%	\$.6	\$2.0	-\$1.3	\$.2	\$.0	-\$1.1	N/A
Radcliffe Ultra Short	\$271.8	3.02%	1.93%	1.09%	\$8.2	\$5.2	\$3.0	\$.7	\$.7	\$4.3	31%
Mariner	\$212.1	6.69%	-0.19%	6.88%	\$14.2	-\$4.4	\$14.6	\$1.3	\$.0	\$15.9	8%
<b>Fixed Income</b>	<b>\$631.7</b>				<b>\$30.2</b>	<b>\$7.6</b>	<b>\$22.6</b>	<b>\$2.6</b>	<b>\$1.5</b>	<b>\$26.8</b>	<b>15%</b>
<b>Totals</b>	<b>\$5,745.2</b>	<b>6.84%</b>	<b>1.06%</b>	<b>5.78%</b>	<b>\$392.9</b>	<b>\$60.9</b>	<b>\$332.0</b>	<b>\$46.3</b>	<b>\$114.7</b>	<b>\$493.1</b>	<b>33%</b>

# Total Investment Expenses



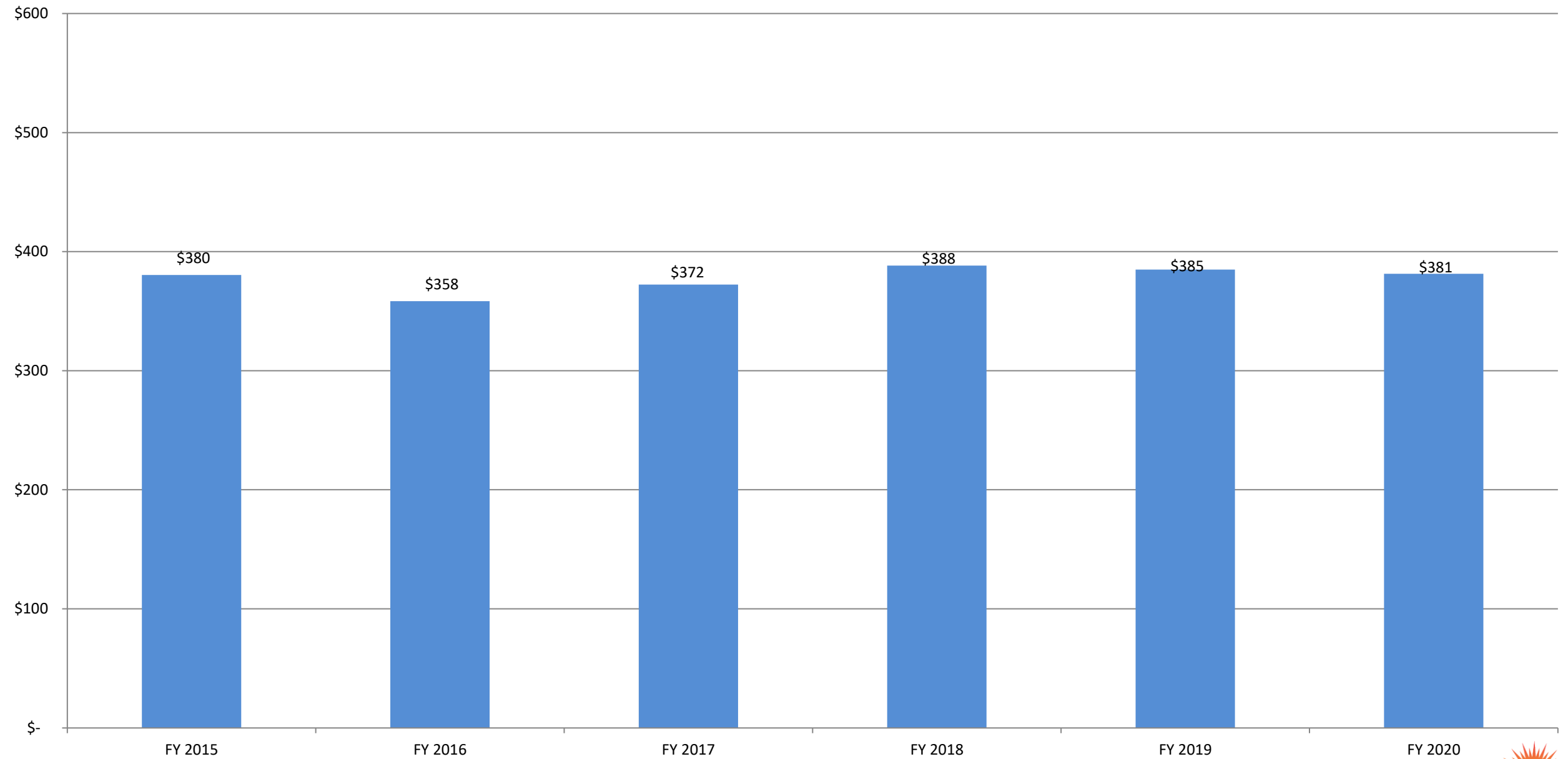
Dollar amounts in millions

# Total Investment Expenses



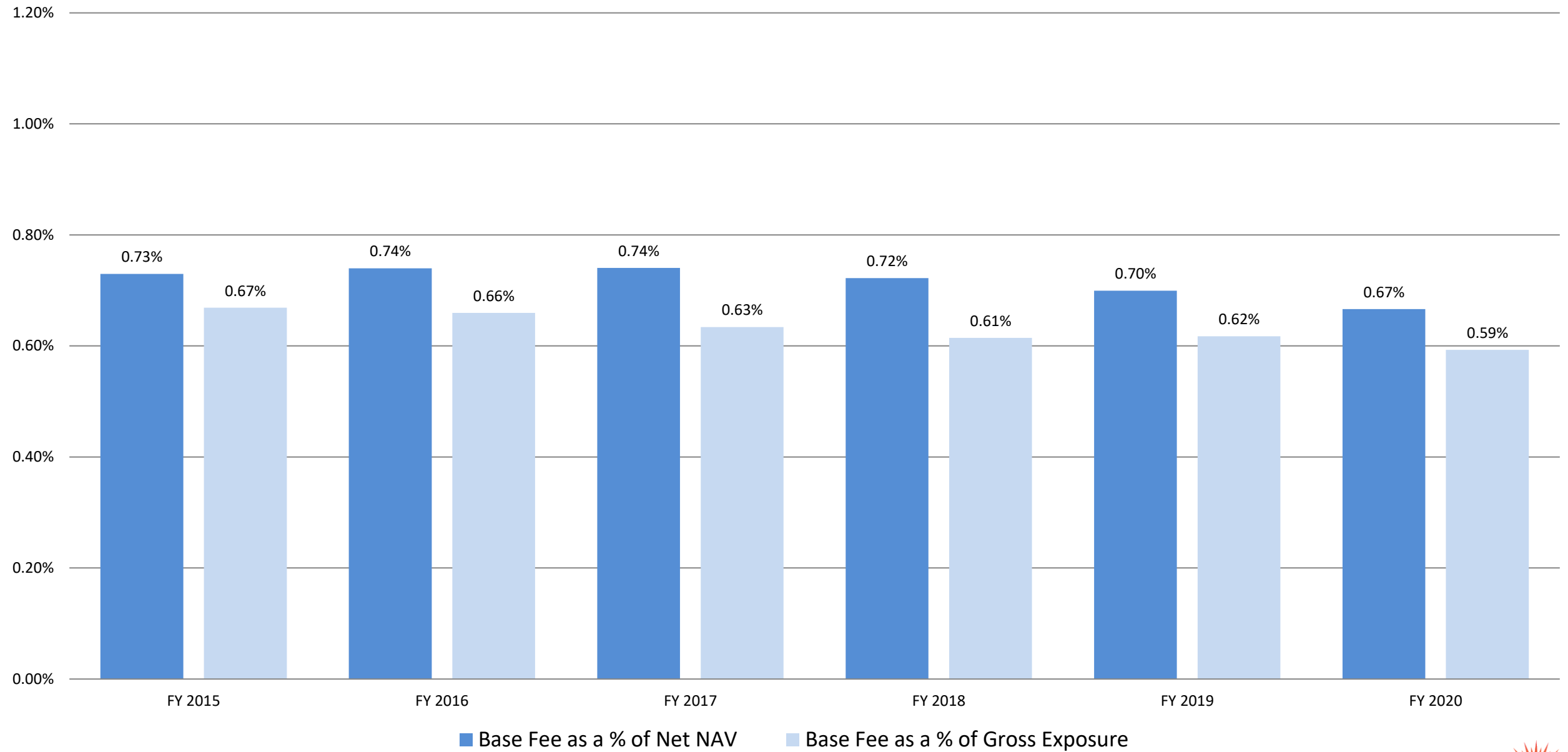
Calculated based upon quarterly NAV and gross exposure (NAV plus leverage)

# Base Fee Expenses



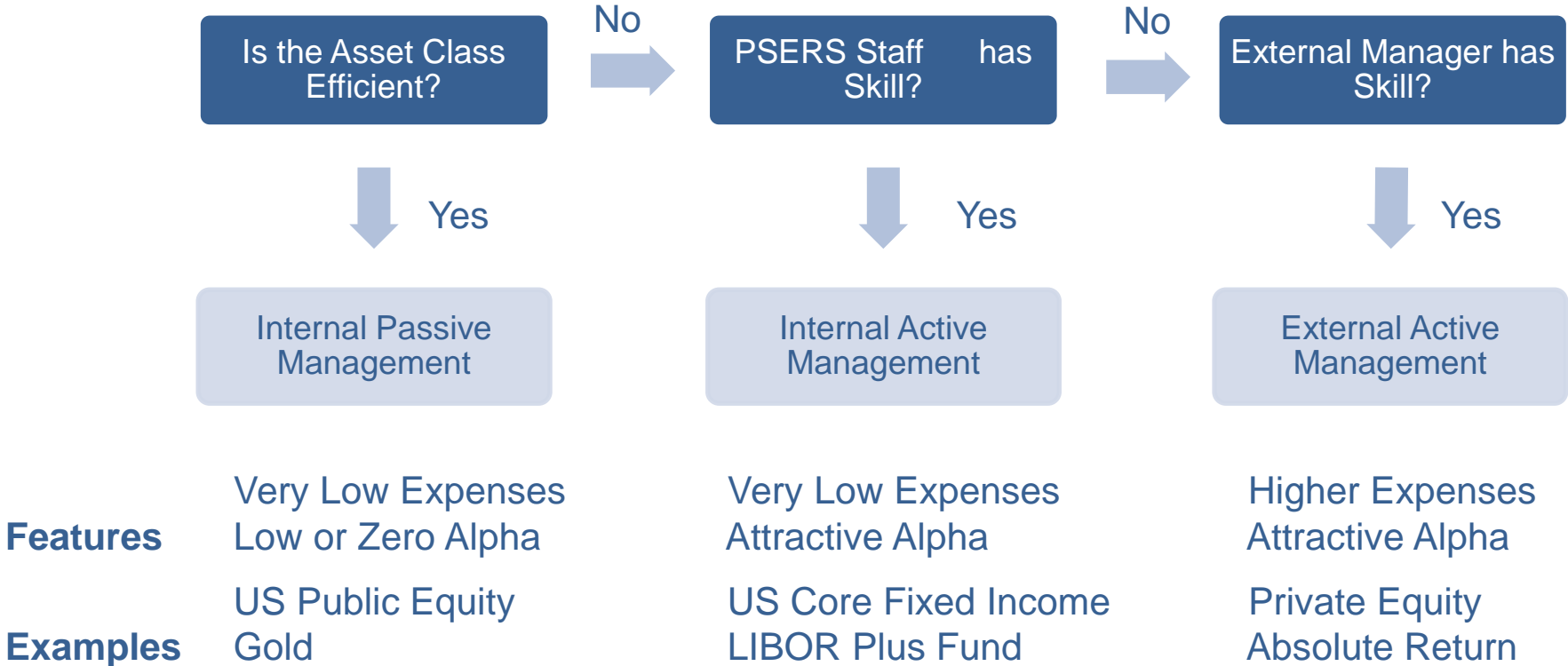
Dollar amounts in millions

# Base Fee Expenses



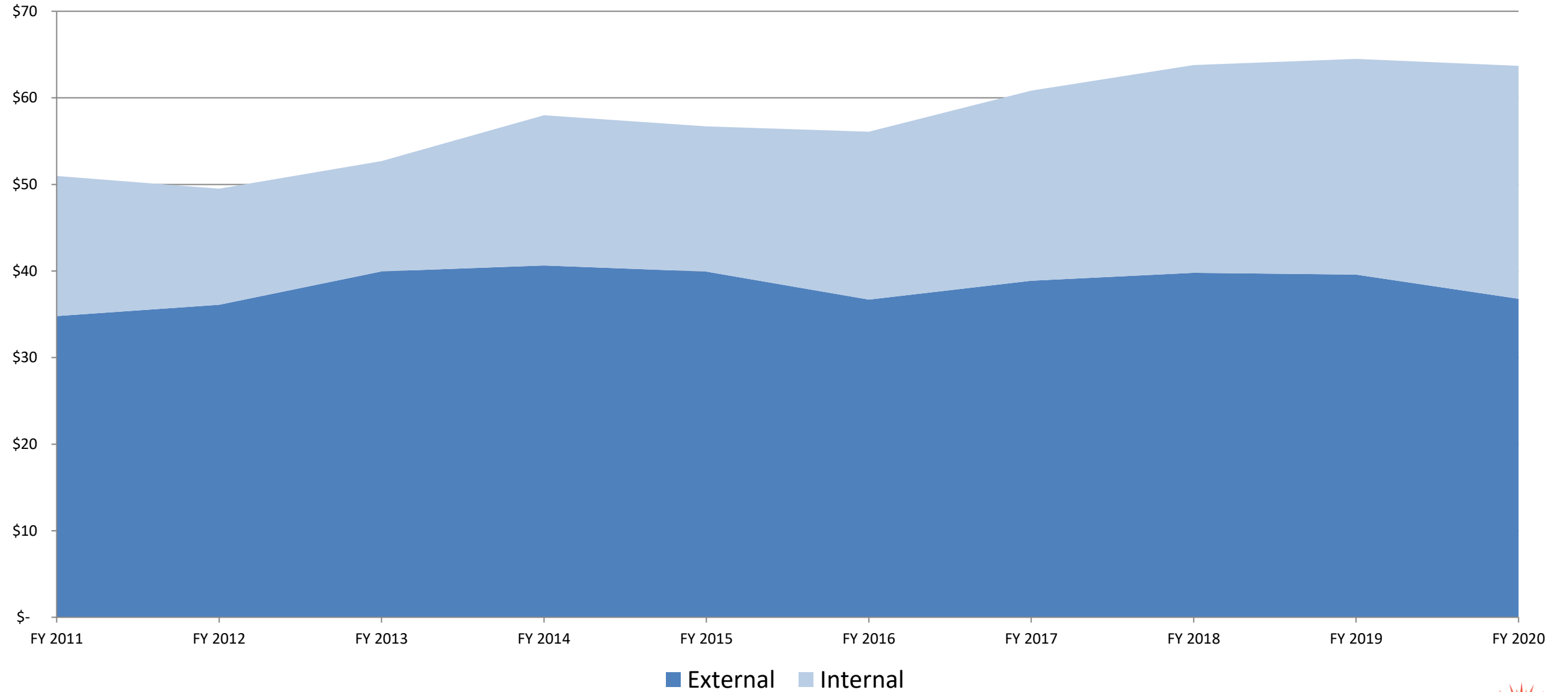
Calculated based upon quarterly NAV and gross exposure (NAV plus leverage)

# External vs Internal Management



# External vs Internal Management

## External AUM v Internal AUM (Gross Exposure)

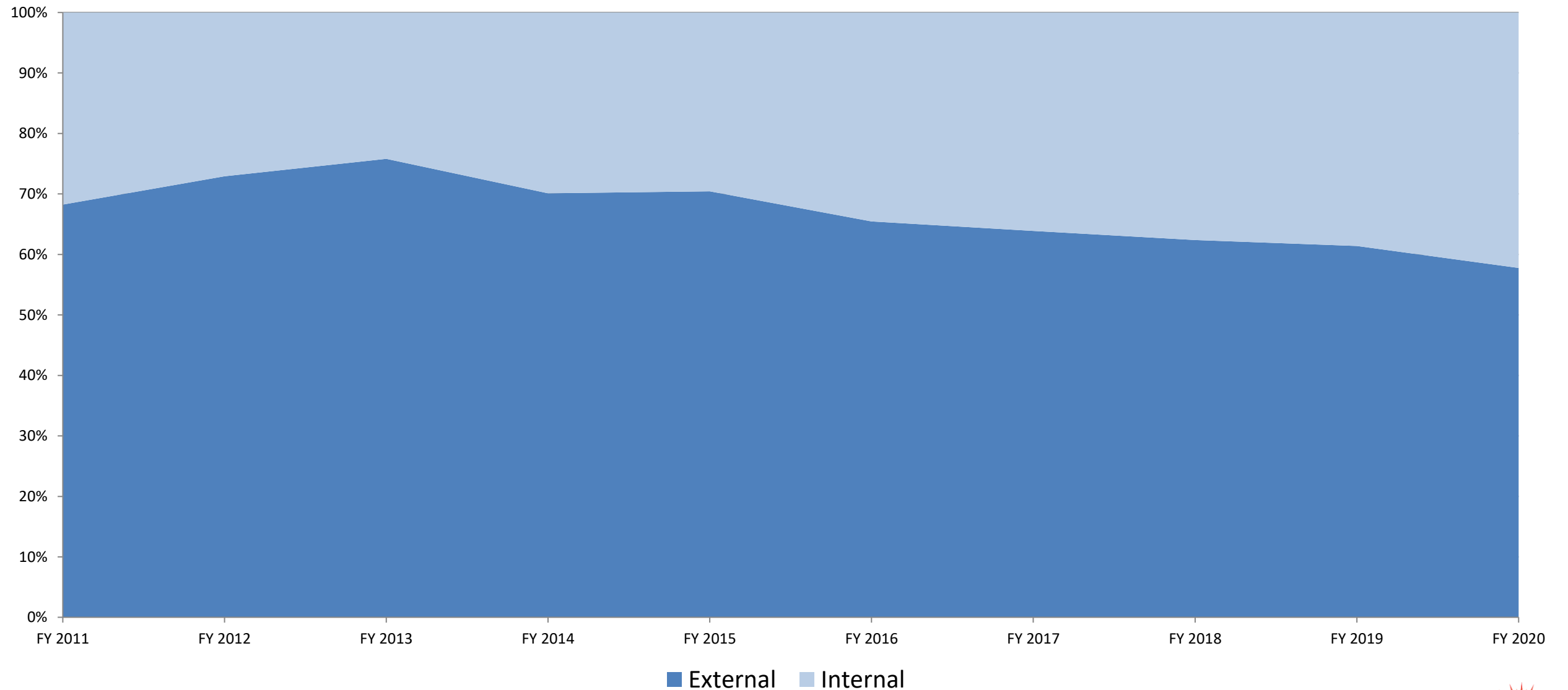


Amounts in billions of dollars  
Calculated based upon monthly average gross exposure (NAV plus leverage)



# External vs Internal Management

## External AUM v Internal AUM as a % of the Total Fund (Gross Exposure)



Amounts in billions of dollars  
Calculated based upon monthly average gross exposure (NAV plus leverage)

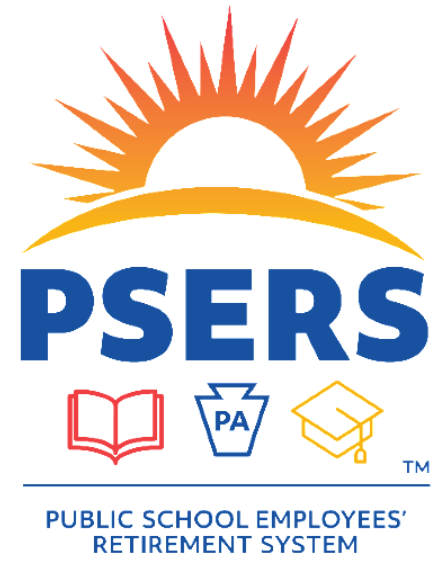
# Savings Generated by Internal Management

Account	Asset Class	As of June 30, 2018			As of June 30, 2019			As of June 30, 2020	
		Estimated Annual Fee%	Market Value*	Estimated Cost to Manage Externally	Market Value*	Estimated Cost to Manage Externally	Market Value*	Estimated Cost to Manage Externally	
PSERS - S&P 500 Index	U.S. Equities	0.01%	\$3,124,356	\$312	\$2,036,956	\$204	\$2,087,712	\$209	
PSERS - S&P 400 Index	U.S. Equities	0.03%	545,220	164	317,259	95	345,712	104	
PSERS - S&P 600 Index	U.S. Equities	0.04%	567,573	227	291,498	117	346,657	139	
Misc. PSERS Equity Accounts	U.S. Equities	0.00%	45,554	0	1,084	0	565	0	
	<b>U.S. Equities Total</b>		<b>4,282,703</b>	<b>703</b>	<b>2,646,797</b>	<b>415</b>	<b>2,780,646</b>	<b>451</b>	
PSERS ACWI ex. U.S. Index	International Equity	0.08%	3,152,720	2,522	2,497,669	1,998	2,909,881	2,328	
	<b>International Equity Total</b>		<b>3,152,720</b>	<b>2,522</b>	<b>2,497,669</b>	<b>1,998</b>	<b>2,909,881</b>	<b>2,328</b>	
Private Equity Co-Investments	Private Equity	1.00%	493,983	4,940	687,284	6,873	678,703	6,787	
PA Investment Fund - Private Equity	Private Equity	1.00%	3,778	38	2,715	27	55,223	552	
	<b>Private Equity Total</b>		<b>497,761</b>	<b>4,978</b>	<b>689,999</b>	<b>6,900</b>	<b>733,926</b>	<b>7,339</b>	
Private Credit Internal	Fixed Income	1.00%	41,646	416	111,717	1,117	128,399	1,284	
PSERS Active Aggregate	Fixed Income	0.21%	1,243,914	2,612	1,344,716	2,824	1,459,558	3,065	
PSERS TIPS Portfolio	Fixed Income	0.13%	1,943,835	2,527	3,463,763	4,503	4,204,660	5,466	
PSERS Long Treasuries	Fixed Income	0.18%	1,778,897	3,202	3,492,479	6,286	3,267,203	5,881	
	<b>Fixed Income Total</b>		<b>5,008,292</b>	<b>8,758</b>	<b>8,412,675</b>	<b>14,730</b>	<b>9,059,820</b>	<b>15,696</b>	
PSERS Infrastructure Index	Infrastructure	0.35%	1,034,990	3,622	1,172,970	4,105	1,277,366	4,471	
Infrastructure Internal	Infrastructure	1.00%	0	0	38,437	384	37,678	377	
	<b>Infrastructure Total</b>		<b>1,034,990</b>	<b>3,622</b>	<b>1,211,407</b>	<b>4,490</b>	<b>1,315,044</b>	<b>4,848</b>	
PSERS Commodity Beta	Commodities	0.15%	1,748,381	2,623	1,608,042	2,412	1,007,678	1,512	
PSERS Gold Fund	Commodities	0.15%	1,700,000	2,550	1,867,652	2,801	2,884,942	4,327	
Private Commodities Internal	Commodities	1.00%	0	0	8,132	81	17,513	175	
	<b>Commodities Total</b>		<b>3,448,381</b>	<b>5,173</b>	<b>3,483,826</b>	<b>5,295</b>	<b>3,910,133</b>	<b>6,014</b>	
PSERS Midstream Energy Index	Mid Stream Energy	0.35%	476,238	1,667	370,149	1,296	548,591	1,920	
	<b>Mid Stream Energy Total</b>		<b>476,238</b>	<b>1,667</b>	<b>370,149</b>	<b>1,296</b>	<b>548,591</b>	<b>1,920</b>	
PSERS REIT Index	Real Estate	0.08%	454,734	364	494,050	395	611,303	489	
Real Estate Co-Investments	Real Estate	0.49%	116,518	565	107,841	523	85,932	417	
	<b>Real Estate Total</b>		<b>571,252</b>	<b>929</b>	<b>601,891</b>	<b>918</b>	<b>697,235</b>	<b>906</b>	
PSERS Risk Parity	Risk Parity	0.30%	2,811,232	8,434	2,508,599	7,526	2,449,286	7,348	
	<b>Risk Parity Total</b>		<b>2,811,232</b>	<b>8,434</b>	<b>2,508,599</b>	<b>7,526</b>	<b>2,449,286</b>	<b>7,348</b>	
PSERS Cash Management	Cash Management	0.10%	2,489,293	2,489	2,694,996	2,695	3,425,643	3,426	
	<b>Cash Management Total</b>		<b>2,489,293</b>	<b>2,489</b>	<b>2,694,996</b>	<b>2,695</b>	<b>3,425,643</b>	<b>3,426</b>	
	<b>Grand Total</b>		<b>\$23,772,862</b>	<b>\$39,274</b>	<b>\$25,118,008</b>	<b>\$46,263</b>	<b>\$27,830,205</b>	<b>\$50,275</b>	

Dollar amounts in thousands; \*Market values include cash and derivatives exposure

# Investment Office Expenses

Expense Category	Vendor	FY2019-2020 Expenditure
<b>BNY Mellon (Custody)</b>		<b>\$2,481,102</b>
<b>GASB 68 Pension Expense</b>		<b>\$1,398,597</b>
<b>Investment Consultants</b>		
	Aksia LLC	\$700,000
	Glass Lewis & Co. LLC	\$178,681
	Hamilton Lane Advisors LLC	\$2,000,000
	Hewitt EnnisKnupp Inc	\$687,337
	McKinsey and Company Inc	\$224,400
	Misc Consulting Services	\$31,873
	Stepstone Group Real Estate LP	\$209,379
	STP Investment Services LLC (ABOR)	\$650,881
<b>Investment Consultants Total</b>		<b>\$4,682,550</b>
<b>Misc Legal Services</b>		<b>-\$33,054</b>
<b>Other Post Employment Benefits</b>		<b>-\$1,048,502</b>
<b>Overhead</b>		<b>\$241,484</b>
<b>Postage</b>		<b>\$50,000</b>
<b>Real Estate Rental</b>		<b>\$234,717</b>
<b>Specialized Service Providers</b>		
	Black Rock Financial Management Inc (Risk)	\$602,708
	Bloomberg	\$1,664,373
	CEM Benchmarking Inc	\$25,000
	Ernst & Young LLP	\$666,456
	Misc Service Providers	\$92,888
	SIMCORP (IBOR)	\$2,348,123
<b>Specialized Service Providers Total</b>		<b>\$5,399,548</b>
<b>Staff Compensation (Salary and Benefits)</b>		<b>\$13,219,692</b>
<b>Subscriptions</b>		
	Advent Software	\$362,078
	BCA Research	\$36,000
	Convergence	\$125,000
	Cornerstone Macro	\$85,000
	CreditSights	\$40,000
	eVestment Alliance	\$36,094
	Financial Recovery Technologies, LLC	\$50,000
	Gavekal Limited	\$25,000
	Misc Subscriptions	\$231,517
	MSCI Index Data	\$75,688
	S&P Index Alert	\$183,070
<b>Subscriptions Total</b>		<b>\$1,249,446</b>
<b>Telecommunications</b>		<b>\$38,685</b>
<b>Travel/Training</b>		<b>\$51,209</b>
<b>Treasury Services</b>		<b>\$55,839</b>
<b>Grand Total</b>		<b>\$28,021,314</b>



# Progress Report on Fee Reduction Plan (Response to PSERB Resolution 2017-41 Re: Management Fees)

# Progress Report on Fee Reduction Plan

- Essential Plan Elements

1. Renegotiate management fee arrangements to create a better alignment of interest between PSERS and each investment manager
2. Expand internal management, which in most cases will require an expansion of investment office professionals

- Goal: by end of FY2021, reduce base fees by \$38.7 million per year to \$334 million, which is by 10.4% from FY2017 levels of \$372 million

- This would be offset by \$3.15 million per year cost increase from 9 additional investment office staff

- Complete fee reduction plan can be found at

<https://www.psers.pa.gov/About/Board/Resolutions/Documents/2018/res41.pdf>

# Progress Report on Fee Reduction Plan

Asset Class	Current Annual Savings	Target Annual Savings	Target Annual Savings Net of Additional Staff
Public Equity	\$3.21	N/A	N/A
Private Equity	\$3.34	\$6.70	\$5.65
Fixed Income US Core Plus	\$0.23	\$0.20	\$0.20
Fixed Income Non-US Developed Markets	\$0.42	\$0.78	\$0.43
Fixed Income Multi-Sector	\$1.63	N/A	N/A
Fixed Income TIPS	\$2.25	\$11.85	\$11.50
Fixed Income Emerging Markets Debt	-	N/A	N/A
Fixed Income High Yield/Opportunistic (Private Credit)	\$0.22	N/A	N/A
Fixed Income Other	\$0.93	N/A	N/A
Real Estate	\$5.67	\$11.40	\$11.05
Midstream Energy	\$5.67	\$1.50	\$1.50
Infrastructure	(\$3.58)	(\$8.80)	(\$8.80)
Commodities	(\$2.30)	(\$1.50)	(\$2.03)
Risk Parity	\$19.60	\$1.00	\$0.65
Absolute Return	\$5.26	\$15.61	\$15.61
<b>Total</b>	<b>\$42.55</b>	<b>\$38.73</b>	<b>\$35.76</b>

Dollar amounts in millions  
Savings achieved through November 16, 2020

# Progress Report on Fee Reduction Plan

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- In Traditional Investments, progress has been steady due to:
  - Renegotiating of many fee structures from management fee only to a lower management fee plus a profit share
  - Bringing additional assets in house to manage

# Progress Report on Fee Reduction Plan

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- In Non-Traditional Investments, progress has been on schedule
  - Co-Investments in Private Equity continue to increase at a steady pace
  - Hiring of additional staff is going well
    - This will allow an increase in Co-Investment activity not only in Private Equity, but also in Private Credit, Private Real Estate, Private Infrastructure, and Absolute Return



## Independent Review

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- We are in discussions with a number of vendors for one to perform a third-party review of our external investment expenses as well as carried interest
  - Colmore
  - Novarca
  - XTP
- This was not part of the original Fee Reduction Plan but might be an additional means of obtaining savings

# Progress Report - Public Equity

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- Public Equity was not envisioned as a source of savings in the Fee Reduction Plan
- Status
  - In 3rd quarter of 2020, we terminated our external portable alpha manager in the S&P 500 Index Portfolio generating \$1.63 million in annual savings
  - Two additional managers had their fee terms renegotiated during calendar year 2020 achieving \$1.58 million in savings

## Progress Report - Private Equity

- Private Equity was envisioned as a source of \$6.7 million in annual fee savings, or \$5.65 million net of additional staff required
  - Increase Co-Investments from 6.2% to 12% of the Private Equity program
  - Hire 3 additional investment professionals at cost of \$1.05 million
- Status
  - Co-Investments represent 9.1% of the Private Equity program as of FY 2020
  - Annual management fee savings from Co-Investments are approximately \$3.34 million for FY 2020
  - Hired one investment professional to support the Private Equity program

# Progress Report - Fixed Income US Core Plus

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- Fixed Income US Core Plus was envisioned as a source of \$0.197 million in annual savings
  - Terminate an external manager and bring the assets in house
- Status
  - External manager was terminated in September 2019 and \$111 million of assets brought in house, for annual fee savings of \$0.23 million

# Progress Report - Fixed Income Non-US Developed Markets

- Fixed Income Non-US Developed Markets was envisioned as a source of \$0.775 million in annual fee savings, or \$0.425 million net of additional staff required
  - Terminate an external manager and bring the assets in house
  - Hire 1 additional investment professional at cost of \$0.35 million
- Status
  - External manager was liquidated in September 2018 and \$180 million of assets put in cash, as we have 0% target weight in the asset class. This generated \$0.42 million in annual fee savings
  - Have not hired additional investment professional. Will do so when allocation to the asset class is restored.

# Progress Report - Fixed Income Multi-Sector

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- Fixed Income Multi-Sector was not envisioned as a source of annual fee savings
- Status
  - External manager mandate was liquidated in November 2019 and \$260 million of assets brought in house, for annual fee savings of \$1.63 million

# Progress Report - Fixed Income TIPS

- Fixed Income TIPS was envisioned as a source of \$11.85 million in annual fee savings, or \$11.5 million net of additional staff required
  - For US TIPS, terminate an external manager and bring the assets in house, saving \$2.25 million
  - For US TIPS, hire 1 additional investment professional at cost of \$0.35 million
  - For Non-US TIPS, move external manager from fixed fee to a base fee plus profit share, saving \$9.6 million in base fees
- Status
  - For US TIPS, external manager was terminated in February 2019 and \$1.5 billion of exposure (\$260 million of assets) brought in house, saving \$2.25 million
  - For US TIPS, have not hired additional investment professional
  - For Non-US TIPS, have not yet negotiated new fee arrangement as this mandate is part of a broader relationship that we want to negotiate all together

# Progress Report - Fixed Income Emerging Markets Debt

- Fixed Income Emerging Markets Debt was not envisioned as a source of annual fee savings
  - Move existing external manager from fixed fee to a base fee plus profit share, saving \$0.835 million in base fees
  - Hire a second external manager at equivalent cost to the savings contemplated
- Status
  - Have not yet negotiated new fee arrangement with existing manager
  - Have not hired a second external manager



# Progress Report - Fixed Income High Yield/Oppportunistic

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- Fixed Income High Yield/Oppportunistic was not envisioned as a source of annual fee savings
  - More commonly known as Private Credit
  
- Status
  - Renegotiated new fee arrangement with existing manager achieving annual savings of \$0.22 million.

## Progress Report - Fixed Income Other

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- Fixed Income Other was not envisioned as a source of annual fee savings
  
- Status
  - Two external managers were terminated in 2020 bringing in \$152 million of assets in house, for annual fee savings of \$0.93 million

## Progress Report - Real Estate

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- Real Estate was envisioned as a source of \$11.4 million in annual fee savings, or \$11.05 million net of additional staff required
  - Step 1
    - Reduce Private Real Estate target allocation from 9.8% of the Total Fund to 8.0%, for annual savings of \$10.3 million
  - Step 2
    - Increase Private Real Estate Co-Investments from 2.3% to 8.0% of the Private Real Estate allocation, for annual savings of \$1.1 million
    - Hire 1 additional investment professional to help with the Co-Investments program at cost of \$0.35 million

# Progress Report - Real Estate Continued

- **Status**

- **Step 1**

- Private Real Estate was been reduced from 9.8% to 8.5% towards the target of 8.0%
    - Annual management fee savings are approximately \$5 million

- **Step 2**

- No new Private Real Estate Co-Investments for FY 2020
    - Annual management fee savings are still on pace to be \$0.67 million, a minimal increase from June 30, 2017

- **Additional Cost Savings Achieved**

- During Fiscal Year 2019 a tail end Fund position was converted to a SMA (Separately Managed Account). The management fee was reduced from 0.75% to 0.50% (partial year savings of \$640,324) and the carried interest from 20% to 10%

# Progress Report - Midstream Energy

- Midstream Energy was envisioned as a source of \$1.5 million in annual fee savings
  - Move two existing external managers from fixed fee to base fee plus profit share
  - The third external manager is already on a base fee plus profit share arrangement
- Status
  - Terminated one manager in the first quarter of 2020, which generated \$3.80 million in annual savings
  - Successfully renegotiated the other two remaining managers to a lower base fee and profit share achieving \$1.87 million in annual savings

# Progress Report - Infrastructure

- Infrastructure was envisioned to cost an additional \$8.8 million per year in fees
  - Move allocation from 2% of the Total Fund to 4%
  - Move actual allocation from current 95% Public/5% Private to 50% Public/50% Private
    - Public is internal and passive
    - Private is external and active
  - Increase Co-Investments from 0% of the Private program to 10%
- Status
  - Current actual allocation to infrastructure is 78% Public / 22% Private
    - Fees increased to \$3.8 million for FY 2020
  - A large infrastructure co-investment was consummated, at no fee/no carry
    - Annual management fee savings of approximately \$0.22 million
  - Side-car co-investment vehicle alongside an existing fund investment is currently being negotiated
    - Preliminary terms: no fee/no carry for initial six years each co-investment is held

# Progress Report - Commodities

- Commodities was envisioned to cost an additional \$1.5 million per year in fees, or \$2.025 million net of additional staff required
  - Negotiate fee arrangements with the 3 existing managers, for annual savings of \$2.8 million
  - Increase allocation to Private Commodities, for annual additional costs of \$5.1 million
  - Bring assets in house to the Senior Portfolio Manager, Commodities, for annual savings of \$1.1 million
  - Hire 1-1/2 additional staff for the internal Commodities portfolio for cost of \$0.525 million
- Status
  - Negotiated fee arrangements with the 3 existing managers, for annual savings of \$2.8 million
  - Increased allocation to Private Commodities increasing annual costs by \$5.1 million
    - We do not anticipate adding any new Private Commodity investments beyond the two existing funds
  - Have not brought assets in house, due to departure of Senior PM, Commodities. No intention to replace him.
  - Have not hired 1-1/2 additional staff for the internal Commodities portfolio. These slots reassigned to other areas.

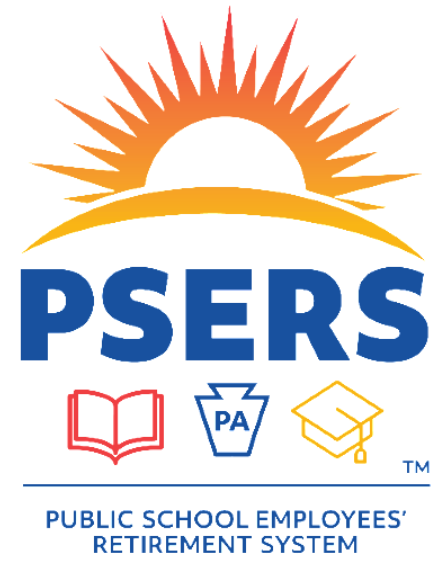
# Progress Report - Risk Parity

- Risk Parity was envisioned as a source of \$1.0 million in annual fee savings, or \$0.65 million net of additional staff required
  - Bring \$250 million in house from external managers
  - Hire 1 additional staff
- Status
  - By the end of the 4th quarter 2020, expect entire program to be liquidated
  - Based on 2017 Fee Savings Report, this will generate \$19.6 million in external manager fee savings



# Progress Report - Absolute Return

- Absolute Return was envisioned as a source of \$15.61 million in annual fee savings
  - With one manager, renegotiate the existing base fee plus profit share, saving \$3.25 million per year in base fees
  - With another manager, move from fixed fee to base fee plus profit share, saving \$12.36 million per year in base fees
- Status
  - With two managers, have renegotiated the existing base fee plus profit share, saving \$3.68 million per year in base fees
  - With another manager, have renegotiated the existing base fee, saving \$0.62 million per year in base fees
  - Terminated one manager during FY 2020, saving \$0.96 million per year in base fees
  - With the other manager, have not moved from fixed fee to base fee plus profit share, as this mandate is part of a broader relationship that we want to negotiate all together



# Appendix

# Appendix

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# Total Fees Reported by Managers FY 2019-2020

Manager	Base Fees	Profit Share	Total
Aeolus Capital Management Ltd.	\$ 7,624	\$ 4,705	\$ 12,328
AKAZ Offshore Fund LTD	\$ 2,609	\$ 20,951	\$ 23,560
Bridgewater Pure Alpha Fund II, LTD.	\$ 23,963	\$ -	\$ 23,963
Brigade Capital Management	\$ 3,139	\$ (129)	\$ 3,011
Capula Global Relative Value Fund Limited	\$ 7,471	\$ 11,518	\$ 18,989
Capula Tail Risk Fund Limited	\$ 4,581	\$ -	\$ 4,581
Caspian Capital, LP	\$ 2,566	\$ 762	\$ 3,328
DaVinci Reinsurance Ltd.	\$ 1,401	\$ 993	\$ 2,394
Falko Regional Aircraft Opportunities Fund II L.P.	\$ 1,032	\$ -	\$ 1,032
Garda Capital Partners, LP	\$ 7,138	\$ 18,862	\$ 26,000
HS Group Sponsor Fund II Ltd.	\$ 889	\$ -	\$ 889
Nephila Capital Ltd.	\$ 2,509	\$ -	\$ 2,509
Nimbus Weather Fund	\$ 1,986	\$ -	\$ 1,986
Oceanwood Opportunities Fund	\$ 1,262	\$ 1,158	\$ 2,420
OWS Credit Opportunity Offshore Fund III, Ltd.	\$ 4,573	\$ (7,011)	\$ (2,438)
Perry Partners, L.P.	\$ 123	\$ -	\$ 123
PIMCO Absolute Return Strategy Offshore Fund Ltd.	\$ 2,326	\$ -	\$ 2,326
PIMCO Global Credit Opportunity Offshore Fund Ltd.	\$ 2,406	\$ -	\$ 2,406
RenaissanceRe Medici Fund Ltd.	\$ 482	\$ -	\$ 482
RenaissanceRe Upsilon Diversified Fund	\$ 935	\$ 68	\$ 1,003
SASOF III, LP	\$ 1,578	\$ -	\$ 1,578
SASOF IV, LP	\$ 1,425	\$ -	\$ 1,425
SASOF V, LP	\$ 249	\$ -	\$ 249
Sciens Aviation Special Opportunities Investment Fund II, LP	\$ 35	\$ -	\$ 35
Two Sigma Risk Premia Enhanced Fund	\$ 1,058	\$ 343	\$ 1,401
Venor Capital Offshore	\$ 1,664	\$ -	\$ 1,664
<b>Absolute Return Total</b>	<b>\$ 85,023</b>	<b>\$ 52,219</b>	<b>\$ 137,242</b>

Dollars in thousands  
Numbers may not add due to rounding

# Total Fees Reported by Managers FY 2019-2020

Manager	Base Fees	Profit Share	Total
Actis Global 4, L.P.	\$ 1,330	\$ -	\$ 1,330
Aisling Capital IV, L.P.	\$ 302	\$ -	\$ 302
Apax Digital, L.P.	\$ 1,758	\$ -	\$ 1,758
Apollo Investment Fund IX, L.P.	\$ 2,265	\$ -	\$ 2,265
Apollo Investment Fund VIII, L.P.	\$ 761	\$ -	\$ 761
Bain Capital Asia Fund II, L.P.	\$ 640	\$ -	\$ 640
Bain Capital Asia Fund III-A, L.P.	\$ 2,600	\$ -	\$ 2,600
Bain Capital Asia Fund IV-B, L.P.	\$ 1,375	\$ -	\$ 1,375
Bain Capital Fund XI-A, L.P.	\$ 449	\$ -	\$ 449
Bain Capital Fund XII-A, L.P.	\$ 1,875	\$ -	\$ 1,875
Baring Asia Private Equity Fund IV, L.P.	\$ 619	\$ -	\$ 619
Baring Asia Private Equity Fund V, L.P.	\$ 3,050	\$ -	\$ 3,050
Baring Asia Private Equity Fund VI, L.P.	\$ 1,212	\$ -	\$ 1,212
Blue Point Capital Partners II (B), L.P.	\$ 76	\$ -	\$ 76
Blue Point Capital Partners III (B), L.P.	\$ 519	\$ -	\$ 519
Blue Point Capital Partners IV, L.P.	\$ 885	\$ -	\$ 885
Bridgepoint Development Capital III, L.P.	\$ 1,477	\$ -	\$ 1,477
Bridgepoint Europe IV, L.P.	\$ 580	\$ -	\$ 580
Bridgepoint Europe V, L.P.	\$ 1,369	\$ -	\$ 1,369
Bridgepoint Europe VI, L.P.	\$ 1,520	\$ -	\$ 1,520
Capital International Private Equity Fund VI, L.P.	\$ 550	\$ -	\$ 550
Catterton Growth Partners II, L.P.	\$ 1,075	\$ -	\$ 1,075
Catterton Growth Partners III, L.P., L	\$ 1,187	\$ -	\$ 1,187
Catterton Growth Partners, L.P.	\$ 462	\$ -	\$ 462
Catterton Partners VI, L.P.	\$ 477	\$ -	\$ 477
Catterton Partners VII, L.P.	\$ 1,409	\$ -	\$ 1,409
Catterton VIII, L.P., L	\$ 1,227	\$ -	\$ 1,227
Cerberus Institutional Partners V, L.P.	\$ 624	\$ -	\$ 624

Dollars in thousands  
Numbers may not add due to rounding

# Total Fees Reported by Managers FY 2019-2020

Manager	Base Fees	Profit Share	Total
Cerberus Institutional Partners VI, L.P.	\$ 2,086	\$ -	\$ 2,086
Cinven Fund (Fifth), L.P.	\$ 586	\$ -	\$ 586
Cinven Fund (Sixth), L.P.	\$ 1,156	\$ -	\$ 1,156
Clearlake Capital Partners IV, L.P.	\$ 687	\$ -	\$ 687
Clearlake Capital Partners V, L.P.	\$ 380	\$ -	\$ 380
Coller International Partners VI, L.P.	\$ 791	\$ -	\$ 791
Coller International Partners VII, L.P. - Series A	\$ 1,250	\$ -	\$ 1,250
Crestview Partners II, L.P.	\$ 872	\$ -	\$ 872
Crestview Partners III, L.P.	\$ 1,290	\$ -	\$ 1,290
Crestview Partners, L.P.	\$ 250	\$ -	\$ 250
DCPF VI Oil and Gas Co-Investment Fund, L.P.	\$ 75	\$ -	\$ 75
Denham Commodity Partners Fund VI, L.P.	\$ 723	\$ -	\$ 723
Energy & Minerals Group Fund III, L.P., The	\$ 1,058	\$ -	\$ 1,058
Equistone Partners Europe Fund V E, L.P.	\$ 932	\$ -	\$ 932
Equistone Partners Europe Fund VI E, SCSp	\$ 1,473	\$ -	\$ 1,473
First Reserve Fund XII, L.P.	\$ 32	\$ -	\$ 32
Gold Hill Venture Lending 03-A, L.P.	\$ 35	\$ -	\$ 35
GoldPoint Partners Co-Investment V, L.P.	\$ 343	\$ -	\$ 343
Hahn & Company III L.P.	\$ 169	\$ -	\$ 169
Hahn & Company III-S L.P.	\$ 86	\$ -	\$ 86
HgCapital 7 A, L.P.	\$ 985	\$ -	\$ 985
HgCapital 8 D, L.P.	\$ 2,057	\$ -	\$ 2,057
HGGC Fund II, L.P.	\$ 1,141	\$ -	\$ 1,141
HGGC Fund III, L.P.	\$ 1,032	\$ -	\$ 1,032
Incline Elevate Fund, L.P.	\$ 745	\$ -	\$ 745
Incline Equity Partners IV, L.P.	\$ 1,109	\$ -	\$ 1,109
Insight Partners XI, L.P.	\$ 693	\$ -	\$ 693
Insight Venture Partners X, L.P.	\$ 1,371	\$ -	\$ 1,371

Dollars in thousands  
Numbers may not add due to rounding

# Total Fees Reported by Managers FY 2019-2020

Manager	Base Fees	Profit Share	Total
K4 Private Investors, L.P.	\$ 1,952	\$ -	\$ 1,952
Landmark Equity Partners XIII, L.P.	\$ 91	\$ -	\$ 91
Landmark Equity Partners XIV, L.P.	\$ 298	\$ -	\$ 298
LLR Equity Partners III, L.P.	\$ 605	\$ -	\$ 605
LLR Equity Partners IV, L.P.	\$ 2,091	\$ -	\$ 2,091
LLR Equity Partners V, L.P.	\$ 3,475	\$ -	\$ 3,475
Milestone Partners III, L.P.	\$ 182	\$ -	\$ 182
Milestone Partners IV, L.P.	\$ 315	\$ -	\$ 315
New Mountain Partners IV, L.P.	\$ 442	\$ -	\$ 442
New Mountain Partners V, L.P.	\$ 2,043	\$ -	\$ 2,043
New York Life Capital Partners IV-A, L.P.	\$ 38	\$ -	\$ 38
NGP Natural Resources X, L.P.	\$ 593	\$ -	\$ 593
NGP Natural Resources XI, L.P.	\$ 1,207	\$ -	\$ 1,207
North Haven Private Equity Asia IV, L.P.	\$ 1,135	\$ -	\$ 1,135
Odyssey Investment Partners Fund V, L.P.	\$ 1,999	\$ -	\$ 1,999
Orchid Asia V, L.P.	\$ 158	\$ -	\$ 158
Orchid Asia VI, L.P.	\$ 1,001	\$ -	\$ 1,001
Orchid Asia VII, L.P.	\$ 1,507	\$ -	\$ 1,507
PAI Europe V, L.P.	\$ 100	\$ -	\$ 100
PAI Europe VI, L.P.	\$ 1,160	\$ -	\$ 1,160
PAI Europe VII, L.P.	\$ 1,099	\$ -	\$ 1,099
Palladium Equity Partners IV, L.P.	\$ 503	\$ -	\$ 503
Partners Group Secondary 2008, L.P.	\$ 372	\$ -	\$ 372
Partners Group Secondary 2011 (USD), L.P. Inc.	\$ 962	\$ -	\$ 962
Partners Group Secondary 2015 (USD) A, L.P.	\$ 1,250	\$ -	\$ 1,250
Platinum Equity Capital Partners V, L.P.	\$ 247	\$ -	\$ 247
Platinum Equity Small Cap Fund, L.P.	\$ 765	\$ -	\$ 765
Portfolio Advisors Secondary Fund III, L.P.	\$ 1,349	\$ -	\$ 1,349

Dollars in thousands  
Numbers may not add due to rounding

# Total Fees Reported by Managers FY 2019-2020

Manager	Base Fees	Profit Share	Total
Psilos Group Partners III-C, L.P.	\$ 15	\$ -	\$ 15
Sante Health Ventures III	\$ 1,191	\$ -	\$ 1,191
SCP Private Equity Partners II, L.P.	\$ 141	\$ -	\$ 141
Searchlight Capital II, L.P.	\$ 921	\$ -	\$ 921
Searchlight Capital III, L.P.	\$ 1,000	\$ -	\$ 1,000
StarVest Partners II (Parallel), L.P.	\$ 230	\$ -	\$ 230
Strategic Partners Fund IV VC, L.P.	\$ 125	\$ -	\$ 125
Strategic Partners Fund IV, L.P.	\$ 65	\$ -	\$ 65
Strategic Partners Fund V, L.P.	\$ 253	\$ -	\$ 253
Strategic Partners Fund VI, L.P.	\$ 530	\$ -	\$ 530
Strategic Partners Fund VII, L.P.	\$ 1,250	\$ -	\$ 1,250
Summit Partners Growth Equity Fund VIII-A, L.P.	\$ 1,111	\$ -	\$ 1,111
Summit Partners Growth Equity Fund X-A, L.P.	\$ 429	\$ -	\$ 429
Summit Partners Venture Capital Fund III-A, L.P.	\$ 200	\$ -	\$ 200
Summit Partners Venture Capital Fund IV-A, L.P.	\$ 800	\$ -	\$ 800
Tenaya Capital VI, L.P.	\$ 713	\$ -	\$ 713
Tenaya Capital VII, L.P.	\$ 2,000	\$ -	\$ 2,000
Tenaya Capital V-P, L.P.	\$ 387	\$ -	\$ 387
Trilantic Capital Partners IV L.P.	\$ 19	\$ -	\$ 19
Trilantic Capital Partners V (North America), L.P.	\$ 564	\$ -	\$ 564
Trilantic Capital Partners VI (North America), L.P.	\$ 2,261	\$ -	\$ 2,261
Venor Special Situations Fund II, L.P.	\$ 691	\$ -	\$ 691
Versa Capital Fund II, L.P.	\$ 1,446	\$ -	\$ 1,446
Versa Capital Fund III, L.P.	\$ 884	\$ -	\$ 884
Webster Capital IV, L.P.	\$ 348	\$ -	\$ 348
<b>Private Equity Total</b>	<b>\$ 99,589</b>	<b>\$ -</b>	<b>\$ 99,589</b>

Dollars in thousands  
Numbers may not add due to rounding



# Total Fees Reported by Managers FY 2019-2020

Manager	Base Fees	Profit Share	Total
Denham Mining Fund, L.P.	\$ 2,094	\$ -	\$ 2,094
Gresham Investment Management, LLC	\$ 888	\$ -	\$ 888
NGP Natural Resources XII, L.P.	\$ 2,998	\$ -	\$ 2,998
PIMCO Commodity Alpha Fund Ltd.	\$ 2,761	\$ -	\$ 2,761
Wellington Management Company, LLP	\$ 1,040	\$ -	\$ 1,040
<b>Commodities Total</b>	<b>\$ 9,780</b>	<b>\$ -</b>	<b>\$ 9,780</b>
Radcliffe Specialty Finance Debt Strategy	\$ 1,600	\$ 277	\$ 1,877
<b>Domestic Equity Total</b>	<b>\$ 1,600</b>	<b>\$ 277</b>	<b>\$ 1,877</b>

Dollars in thousands  
Numbers may not add due to rounding

# Total Fees Reported by Managers FY 2019-2020

Manager	Base Fees	Profit Share	Total
Apollo European Principal Finance Fund II (Dollar A), L.P.	\$ 321	\$ -	\$ 321
Apollo European Principal Finance Fund III (Dollar A), LP	\$ 2,764	\$ -	\$ 2,764
Avenue Energy Opportunities Fund II, L.P.	\$ 850	\$ -	\$ 850
Avenue Energy Opportunities Fund, L.P.	\$ 1,715	\$ -	\$ 1,715
Avenue Europe Special Situations Fund III (U.S.), L.P.	\$ 1,800	\$ -	\$ 1,800
Bain Capital Credit Managed Account (PSERS), L.P.	\$ 1,756	\$ -	\$ 1,756
Bain Capital Distressed and Special Situations 2013 (A), L.P.	\$ 1,440	\$ -	\$ 1,440
Bain Capital Distressed and Special Situations 2016 (A), L.P.	\$ 2,716	\$ -	\$ 2,716
Bain Capital Distressed and Special Situations 2019 (A), L.P.	\$ 174	\$ -	\$ 174
Bain Capital Middle Market Credit 2010, L.P.	\$ 152	\$ -	\$ 152
Bain Capital Middle Market Credit 2014, LP	\$ 893	\$ -	\$ 893
BlackRock U.S. Extended Core Global Alpha Bond (Non-ERISA) Fund Ltd.	\$ 4,132	\$ (2,107)	\$ 2,025
Bridgewater Pure Alpha Fund II, LTD.	\$ 23,852	\$ -	\$ 23,852
Brigade Distressed Value Offshore Fund Ltd.	\$ 1,648	\$ -	\$ 1,648
Brigade Structured Credit Offshore Fund Ltd.	\$ 2,776	\$ -	\$ 2,776
Capula Tail Risk Fund Limited - Libor Plus	\$ 525	\$ 717	\$ 1,242
Carlyle Energy Mezzanine Opportunities Fund II, L.P.	\$ 1,426	\$ -	\$ 1,426
Carlyle Energy Mezzanine Opportunities Fund-Q, L.P.	\$ 888	\$ -	\$ 888
Cerberus Levered Loan Opportunities Fund II, L.P.	\$ 557	\$ -	\$ 557
Cerberus PSERS Levered Loan Opportunities Fund, L.P.	\$ 8,019	\$ -	\$ 8,019
Clearlake Opportunities Partners (P) II, L.P.	\$ 837	\$ -	\$ 837
Galton Onshore Mortgage Recovery Fund III, L.P.	\$ 23	\$ -	\$ 23
Galton Onshore Mortgage Recovery Fund IV, L.P.	\$ 963	\$ -	\$ 963
Hayfin SOF II USD Co-Invest, L.P.	\$ 93	\$ -	\$ 93
Hayfin SOF II USD, L.P.	\$ 2,195	\$ -	\$ 2,195
HayFin Special Opportunities Credit Fund (Parallel), L.P.	\$ 470	\$ -	\$ 470
ICG Europe Fund V, L.P.	\$ 621	\$ -	\$ 621
ICG Europe Fund VI, L.P.	\$ 1,035	\$ -	\$ 1,035
ICG Europe Fund VII Feeder SCSp	\$ 2,270	\$ -	\$ 2,270

Dollars in thousands

Numbers may not add due to rounding

# Total Fees Reported by Managers FY 2019-2020

Manager	Base Fees	Profit Share	Total
International Infrastructure Finance Company Fund, L.P.	\$ 898	\$ -	\$ 898
Latitude Management Real Estate Capital IV, Inc.	\$ 819	\$ -	\$ 819
LBC Credit Partners III, L.P.	\$ 975	\$ -	\$ 975
LBC-P Credit Fund, L.P.	\$ 6,075	\$ -	\$ 6,075
Mariner Investment Group, LLC	\$ 1,273	\$ 42	\$ 1,314
Park Square - PSERS Credit Opportunities Fund, L.P.	\$ 2,223	\$ -	\$ 2,223
Penn Mutual Asset Management, LLC	\$ 157	\$ 45	\$ 202
PIMCO BRAVO Fund III Onshore Feeder, LP	\$ 1,726	\$ -	\$ 1,726
PIMCO Multi-Sector Strategy Fund Ltd.	\$ 530	\$ -	\$ 530
PSERS TAO Partners Parallel Fund, L.P. - (TAO 2.0)	\$ 1,818	\$ -	\$ 1,818
PSERS TAO Partners Parallel Fund, L.P. - (TAO 3.0)	\$ 1,892	\$ -	\$ 1,892
Pugh Capital Management, Inc.	\$ 47	\$ -	\$ 47
Radcliffe Ultra Short Duration Managed Account	\$ 693	\$ 667	\$ 1,359
Sankaty Credit Opportunities IV, L.P.	\$ 382	\$ -	\$ 382
SEI Investment Management	\$ 752	\$ -	\$ 752
SSG Capital Partners V Sidecar, L.P.	\$ 29	\$ -	\$ 29
SSG Capital Partners V, L.P.	\$ 1,097	\$ -	\$ 1,097
Templeton Investment Counsel, LLC	\$ 1,899	\$ -	\$ 1,899
TOP NPL (A), L.P.	\$ 16	\$ -	\$ 16
TPG Opportunities Partners II (A), L.P.	\$ 70	\$ -	\$ 70
TPG Opportunities Partners III (A), L.P.	\$ 804	\$ -	\$ 804
TSSP Opportunities Partners IV (A), L.P.	\$ 2,252	\$ -	\$ 2,252
Varde Scratch and Dent Feeder I-A, L.P., The	\$ 729	\$ -	\$ 729
Varde Scratch and Dent Feeder, L.P., The	\$ 544	\$ -	\$ 544
<b>Fixed Income Total</b>	<b>\$ 94,609</b>	<b>\$ (636)</b>	<b>\$ 93,973</b>

Dollars in thousands  
Numbers may not add due to rounding

# Total Fees Reported by Managers FY 2019-2020

Manager	Base Fees	Profit Share	Total
Blackstone Infrastructure Partners L.P.	\$ 1,700	\$ -	\$ 1,700
GCM Grosvenor Customized Infrastructure Strategies II, LP	\$ 1,062	\$ -	\$ 1,062
International Infrastructure Finance Company II, L.P.	\$ 703	\$ -	\$ 703
Strategic Partners Real Assets II, L.P.	\$ 348	\$ -	\$ 348
<b>Infrastructure Total</b>	<b>\$ 3,812</b>	<b>\$ -</b>	<b>\$ 3,812</b>
Acadian Asset Management, LLC	\$ 1,062	\$ -	\$ 1,062
Baillie Gifford Overseas Ltd.	\$ 2,182	\$ 9,247	\$ 11,428
BlackRock Emerging Markets Alpha Advantage Fund Ltd.	\$ 1,845	\$ (1,274)	\$ 571
Cederberg Greater China Equity Fund	\$ -	\$ 12,536	\$ 12,536
ECM Feeder Fund 2 LP	\$ -	\$ (494)	\$ (494)
Insight Investment International Limited - Everest	\$ 561	\$ -	\$ 561
Insight Investment International Limited - Nevada	\$ 109	\$ -	\$ 109
Insight Investment International Limited - Oxygen	\$ 83	\$ -	\$ 83
Insight Investment International Limited - Sierra	\$ 46	\$ -	\$ 46
Insight Investment International Limited - Wilson	\$ 51	\$ -	\$ 51
Marathon Asset Management Limited	\$ 2,669	\$ -	\$ 2,669
Oberweis Asset Management, Inc.	\$ 1,721	\$ -	\$ 1,721
QS Investors, LLC	\$ 652	\$ -	\$ 652
Steadview Capital Partners LP	\$ 2,331	\$ (503)	\$ 1,828
The Children's Investment Fund LP	\$ 3,212	\$ 7,395	\$ 10,607
Wasatch Advisors, Inc (Non-US Small Cap Equity Inv)	\$ 2,529	\$ -	\$ 2,529
Wasatch Advisors, Inc. (Emerging Markets Small Cap)	\$ 1,508	\$ 23,727	\$ 25,234
<b>International Equity Total</b>	<b>\$ 20,560</b>	<b>\$ 50,633</b>	<b>\$ 71,193</b>
Harvest Fund Advisors, LLC	\$ 1,882	\$ -	\$ 1,882
Salient Capital Advisors LLC	\$ 1,548	\$ -	\$ 1,548
Stein Roe Investment Counsel D/B/A/ Atlantic Trust	\$ 822	\$ (236)	\$ 586
<b>Midstream Energy Total</b>	<b>\$ 4,252</b>	<b>\$ (236)</b>	<b>\$ 4,016</b>

Dollars in thousands  
Numbers may not add due to rounding

# Total Fees Reported by Managers FY 2019-2020

Manager	Base Fees	Profit Share	Total
812 Market Street	\$ 39	\$ -	\$ 39
AG Core Plus Realty Fund III, L.P.	\$ 193	\$ -	\$ 193
AG Core Plus Realty Fund IV, L.P.	\$ 1,258	\$ -	\$ 1,258
AG Europe Realty Fund II, L.P.	\$ 1,044	\$ -	\$ 1,044
AG Realty Value Fund X, L.P.	\$ 1,006	\$ -	\$ 1,006
Almanac Realty Securities V, L.P.	\$ 16	\$ -	\$ 16
Almanac Realty Securities VI, L.P.	\$ 164	\$ -	\$ 164
Almanac Realty Securities VII, L.P.	\$ 563	\$ -	\$ 563
Almanac Realty Securities VIII, L.P.	\$ 1,878	\$ -	\$ 1,878
Ares European Real Estate Fund IV, L.P.	\$ 868	\$ -	\$ 868
Ares U.S. Real Estate Fund IX, L.P.	\$ 887	\$ -	\$ 887
Ares U.S. Real Estate Fund VIII, L.P.	\$ 643	\$ -	\$ 643
ARS VII (SIDE CAR V), L.P. - Claros Holdings	\$ 33	\$ -	\$ 33
ARS VII (SIDE CAR V), L.P. - MA Multifamily	\$ 8	\$ -	\$ 8
ARS VII (SIDE CAR V), L.P. - MA Multifamily 2	\$ 4	\$ -	\$ 4
ARS VII (SIDE CAR V), L.P. - ReNew Investors	\$ 19	\$ -	\$ 19
ARS VII (SIDE CAR V), L.P. - Westcore 2.0	\$ 14	\$ -	\$ 14
ARS VIII (SC V), L.P. - McNeill Hotel Investors	\$ 33	\$ -	\$ 33
Atlanta Marriott	\$ 131	\$ -	\$ 131
Avenue Real Estate Fund (Parallel) L.P.	\$ 661	\$ -	\$ 661
Bell Institutional Fund V, L.P.	\$ 857	\$ -	\$ 857
Bell Institutional Fund VI, L.P.	\$ 848	\$ -	\$ 848
Bell Institutional Fund VII, L.P.	\$ 846	\$ -	\$ 846
Big Valley Ranch	\$ 248	\$ -	\$ 248
Blackstone Real Estate Debt Strategies II, L.P.	\$ 40	\$ -	\$ 40
Blackstone Real Estate Debt Strategies III, L.P.	\$ 1,066	\$ -	\$ 1,066
Blackstone Real Estate Partners Europe III, L.P.	\$ 597	\$ -	\$ 597
Blackstone Real Estate Partners Europe IV, L.P.	\$ 482	\$ -	\$ 482
Blackstone Real Estate Partners VII, L.P.	\$ 1,371	\$ -	\$ 1,371

Dollars in thousands

Numbers may not add due to rounding

# Total Fees Reported by Managers FY 2019-2020

Manager	Base Fees	Profit Share	Total
Blackstone Real Estate Partners VIII, L.P.	\$ 2,891	\$ -	\$ 2,891
Brookfield Strategic Real Estate Partners II, L.P.	\$ 2,306	\$ -	\$ 2,306
Brookfield Strategic Real Estate Partners III-A, L.P.	\$ 2,599	\$ -	\$ 2,599
Brookfield Strategic Real Estate Partners, L.P.	\$ 846	\$ -	\$ 846
Cabot Industrial Core Fund II, L.P.	\$ 307	\$ -	\$ 307
Cabot Industrial Core Fund, L.P.	\$ 1,365	\$ -	\$ 1,365
Cabot Industrial Value Fund V, L.P.	\$ 1,500	\$ -	\$ 1,500
Carlyle Realty Partners IV, L.P.	\$ 15	\$ -	\$ 15
Carlyle Realty Partners V, L.P.	\$ 144	\$ -	\$ 144
Carlyle Realty Partners VI, L.P.	\$ 110	\$ -	\$ 110
Carlyle Realty Partners VII, L.P.	\$ 459	\$ -	\$ 459
Carlyle Realty Partners VIII, L.P.	\$ 1,703	\$ -	\$ 1,703
DRA Fund IX Industrial Co-Investment LLC	\$ 104	\$ -	\$ 104
DRA Growth and Income Fund IX, LLC	\$ 2,024	\$ -	\$ 2,024
DRA Growth and Income Fund VII, L.P.	\$ 507	\$ -	\$ 507
DRA Growth and Income Fund VIII Co-Investment I, LLC	\$ 145	\$ -	\$ 145
DRA Growth and Income Fund VIII, LLC	\$ 1,396	\$ -	\$ 1,396
DRA Growth and Income Master Fund X, LLC	\$ 205	\$ -	\$ 205
Exeter Core Industrial Club Fund II, L.P.	\$ 743	\$ -	\$ 743
Exeter Industrial Core Fund III, L.P.	\$ 37	\$ -	\$ 37
Exeter Industrial Value Fund II, L.P.	\$ 0	\$ -	\$ 0
Exeter Industrial Value Fund III, L.P.	\$ 206	\$ -	\$ 206
Exeter Industrial Value Fund IV, L.P.	\$ 1,060	\$ -	\$ 1,060
Five North 5th Street	\$ 53	\$ -	\$ 53
Galleria at Ft Lauderdale, The	\$ 680	\$ -	\$ 680
Golden Hills Ranch	\$ 151	\$ -	\$ 151
Keystone Milano LLC	\$ 173	\$ -	\$ 173
Keystone Miramar LLC	\$ 140	\$ -	\$ 140
Keystone Orlando LLC	\$ 265	\$ -	\$ 265
Keystone Parkland LLC	\$ 391	\$ -	\$ 391

Dollars in thousands

Numbers may not add due to rounding

# Total Fees Reported by Managers FY 2019-2020

Manager	Base Fees	Profit Share	Total
Latitude Management Real Estate Capital III, Inc.	\$ 876	\$ -	\$ 876
LEM Multifamily Fund V, L.P.	\$ 1,000	\$ -	\$ 1,000
LEM Multifamily Senior Equity Fund IV, L.P.	\$ 838	\$ -	\$ 838
LEM RE HY Debt & Pfd Equity Fund III, L.P.	\$ 33	\$ -	\$ 33
Lorida Groves	\$ 292	\$ -	\$ 292
Maricopa Citrus	\$ 29	\$ -	\$ 29
Pramerica Real Estate Capital VI, L.P.	\$ 688	\$ -	\$ 688
RCG Longview Debt Fund V, L.P.	\$ 75	\$ -	\$ 75
RCG Longview Debt Fund VI, L.P.	\$ 1,127	\$ -	\$ 1,127
RCG Longview Equity Fund, L.P.	\$ 47	\$ -	\$ 47
Rivercenter Mall	\$ 57	\$ -	\$ 57
Security Capital Preferred Growth (Public)	\$ 1,252	\$ -	\$ 1,252
Senior Housing Partnership Fund IV, L.P.	\$ 274	\$ -	\$ 274
Senior Housing Partnership Fund V, L.P.	\$ 715	\$ -	\$ 715
Stockbridge Real Estate Fund II, LP	\$ 130	\$ -	\$ 130
Stockbridge Real Estate Fund III, LP	\$ 299	\$ -	\$ 299
Stockbridge Real Estate Fund, L.P.	\$ 3,257	\$ -	\$ 3,257
Strategic Partners Fund IV RE, L.P.	\$ 27	\$ -	\$ 27
Townsend Grove	\$ 101	\$ -	\$ 101
UBS (US) Trumbull Property Fund, L.P.	\$ 303	\$ -	\$ 303
<b>Real Estate Total</b>	<b>\$ 49,762</b>	<b>\$ -</b>	<b>\$ 49,762</b>

Dollars in thousands  
Numbers may not add due to rounding

# Total Fees Reported by Managers FY 2019-2020

Manager	Base Fees	Profit Share	Total
BlackRock Market Advantage II, Ltd.	\$ 2,004	\$ -	\$ 2,004
Bridgewater All Weather@15%, Ltd.	\$ 2,922	\$ -	\$ 2,922
Bridgewater Optimal Portfolio @ 12%, Ltd.	\$ 4,938	\$ 1,184	\$ 6,122
D.E. Shaw Orienteer HV Fund, L.L.C.	\$ 4,919	\$ -	\$ 4,919
<b>Risk Parity Total</b>	<b>\$ 14,783</b>	<b>\$ 1,184</b>	<b>\$ 15,967</b>

Dollars in thousands  
Numbers may not add due to rounding



# Appendix

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# Carried Interest Reported by Managers CY 2019

## Private Equity

Manager	Net Management Fees	Net Carried Interest	Partnership Expenses	Total
Actis Emerging Markets 3, L.P.	\$ -	\$ -	\$ 255,000	\$ 255,000
Actis Global 4, L.P.	\$ 1,281,000	\$ -	\$ 259,000	\$ 1,540,000
Adams Capital Management, L.P.	\$ -	\$ -	\$ 5,818	\$ 5,818
Aisling Capital II, L.P.	\$ -	\$ -	\$ 29,149	\$ 29,149
Aisling Capital III, L.P.	\$ (31,554)	\$ 10,289,173	\$ 42,055	\$ 10,299,674
Aisling Capital IV, L.P.	\$ 775,615	\$ 7,181,737	\$ 268,205	\$ 8,225,557
Allegheny New Mountain Partners, L.P.	\$ -	\$ (131,210)	\$ -	\$ (131,210)
Apax Digital L.P.	\$ 1,632,040	\$ 668,904	\$ 586,597	\$ 2,887,541
Apax Europe VII-A, L.P.	\$ -	\$ 5,584,683	\$ 16,144	\$ 5,600,827
Apollo Investment Fund IX, L.P.	\$ 2,471,522	\$ -	\$ 1,102,455	\$ 3,573,977
Apollo Investment Fund VIII, L.P.	\$ 776,196	\$ 10,676,688	\$ 513,471	\$ 11,966,355
Avenue Special Situations Fund VI, L.P.	\$ -	\$ -	\$ 19,808	\$ 19,808
Bain Capital Asia Fund II, L.P.	\$ 657,192	\$ 2,212,258	\$ 362,693	\$ 3,232,143
Bain Capital Asia Fund III, L.P.	\$ 2,600,000	\$ 775,779	\$ 1,835,962	\$ 5,211,741
Bain Capital Asia Fund IV, L.P.	\$ 625,000	\$ -	\$ 205,943	\$ 830,943
Bain Capital Fund XI, L.P.	\$ 458,433	\$ 9,340,776	\$ 67,383	\$ 9,866,592
Bain Capital Fund XII, L.P.	\$ 1,875,000	\$ -	\$ 1,201,020	\$ 3,076,020
Baring Asia Private Equity Fund III, L.P.	\$ -	\$ 2,019,210	\$ 494,139	\$ 2,513,349
Baring Asia Private Equity Fund IV, L.P.	\$ 341,402	\$ (168,555)	\$ 364,030	\$ 536,877
Baring Asia Private Equity Fund V, L.P.	\$ 3,170,005	\$ (5,772,862)	\$ 2,870,649	\$ 267,792
Baring Asia Private Equity Fund VI, L.P.	\$ 951,777	\$ 4,080,454	\$ 935,907	\$ 5,968,138
BDC III, L.P.	\$ 925,805	\$ 1,292,509	\$ 259,803	\$ 2,478,118
Blue Point Capital Partners I, L.P.	\$ -	\$ -	\$ 9,417	\$ 9,417
Blue Point Capital Partners II, L.P.	\$ 49,051	\$ 2,152,588	\$ 21,183	\$ 2,222,822
Blue Point Capital Partners III, L.P.	\$ 385,272	\$ 376,711	\$ 155,416	\$ 917,398
Blue Point Capital Partners IV, L.P.	\$ 976,222	\$ -	\$ 238,858	\$ 1,215,080
Bridgepoint Capital II (Secondary)	\$ -	\$ -	\$ -	\$ -
Bridgepoint Europe I	\$ -	\$ -	\$ -	\$ -
Bridgepoint Europe II, L.P.	\$ -	\$ 624,781	\$ 10,617	\$ 635,398

# Carried Interest Reported by Managers CY 2019

## Private Equity

Manager	Net Management Fees	Net Carried Interest	Partnership Expenses	Total
Bridgepoint Europe III, L.P.	\$ -	\$ -	\$ 113,594	\$ 113,594
Bridgepoint Europe IV, L.P.	\$ (5,719,019)	\$ 2,635,812	\$ (554,939)	\$ (3,638,146)
Bridgepoint Europe V, L.P.	\$ 1,052,022	\$ 5,543,344	\$ 826,813	\$ 7,422,179
Bridgepoint Europe VI, L.P.	\$ 1,263,809	\$ 825,066	\$ 506,272	\$ 2,595,147
Capital International Private Equity Fund V, L.P.	\$ 107,589	\$ -	\$ 140,267	\$ 247,856
Capital International Private Equity Fund VI, L.P.	\$ 509,332	\$ -	\$ 511,629	\$ 1,020,961
Catterton Growth Partners II, L.P.	\$ 1,077,443	\$ -	\$ 125,561	\$ 1,203,004
Catterton Growth Partners, L.P.	\$ 507,509	\$ (2,349,663)	\$ 103,326	\$ (1,738,828)
Catterton Partners V, L.P.	\$ -	\$ -	\$ 7,576	\$ 7,576
Catterton Partners VI, L.P.	\$ 706,197	\$ (1,442,747)	\$ 67,407	\$ (669,143)
Catterton Partners VII, L.P.	\$ 1,528,286	\$ 3,988,656	\$ 127,106	\$ 5,644,048
Cerberus Institutional Partners V, L.P.	\$ 656,136	\$ 4,856,700	\$ 483,990	\$ 5,996,826
Cerberus Institutional Partners VI, L.P.	\$ 2,374,858	\$ -	\$ 1,564,342	\$ 3,939,201
Cerberus Institutional Partners, L.P. - Series 3	\$ (32,143)	\$ 73,967	\$ 7,698	\$ 49,522
Cerberus Institutional Partners, L.P. (Series 4)	\$ (342,380)	\$ 2,428,801	\$ 423,526	\$ 2,509,947
Cinven Fifth Fund, L.P.	\$ 566,411	\$ 7,492,472	\$ 2,404,056	\$ 10,462,939
Cinven Fourth Fund	\$ -	\$ -	\$ -	\$ -
Cinven Sixth Fund	\$ 1,004,964	\$ 2,885,728	\$ 465,588	\$ 4,356,280
Clearlake Capital Partners IV, L.P.	\$ 583,625	\$ 4,453,571	\$ 102,946	\$ 5,140,142
Clearlake Capital Partners V, L.P.	\$ 524,540	\$ 7,211,676	\$ 427,599	\$ 8,163,815
Clearlake Capital Partners VI, L.P.	\$ -	\$ -	\$ -	\$ -
Co-Investment 2000 Fund, L.P.	\$ -	\$ -	\$ 206,818	\$ 206,818
Co-Investment Fund II, L.P.	\$ -	\$ -	\$ 232,800	\$ 232,800
Coller International Partners VI, L.P.	\$ 820,082	\$ 2,031,850	\$ 47,252	\$ 2,899,184
Coller International Partners VII, L.P.	\$ 1,341,703	\$ 363,635	\$ 137,411	\$ 1,842,749
Crestview Capital Partners	\$ 249,664	\$ 4,549,815	\$ 242,509	\$ 5,041,988
Crestview Partners II, L.P.	\$ 902,341	\$ 3,805,096	\$ 464,929	\$ 5,172,366
Crestview Partners III, L.P.	\$ 905,541	\$ 5,677,418	\$ 377,886	\$ 6,960,845
Cross Atlantic Technology Fund II, L.P.	\$ -	\$ -	\$ 4,155	\$ 4,155

# Carried Interest Reported by Managers CY 2019

## Private Equity

Manager	Net Management Fees	Net Carried Interest	Partnership Expenses	Total
Cross Atlantic Technology Fund, L.P.	\$ -	\$ -	\$ 19,206	\$ 19,206
CVC Capital Partners Asia Pacific III, L.P.	\$ -	\$ 730,596	\$ 603,377	\$ 1,333,973
CVC European Equity Partners V, L.P.	\$ 18,878	\$ 25,336,343	\$ 24,934	\$ 25,380,155
DCPF VI Oil and Gas Coinvestment Fund LP	\$ 113,886	\$ 1,871,415	\$ 16,948	\$ 2,002,249
Denham Commodity Partners Fund VI, L.P.	\$ 736,018	\$ (28,539)	\$ 120,014	\$ 827,493
Denham Mining Fund, L.P.	\$ 1,817,660	\$ (1)	\$ 304,519	\$ 2,122,178
Equistone Partners Europe Fund V, L.P.	\$ 820,304	\$ -	\$ 91,434	\$ 911,738
Equistone Partners Europe Fund VI, L.P.	\$ 1,312,915	\$ -	\$ 380,324	\$ 1,693,239
Evergreen Pacific Partners II, L.P.	\$ -	\$ 18,340	\$ 43,407	\$ 61,748
Evergreen Pacific Partners, L.P.	\$ -	\$ -	\$ 99,548	\$ 99,548
First Reserve Fund XII, L.P.	\$ 206,126	\$ -	\$ 91,427	\$ 297,553
Gleacher Mezzanine Fund II, L.P.	\$ -	\$ 20,965	\$ 23,293	\$ 44,258
Gold Hill Venture Lending 03, L.P.	\$ 35,040	\$ 11,249	\$ 14,868	\$ 61,157
GoldPoint Partners Co-Investment V, L.P.	\$ 368,596	\$ 1,221,010	\$ 24,453	\$ 1,614,059
GSC Recovery II, L.P.	\$ -	\$ -	\$ -	\$ -
GSC Recovery III (Parallel Fund), L.P.	\$ -	\$ -	\$ -	\$ -
Hahn & Company III, L.P.	\$ 3,264,947	\$ -	\$ 935,376	\$ 4,200,323
Hahn & Company III-S, L.P.	\$ 172,412	\$ -	\$ 315,353	\$ 487,765
HgCapital 7, L.P.	\$ 811,252	\$ -	\$ 93,419	\$ 904,671
HgCapital 8, L.P.	\$ 1,643,102	\$ -	\$ 430,049	\$ 2,073,151
HGGC Fund II, L.P.	\$ 1,154,233	\$ 4,273,073	\$ 102,526	\$ 5,529,832
HGGC Fund III, L.P.	\$ 313,557	\$ 7,480,924	\$ 636,766	\$ 8,431,247
Incline Elevate Fund, L.P.	\$ 918,990	\$ -	\$ 584,578	\$ 1,503,568
Incline Equity Partners III, L.P.	\$ -	\$ 14,671,939	\$ 29,790	\$ 14,701,729
Incline Equity Partners IV, L.P.	\$ 1,126,342	\$ 2,152,326	\$ 71,651	\$ 3,350,319
Incline Equity Partners V, L.P.	\$ -	\$ -	\$ -	\$ -
Insight Partners XI, L.P.	\$ 189,583	\$ -	\$ 339,032	\$ 528,615
Insight Venture Partners X, L.P.	\$ 390,971	\$ 895,858	\$ 102,781	\$ 1,389,609
Irving Place Capital III SPV, L.P.	\$ -	\$ -	\$ 90,192	\$ 90,192

# Carried Interest Reported by Managers CY 2019

## Private Equity

Manager	Net Management Fees	Net Carried Interest	Partnership Expenses	Total
Irving Place Capital MB-PSERS II, L.P.	\$ -	\$ (3,648,960)	\$ 37,166	\$ (3,611,794)
K4 Private Investors, L.P.	\$ 1,927,820	\$ -	\$ 167,573	\$ 2,095,393
KBL Partnership, L.P.	\$ -	\$ -	\$ 7,879	\$ 7,879
L Catterton Growth Partners III, L.P.	\$ 1,129,621	\$ 5,994,534	\$ 485,489	\$ 7,609,644
L Catterton VIII, L.P.	\$ 1,595,889	\$ 3,052,718	\$ 704,743	\$ 5,353,350
Landmark Equity Partners XIII, L.P.	\$ 206,324	\$ -	\$ 19,494	\$ 225,818
Landmark Equity Partners XIV, L.P.	\$ 341,195	\$ 169,626	\$ 53,995	\$ 564,816
Lindsay Goldberg V, L.P.	\$ -	\$ -	\$ -	\$ -
LLR Equity Partners II, L.P.	\$ -	\$ 86,980	\$ 42,740	\$ 129,720
LLR Equity Partners III, L.P.	\$ 378,764	\$ 9,690,886	\$ 140,110	\$ 10,209,760
LLR Equity Partners IV, L.P.	\$ 2,159,315	\$ 17,765,871	\$ 192,447	\$ 20,117,633
LLR Equity Partners V, L.P.	\$ 3,500,000	\$ 4,200,656	\$ 1,379,364	\$ 9,080,020
Milestone Partners FS 2, L.P.	\$ 8,078	\$ -	\$ 350,151	\$ 358,229
Milestone Partners III, L.P.	\$ 239,169	\$ -	\$ 41,408	\$ 280,577
Milestone Partners IV, L.P.	\$ 333,521	\$ (506,810)	\$ 265,705	\$ 92,416
NEPA Venture Fund II	\$ -	\$ -	\$ 2,931	\$ 2,931
New Mountain Partners III, L.P.	\$ -	\$ 9,115,620	\$ -	\$ 9,115,620
New Mountain Partners IV, L.P.	\$ 423,136	\$ 16,164,701	\$ 40,428	\$ 16,628,265
New Mountain Partners V, L.P.	\$ 2,372,147	\$ 4,788,912	\$ 1,753,701	\$ 8,914,760
New York Life Capital Partners I, L.P.	\$ -	\$ -	\$ 29,437	\$ 29,437
New York Life Capital Partners II, L.P.	\$ -	\$ 13,955	\$ 34,032	\$ 47,987
New York Life Capital Partners III-A, L.P.	\$ -	\$ (1,084,084)	\$ 54,770	\$ (1,029,314)
New York Life Capital Partners IV-A, L.P.	\$ 77,072	\$ 455,886	\$ 96,303	\$ 629,261
NGP Natural Resources X, L.P.	\$ 749,934	\$ -	\$ 63,995	\$ 813,929
NGP Natural Resources XI, L.P.	\$ 1,340,409	\$ (6,018,533)	\$ 53,795	\$ (4,624,329)
NGP Natural Resources XII, L.P.	\$ 3,001,730	\$ -	\$ 111,923	\$ 3,113,653
North Haven Private Equity Asia IV, L.P.	\$ 1,143,167	\$ 4,315,645	\$ 584,439	\$ 6,043,251
NYLIM Mezzanine Partners II (Parallel Fund) LP	\$ -	\$ -	\$ -	\$ -
OCM Opportunities Fund VII, L.P.	\$ -	\$ -	\$ 21,492	\$ 21,492

# Carried Interest Reported by Managers CY 2019

## Private Equity

Manager	Net Management Fees	Net Carried Interest	Partnership Expenses	Total
OCM Opportunities Fund VII-B, L.P.	\$ 4,611	\$ 2,205	\$ 25,043	\$ 31,859
Odyssey Investment Partners Fund V, L.P.	\$ 969,221	\$ -	\$ 422,125	\$ 1,391,347
Orchid Asia Fund VI, L.P.	\$ 1,188,802	\$ 1,063,589	\$ 41,837	\$ 2,294,228
Orchid Asia V, L.P.	\$ 150,307	\$ 127,839	\$ 4,171	\$ 282,317
Orchid Asia VII, L.P.	\$ 1,498,357	\$ 451,550	\$ 573,583	\$ 2,523,490
PAI Europe IV	\$ -	\$ 35,201	\$ (15,062)	\$ 20,138
PAI Europe V	\$ 179,831	\$ (860,643)	\$ 238,447	\$ (442,365)
PAI Europe VI	\$ 979,125	\$ 4,037,037	\$ 826,110	\$ 5,842,273
PAI Europe VII	\$ 1,430,936	\$ -	\$ 1,807,613	\$ 3,238,550
Palladium Equity Partners IV, L.P.	\$ 627,857	\$ (41,257)	\$ 426,951	\$ 1,013,551
Partners Group Secondary 2008 S.C.A., SICAR	\$ 997,038	\$ 144,359	\$ 55,629	\$ 1,197,026
Partners Group Secondary 2011 (USD), L.P. Inc.	\$ 1,012,500	\$ (119,939)	\$ 467,781	\$ 1,360,342
Partners Group Secondary 2015 (USD) A, L.P.	\$ 1,250,000	\$ 510,944	\$ 284,167	\$ 2,045,112
Permira IV, L.P.	\$ -	\$ 1,007,577	\$ 21,348	\$ 1,028,925
Perseus-Soros BioPharmaceutical Fund, L.P.	\$ -	\$ -	\$ -	\$ -
Platinum Equity Capital Partners II, L.P.	\$ -	\$ 2,904,650	\$ 194,352	\$ 3,099,002
Platinum Equity Capital Partners III, L.P.	\$ -	\$ (2,204,625)	\$ 215,574	\$ (1,989,051)
Platinum Equity Capital Partners IV, L.P.	\$ -	\$ 5,512,326	\$ 1,135,462	\$ 6,647,788
Platinum Equity Capital Partners V, L.P.	\$ 1,022,876	\$ -	\$ 291,690	\$ 1,314,566
Platinum Equity Capital Partners, L.P.	\$ -	\$ -	\$ 88,137	\$ 88,137
Platinum Equity Small Cap Fund, L.P.	\$ 3,777,671	\$ -	\$ 924,106	\$ 4,701,777
PNC Equity Partners II, L.P.	\$ -	\$ 79,603	\$ 38,010	\$ 117,613
Portfolio Advisors Secondary Fund III, L.P.	\$ 1,146,754	\$ 2,699,091	\$ 265,971	\$ 4,111,816
Psilos Group Partners III, L.P.	\$ -	\$ -	\$ -	\$ -
Quaker BioVentures II, L.P.	\$ 279,182	\$ -	\$ 28,660	\$ 307,843
Quaker Bio-Ventures, L.P.	\$ -	\$ -	\$ 16,248	\$ 16,248
Sante Health Ventures III, L.P.	\$ -	\$ -	\$ 209,933	\$ 209,933
SCP Private Equity Partners I, L.P.	\$ -	\$ -	\$ -	\$ -
SCP Private Equity Partners II, L.P.	\$ -	\$ -	\$ -	\$ -

# Carried Interest Reported by Managers CY 2019

## Private Equity

Manager	Net Management Fees	Net Carried Interest	Partnership Expenses	Total
Searchlight Capital Partners II, L.P.	\$ 1,317,893	\$ 1,468,502	\$ 467,884	\$ 3,254,279
Searchlight Capital Partners III, L.P.	\$ -	\$ -	\$ -	\$ -
StarVest	\$ 425	\$ -	\$ 19,587	\$ 20,012
StarVest Partners II (Parallel), L.P.	\$ 267,953	\$ -	\$ 62,099	\$ 330,052
StepStone International Investors III L.P.	\$ 248,141	\$ -	\$ 131,217	\$ 379,358
Sterling Capital Partners, L.P.	\$ -	\$ -	\$ 32,111	\$ 32,111
Sterling Venture Partners I, L.P.	\$ -	\$ -	\$ 9,280	\$ 9,280
Strategic Partners Fund II, L.P.	\$ -	\$ -	\$ -	\$ -
Strategic Partners Fund III VC, L.P.	\$ -	\$ -	\$ 90,524	\$ 90,524
Strategic Partners Fund III-B, L.P.	\$ -	\$ -	\$ 202,241	\$ 202,241
Strategic Partners Fund IV VC, L.P.	\$ 123,100	\$ 968,732	\$ 27,990	\$ 1,119,822
Strategic Partners Fund IV, L.P.	\$ 94,813	\$ 560,252	\$ 21,121	\$ 676,186
Strategic Partners Fund V, L.P.	\$ 283,297	\$ 1,846,469	\$ 127,508	\$ 2,257,274
Strategic Partners Fund VI, L.P.	\$ 593,084	\$ 271,375	\$ 177,851	\$ 1,042,310
Strategic Partners Fund VII, L.P.	\$ 1,250,000	\$ 3,999,350	\$ 588,415	\$ 5,837,765
Summit Partners Growth Equity Fund IX, L.P.	\$ -	\$ 5,314,764	\$ 138,266	\$ 5,453,030
Summit Partners Growth Equity Fund VIII, L.P.	\$ 1,210,629	\$ 11,203,632	\$ 79,056	\$ 12,493,317
Summit Partners Growth Equity Fund X, L.P.	\$ -	\$ -	\$ 267,657	\$ 267,657
Summit Partners Venture Capital Fund III, L.P.	\$ 246,605	\$ 2,099,712	\$ 17,157	\$ 2,363,474
Summit Partners Venture Capital Fund IV, L.P.	\$ 783,643	\$ 3,138,363	\$ 107,033	\$ 4,029,039
TDH III, L.P.	\$ -	\$ -	\$ -	\$ -
Tenaya Capital IV-P, L.P.	\$ -	\$ (3,729,553)	\$ 69,496	\$ (3,660,057)
Tenaya Capital VI, L.P.	\$ 764,048	\$ (1,436,434)	\$ 55,244	\$ (617,141)
Tenaya Capital VII, L.P.	\$ 2,000,000	\$ 5,251,090	\$ 105,699	\$ 7,356,789
Tenaya Capital V-P, L.P.	\$ 431,261	\$ 461,085	\$ 71,139	\$ 963,485
The Energy & Minerals Group Fund III, L.P.	\$ 1,189,580	\$ -	\$ 24,521	\$ 1,214,101
Trilantic Capital Partners IV L.P.	\$ 51,846	\$ (408,492)	\$ 46,069	\$ (310,577)
Trilantic Capital Partners V (North America), L.P.	\$ 594,455	\$ 3,481,737	\$ 134,027	\$ 4,210,219

# Carried Interest Reported by Managers CY 2019

## Private Equity

Manager	Net Management Fees	Net Carried Interest	Partnership Expenses	Total
Trilantic Capital Partners VI (North America), L.P.	\$ 2,248,673	\$ -	\$ 265,659	\$ 2,514,332
Tulco LLC	\$ -	\$ -	\$ -	\$ -
U.S. Equity Partners II, L.P.	\$ -	\$ -	\$ (31,619)	\$ (31,619)
Venor Special Situations Fund II, L.P.	\$ 717,862	\$ -	\$ 314,927	\$ 1,032,789
Versa Capital Fund I, L.P.	\$ -	\$ -	\$ 171,957	\$ 171,957
Versa Capital Fund II, L.P.	\$ 1,544,074	\$ -	\$ 547,631	\$ 2,091,705
Versa Capital Fund III, L.P.	\$ 286,530	\$ -	\$ 1,149,922	\$ 1,436,452
Webster Capital IV, L.P.	\$ 348,310	\$ (250,677)	\$ 125,198	\$ 222,831
Windjammer Senior Equity Fund III, L.P.	\$ -	\$ -	\$ -	\$ -
Windjammer Senior Equity Fund IV, L.P.	\$ -	\$ -	\$ -	\$ -
<b>Private Equity Total</b>	<b>\$ 99,961,882</b>	<b>\$ 279,037,337</b>	<b>\$ 48,228,370</b>	<b>\$ 427,227,589</b>



# Carried Interest Reported by Managers CY 2019

## Private Credit

Manager	Net Management Fees	Net Carried Interest	Operating Expense	Total
Apollo European Principal Finance Fund II (Dollar A), L.P.	\$ 515,825	\$ 80,775	\$ (6,524)	\$ 590,075
Apollo European Principal Finance Fund III (Dollar A), LP	\$ 2,142,340	\$ 5,272,772	\$ 1,391,629	\$ 8,806,741
Avenue Energy Opportunities Fund II, L.P.	\$ 840,279	\$ -	\$ 406,170	\$ 1,246,449
Avenue Energy Opportunities Fund, L.P.	\$ 1,800,000	\$ -	\$ 441,214	\$ 2,241,214
Avenue Europe Special Situations Fund III (U.S.), L.P.	\$ 1,863,703	\$ -	\$ 769,905	\$ 2,633,608
Bain Capital Credit Managed Account (PSERS), L.P.	\$ 1,806,603	\$ -	\$ 430,293	\$ 2,236,896
Bain Capital Credit Managed Account (PSERS), L.P. (SCF)	\$ -	\$ -	\$ -	\$ -
Bain Capital Credit Managed Account (PSERS), L.P. (SSA)	\$ 431,174	\$ 731,238	\$ 429,896	\$ 1,592,308
Bain Capital Distressed and Special Situations 2013 (A) AIV, L.P.	\$ 1,247,508	\$ -	\$ 253,760	\$ 1,501,268
Bain Capital Distressed and Special Situations 2013 (A), L.P.	\$ 526,128	\$ -	\$ 101,376	\$ 627,504
Bain Capital Distressed and Special Situations 2016 (A), L.P.	\$ 2,686,715	\$ 14,756	\$ 2,431,377	\$ 5,132,848
Bain Capital Distressed and Special Situations 2019, L.P.	\$ 76,027	\$ -	\$ 1,833,412	\$ 1,909,439
Bain Capital Middle Market Credit 2010, L.P.	\$ 198,042	\$ 757,934	\$ 77,970	\$ 1,033,946
Bain Capital Middle Market Credit 2014, LP	\$ 1,030,604	\$ 7,495,557	\$ 170,897	\$ 8,697,058
Brigade Distressed Value Offshore Fund	\$ 1,688,029	\$ -	\$ 677,901	\$ 2,365,930
Brigade Structured Credit Offshore Fund	\$ 2,860,307	\$ 175,606	\$ 246,076	\$ 3,281,988
Carlyle Energy Mezzanine Opportunities Fund II, L.P.	\$ 2,305,799	\$ -	\$ 667,474	\$ 2,973,273
Carlyle Energy Mezzanine Opportunities Fund-Q, L.P.	\$ 1,243,820	\$ -	\$ 559,032	\$ 1,802,852
Cerberus Levered Loan Opportunities Fund I, L.P.	\$ -	\$ -	\$ -	\$ -
Cerberus Levered Loan Opportunities Fund II, L.P.	\$ -	\$ -	\$ -	\$ -
Cerberus PSERS Levered Loan Opportunities Fund, L.P.	\$ 7,705,541	\$ 5,341,554	\$ 1,470,022	\$ 14,517,117
Clearlake Opportunities Partners II, L.P.	\$ 201,262	\$ 84,062	\$ 516,888	\$ 802,212
Galton Onshore Mortgage Recovery Fund III, L.P.	\$ 73,706	\$ -	\$ 246,437	\$ 320,143
Galton Onshore Mortgage Recovery Fund IV, L.P.	\$ 972,945	\$ -	\$ 710,268	\$ 1,683,213
Galton Residential Mortgage-Backed Securities	\$ 1,240,471	\$ 1,221,784	\$ -	\$ 2,462,255
Hayfin SOF II USD Co-Invest, L.P.	\$ 88,302	\$ -	\$ 73,938	\$ 162,240
Hayfin SOF II USD, L.P.	\$ 2,064,659	\$ -	\$ 665,041	\$ 2,729,700
HayFin Special Opportunities Credit Fund (Parallel), L.P.	\$ 582,326	\$ 100,702	\$ 94,044	\$ 777,072
ICG Europe Fund V, L.P.	\$ 649,394	\$ 582,335	\$ 390,785	\$ 1,622,514

# Carried Interest Reported by Managers CY 2019

## Private Credit

Manager	Net Management Fees	Net Carried Interest	Operating Expense	Total
ICG Europe Fund VI, L.P.	\$ 1,184,217	\$ 3,142,284	\$ 219,372	\$ 4,545,873
ICG Europe Fund VII Feeder SCSp	\$ 1,785,921	\$ 2,920,256	\$ 132,639	\$ 4,838,817
International Infrastructure Finance Company Fund II, L.P.	\$ 585,330	\$ 1,806,400	\$ 368,372	\$ 2,760,102
International Infrastructure Finance Company Fund, L.P.	\$ 997,501	\$ 1,251,119	\$ 325,832	\$ 2,574,451
Latitude Management Real Estate Capital IV, Inc.	\$ 803,251	\$ -	\$ 115,664	\$ 918,915
LBC Credit Partners II, LP	\$ -	\$ -	\$ -	\$ -
LBC Credit Partners III, L.P.	\$ 1,276,556	\$ -	\$ 244,424	\$ 1,520,980
LBC-P Credit Fund, L.P.	\$ 5,359,796	\$ 3,182,023	\$ 641,576	\$ 9,183,395
Oaktree Loan Fund 2X, LP	\$ -	\$ -	\$ 91,980	\$ 91,980
Pacific Investment Management Company, LLC	\$ (7)	\$ 194,354	\$ 43,988	\$ 238,335
Park Square - PSERS Credit Opportunities Fund, L.P. (COPS)	\$ 2,349,134	\$ -	\$ 714,108	\$ 3,063,242
Park Square - PSERS Credit Opportunities Fund, L.P. (ELP)	\$ 254,646	\$ 915,288	\$ 1,414,776	\$ 2,584,710
PIMCO BRAVO Fund III Onshore Feeder, LP	\$ 1,549,642	\$ 4,631,838	\$ 870,677	\$ 7,052,157
PSERS TAO Partners Parallel Fund, L.P. - (TAO 2.0)	\$ 1,668,780	\$ 3,458,906	\$ 973,939	\$ 6,101,625
PSERS TAO Partners Parallel Fund, L.P. - (TAO 3.0)	\$ 1,577,957	\$ 3,276,808	\$ 992,027	\$ 5,846,792
PSERS TAO Partners Parallel Fund, L.P. - (TAO Contingent)	\$ -	\$ -	\$ -	\$ -
Sankaty Credit Opportunities IV, L.P.	\$ 570,404	\$ 1,215,420	\$ 134,534	\$ 1,920,358
SSG Capital Partners V Sidecar, L.P.	\$ 1,403,246	\$ -	\$ 267,385	\$ 1,670,631
SSG Capital Partners V, L.P.	\$ -	\$ -	\$ 66,240	\$ 66,240
Summit Partners Credit Fund II, L.P.	\$ -	\$ 850,876	\$ 584,321	\$ 1,435,197
TCI Real Estate Partners Fund III, L.P.	\$ -	\$ 1,419,729	\$ 98,501	\$ 1,518,230
TOP NPL (A), L.P.	\$ 25,979	\$ 519,105	\$ 188,604	\$ 733,688
TPG Opportunities Partners II (A), L.P.	\$ 104,742	\$ 260,505	\$ 162,168	\$ 527,415
TPG Opportunities Partners III (A), L.P.	\$ 884,697	\$ 2,841,868	\$ 351,015	\$ 4,077,580
TSSP Opportunities Partners IV, L.P.	\$ 2,243,835	\$ 14,885	\$ 479,769	\$ 2,738,489
Varde Scratch and Dent Feeder I-A, L.P., The	\$ 774,271	\$ 226,073	\$ 330,659	\$ 1,331,002
Varde Scratch and Dent Feeder, L.P., The	\$ 629,788	\$ 9,585	\$ 209,214	\$ 848,587
<b>Private Credit Total</b>	<b>\$ 62,871,194</b>	<b>\$ 53,996,395</b>	<b>\$ 25,071,066</b>	<b>\$ 141,938,655</b>

# Carried Interest Reported by Managers CY 2019

## Private Real Estate

Manager	Net Management Fees	Net Carried Interest	Partnership Expenses	Total
812 Market Street	\$ 29,940	\$ -	\$ -	\$ 29,940
AG Core Plus Realty Fund III, L.P.	\$ 201,642	\$ 374,928	\$ 62,949	\$ 639,518
AG Europe Realty Fund II, L.P.	\$ 1,010,764	\$ 2,660,065	\$ 868,406	\$ 4,539,235
AG Europe Realty Fund III, L.P.	\$ -	\$ -	\$ -	\$ -
AG Realty Fund X, L.P.	\$ 885,987	\$ -	\$ 762,292	\$ 1,648,279
Almanac Realty Securities V, L.P.	\$ 27,598	\$ 386,172	\$ 6,110	\$ 419,880
Almanac Realty Securities VI, L.P.	\$ 100,752	\$ (603,967)	\$ 10,912	\$ (492,303)
Almanac Realty Securities VII, L.P.	\$ 406,984	\$ 937,966	\$ 32,834	\$ 1,377,784
Almanac Realty Securities VIII, L.P.	\$ 929,795	\$ -	\$ 65,353	\$ 995,148
Angelo Gordon Core Plus Realty Fund IV, L.P.	\$ 1,184,228	\$ 582,289	\$ 412,861	\$ 2,179,378
Apollo Real Estate Finance Corporation	\$ -	\$ -	\$ 37,460	\$ 37,460
Ares European Real Estate Fund III, L.P.	\$ -	\$ -	\$ 67,246	\$ 67,246
Ares European Real Estate Fund IV, L.P.	\$ 401,142	\$ 736,840	\$ 265,174	\$ 1,403,156
Ares U.S. Real Estate Fund IX, L.P.	\$ 352,625	\$ -	\$ 140,377	\$ 493,002
Ares U.S. Real Estate Fund VII, L.P.	\$ -	\$ -	\$ 293,870	\$ 293,870
Ares U.S. Real Estate Fund VIII, L.P.	\$ 365,889	\$ 692,921	\$ 38,426	\$ 1,097,236
Atlanta Marriott	\$ 131,000	\$ -	\$ -	\$ 131,000
Avenue Real Estate Fund (Parallel) L.P.	\$ 743,846	\$ -	\$ 255,528	\$ 999,374
Bell Institutional Fund IV, LLC	\$ -	\$ 4,082	\$ 76,077	\$ 80,159
Bell Institutional Fund V, L.P.	\$ 888,457	\$ 1,792,146	\$ 732,940	\$ 3,413,543
Bell Institutional Fund VI, L.P.	\$ 763,614	\$ -	\$ 1,013,406	\$ 1,777,020
Bell Institutional Fund VII, L.P.	\$ 322,222	\$ -	\$ 38,682	\$ 360,904
Big Valley Ranch	\$ 247,500	\$ -	\$ -	\$ 247,500
BlackRock Asia Property Fund III L.P.	\$ -	\$ -	\$ (16,322)	\$ (16,322)
BlackRock Europe Property Fund III L.P.	\$ -	\$ -	\$ 889,053	\$ 889,053
Blackstone Real Estate Debt Strategies II, L.P.	\$ 30,049	\$ 710	\$ 2,660	\$ 33,419
Blackstone Real Estate Debt Strategies III, L.P.	\$ 605,991	\$ 413,839	\$ 6,858	\$ 1,026,688
Blackstone Real Estate Partners Europe III, L.P.	\$ 282,474	\$ 30,670	\$ 60,756	\$ 373,900
Blackstone Real Estate Partners Europe IV, L.P. (USD)	\$ 286,742	\$ 517,058	\$ 25,414	\$ 829,214

# Carried Interest Reported by Managers CY 2019

## Private Real Estate

Manager	Net Management Fees	Net Carried Interest	Partnership Expenses	Total
Blackstone Real Estate Partners V, L.P.	\$ -	\$ 611,901	\$ 3,188	\$ 615,089
Blackstone Real Estate Partners VI, L.P.	\$ -	\$ 1,200,518	\$ (13,196)	\$ 1,187,322
Blackstone Real Estate Partners VII, L.P.	\$ 875,325	\$ 4,025,217	\$ 80,315	\$ 4,980,857
Blackstone Real Estate Partners VIII, L.P.	\$ 1,005,941	\$ 3,024,087	\$ 428,303	\$ 4,458,331
BPG/PSERS Co-Investment Fund	\$ -	\$ 5,999	\$ 2,804	\$ 8,803
Brookfield Strategic Real Estate Partners II, L.P.	\$ 2,359,237	\$ 5,836,222	\$ 158,380	\$ 8,353,839
Brookfield Strategic Real Estate Partners III, L.P.	\$ 5,234,573	\$ -	\$ 710,111	\$ 5,944,684
Brookfield Strategic Real Estate Partners, L.P.	\$ 950,000	\$ 28,259,595	\$ 339,000	\$ 29,548,595
Cabot Industrial Core Fund, L.P.	\$ 677,704	\$ 10,198	\$ 99,121	\$ 787,023
Cabot Industrial Value Fund IV, L.P.	\$ -	\$ 154	\$ 7,241	\$ 7,395
Cabot Industrial Value Fund V, L.P.	\$ 750,000	\$ 348,116	\$ 105,418	\$ 1,203,534
Cabot Industrial Value Fund VI, L.P.	\$ -	\$ -	\$ -	\$ -
Cabot U.K. Core-Plus Industrial Fund SCSp	\$ -	\$ -	\$ -	\$ -
Carlyle Realty Partners III, L.P.	\$ -	\$ 4,257,667	\$ 108,959	\$ 4,366,626
Carlyle Realty Partners IV, L.P.	\$ 14,767	\$ -	\$ 126,634	\$ 141,400
Carlyle Realty Partners V, L.P.	\$ 137,940	\$ 17,204,526	\$ 77,003	\$ 17,419,469
Carlyle Realty Partners VI, L.P.	\$ 155,374	\$ 71,916	\$ 228,313	\$ 455,603
Carlyle Realty Partners VII, L.P.	\$ 546,810	\$ 1,889,383	\$ 131,846	\$ 2,568,039
Carlyle Realty Partners VIII, L.P.	\$ 828,545	\$ -	\$ 127,735	\$ 956,280
Centerline High Yield CMBS III - Loan/Stock	\$ 26,652	\$ -	\$ -	\$ 26,652
DRA Growth and Income Fund IX, LLC	\$ 1,898,251	\$ -	\$ 160,542	\$ 2,058,793
DRA Growth and Income Fund VI, L.P.	\$ -	\$ 1,191,069	\$ 37,264	\$ 1,228,333
DRA Growth and Income Fund VII, LLC	\$ 620,297	\$ 9,780,271	\$ 232,968	\$ 10,633,536
DRA Growth and Income Fund VIII, LLC	\$ 1,500,353	\$ 225,235	\$ 136,866	\$ 1,862,454
DRA Growth and Income Fund X, L.P.	\$ 19,818	\$ -	\$ 105,714	\$ 125,532
Exeter Core Industrial Club Fund II, L.P.	\$ 638,381	\$ 544,620	\$ 123,797	\$ 1,306,798
Exeter Core Industrial Fund III, L.P.	\$ -	\$ -	\$ -	\$ -
Exeter Industrial Value Fund II, L.P.	\$ 1,190	\$ 6,006	\$ 43,588	\$ 50,783
Exeter Industrial Value Fund III, L.P.	\$ 229,673	\$ 3,198,947	\$ 83,528	\$ 3,512,148

# Carried Interest Reported by Managers CY 2019

## Private Real Estate

Manager	Net Management Fees	Net Carried Interest	Partnership Expenses	Total
Exeter Industrial Value Fund IV, L.P.	\$ 1,150,000	\$ 2,090,312	\$ 150,450	\$ 3,390,762
Exeter Industrial Value Fund V, L.P.	\$ -	\$ -	\$ -	\$ -
Five North 5th Street	\$ 52,275	\$ -	\$ -	\$ 52,275
Fortress Investment Fund IV, L.P.	\$ -	\$ -	\$ 72,274	\$ 72,274
Fortress Investment Fund V, L.P.	\$ -	\$ -	\$ 250,739	\$ 250,739
Fortress Investment Fund, L.P.	\$ -	\$ -	\$ 15,186	\$ 15,186
Golden Hills Ranch	\$ 150,750	\$ -	\$ -	\$ 150,750
Keystone Portfolio	\$ 719,175	\$ -	\$ 1,192,495	\$ 1,911,670
LAI Strategic Realty Investors, L.P.	\$ -	\$ -	\$ 14,527	\$ 14,527
Latitude Management Real Estate Capital III, L.P.	\$ 876,355	\$ (25,334)	\$ 94,790	\$ 945,811
Legg Mason Real Estate Capital II	\$ -	\$ -	\$ -	\$ -
LEM Multifamily Senior Equity Fund IV, L.P.	\$ 562,500	\$ 3,752,605	\$ 144,732	\$ 4,459,836
LEM Multifamily Senior Equity Fund V, L.P.	\$ 1,000,000	\$ -	\$ 1,861,862	\$ 2,861,862
LEM RE HY Debt & Pfd Equity Fund III, L.P.	\$ 64,654	\$ 415,031	\$ 50,541	\$ 530,226
LEM Real Estate Mezzanine Fund II, L.P.	\$ -	\$ -	\$ 92,392	\$ 92,392
Lorida Groves	\$ 351,699	\$ -	\$ -	\$ 351,699
Maricopa Citrus	\$ 41,625	\$ -	\$ -	\$ 41,625
Paramount Group Real Estate Fund VII, L.P.	\$ 5,987	\$ -	\$ 46,657	\$ 52,644
Peabody Global Real Estate Partners	\$ -	\$ -	\$ -	\$ -
Pramerica Real Estate Capital VI, L.P.	\$ 476,690	\$ 382,887	\$ -	\$ 859,577
Prudential Senior Housing Partners IV, L.P.	\$ 516,625	\$ 16,840	\$ 61,067	\$ 594,532
Prudential Senior Housing V, L.P.	\$ 656,173	\$ 489,630	\$ 216,601	\$ 1,362,404
PSERS YES Holdings, L.P.	\$ -	\$ -	\$ 90,037	\$ 90,037
RCG Longview Debt Fund V, L.P.	\$ 54,958	\$ -	\$ 180,059	\$ 235,017
RCG Longview Debt Fund VI, L.P.	\$ 277,397	\$ 153,887	\$ 323,640	\$ 754,924
RCG Longview Equity Fund, L.P.	\$ 13,835	\$ -	\$ 33,483	\$ 47,318
Rivercenter Mall	\$ 57,236	\$ -	\$ -	\$ 57,236

# Carried Interest Reported by Managers CY 2019

## Private Real Estate

Manager	Net Management Fees	Net Carried Interest	Partnership Expenses	Total
Security Capital Preferred Growth (Public)	\$ 1,204,579	\$ -	\$ 210,822	\$ 1,415,401
Silverpeak Legacy/PSERS, L.P.	\$ -	\$ 2,456,178	\$ 164,329	\$ 2,620,507
Stockbridge Real Estate Fund II, L.P.	\$ 189,284	\$ -	\$ 66,252	\$ 255,536
Stockbridge Real Estate Fund III, L.P.	\$ 298,097	\$ -	\$ 71,537	\$ 369,634
Stockbridge Real Estate Fund, L.P.	\$ 3,028,118	\$ 14,866,222	\$ 426,404	\$ 18,320,744
Strategic Partners Fund IV RE, L.P.	\$ -	\$ -	\$ -	\$ -
Strategic Partners III RE, L.P.	\$ -	\$ -	\$ -	\$ -
The Galleria at Ft Lauderdale	\$ 571,400	\$ -	\$ -	\$ 571,400
Townsend Grove	\$ 198,386	\$ -	\$ -	\$ 198,386
UBS Trumbull Property Income Fund	\$ 329,733	\$ -	\$ 21,442	\$ 351,175
<b>Real Estate Total</b>	<b>\$ 41,517,602</b>	<b>\$ 114,815,624</b>	<b>\$ 15,647,078</b>	<b>\$ 171,980,304</b>
<b>Grand Total</b>	<b>\$ 204,350,678</b>	<b>\$ 447,849,355</b>	<b>\$ 88,946,515</b>	<b>\$ 741,146,548</b>

# Appendix

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# Net Alpha\*\* Generated by External Managers

Manager	FY 2020			3 Year			5 Year		
	FY 2020 Return	Benchmark	1 Yr \$ Alpha	3 Year Return	Benchmark	3 Yr \$ Alpha	5 Year Return	Benchmark	5 Yr \$ Alpha
Aeolus Property Catastrophe Keystone PF Fund, LP	5.94%	1.74%	\$ 17	-6.89%	4.39%	\$ 17	0.23%	4.34%	\$ 17
AKAZ Offshore Fund Ltd	31.25%	1.74%	\$ 56	N/A	N/A	N/A	N/A	N/A	N/A
Bridgewater Pure Alpha Fund II, Ltd.	-16.63%	1.74%	\$ (185)	-0.99%	4.39%	\$ (81)	1.48%	4.34%	\$ (129)
Brigade Leveraged Capital Structures Offshore Fund, Ltd.	-15.36%	1.74%	\$ (56)	-1.83%	4.39%	\$ (34)	0.80%	4.34%	\$ (10)
Capula Global Relative Value Fund Limited	9.69%	1.74%	\$ 37	6.89%	4.39%	\$ 68	7.14%	4.34%	\$ 121
Capula Tail Risk Fund Limited	13.22%	1.74%	\$ 35	2.18%	4.39%	\$ 4	0.58%	4.34%	\$ (12)
Carlyle Aviation/SASOF III LP	-3.45%	1.74%	\$ (2)	24.23%	4.39%	\$ (2)	11.59%	4.34%	\$ (2)
Carlyle Aviation/SASOF IV LP	-16.19%	1.74%	\$ (8)	N/A	N/A	N/A	N/A	N/A	N/A
Carlyle Aviation/SASOF V LP*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Caspian Keystone Focused Fund, LP	16.53%	1.74%	\$ 2	12.16%	4.39%	\$ 2	N/A	N/A	N/A
Caspian Select Credit International, Ltd.	-2.97%	1.74%	\$ (12)	1.47%	4.39%	\$ (4)	1.41%	4.34%	\$ 0
DaVinci Reinsurance Ltd.	12.46%	5.92%	\$ 4	-0.35%	4.39%	\$ 1	N/A	N/A	N/A
Falko Regional Aircraft Opportunities Fund II*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Garda Fixed Income Relative Value Opportunity Fund Ltd.	18.64%	1.74%	\$ 74	9.38%	4.39%	\$ 99	7.87%	4.34%	\$ 135
HS Group Sponsor Fund II, Ltd.	8.77%	1.74%	\$ 3	N/A	N/A	N/A	N/A	N/A	N/A
RenaissanceRe Medici Fund Ltd.	5.92%	6.93%	\$ (1)	3.34%	4.39%	\$ (1)	N/A	N/A	N/A
Nephila/Nimbus Weather Fund	0.92%	1.74%	\$ (1)	N/A	N/A	N/A	N/A	N/A	N/A
Nephila/Palmetto Fund Ltd.	0.95%	1.74%	\$ (2)	-2.89%	4.39%	\$ (27)	-0.11%	4.34%	\$ (10)
Oceanwood Opportunities Fund	2.99%	5.58%	\$ (6)	3.12%	4.39%	\$ (1)	3.08%	4.34%	\$ 10
Oceanwood Investments SPC Co-Invest	-17.71%	1.74%	\$ (6)	N/A	N/A	N/A	N/A	N/A	N/A
OWS Credit Opportunity Offshore Fund III, Ltd.	-7.16%	1.74%	\$ (25)	3.86%	4.39%	\$ 13	N/A	N/A	N/A
Perry Partners LP	-20.68%	7.94%	\$ (6)	1.82%	4.39%	\$ (5)	3.33%	4.34%	\$ (30)
PIMCO Absolute Return Strategy V Offshore Fund, Ltd.	-12.02%	1.74%	\$ (37)	-3.87%	4.39%	\$ (45)	-1.85%	4.34%	\$ (41)
PIMCO Commodity Alpha Fund	6.58%	1.74%	\$ 16	12.54%	4.39%	\$ 56	N/A	N/A	N/A
PIMCO Global Credit Opportunity Offshore Fund, Ltd.	-3.60%	1.74%	\$ (16)	5.60%	4.39%	\$ (1)	5.74%	4.34%	\$ 26
Two Sigma Risk Premia Enhanced Fund, LP	-11.70%	1.74%	\$ (29)	-0.96%	4.39%	\$ (21)	N/A	N/A	N/A
Upsilon Diversified Fund Ltd.	6.93%	1.74%	\$ 5	-25.24%	4.39%	\$ 5	N/A	N/A	N/A
Venor Capital Offshore, Ltd.	0.30%	1.74%	\$ (2)	4.42%	4.39%	\$ 12	N/A	N/A	N/A
<b>Absolute Return Total</b>			<b>\$ (147)</b>			<b>\$ 54</b>			<b>\$ 76</b>

Dollar amounts in millions

\*New manager in FY2019-2020 alpha not included

\*\*Net Alpha refers to performance over the benchmark net of fees



# Net Alpha\*\* Generated by External Managers

Manager	FY 2020			3 Year			5 Year		
	FY 2020 Return	Benchmark	1 Yr \$ Alpha	3 Year Return	Benchmark	3 Yr \$ Alpha	5 Year Return	Benchmark	5 Yr \$ Alpha
Gresham	-17.18%	-17.38%	\$ 1	-4.82%	-6.14%	\$ 14	-6.59%	-7.69%	\$ 20
Wellington Management Company	-16.72%	-19.95%	\$ 14	-3.55%	-3.90%	\$ 0	-3.82%	-4.17%	\$ 4
<b>Commodities Total</b>			<b>\$ 15</b>			<b>\$ 15</b>			<b>\$ 23</b>
Alliance Bernstein Global Fixed	1.94%	4.71%	\$ (0)	1.91%	5.25%	\$ (13)	3.13%	4.67%	\$ (7)
Apollo European Principal Fund II	-12.29%	-0.19%	\$ (7)	-4.68%	3.25%	\$ (11)	2.14%	4.74%	\$ 3
Apollo European Principal Fund III	13.09%	-0.19%	\$ 13	N/A	N/A	N/A	N/A	N/A	N/A
Avenue Energy Opportunities Fund	-14.15%	-0.19%	\$ (32)	-3.45%	3.25%	\$ (46)	-1.41%	4.74%	\$ (40)
Avenue Energy Opportunities Fund II	5.49%	-0.19%	\$ 5	N/A	N/A	N/A	N/A	N/A	N/A
Avenue Europe SS III	-3.65%	-0.19%	\$ (8)	3.38%	3.25%	\$ (3)	N/A	N/A	N/A
Bain Capital Credit Managed Account (PSERS), L.P.	-7.29%	-0.19%	\$ (28)	0.81%	3.25%	\$ (34)	3.51%	4.74%	\$ (57)
Bain Capital Credit Opp. Fund IV	-6.74%	-0.19%	\$ (2)	10.35%	3.25%	\$ 24	6.99%	4.74%	\$ 15
Bain Capital Distressed and Special Situations 2013	-23.08%	-0.19%	\$ (43)	-3.57%	3.25%	\$ (21)	-1.82%	4.74%	\$ (52)
Bain Capital Distressed and Special Situations 2016 (A), L.P.	0.39%	-0.19%	\$ 2	6.84%	3.25%	\$ 14	N/A	N/A	N/A
Bain Capital Distressed and Special Situations 2019 (A), L.P.*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bain Capital Middle Market Credit 2010, L.P.	-9.60%	-0.19%	\$ (3)	1.10%	3.25%	\$ (2)	-0.46%	4.74%	\$ (12)
Bain Capital Middle Market Credit 2014, L.P.	1.20%	-0.19%	\$ 1	6.17%	3.25%	\$ 5	4.68%	4.74%	\$ (6)
BlackRock Global Alpha	11.26%	8.74%	\$ 25	6.43%	5.32%	\$ 33	6.44%	4.30%	\$ 96
Bridgewater TIPS (unlevered)	0.93%	4.54%	\$ (159)	3.93%	3.25%	\$ (106)	3.82%	6.58%	\$ (339)
Brigade Distressed Value	-8.22%	-0.19%	\$ (14)	1.57%	3.25%	\$ (16)	3.31%	4.74%	\$ (4)
Brigade Structured Credit Offshore Fund	-9.72%	-0.19%	\$ (27)	1.30%	3.25%	\$ (17)	4.85%	4.74%	\$ (3)
Carlyle Energy Mezz. Opp. Fund	-70.88%	-0.19%	\$ (63)	-37.86%	3.25%	\$ (89)	-35.50%	4.74%	\$ (177)
Carlyle Energy Mezz. Opp. Fund II	-22.68%	-0.19%	\$ (22)	-6.04%	3.25%	\$ (28)	N/A	N/A	N/A
Cerberus Levered Loan Fund I	-15.74%	-0.19%	\$ (1)	-1.52%	3.25%	\$ (1)	0.60%	4.74%	\$ (3)
Cerberus Levered Loan Fund II	-20.06%	-0.19%	\$ (15)	-5.67%	3.25%	\$ (22)	-2.11%	4.74%	\$ (32)
Cerberus PSERS Levered Loan Opportunities Fund	9.33%	-9.85%	\$ 52	10.96%	3.25%	\$ 79	N/A	N/A	N/A
Clearlake Opportunities Partners II, LP*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Franklin Templeton Emerging Fixed Income	-3.11%	0.99%	\$ (16)	3.34%	2.38%	\$ 6	4.54%	3.46%	\$ 19
Galton Onshore Mortgage Recovery Fund III, LP	-11.13%	-0.19%	\$ (4)	1.72%	3.25%	\$ 5	3.57%	4.74%	\$ 4
Galton Onshore Mortgage Recovery Fund IV, L.P.	-61.24%	-0.19%	\$ (54)	N/A	N/A	N/A	N/A	N/A	N/A
Hayfin SOF II USD Co-Invest	-6.41%	-0.19%	\$ (2)	1.46%	3.25%	\$ (2)	N/A	N/A	N/A

Dollar amounts in millions

\*New manager in FY2019-2020 alpha not included

\*\*Net Alpha refers to performance over the benchmark net of fees

# Net Alpha\*\* Generated by External Managers

Manager	FY 2020		3 Year			5 Year			
	FY 2020 Return	Benchmark	1 Yr \$ Alpha	3 Year Return	Benchmark	3 Yr \$ Alpha	5 Year Return	Benchmark	5 Yr \$ Alpha
Hayfin SOF II USD LP	-5.41%	-0.19%	\$ (6)	2.67%	3.25%	\$ (5)	N/A	N/A	N/A
Hayfin Special Opportunities Credit LP	-20.87%	-0.19%	\$ (9)	1.39%	3.25%	\$ 15	4.50%	4.74%	\$ 22
ICG Europe Fund V	7.94%	-0.19%	\$ 6	13.80%	3.25%	\$ 41	12.39%	4.74%	\$ 55
ICG Europe Fund VI	4.70%	-0.19%	\$ 7	12.94%	3.25%	\$ 22	N/A	N/A	N/A
ICG Europe Fund VII	20.00%	-0.19%	\$ 10	N/A	N/A	N/A	N/A	N/A	N/A
Insight Oxygen Currency Hedge - Private Credit (notional)	3.80%	3.75%	\$ 0	3.09%	3.14%	\$ 3	1.86%	2.12%	\$ 6
Latitude Management Real Estate Capital IV	7.95%	-0.19%	\$ 4	5.66%	3.25%	\$ 3	N/A	N/A	N/A
LBC Credit Partners III	-12.04%	-0.19%	\$ (8)	-4.09%	0.00%	\$ (16)	1.04%	4.74%	\$ (13)
LBC-P Credit Fund LP	3.51%	-0.19%	\$ 10	8.34%	3.25%	\$ 23	N/A	N/A	N/A
Mariner/Galton RMBS	6.69%	-0.19%	\$ 14	6.75%	3.25%	\$ 26	5.64%	4.74%	\$ 32
Newmarket International Infrastructure Finance Company Fund, L.P.	10.90%	-0.19%	\$ 9	9.11%	3.25%	\$ 16	9.19%	4.74%	\$ 19
Park Square Credit Opportunities	-10.55%	-0.19%	\$ (19)	-0.49%	3.25%	\$ (19)	N/A	N/A	N/A
Penn Mutual Asset Management	0.60%	1.86%	\$ (1)	2.18%	2.04%	\$ 0	N/A	N/A	N/A
PIMCO BRAVO Fund III Onshore Feeder, L.P.	-5.69%	-0.19%	\$ (10)	N/A	N/A	N/A	N/A	N/A	N/A
PIMCO Commercial Real Estate Debt Fund, L.P.	-9.10%	-0.19%	\$ 2	N/A	N/A	N/A	N/A	N/A	N/A
PIMCO Multi-Sector Strategy	1.43%	13.35%	\$ (31)	4.09%	8.18%	\$ (33)	3.84%	N/A	N/A
Radcliffe Ultra Short Duration	3.02%	1.93%	\$ 3	3.19%	2.09%	\$ 9	3.20%	1.55%	\$ 22
SEI Investment Management	-5.50%	4.58%	\$ (12)	0.83%	3.42%	\$ (9)	2.27%	2.80%	\$ (4)
Sixth Street Fundamental Strategies Partners*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SSG Capital Partners V, LP*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SSG Capital Partners V Sidecar, LP*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Summit Partners Credit Fund II LP*	-2.73%	-0.19%	\$ (4)	4.00%	3.25%	\$ 1	5.65%	4.74%	\$ 4
TCI Real Estate Partners Fund III, L.P.	11.41%	-0.19%	\$ 6	N/A	N/A	N/A	N/A	N/A	N/A
The Varde Scratch and Dent Fund Feed I-A	2.02%	-0.19%	\$ 1	6.21%	3.25%	\$ 5	N/A	N/A	N/A
The Varde Scratch and Dent Fund, LP	0.45%	-0.19%	\$ 0	4.80%	3.25%	\$ 6	5.86%	4.74%	\$ 1
TOP NPL (A)	-28.88%	-0.19%	\$ (2)	-11.19%	3.25%	\$ (4)	-5.06%	4.74%	\$ 3
TPG Opportunities Partners II, LP	-12.05%	-0.19%	\$ (1)	2.27%	3.25%	\$ 2	5.41%	4.74%	\$ 10

Dollar amounts in millions

\*New manager in FY2019-2020 alpha not included

\*\*Net Alpha refers to performance over the benchmark net of fees

# Net Alpha\*\* Generated by External Managers

Manager	FY 2020			3 Year			5 Year		
	FY 2020 Return	Benchmark	1 Yr \$ Alpha	3 Year Return	Benchmark	3 Yr \$ Alpha	5 Year Return	Benchmark	5 Yr \$ Alpha
TPG Opportunities Partners III, LP	3.19%	-0.19%	\$ 4	7.87%	3.25%	\$ 12	10.02%	4.74%	\$ 16
TPG TAO	5.19%	-0.19%	\$ 19	7.09%	3.25%	\$ 35	7.95%	4.74%	\$ 37
TSSP Opportunities Partners IV, LP	2.61%	-0.19%	\$ 1	N/A	N/A	N/A	N/A	N/A	N/A
Whitehorse Liquidity Partners IV LP*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Fixed Income Total</b>			<b>\$ (410)</b>			<b>\$ (111)</b>			<b>\$ (386)</b>
Acadian Asset Mgmt	-2.03%	-4.34%	\$ 6	0.99%	-0.17%	\$ 9	5.31%	2.50%	\$ 31
Baillie Gifford	8.80%	-4.80%	\$ 119	7.36%	1.13%	\$ 173	7.71%	2.26%	\$ 250
BlackRock EMAA	-3.53%	-3.39%	\$ (1)	2.24%	1.90%	\$ 4	3.75%	2.86%	\$ 24
BlackRock Emerging Markets Alpha Advantage Fund Ltd	-3.88%	-3.39%	\$ (1)	2.57%	1.90%	\$ 17	6.50%	2.86%	\$ 4
Cederberg China Equity Fund	25.63%	9.89%	\$ 40	N/A	N/A	N/A	N/A	N/A	N/A
Effissimo Capital Partners Feeder Fund 2 LP	-16.12%	3.24%	\$ (32)	N/A	N/A	N/A	N/A	N/A	N/A
Insight Everest Currency Hedge - Int'l Eq (notional)	3.00%	3.02%	\$ (1)	2.47%	2.52%	\$ (5)	2.00%	2.09%	\$ (20)
Insight Wilson Currency Hedge - PE Internal Co-Invest (1Q Lag)(Notional)	5.87%	5.85%	\$ 0	1.88%	1.90%	\$ 0	N/A	N/A	N/A
Marathon Asset Mgmt	-8.11%	-4.80%	\$ (27)	0.16%	1.13%	\$ (20)	2.27%	2.26%	\$ 5
Oberweis Asset Mgmt	15.64%	-4.34%	\$ 40	7.67%	-0.17%	\$ 48	8.07%	2.50%	\$ 53
QS Investors	-5.45%	-4.34%	\$ (1)	-1.46%	-0.17%	\$ (4)	1.62%	2.50%	\$ (4)
Steadview Capital Partners LP	-10.63%	-12.61%	\$ 4	N/A	N/A	N/A	N/A	N/A	N/A
The Children's Investment Fund, LP	5.31%	2.84%	\$ 12	N/A	N/A	N/A	N/A	N/A	N/A
Wasatch EM Small Cap	9.33%	-9.85%	\$ 64	6.47%	-2.43%	\$ 86	4.32%	-0.87%	\$ 83
Wasatch Int'l Small Cap	7.12%	-4.34%	\$ 34	7.28%	-0.17%	\$ 64	6.65%	2.50%	\$ 57
<b>International Equity Total</b>			<b>\$ 256</b>			<b>\$ 372</b>			<b>\$ 482</b>
Insight Nevada Currency Hedge - Infra (notional)	3.22%	3.34%	\$ (1)	2.59%	2.67%	\$ (1)	N/A	N/A	N/A
<b>Infrastructure Total</b>			<b>\$ (1)</b>			<b>\$ (1)</b>			<b>\$ -</b>
Atlantic Trust	-33.92%	-30.96%	\$ (17)	-12.08%	-11.20%	\$ (10)	-10.16%	-10.14%	\$ 4
Salient	-34.68%	-30.96%	\$ (23)	-12.86%	-11.20%	\$ (24)	-11.58%	-10.14%	\$ (30)
<b>Mid Stream Energy Total</b>			<b>\$ (40)</b>			<b>\$ (33)</b>			<b>\$ (26)</b>
Insight Sierra Currency Hedge - REIT (notional)	2.69%	2.72%	\$ (0)	2.16%	2.23%	\$ (1)	N/A	N/A	N/A
Security Capital Preferred Growth	-2.01%	-12.39%	\$ 21	5.72%	0.22%	\$ 30	6.79%	4.20%	\$ 22
<b>REIT Total</b>			<b>\$ 21</b>			<b>\$ 30</b>			<b>\$ 22</b>

Dollar amounts in millions

\*New manager in FY2019-2020 alpha not included

\*\*Net Alpha refers to performance over the benchmark net of fees

# Net Alpha\*\* Generated by External Managers

Manager	FY 2020			3 Year			5 Year		
	FY 2020 Return	Benchmark	1 Yr \$ Alpha	3 Year Return	Benchmark	3 Yr \$ Alpha	5 Year Return	Benchmark	5 Yr \$ Alpha
BlackRock Market Advantage II (vol adjusted)	-5.19%	10.51%	\$ (95)	5.73%	-0.37%	\$ (33)	5.17%	-0.22%	\$ (13)
Bridgewater All Weather (vol adjusted)	0.85%	10.51%	\$ (80)	5.73%	-0.37%	\$ (67)	5.17%	-0.22%	\$ (162)
Bridgewater Optimal (vol adjusted)	-10.67%	10.51%	\$ (98)	5.73%	-0.37%	\$ (156)	5.17%	-0.22%	\$ (143)
DE Shaw Orienteer HV (vol adjusted)	-16.41%	10.51%	\$ (146)	5.73%	-0.37%	\$ (82)	5.17%	-0.22%	\$ (77)
<b>REIT Total</b>			<b>\$ (419)</b>			<b>\$ (339)</b>			<b>\$ (396)</b>
Radcliffe Specialty Finance Debt	1.41%	2.43%	\$ (4)	3.60%	2.67%	\$ 10	4.10%	2.14%	\$ 32
<b>U.S. Equity Total</b>			<b>\$ (4)</b>			<b>\$ 10</b>			<b>\$ 32</b>

Dollar amounts in millions

\*New manager in FY2019-2020 alpha not included

\*\*Net Alpha refers to performance over the benchmark net of fees

# Net Alpha\*\* Generated by External Managers

Asset Class	Investment	ITD Direct Alpha	KS PME
Commodities	Denham Mining Fund, L.P.	-21.81	0.71
Commodities	NGP Natural Resources XII, L.P.	-23.27	0.76

\*New manager in FY2019-2020 alpha not included

\*\*Net Alpha refers to performance over the benchmark net of fees

Commodities Benchmark - Blended 70% Russell 3000 / 30% MSCI ACI x US IMI Net

# Net Alpha\*\* Generated by External Managers

Asset Class	Investment	ITD Direct Alpha	KS PME
Infrastructure	Blackstone Infrastructure Partners L.P.	-7.47	0.91
Infrastructure	GCM Grosvenor Customized Infrastructure Strategies II, LP	6.54	1.14
Infrastructure	International Infrastructure Finance Company II, L.P.	4.67	1.07
Infrastructure	Strategic Partners Real Assets II, L.P.	12.81	1.1

\*New manager in FY2019-2020 alpha not included

\*\*Net Alpha refers to performance over the benchmark net of fees  
Infrastructure Benchmark - FTSE Infrastructure Hedged Index

# Net Alpha\*\* Generated by External Managers

Asset Class	Investment	ITD Direct Alpha	KS PME
Private Credit	Apollo European Principal Finance Fund II (Dollar A), L.P.	1.57	1.03
Private Credit	Apollo European Principal Finance Fund III (Dollar A), LP	7.22	1.09
Private Credit	Avenue Energy Opportunities Fund II, L.P.	-2.69	0.95
Private Credit	Avenue Energy Opportunities Fund, L.P.	-3.32	0.9
Private Credit	Avenue Europe Special Situations Fund III (U.S.), L.P.	-0.98	0.97
Private Credit	Bain Capital Credit Managed Account (PSERS), L.P.	-1.25	0.92
Private Credit	Bain Capital Distressed and Special Situations 2013 (A), L.P.	-2.23	0.91
Private Credit	Bain Capital Distressed and Special Situations 2016 (A), L.P.	3	1.08
Private Credit	Bain Capital Distressed and Special Situations 2019 (A), L.P.	-7.71	0.95
Private Credit	Bain Capital Middle Market Credit 2010, L.P.	2.15	1.05
Private Credit	Bain Capital Middle Market Credit 2014, LP	0.64	1.02
Private Credit	Brigade Distressed Value Offshore Fund	-0.79	0.93
Private Credit	Brigade Structured Credit Offshore Fund	-0.26	0.99
Private Credit	Carlyle Energy Mezzanine Opportunities Fund II, L.P.	-12.46	0.8
Private Credit	Carlyle Energy Mezzanine Opportunities Fund-Q, L.P.	-28.23	0.57
Private Credit	Cerberus Levered Loan Opportunities Fund I, L.P.	-0.84	0.98
Private Credit	Cerberus Levered Loan Opportunities Fund II, L.P.	0	1
Private Credit	Cerberus PSERS Levered Loan Opportunities Fund, L.P.	8.72	1.18
Private Credit	Clearlake Opportunities Partners (P) II, L.P.	10.34	1.05
Private Credit	Galton Onshore Mortgage Recovery Fund III, L.P.	-1.24	0.98
Private Credit	Galton Onshore Mortgage Recovery Fund IV, L.P.	-48.94	0.42
Private Credit	Galton Residential Mortgage-Backed Securities	2.65	1.14
Private Credit	Hayfin SOF II USD Co-Invest, L.P.	-3.3	0.94

\*New manager in FY2019-2020 alpha not included

\*\*Net Alpha refers to performance over the benchmark net of fees

Private Credit Benchmark - S&P LLI + 200 bps

# Net Alpha\*\* Generated by External Managers

Asset Class	Investment	ITD Direct Alpha	KS PME
Private Credit	Hayfin SOF II USD, L.P.	-2.46	0.96
Private Credit	HayFin Special Opportunities Credit Fund (Parallel), L.P.	-0.41	0.99
Private Credit	ICG Europe Fund V, L.P.	2.29	1.07
Private Credit	ICG Europe Fund VI, L.P.	10.75	1.25
Private Credit	ICG Europe Fund VII Feeder SCSp	19.04	1.21
Private Credit	International Infrastructure Finance Company Fund, L.P.	2.16	1.07
Private Credit	Latitude Management Real Estate Capital IV, Inc.	3.13	1.06
Private Credit	LBC Credit Partners III, L.P.	1.91	1.05
Private Credit	LBC-P Credit Fund, L.P.	4.79	1.09
Private Credit	Park Square - PSERS Credit Opportunities Fund, L.P.	-2.63	0.93
Private Credit	PIMCO BRAVO Fund III Onshore Feeder, LP	-0.61	0.99
Private Credit	PIMCO Commercial Real Estate Debt Fund, L.P.	2.96	1.01
Private Credit	PSERS TAO Partners Parallel Fund, L.P. - (TAO 2.0)	2.59	1.05
Private Credit	PSERS TAO Partners Parallel Fund, L.P. - (TAO 3.0)	3.19	1.04
Private Credit	Sankaty Credit Opportunities IV, L.P.	0.07	1
Private Credit	SSG Capital Partners V Sidecar, L.P.	21,079.74	1.6
Private Credit	SSG Capital Partners V, L.P.	10.69	1.07
Private Credit	Summit Partners Credit Fund II, L.P.	0.9	1.02
Private Credit	TCI Real Estate Partners Fund III	9.05	1.11
Private Credit	TOP NPL (A), L.P.	12.37	1.32
Private Credit	TPG Opportunities Partners II (A), L.P.	9.8	1.35
Private Credit	TPG Opportunities Partners III (A), L.P.	3.47	1.06
Private Credit	TSSP Opportunities Partners IV (A), L.P.	0.31	1
Private Credit	Varde Scratch and Dent Feeder I-A, L.P., The	1.56	1.04
Private Credit	Varde Scratch and Dent Feeder, L.P., The	0.67	1.02

\*New manager in FY2019-2020 alpha not included

\*\*Net Alpha refers to performance over the benchmark net of fees

Private Credit Benchmark - S&P LLI + 200 bps



# Net Alpha\*\* Generated by External Managers

Asset Class	Investment	ITD Direct Alpha	KS PME
Private Equity	Actis Emerging Markets 3, L.P.	-11.61	0.62
Private Equity	Actis Global 4, L.P.	1.46	1.05
Private Equity	Adams Capital Management, L.P.	38.72	1.69
Private Equity	Aisling Capital II L.P.	-6.24	0.72
Private Equity	Aisling Capital III, L.P.	12.34	1.48
Private Equity	Aisling Capital IV, L.P.	13.25	1.24
Private Equity	Apax Digital, L.P.	14.15	1.12
Private Equity	Apax Europe VII, L.P.	-3.95	0.82
Private Equity	Apollo Investment Fund IX, L.P.	-0.32	1
Private Equity	Apollo Investment Fund VIII, L.P.	1.32	1.04
Private Equity	Avenue Special Situations Fund VI, L.P.	-9.03	0.66
Private Equity	Bain Capital Asia Fund II, L.P.	9.66	1.4
Private Equity	Bain Capital Asia Fund III-A, L.P.	16.89	1.18
Private Equity	Bain Capital Asia Fund IV-B, L.P.	44.78	1.29
Private Equity	Bain Capital Fund XI-A, L.P.	17.22	1.56
Private Equity	Bain Capital Fund XII-A, L.P.	-9.77	0.9
Private Equity	Baring Asia Private Equity Fund IV, L.P.	1	1.05
Private Equity	Baring Asia Private Equity Fund V, L.P.	-1.71	0.93
Private Equity	Baring Asia Private Equity Fund VI, L.P.	4.03	1.1
Private Equity	Blue Point Capital Partners (B), L.P.	-0.47	0.98
Private Equity	Blue Point Capital Partners II (B), L.P.	13.54	1.74
Private Equity	Blue Point Capital Partners III (B), L.P.	3.92	1.08
Private Equity	Blue Point Capital Partners IV, L.P.	0.71	1.01
Private Equity	Bridgepoint Development Capital III, L.P.	19.13	1.29
Private Equity	Bridgepoint Europe II	15.09	1.25
Private Equity	Bridgepoint Europe III A, L.P.	-2.74	0.82
Private Equity	Bridgepoint Europe IV, L.P.	-1.94	0.92
Private Equity	Bridgepoint Europe V, L.P.	5.53	1.14
Private Equity	Bridgepoint Europe VI, L.P.	-7.96	0.96

\*New manager in FY2019-2020 alpha not included

\*\*Net Alpha refers to performance over the benchmark net of fees

Private Equity Benchmark – Blended 65% MSCI USA Sm Cap / 35% MSCI ACWI x US Index

# Net Alpha\*\* Generated by External Managers

Asset Class	Investment	ITD Direct Alpha	KS PME
Private Equity	Capital International Private Equity Fund V L.P.	-9.04	0.78
Private Equity	Capital International Private Equity Fund VI, L.P.	-5.06	0.79
Private Equity	Catterton Growth Partners II, L.P.	3.31	1.19
Private Equity	Catterton Growth Partners III, L.P., L	21.46	1.62
Private Equity	Catterton Growth Partners, L.P.	-2	0.91
Private Equity	Catterton Partners VI, L.P.	4.32	1.25
Private Equity	Catterton Partners VII, L.P.	5.31	1.21
Private Equity	Catterton VIII, L.P., L	10.67	1.19
Private Equity	Cerberus Institutional Partners V, L.P.	2.48	1.1
Private Equity	Cerberus Institutional Partners VI, L.P.	2.36	1.04
Private Equity	Cerberus Institutional Partners, L.P. (Series 3)	5.15	1.29
Private Equity	Cerberus Institutional Partners, L.P. (Series 4)	0.85	1.05
Private Equity	Cinven Fund (Fifth), L.P.	8.22	1.25
Private Equity	Cinven Fund (Fourth), L.P.	1.16	1.06
Private Equity	Cinven Fund (Sixth), L.P.	7	1.1
Private Equity	Clearlake Capital Partners IV, L.P.	17.33	1.37
Private Equity	Clearlake Capital Partners V, L.P.	40.71	1.49
Private Equity	Co-Investment 2000 Fund, L.P.	0.16	1.01
Private Equity	Co-Investment Fund II, L.P.	-9.04	0.46
Private Equity	Coller International Partners VI, L.P.	3.68	1.14
Private Equity	Coller International Partners VII, L.P. - Series A	4.58	1.1
Private Equity	CP Primanti Holdings, LLC	-9.55	0.48
Private Equity	Crestview Partners II, L.P.	2.11	1.09
Private Equity	Crestview Partners III, L.P.	1.95	1.05
Private Equity	Crestview Partners, L.P.	1.68	1.11
Private Equity	Cross Atlantic Technology Fund II	-7.31	0.64
Private Equity	Cross Atlantic Technology Fund, L.P.	-1.92	0.87

\*New manager in FY2019-2020 alpha not included

\*\*Net Alpha refers to performance over the benchmark net of fees

Private Equity Benchmark – Blended 65% MSCI USA Sm Cap / 35% MSCI ACWI x US Index

# Net Alpha\*\* Generated by External Managers

Asset Class	Investment	ITD Direct Alpha	KS PME
Private Equity	CVC Capital Partners Asia Pacific III, L.P.	3.1	1.11
Private Equity	CVC European Equity Partners V (A), L.P.	6.15	1.27
Private Equity	DCPF VI Oil and Gas Co-Investment Fund, L.P.	5.62	1.17
Private Equity	Denham Commodity Partners Fund VI, L.P.	-6.78	0.81
Private Equity	Energy & Minerals Group Fund III, L.P., The	-16.06	0.47
Private Equity	Equistone Partners Europe Fund V E, L.P.	-3.38	0.89
Private Equity	Equistone Partners Europe Fund VI E, SCSp	-8.33	0.93
Private Equity	Evergreen Pacific Partners II, L.P.	11.19	1.43
Private Equity	Evergreen Pacific Partners, L.P.	-54.64	0.44
Private Equity	First Reserve Fund XII, L.P.	-21.54	0.4
Private Equity	Gleacher Mezzanine Fund II, L.P.	0.42	1.01
Private Equity	Gold Hill Venture Lending 03-A, L.P.	5.55	1.28
Private Equity	GoldPoint Partners Co-Investment V, L.P.	7.06	1.2
Private Equity	GSC Recovery II, L.P.	2.88	1.12
Private Equity	Hahn & Company III L.P.	-17.4	0.84
Private Equity	Hahn & Company III-S L.P.	7.83	1.07
Private Equity	HgCapital 7 A, L.P.	6.88	1.26
Private Equity	HgCapital 8 D, L.P.	16.81	1.13
Private Equity	HGGC Fund II, L.P.	7.08	1.24
Private Equity	HGGC Fund III, L.P.	21.47	1.38
Private Equity	Incline Elevate Fund, L.P.	-6.18	0.97
Private Equity	Incline Equity Partners III (PSERS), L.P.	22.32	1.76
Private Equity	Incline Equity Partners IV, L.P.	10.03	1.13
Private Equity	Insight Venture Partners X, L.P.	22.54	1.31
Private Equity	Irving Place Capital MB-PSERS II, L.P.	4.32	1.18
Private Equity	Irving Place Capital Partners III SPV, L.P.	-0.51	0.97
Private Equity	K4 Private Investors, L.P.	8.94	1.1
Private Equity	KBL Partnership, L.P.	-16.7	0.44

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Private Equity Benchmark – Blended 65% MSCI USA Sm Cap / 35% MSCI ACWI x US Index

# Net Alpha\*\* Generated by External Managers

Asset Class	Investment	ITD Direct Alpha	KS PME
Private Equity	Landmark Equity Partners XIII, L.P.	-0.39	0.98
Private Equity	Landmark Equity Partners XIV, L.P.	-1.62	0.95
Private Equity	LLR Equity Partners II, L.P.	6.73	1.36
Private Equity	LLR Equity Partners III, L.P.	5.13	1.24
Private Equity	LLR Equity Partners IV, L.P.	16.28	1.62
Private Equity	LLR Equity Partners V, L.P.	7.02	1.08
Private Equity	Milestone Partners FS 2, L.P.	26.95	1.23
Private Equity	Milestone Partners III, L.P.	-10.66	0.57
Private Equity	Milestone Partners IV, L.P.	-0.78	0.97
Private Equity	NEPA Venture Fund II	20.69	2.63
Private Equity	New Mountain Partners III L.P.	3.46	1.19
Private Equity	New Mountain Partners IV, L.P.	13.63	1.5
Private Equity	New Mountain Partners V, L.P.	13.25	1.18
Private Equity	New Mountain Partners, L.P., Allegheny	9.68	1.58
Private Equity	New York Life Capital Partners I, L.P.	3.2	1.13
Private Equity	New York Life Capital Partners III-A, L.P.	-5.18	0.73
Private Equity	New York Life Capital Partners IV-A. L.P.	2.87	1.14
Private Equity	NGP Natural Resources X, L.P.	-8.81	0.76
Private Equity	NGP Natural Resources XI, L.P.	-7.14	0.83
Private Equity	North Haven Private Equity Asia IV, L.P.	1.33	1.04
Private Equity	NYLIM Mezzanine Partners II (Parallel Fund) LP	4.26	1.12
Private Equity	OCM Opportunities Fund VII L.P.	6.08	1.27
Private Equity	OCM Opportunities Fund VII-b L.P.	3.56	1.13
Private Equity	Odyssey Investment Partners Fund V, L.P.	2.02	1.06
Private Equity	Orchid Asia V, L.P.	13.02	1.34
Private Equity	Orchid Asia VI, L.P.	2.96	1.07
Private Equity	Orchid Asia VII, L.P.	4.27	1.04

\*New manager in FY2019-2020 alpha not included

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# Net Alpha\*\* Generated by External Managers

Asset Class	Investment	ITD Direct Alpha	KS PME
Private Equity	PA Pennsylvania Co-Investment Fund, L.P.	10.27	1.34
Private Equity	PAI Europe IV-B2, L.P.	3.7	1.13
Private Equity	PAI Europe V, L.P.	-0.46	0.97
Private Equity	PAI Europe VI, L.P.	6.78	1.18
Private Equity	PAI Europe VII, L.P.	-60.26	0.63
Private Equity	Palladium Equity Partners IV, L.P.	-0.72	0.98
Private Equity	Partners Group Secondary 2008, L.P.	-2.47	0.9
Private Equity	Partners Group Secondary 2011 (USD), L.P. Inc.	4.62	1.17
Private Equity	Partners Group Secondary 2015 (USD) A, L.P.	6.25	1.14
Private Equity	Perseus-Soros BioPharmaceutical Fund	9.25	1.26
Private Equity	Platinum Equity Capital Partners IV, L.P.	12.92	1.2
Private Equity	Platinum Equity Capital Partners V, L.P.	-10.43	0.94
Private Equity	Platinum Equity Capital Partners-A II, L.P.	4.78	1.1
Private Equity	Platinum Equity Capital Partners-A III, L.P.	15.38	1.28
Private Equity	Platinum Equity Capital Partners-A, L.P.	43.65	1.66
Private Equity	Platinum Equity Small Cap Fund, L.P.	-78.43	0.58
Private Equity	PNC Equity Partners II, L.P.	4.58	1.23
Private Equity	Portfolio Advisors Secondary Fund III, L.P.	18.6	1.21
Private Equity	Psilos Group Partners III-C, L.P.	0.35	1.02
Private Equity	Sante Health Ventures III	47.59	1.34
Private Equity	SCP Private Equity Partners II, L.P.	-15.26	0.22
Private Equity	Searchlight Capital II, L.P.	9.12	1.21
Private Equity	Searchlight Capital III, L.P.	2.89	1.02
Private Equity	StarVest Partners , L.P.	1.61	1.1
Private Equity	StarVest Partners II (Parallel), L.P.	-8.52	0.58
Private Equity	StepStone International Investors III L.P.	-9.88	0.64
Private Equity	Sterling Capital Partners, L.P.	8.71	1.42

\*New manager in FY2019-2020 alpha not included

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Private Equity Benchmark – Blended 65% MSCI USA Sm Cap / 35% MSCI ACWI x US Index

# Net Alpha\*\* Generated by External Managers

Asset Class	Investment	ITD Direct Alpha	KS PME
Private Equity	Sterling Venture Partners, L.P.	-6.58	0.7
Private Equity	Strategic Partners Fund III VC, L.P.	1.4	1.06
Private Equity	Strategic Partners Fund III-B, L.P.	-0.09	1
Private Equity	Strategic Partners Fund IV VC, L.P.	-3.58	0.85
Private Equity	Strategic Partners Fund IV, L.P.	2.84	1.1
Private Equity	Strategic Partners Fund V, L.P.	6.68	1.2
Private Equity	Strategic Partners Fund VI, L.P.	5.3	1.12
Private Equity	Strategic Partners Fund VII, L.P.	9.5	1.2
Private Equity	Summit Partners Growth Equity Fund IX-A, L.P.	24.4	1.32
Private Equity	Summit Partners Growth Equity Fund VIII-A, L.P.	15.16	1.61
Private Equity	Summit Partners Venture Capital Fund III-A, L.P.	8.82	1.5
Private Equity	Summit Partners Venture Capital Fund IV-A, L.P.	29.85	1.51
Private Equity	Tenaya Capital IV-P, L.P.	0.54	1.03
Private Equity	Tenaya Capital VI, L.P.	-6.85	0.66
Private Equity	Tenaya Capital VII, L.P.	9.23	1.26
Private Equity	Tenaya Capital V-P, L.P.	7.41	1.35
Private Equity	Trilantic Capital Partners IV L.P.	3.69	1.11
Private Equity	Trilantic Capital Partners V (North America), L.P.	5.08	1.12
Private Equity	Trilantic Capital Partners VI (North America), L.P.	-3.1	0.96
Private Equity	Tulco, LLC	29.31	1.45
Private Equity	Venor Special Situations Fund II, L.P.	-3.8	0.88
Private Equity	Versa Capital Fund I, L.P.	-5.78	0.8
Private Equity	Versa Capital Fund II, L.P.	-15.69	0.49
Private Equity	Versa Capital Fund III, L.P.	-21.74	0.54
Private Equity	Webster Capital IV, L.P.	2.47	1.03

\*New manager in FY2019-2020 alpha not included

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Private Equity Benchmark – Blended 65% MSCI USA Sm Cap / 35% MSCI ACWI x US Index

# Net Alpha\*\* Generated by External Managers

Asset Class	Investment	ITD Direct Alpha	KS PME
Real Estate	812 Market Street	0.43	1.01
Real Estate	AG Core Plus Realty Fund III, L.P.	9.92	1.3
Real Estate	AG Core Plus Realty Fund IV, L.P.	6.78	1.19
Real Estate	AG Europe Realty Fund II, L.P.	17.53	1.27
Real Estate	AG Europe Realty Fund III, L.P.	-11.57	0.88
Real Estate	AG Realty Value Fund X, L.P.	23	1.13
Real Estate	Almanac Realty Securities V, L.P.	1.11	1.03
Real Estate	Almanac Realty Securities VI, L.P.	-0.24	0.99
Real Estate	Almanac Realty Securities VII, L.P.	7.69	1.17
Real Estate	Almanac Realty Securities VIII, L.P.	-14.74	0.91
Real Estate	Ares European Real Estate Fund III, L.P.	-9.97	0.66
Real Estate	Ares European Real Estate Fund IV, L.P.	8.32	1.2
Real Estate	Ares U.S. Real Estate Fund IX, L.P.	13.66	1.14
Real Estate	Ares U.S. Real Estate Fund VII, L.P.	1.69	1.06
Real Estate	Ares U.S. Real Estate Fund VIII, L.P.	10.2	1.27
Real Estate	Atlanta Marriott	-5.82	0.52
Real Estate	Avenue Real Estate Fund (Parallel) L.P.	-8.06	0.47
Real Estate	Bell Institutional Fund IV, LLC	7.38	1.25
Real Estate	Bell Institutional Fund V, L.P.	8.75	1.38
Real Estate	Bell Institutional Fund VI, L.P.	9.29	1.17
Real Estate	Bell Institutional Fund VII, L.P.	-42.53	0.81
Real Estate	Big Valley Ranch	0.24	1.01
Real Estate	BlackRock Europe Property Fund III, L.P.	-8.57	0.66
Real Estate	Blackstone Real Estate Debt Strategies II, L.P.	-0.23	1
Real Estate	Blackstone Real Estate Debt Strategies III, L.P.	4.47	1.06
Real Estate	Blackstone Real Estate Partners Europe III, L.P.	0.81	1.03
Real Estate	Blackstone Real Estate Partners Europe IV, L.P.	6.71	1.23
Real Estate	Blackstone Real Estate Partners V, L.P.	4.63	1.28

\*New manager in FY2019-2020 alpha not included

\*\*Net Alpha refers to performance over the benchmark net of fees

Real Estate Benchmark - FTSE NAREIT Equity REIT TR Index

# Net Alpha\*\* Generated by External Managers

Asset Class	Investment	ITD Direct Alpha	KS PME
Real Estate	Blackstone Real Estate Partners VI, L.P.	5.07	1.26
Real Estate	Blackstone Real Estate Partners VII, L.P.	5.56	1.18
Real Estate	Blackstone Real Estate Partners VIII, L.P.	10.64	1.26
Real Estate	BPG/PSERS Co-Investment Fund	4.54	1.14
Real Estate	Brookfield Strategic Real Estate Partners II, L.P.	9.31	1.27
Real Estate	Brookfield Strategic Real Estate Partners III-A, L.P.	10.62	1.09
Real Estate	Brookfield Strategic Real Estate Partners, L.P.	10.66	1.45
Real Estate	Cabot Industrial Core Fund II, L.P.	28.72	1.22
Real Estate	Cabot Industrial Core Fund, L.P.	11.65	1.42
Real Estate	Cabot Industrial Value Fund V, L.P.	17.17	1.22
Real Estate	Cabot UK Core Plus Industrial Fund SCSp	-10.43	0.9
Real Estate	Carlyle Realty Partners III, L.P.	12.25	1.42
Real Estate	Carlyle Realty Partners IV, L.P.	-4.47	0.74
Real Estate	Carlyle Realty Partners V, L.P.	-1.02	0.96
Real Estate	Carlyle Realty Partners VI, L.P.	8.49	1.22
Real Estate	Carlyle Realty Partners VII, L.P.	8.08	1.19
Real Estate	Carlyle Realty Partners VIII, L.P.	17.82	1.18
Real Estate	Centerline High Yield CMBS III - Loan/Stock	-18.19	0.55
Real Estate	DRA Growth and Income Fund IX, LLC	13.92	1.22
Real Estate	DRA Growth and Income Fund VI, L.P.	-0.15	0.99
Real Estate	DRA Growth and Income Fund VII, L.P.	10.44	1.5
Real Estate	DRA Growth and Income Fund VIII, LLC	2.6	1.07
Real Estate	DRA Growth and Income Fund X, LLC	4.29	1.04
Real Estate	Exeter Core Industrial Club Fund II, L.P.	13.05	1.3
Real Estate	Exeter Industrial Core Fund III, L.P.	14.67	1.15
Real Estate	Exeter Industrial Value Fund II, L.P.	17.3	1.54
Real Estate	Exeter Industrial Value Fund III, L.P.	24.15	1.8

\*New manager in FY2019-2020 alpha not included

\*\*Net Alpha refers to performance over the benchmark net of fees

Real Estate Benchmark - FTSE NAREIT Equity REIT TR Index



# Net Alpha\*\* Generated by External Managers

Asset Class	Investment	ITD Direct Alpha	KS PME
Real Estate	Exeter Industrial Value Fund IV, L.P.	15.01	1.25
Real Estate	Five North 5th Street	-4.92	0.51
Real Estate	Fortress Investment Fund IV LP	-6.03	0.62
Real Estate	Fortress Investment Fund LLC	7.12	1.27
Real Estate	Fortress Investment Fund V (Fund A) L.P.	-4.23	0.69
Real Estate	Galleria at Ft Lauderdale, The	1.56	1.09
Real Estate	Golden Hills Ranch	-5.2	0.9
Real Estate	Keystone Milano LLC	6.01	1.08
Real Estate	Keystone Miramar LLC	6.22	1.06
Real Estate	Keystone Orlando LLC	6.79	1.07
Real Estate	Keystone Parkland LLC	6.13	1.06
Real Estate	LAI Strategic Realty Investors, L.P.	3.02	1.14
Real Estate	Latitude Management Real Estate Capital III, Inc.	3.27	1.17
Real Estate	LEM Multifamily Fund V, L.P.	42	1.24
Real Estate	LEM Multifamily Senior Equity Fund IV, L.P.	17.23	1.5
Real Estate	LEM RE HY Debt & Pfd Equity Fund III, L.P.	14.56	1.5
Real Estate	Lorida Groves	10.61	1.37
Real Estate	Maricopa Citrus	14.38	2.4
Real Estate	Paramount Group Real Estate Fund VII, L.P.	-3.88	0.94
Real Estate	Peabody Global Real Estate Partners	-3.02	0.91
Real Estate	Pramerica Real Estate Capital VI, L.P.	5.73	1.07
Real Estate	PSERS YES Holdings, L.P.	24.74	1.73
Real Estate	RCG Longview Debt Fund V, L.P.	3.09	1.08
Real Estate	RCG Longview Debt Fund VI, L.P.	13.77	1.18
Real Estate	RCG Longview Equity Fund, L.P.	-9.47	0.56
Real Estate	Rivercenter Mall	-1.41	0.91
Real Estate	Senior Housing Partnership Fund IV, L.P.	4.15	1.19

\*New manager in FY2019-2020 alpha not included

\*\*Net Alpha refers to performance over the benchmark net of fees

Real Estate Benchmark - FTSE NAREIT Equity REIT TR Index

# Net Alpha\*\* Generated by External Managers

Asset Class	Investment	ITD Direct Alpha	KS PME
Real Estate	Senior Housing Partnership Fund V, L.P.	8.87	1.28
Real Estate	Silverpeak Legacy/PSERS, L.P.	-1.99	0.96
Real Estate	Stockbridge Real Estate Fund II, LP	-16.33	0.16
Real Estate	Stockbridge Real Estate Fund III, LP	-8.03	0.51
Real Estate	Stockbridge Real Estate Fund, L.P.	6.18	1.26
Real Estate	Strategic Partners Fund III RE, L.P.	-15.41	0.35
Real Estate	Strategic Partners Fund IV RE, L.P.	-10.37	0.53
Real Estate	Townsend Grove	0.93	1.1
Real Estate	UBS (US) Trumbull Property Fund, L.P.	0	1

\*New manager in FY2019-2020 alpha not included

\*\*Net Alpha refers to performance over the benchmark net of fees  
Real Estate Benchmark - FTSE NAREIT Equity REIT TR Index

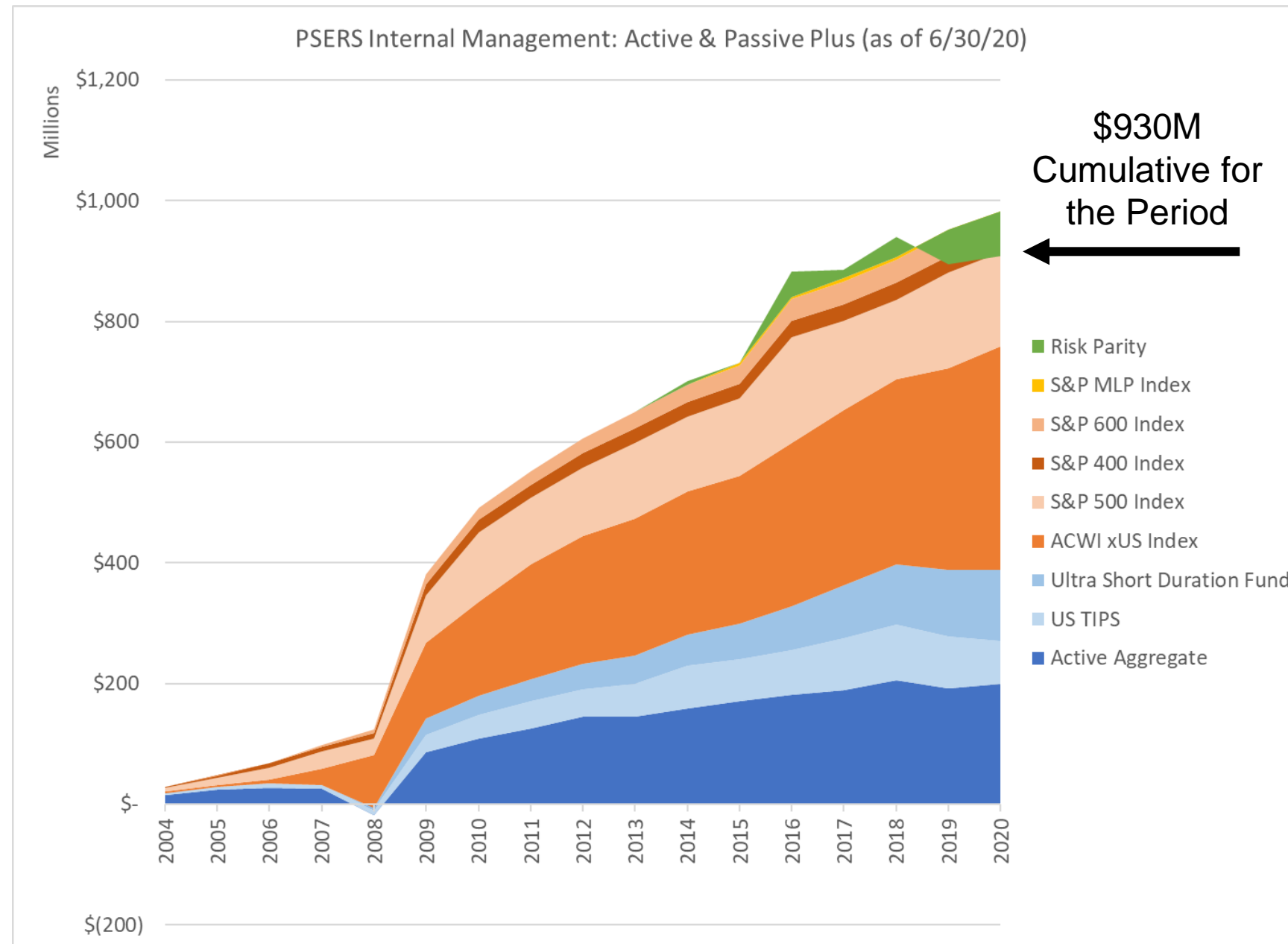
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# Performance of PSERS Internal Management vs. No Cost Indexes

PSERS Internal Management: Active & Passive Plus (as of 6/30/20)													
	Public Fixed Income					Public Equities					Risk Parity	Total	
	Active Aggregate	US TIPS	Ultra Short Duration Fund	LIBOR Plus	Fixed Income (ex LIBOR Plus) Total	ACWI xUS Index	S&P 500 Index	S&P 400 Index	S&P 600 Index	S&P MLP Index			Equities Total
2020 YTD	\$8.8	(\$16.2)	\$7.6	(\$0.8)	\$0.2	\$46.4	\$7.9	\$0.2	\$0.0	(\$2.2)	\$52.3	(\$18.5)	\$34.0
2019	(\$14.5)	(\$5.2)	\$10.7	\$3.6	(\$9.0)	\$27.6	\$25.6	\$0.2	\$0.4	(\$0.1)	\$53.8	(\$90.1)	(\$45.3)
2018	\$16.5	\$6.1	\$12.7	(\$0.1)	\$35.4	\$16.7	(\$16.8)	\$0.5	\$1.3	(\$2.3)	(\$0.7)	\$20.8	\$55.5
2017	\$8.4	\$10.8	\$14.6	\$3.5	\$33.8	\$19.9	(\$27.1)	\$1.0	\$1.2	\$2.0	(\$2.8)	(\$27.8)	\$3.2
2016	\$10.1	\$5.1	\$14.4	\$7.4	\$29.6	\$24.5	\$47.1	\$2.4	\$5.3	\$0.8	\$80.2	\$41.0	\$150.8
2015	\$11.9	(\$0.8)	\$6.2	\$2.0	\$17.3	\$9.1	\$4.4	(\$0.1)	\$2.1	\$3.7	\$19.2	(\$6.9)	\$29.6
2014	\$14.0	\$16.9	\$4.9	\$3.1	\$35.8	\$9.0	(\$0.8)	\$0.2	\$1.2		\$9.5	\$6.6	\$52.0
2013	\$0.2	\$8.9	\$4.7	\$4.6	\$13.7	\$15.4	\$12.0	(\$0.1)	\$2.7		\$30.1	\$0.3	\$44.1
2012	\$18.8	\$0.8	\$5.0	\$5.4	\$24.6	\$22.2	\$2.9	\$2.2	\$2.6		\$30.0		\$54.5
2011	\$17.1	\$5.3	\$4.7	\$6.3	\$27.1	\$35.6	(\$4.8)	\$0.4	\$1.9		\$33.2		\$60.2
2010	\$22.5	\$11.0	\$5.7	\$16.7	\$39.1	\$27.5	\$37.2	\$2.8	\$3.8		\$71.3		\$110.4
2009	\$104.3	\$19.4	\$24.1	\$54.0	\$147.8	\$38.0	\$51.4	\$9.5	\$10.3		\$109.2		\$257.1
2008	(\$44.2)	\$3.5	\$2.9	(\$9.8)	(\$37.8)	\$61.6	(\$2.8)	\$2.1	\$2.9		\$63.9		\$26.1
2007	(\$0.4)	(\$2.3)		(\$1.4)	(\$2.7)	\$20.1	\$9.3	\$0.8	\$1.4		\$31.6		\$28.9
2006	\$2.7	\$3.1			\$5.8	\$3.9	\$7.5	\$2.2	\$1.9		\$15.5		\$21.3
2005	\$9.6	\$0.7			\$10.2	\$0.4	\$6.4	\$1.6	(\$0.1)		\$8.3		\$18.6
2004	\$14.1	\$3.5			\$17.7	\$2.7	\$6.0	\$2.5	(\$0.4)		\$10.8		\$28.5
Inception Date	9/30/90	3/31/04	11/1/08	1/1/07		9/30/04	9/30/83	6/30/98	12/31/94	7/31/15		1/31/13	
PSERS Internal Management: Active & Passive Plus (as of 6/30/20)													
	Public Fixed Income					Public Equities					Risk Parity	Total	
	Active Aggregate	US TIPS	Ultra Short Duration Fund	LIBOR Plus	Fixed Income (ex LIBOR Plus) Total	ACWI xUS Index	S&P 500 Index	S&P 400 Index	S&P 600 Index	S&P MLP Index			Equities Total
Trailing													
1 Years	(\$2.4)	(\$17.6)	\$13.3	\$0.2	(\$6.7)	\$50.4	\$9.8	\$0.3	\$0.3	(\$3.3)	\$57.6	(\$37.5)	\$13.4
3 Years	\$13.3	(\$7.3)	\$36.9	\$4.0	\$42.9	\$94.3	(\$18.1)	\$1.3	\$4.0	(\$4.4)	\$77.0	(\$97.1)	\$22.8
5 Years	\$38.3	\$4.0	\$63.1	\$13.7	\$105.3	\$128.1	\$18.5	\$4.2	\$8.5	\$1.2	\$160.5	(\$83.5)	\$182.4
10 Years	\$91.9	\$35.0	\$88.5	\$44.5	\$215.4	\$225.3	\$53.1	\$7.7	\$20.8		\$306.9	(\$74.6)	\$447.7
15 Years	\$179.6	\$66.5	\$118.2	\$94.7	\$364.3	\$367.1	\$145.6	\$24.3	\$38.9		\$577.2		\$866.8
Inception Date	9/30/90	3/31/04	11/1/08	1/1/07		9/30/04	9/30/83	6/30/98	12/31/94	7/31/15		1/31/13	
Notes				Alpha generated by LIBOR Plus is included in other accounts and therefore not shown in the Fixed Income Total		Prior to 9/30/04, the mandate was PSERS EAFE, which began 3/31/97				Benchmark at inception was S&P MLP Index; 7/1/17 changed to Ext Manager Composite; 4/1/20 changed to Alerian Midstream Index			

# Performance of PSERS Internal Management vs. No Cost Indexes

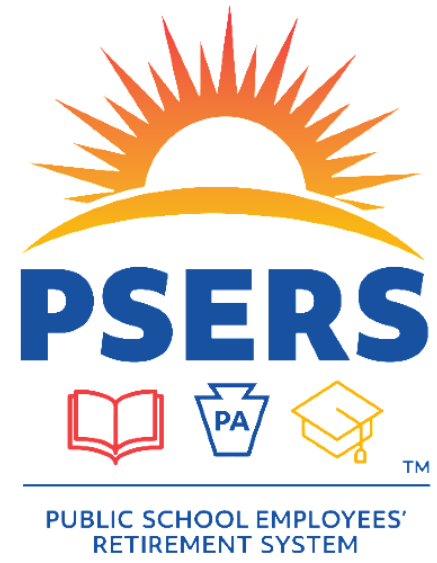


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# Examples of Negotiated Fee Savings in Non-Traditional Investments

Investment	Investment Period Offered Fee Terms	PSERS Negotiated Fee Terms	PSERS Total Investment Period Fee Savings
Manager A	1.75% on committed	0.00% on committed	\$1,050,000
Manager B	1.50% on committed	0.00% on committed	\$1,350,000
Manager C	2.00% on committed	0.00% on committed	\$1,215,568
Manager D	2.00% on committed	0.00% on committed	\$2,003,578
Manager E	1.50% on committed	0.00% on committed	\$984,000
Manager F	2.00% on committed	0.00% on committed	\$1,414,792
Manager G	1.4% on committed	0.00% on committed	\$1,400,000
Manager H	2% on committed	0.00% on committed	\$120,000
Manager I	1.75% on committed	1% on committed (first 18 months); 1.5% on invested thereafter	\$1,362,500
Manager J	1.00% on assets	0.875% on assets	\$3,500,000
<b>Total</b>			<b>\$14,400,439</b>



# Investment Expenses Report FY 2020

**Thomas A. Bauer, CFA - Deputy Chief Investment Officer, Traditional Investments**  
**Charles J. Spiller – Deputy Chief Investment Officer, Non-Traditional Investments**  
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**December 2, 2020**