

CALENDAR YEAR 2018 FEE ANALYSIS

OKLAHOMA STATE PENSION COMMISSION

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BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | PORTLAND | SAN FRANCISCO

PUBLIC MARKETS FEE OVERVIEW

Within Public Markets (Both Equity & Fixed) there are 3 general types of Fee structures:

1. Flat Fee

- A flat basis point fee that is charged no matter the size of the mandate
- Typically used for passive or indexed mandates

2. Tier or Asset-Based Fee (Declining Marginal Rate Fee Structure)

- A fee schedule that includes breakpoints or “Tiers” based on the size of the mandate
- The breakpoints will provide lower fees as the amount of assets grows
- These fee structures are offered by passive and active managers and are the most prominently used (100 bps on the first \$50 mm, 75 bps on the next \$50 mm, with 50 bps on assets over \$100mm)

3. Performance-Based Fee

- A fee schedule that includes the ability for the manager to profit from the performance of a portfolio
- The fee is comprised of a base fee, which is substantially lower than the customary or normal fee, and a performance component that is earned or exceeded only when the manager earns a required excess returns (See Appendix for Formula)

Notes:

- Performance fees do not lead to better performance
- Clients may be able to negotiate better fees using the performance fee approach, since manager most-favored-nation restrictions are less binding
- When managers seriously underperform, the optics are better, but in rising markets fees can be noticeably higher

PRIVATE EQUITY/HEDGE FUND FEE OVERVIEW

Within the private equity and hedge fund fees, there are different types of fee structures which depend on the type of vehicle:

1. Private Equity Fee Structures

- Fees are typically much higher than for public market assets
- Fees structures often include the following components:
 - Management Fee – Typically 1-2%
 - Performance Fee or “carry” – Typically 20% of performance above a preferred return payable after all capital is returned
 - Preferred return or “hurdle rate” which needs to be attained in order to earn the performance fee– Typically 6-10%
- Fees often paid on committed, not invested capital, although this is changing

2. Hedge Fund Fee Structures

- Fees are very high compared to traditional managers
- Fees are made up of two components:
 - Management Fee
 - A fixed fee usually determined as a percentage of assets
 - Typically between 1-3%
 - Performance Fee:
 - Based on net new performance
 - Generally subject to a “highwater mark” or max fee
 - Typically between 15-30% of performance, which can be either above a hurdle or simply a positive return

GENERAL OBSERVATIONS

- **Competitive pressures are leading to lower fees**
- **In Public Markets, chronic manager underperformance has led to increased use of passive management**
- **In Alternatives, 1) Fees are coming down 2) Increasingly fees are being quoted on invested or drawn amounts, and 3) Non-zero hurdle rates are becoming more common**
- **Public Entities are facing greater political pressures on fees**

FEE COMPARISON CALENDAR YEAR 2017 TO 2018

2018 FEES*

	TEACHERS	PERS	FIRE	POLICE	LAW	JUDGES	Total
Total Average 2018 Market Values	\$16,401,708,029	\$9,639,208,003	\$2,711,184,126	\$2,511,341,543	\$946,312,833	\$335,646,740	\$32,545,401,274
Custody Fee	\$25,000	\$38,871	\$252,290	\$198,201	\$104,000	\$1,129	\$619,492
Securities Lending Income	(\$7,000,900)	(\$2,596,907)	(\$800,055)	\$0	(\$228,113)	\$0	(\$10,625,974)
Commission Recapture	(\$71,674)	(\$82,187)	(\$41,239)	\$0	(\$18,277)	\$0	(\$213,377)
Sub-Total (Custody - Net)	(\$7,047,574)	(\$2,640,223)	(\$589,004)	\$198,201	(\$142,390)	\$1,129	(\$10,219,860)
Investment Manager Fees (\$)	\$71,075,916	\$8,999,439	\$14,321,545	\$14,341,324	\$5,321,203	\$127,293	\$114,186,719
Investment Manager Fees (%)	0.43%	0.09%	0.53%	0.57%	0.56%	0.04%	0.35%
Percent Passively Managed	5.6%	44.2%	17.7%	18.1%	16.1%	73.5%	25.0%
CY 2018 Gross of Fee Investment Return	-5.0%	-6.5%	-2.4%	-2.5%	-4.6%	-6.4%	9.5%
Sub-Total Manager Fees	\$71,075,916	\$8,999,439	\$14,321,545	\$14,341,324	\$5,321,203	\$127,293	\$114,186,719
Investment Consultant Fee (\$)	\$1,110,268	\$272,098	\$282,500	\$650,000	\$150,000	\$7,903	\$2,472,768
Investment Consultant Fee (%)	0.01%	0.003%	0.01%	0.03%	0.02%	0.002%	0.01%
Total Fee (\$)	\$65,138,610	\$6,631,314	\$14,015,042	\$15,189,525	\$5,328,813	\$136,324	\$106,439,627
Total Fee (%)	0.40%	0.07%	0.52%	0.60%	0.56%	0.04%	0.33%

2017 FEES

	TEACHERS	PERS	FIRE	POLICE	LAW	JUDGES	WILDLIFE	Total
Total Average 2017 Market Values	\$15,483,609,242	\$9,287,203,577	\$2,521,798,612	\$2,377,058,326	\$911,486,500	\$322,990,545	\$110,182,881	\$31,014,329,683
Custody Fee	\$30,000	\$38,871	\$252,115	\$215,243	\$104,000	\$1,129	\$10,993	\$652,351
Securities Lending Income	(\$7,688,673)	(\$2,204,961)	(\$967,206)	\$0	(\$279,019)	\$0	\$0	(\$11,139,859)
Commission Recapture	(\$158,904)	(\$83,398)	(\$42,734)	\$0	\$0	\$0	\$0	(\$285,037)
Sub-Total (Custody - Net)	(\$7,817,577)	(\$2,249,488)	(\$757,826)	\$215,243	(\$175,019)	\$1,129	\$10,993	(\$10,772,545)
Investment Manager Fees (\$)	\$63,604,505	\$10,838,251	\$15,532,341	\$13,384,910	\$4,084,730	\$128,413	\$195,310	\$107,768,461
Investment Manager Fees (%)	0.41%	0.12%	0.62%	0.56%	0.45%	0.04%	0.18%	0.35%
Percent Passively Managed	7.9%	37.9%	20.0%	17.4%	16.2%	72.7%	0.0%	24.6%
Total Investment Return	16.2%	17.1%	18.7%	13.2%	14.7%	16.9%	14.3%	9.5%
Sub-Total Manager Fees	\$63,604,505	\$10,838,251	\$15,532,341	\$13,384,910	\$4,084,730	\$128,413	\$195,310	\$107,768,461
Investment Consultant Fee (\$)	\$1,077,930	\$272,098	\$270,000	\$650,000	\$150,000	\$7,903	\$0	\$2,427,930
Investment Consultant Fee (%)	0.01%	0.003%	0.01%	0.03%	0.02%	0.002%	0%	0.01%
Total Fee (\$)	\$56,864,858	\$8,860,860	\$15,044,516	\$14,250,153	\$4,059,711	\$137,444	\$206,303	\$99,423,846
Total Fee (%)	0.37%	0.10%	0.60%	0.60%	0.45%	0.04%	0.19%	0.32%

*No data provided was provided by OK Wildlife for 2018



OK TEACHERS OVERVIEW

Manager	Asset Class/Style	2018 Total Fees Paid	Avg. Market Value	Fees (%)	2018 Securities Lending Income	2018 Commission Recapture	2018 Investment Consultant Fee	2018 Custody Fee
AEW Core Property Trust	Real Estate	\$2,351,806	\$300,318,620	0.78%	\$7,000,900	\$71,674	\$1,110,268	\$25,000
Allianz Intl	Intl Equity	\$2,685,437	\$1,001,268,851	0.27%				
American Strategic Value	Real Estate	\$652,816	\$55,258,013	1.18%				
Aronson, Johnson & Ortiz	US Equity	\$660,638	\$427,309,014	0.15%				
Causeway Capital	Intl Equity	\$1,566,597	\$466,630,697	0.34%				
Chickasaw Capital	MLP	\$1,690,668	\$271,095,820	0.62%				
Cushing	MLP	\$2,016,609	\$463,413,200	0.44%				
Custom Cash Flow	Cash	\$14,263	\$142,627,644	0.01%				
Dune Real Estate III	Real Estate	\$2,240,134	\$53,696,005	4.17%				
Epoch Intl	Intl Equity	\$1,821,400	\$282,138,942	0.65%				
FCP Realty Fund IV, L.P.	Real Estate	\$139,952	\$695,364	20.13%				
Franklin Park	Private Equity	\$3,185,209	\$1,086,751,929	0.29%				
Frontier Cap Small Cap	US Equity	\$1,679,369	\$212,172,785	0.79%				
Frontier Mid Cap	US Equity	\$2,374,286	\$436,250,196	0.54%				
Geneva Capital	US Equity	\$1,489,383	\$214,450,380	0.69%				
GreenOak US II	Real Estate	\$614,960	\$37,880,125	1.62%				
GreenOak US III	Real Estate	\$612,375	\$6,547,110	9.35%				
Harbert European Real Estate V	Real Estate	\$234,190	\$2,121,743	11.04%				
Heitman America Real Estate	Real Estate	\$2,260,405	\$311,174,938	0.73%				
Hoisington Investment	US Fixed Income	\$561,123	\$524,854,722	0.11%				
Hotchkis & Wiley LG Cap	US Equity	\$1,926,016	\$714,323,064	0.27%				
Hotchkis & Wiley Mid Cap	US Equity	\$2,153,101	\$432,042,053	0.50%				
L&B Core Income	Real Estate	\$1,211,325	\$278,684,063	0.43%				
L&B Golden Driller	Real Estate	\$288,472	\$68,513,218	0.42%				
Landmark Real Estate VII	Real Estate	\$350,000	\$22,319,945	1.57%				
Legacy LP	Private Equity	\$81,533	\$23,374,270	0.35%				
Loomis Sayles Core Plus	US Fixed Income	\$1,417,393	\$721,489,945	0.20%				
Loomis Sayles High Yield	High Yield	\$714,595	\$250,011,107	0.29%				
Lord Abbett Core Plus	US Fixed Income	\$1,435,378	\$713,369,559	0.20%				
Lord Abbett High Yield	High Yield	\$501,477	\$291,980,304	0.17%				
Lyrical-OTRS Realty Partner IV	Real Estate	\$771,523	\$44,475,391	1.73%				
Mackay Shields Core Plus	US Fixed Income	\$1,796,553	\$697,792,692	0.26%				
Mackay Shields High Yield	High Yield	\$563,599	\$264,481,886	0.21%				
Neumeier Poma Small Cap	US Equity	\$1,261,163	\$203,887,480	0.62%				
NT Russell 1000	US Equity	\$62,253	\$637,279,304	0.01%				
Pimco Bravo	Private Debt	\$517,327	\$4,561,338	11.34%				
Pimco Bravo II	Private Debt	\$2,273,334	\$126,382,821	1.80%				
PIMCO Bravo III	Private Debt	\$2,130,760	\$51,202,087	4.16%				
Pimco COF II	Private Debt	\$742,238	\$38,996,752	1.90%				
Sawgrass LG Cap	US Equity	\$2,015,491	\$695,554,953	0.29%				
Sci Beta US HFE MBMS	US Equity	\$696,586	\$978,315,738	0.07%				
Shapiro Cap Small Cap	US Equity	\$4,448,143	\$756,332,913	0.59%				
SSGA Emerging Market Small Cap	Intl Equity	\$1,934,896	\$284,207,749	0.68%				
Starwood Opportunity X	Real Estate	\$1,727,599	\$27,488,028	6.28%				
Starwood Opportunity XI	Real Estate	\$447,180	\$2,048,305	21.83%				
Wasatch Adv Small Cap	US Equity	\$1,763,422	\$211,787,607	0.83%				
Wasatch Intl	Intl Equity	\$2,442,991	\$309,519,024	0.79%				
Wellington Intl	Intl Equity	\$2,650,047	\$303,598,775	0.87%				
Wellington Intl LC Grow	Intl Equity	\$2,746,642	\$491,572,270	0.56%				
Wellington Mid Cap	US Equity	\$1,153,259	\$459,459,288	0.25%				
Total		\$71,075,916	\$16,401,708,029	0.43%				

Asset Allocation Breakdown		
	2018 % of Total Fund	2017 % of Total Fund
Domestic Equity	36.9%	39.2%
% Active	27.4%	29.3%
% Passive	9.5%	9.9%
Domestic Fixed	22.8%	21.4%
% Active	22.8%	21.4%
% Passive	0.0%	0.0%
International Eq	17.8%	19.7%
% Active	16.1%	17.9%
% Passive	1.7%	1.8%
Private Equity	9.8%	7.4%
Other	12.7%	12.3%
Calendar Year Return	-5.0%	16.2%



OK PERS OVERVIEW

Manager	2018 Total Fees Paid	Avg. Market Value	Fees (%)	2018 Securities Lending Income	2018 Commission Recapture	2018 Investment Consultant Fee	2018 Custody Fee
BlackRock Financial	\$1,129,802	\$1,407,685,644	0.08%	\$2,596,907	\$82,187	\$272,098	\$38,871
Hoisington	\$445,151	\$312,227,669	0.14%				
BlackRock TIPS	\$28,104	\$306,443,103	0.01%				
MetWest	\$908,845	\$854,033,854	0.11%				
Mondrian	\$2,176,839	\$604,150,295	0.36%				
Baillie Gifford	\$700,347	\$341,213,693	0.21%				
BlackRock ACWI x-US Growth	\$165,268	\$324,056,325	0.05%				
BlackRock ACWI x-US	\$409,620	\$1,430,537,424	0.03%				
BlackRock R1000 Index	\$123,177	\$1,630,873,683	0.01%				
Mellon	\$125,000	\$563,023,783	0.02%				
SSgA	\$171,380	\$566,724,085	0.03%				
AJO	\$0	\$297,866,670	0.00%				
Westfield	\$329,000	\$322,319,279	0.10%				
UBS	\$340,906	\$224,615,961	0.15%				
Barrow Hanley	\$1,120,251	\$217,994,417	0.51%				
DRZ	\$799,802	\$223,050,449	0.36%				
Grand Center/Price Edwards	\$25,947	\$12,391,667	0.21%				
Total	\$8,999,439	\$9,639,208,003	0.09%				

Asset Allocation Breakdown		
	<u>2018 % of Total Fund</u>	<u>2017 % of Total Fund</u>
Domestic Equity	39.8%	41.3%
% Active	23.7%	24.7%
% Passive	16.1%	16.6%
Domestic Fixed	32.8%	29.8%
% Active	29.4%	26.7%
% Passive	3.4%	3.1%
Int'l Equity	27.0%	28.6%
% Active	9.5%	9.9%
% Passive	17.5%	18.7%
Other	0.4%	0.3%
Calendar Year Return	-6.5%	17.1%

OK FIREFIGHTERS OVERVIEW

Manager	Asset Class/Style	2018 Total Fees Paid	Avg. Market Value	Fees (%)	2018 Securities Lending Income	2018 Commission Recapture	2018 Investment Consultant Fee	2018 Custody Fee
INTERNAL CASH ACCOUNT	CASH EQUIVALENT	\$0	\$18,779,939	0.00%	\$800,055	\$41,239	\$282,500	\$252,290
SSGA EQUITY S&P FLAGSHIP	INDEX	\$149,650	\$191,359,386	0.08%				
SSGA S&P 500 EQUAL WEIGHT CTF	INDEX	\$0	\$189,238,439	0.00%				
ENHANCED INVESTMENT TECHNOLOGIES	LARGE CAP CORE	\$186,448	\$186,447,731	0.10%				
ARONSON+ PARTNERS	LARGE CAP VALUE	\$86,279	\$90,943,156	0.09%				
SSGA LEHMAN IM	INDEX	\$0	\$19,842,948	0.00%				
ARTIO GLOBAL MANAGEMENT LLC	REMNANT	\$0	\$30,957	0.00%				
JP MORGAN RE	REAL ESTATE	\$1,306,813	\$144,608,039	0.90%				
EARNEST PARTNERS	SMALL CAP VALUE	\$258,125	\$82,184,601	0.31%				
PRIVATE ADVISORS	LOW VOL HEDGE FUND	\$0	\$1,681,343	0.00%				
SSGA RUSSELL SMCAP COMPLETE NL	INDEX	\$0	\$60,463,813	0.00%				
RIVER ROAD ASSET MGMT	SMALL CAP VALUE	\$488,621	\$77,198,816	0.63%				
PORTFOLIO ADV REAL ESTATE FD III	REAL ESTATE	\$48,448	\$4,095,668	1.18%				
THORNBURG INVESTMENT MGMT	REMNANT	\$0	\$36,459	0.00%				
BRANDYWINE GLOBAL FIXED	GLOBAL FIXED INCOME	\$682,389	\$162,188,785	0.42%				
SSGA NL FIXED INCOME FUND	INDEX	\$0	\$20,135,341	0.00%				
AZUL HOLDCO	REMNANT	\$0	\$269,423	0.00%				
TA REALTY ASSOCIATES IX CORP	REAL ESTATE	\$50,000	\$79,183	63.15%				
FRED ALGER MANAGEMENT, INC.	LARGE CAP GROWTH	\$549,447	\$184,407,616	0.30%				
LORD ABBETT	SMALL CAP GROWTH	\$429,830	\$79,990,756	0.54%				
JACKSON SQUARE PARTNERS	SMALL CAP GROWTH	\$439,061	\$88,760,059	0.49%				
PORTFOLIO ADV REAL ESTATE FD IV	REAL ESTATE	\$12,541	\$3,663,249	0.34%				
HERNDON CAPITAL (TERMINATED)	REMNANT	\$0	\$1,506	0.00%				
CHAUTAUQUA INT EQUITY	INTERNATIONAL EQUITY	\$717,800	\$129,313,533	0.56%				
WCM INT EQTY	INTERNATIONAL EQUITY	\$1,172,230	\$138,168,851	0.85%				
CLARIVEST EM EQUITY	EMERGING MARKETS	\$412,640	\$56,534,315	0.73%				
WASATCH EM EQUITY	EMERGING MARKETS	\$203,376	\$22,883,160	0.89%				
GARRISON MIDDLE MKT FUNDING LP	OTHER FIXED INCOME	\$233,118	\$13,996,156	1.67%				
MEDLEY OPPORTUNITY FUND II LP	OTHER FIXED INCOME	\$244,615	\$23,431,551	1.04%				
ANGELO GORDON NET LEASE REALTY III LP	REAL ESTATE	\$421,590	\$19,167,312	2.20%				
MESIROW	REAL ESTATE	\$321,255	\$26,657,699	1.21%				
HALL CAPITAL III LP	REAL ESTATE	\$251,525	\$11,475,211	2.19%				
POMONA CAPITAL FUND VIII	PRIVATE EQUITY	\$400,000	\$8,493,283	4.71%				
ARDIAN SF VI LP	PRIVATE EQUITY	\$425,000	\$25,720,222	1.65%				
DUNE REAL ESTATE FUND III	REAL ESTATE	\$299,125	\$25,503,798	1.17%				
CAPITAL DYNAMICS GLOBAL SECONDARIES IV LP	PRIVATE EQUITY	\$427,500	\$26,398,293	1.62%				
GARCIA HAMILTON & ASSOCIATES, LP	BONDS	\$169,016	\$100,779,228	0.17%				
LANDMARK RE VII	REAL ESTATE	\$250,000	\$16,200,611	1.54%				
ORLEANS CAPITAL MANAGEMENT	BONDS	\$55,599	\$44,814,074	0.12%				
PORTFOLIO ADV REAL ESTATE FD V	REAL ESTATE	\$272,260	\$12,909,669	2.11%				
JPMCB SPECIAL SITUA PROP FUND	REAL ESTATE	\$1,041,045	\$64,376,696	1.62%				
PERMAL FUND LLC	HEDGE FUND	\$364,509	\$81,032,494	0.45%				
ALLIANZ GLOBAL INVESTORS DMAP	OTHER FIXED INCOME	\$197,967	\$55,687,780	0.36%				
BEUTEL GOODMAN COMPANY	LARGE CAP VALUE	\$393,088	\$97,740,230	0.40%				
TORTOISE DIRECT OPPORTUNITIES FUND, LP	OTHER EQUITY	\$245,711	\$37,256,306	0.66%				
PIMCO CORPORATE OPP FUND II, LP	OTHER FIXED INCOME	\$200,549	\$13,964,563	1.44%				
PORTFOLIO ADV REAL ESTATE FD VI	REAL ESTATE	\$158,513	\$10,667,434	1.49%				
POMONA CAPITAL FUND IX	PRIVATE EQUITY	\$162,500	\$3,297,082	4.93%				
ARDIAN ESF VI LP	PRIVATE EQUITY	\$211,945	\$15,916,580	1.33%				
PIMCO BRAVO FUND III, LP	OTHER FIXED INCOME	\$302,082	\$14,599,010	2.07%				
ARGONAUT PRIVATE EQUITY FUND IV	PRIVATE EQUITY	\$79,337	\$4,052,944	1.96%				
HALL CAPITAL II LP	REAL ESTATE	\$0	\$3,738,829	0.00%				
Total		\$14,321,545	\$2,711,184,126	0.53%				

Asset Allocation Breakdown		
	2018 % of Total Fund	2017 % of Total Fund
Domestic Equity	46.3%	51.2%
% Active	32.5%	34.4%
% Passive	13.8%	16.8%
Domestic Fixed	8.4%	4.8%
% Active	8.4%	3.1%
% Passive	0.0%	1.7%
International Equity	12.6%	16.0%
% Active	12.6%	16.0%
% Passive	0.0%	0.0%
Global Fixed	8.3%	6.0%
% Active	8.3%	6.0%
% Passive	0.0%	0.0%
Other*	24.4%	22.0%
Calendar Year Return	-2.4%	18.7%

*Includes L/S Equity



OK POLICE OVERVIEW

Manager	Asset Class/Style	2018 Total Fees Paid	Avg. Market Value	Fees (%)
ACCEL	Private Equity - Venture Capital	\$0	\$1,130,660	0.00%
ACITS GLOBAL 4	Private Equity - EM Focused	\$93,084	\$6,175,743	1.51%
AGINCOURT	Global Fixed Income - Core	\$307,517	\$170,017,268	0.18%
ALLIANCE BERNSTEIN EM	International Equity - EM	\$445,879	\$82,475,323	0.54%
ANGELO GORDON	Core Real Estate	\$88,845	\$0	
APOLLO ACCORD FUND II	Private Equity - Buyout	\$0	\$750,000	0.00%
APOLLO FUND VIII	Private Equity - Buyout	\$19,174	\$6,558,303	0.29%
APOLLO EUROPEAN PFF III	Private Equity - Buyout	\$112,520	\$1,739,445	6.47%
APOLLO FUND X	Private Equity - Buyout	\$146,519	\$0	
ARCLIGHT ENERGY	Other	\$108,426	\$6,186,037	1.75%
ARSENAL II	Private Equity - Buyout	\$0	\$5,459,167	0.00%
ARSENAL III	Private Equity - Buyout	\$30,205	\$4,824,786	0.63%
BARING FOCUSED INT'L. Equity	International Equity	\$483,107	\$120,803,483	0.40%
BLACKSTONE PROPERTY	Core Real Estate	\$416,010	\$40,408,434	1.03%
BOSTON PARTNERS	US Equity Smid Cap Value	\$524,326	\$89,386,307	0.59%
CALERA III (SEMI ANNUAL)	Private Equity - Buyout	\$0	\$14,525	0.00%
CALERA IV (SEMI ANNUAL)	Private Equity - Buyout	\$11,626	\$1,173,200	0.99%
CENTEROAK EQUITY I	Private Equity - Buyout	\$0	\$3,570,418	0.00%
CERBERUS FUND III	Real Assets - Opportunistic	\$85,663	\$13,416,699	0.64%
CERBERUS FUND IV	Real Assets - Opportunistic	\$224,996	\$5,131,973	4.38%
COLUMBUS SQUARE	Real Assets - Core	\$0	\$4,715,874	0.00%
CONTROL ACCOUNT	Cash & Cash Equivalent	\$0	\$13,913,173	0.00%
CORTINA CAPITAL	Small/Mid Cap Growth	\$884,513	\$101,080,693	0.88%
ENCAP ENERGY CAPITAL FUND IX	Other	\$76,387	\$4,949,268	1.54%
ENCAP ENERGY CAPITAL FUND X	Other	\$72,114	\$5,282,024	1.37%
ENCAP ENERGY CAPITAL FUND XI	Other	\$150,000	\$639,098	23.47%
FIRSTMARK CAP III	Private Equity - Venture Capital	\$91,027	\$5,474,512	1.66%
FIRSTMARK CAP OPP I	Private Equity - Venture Capital	\$46,739	\$5,905,683	0.79%
FIRSTMARK CAP OPP II	Private Equity - Venture Capital	\$17,463	\$2,115,174	0.83%
FIRSTMARK I (FIRSTMARK IV)	Private Equity - Venture Capital	\$53,397	\$20,616,409	0.26%
FIRSTMARK II (FIRSTMARK V)	Private Equity - Venture Capital	\$80,000	\$7,534,899	1.06%

2018 Securities Lending Income	2018 Commission Recapture	2018 Investment Consultant Fee	2018 Custody Fee
\$0	\$0	\$650,000	\$198,201

Asset Allocation Breakdown		
	2018 % of Total Fund	2017 % of Total Fund
Domestic Equity	22.9%	24.8%
% Active	6.5%	7.2%
% Passive	16.4%	17.6%
Domestic Fixed	16.3%	15.7%
% Active	16.3%	15.7%
% Passive	0.0%	0.0%
International Eq	14.1%	15.7%
% Active	14.1%	15.7%
% Passive	0.0%	0.0%
Global Fixed	4.0%	3.9%
% Active	4.0%	3.9%
% Passive	0.0%	0.0%
Other*	42.7%	39.9%
Calendar Year Return	-2.5%	13.2%

*Includes L/S Equity

Manager	Asset Class/Style	2018 Total Fees Paid	Avg. Market Value	Fees (%)
FIRSTMARK CAP IV	Private Equity - Venture Capital	\$150,000	\$1,444,297	10.39%
FRANCISCO PARTNERS IV	Private Equity - Venture Capital	\$93,894	\$9,683,754	0.97%
FRANCISCO PARTNERS V	Private Equity - Venture Capital	\$74,583	\$1,472,057	5.07%
GREEN EQUITY	Private Equity - Venture Capital	\$2,327	\$2,829,028	0.08%
GRESHAM INV	Real Assets - Commodities	\$383,024	\$51,811,636	0.74%
GROSVENOR "A" CLASS A	Long/Short Equity	\$1,572,265	\$201,052,806	0.78%
GROSVENOR "B" CLASS B	Long/Short Equity	\$0	\$157,165,841	0.00%
HALL CAPITAL III	Real Estate	\$100,836	\$5,664,049	1.78%
JP MORGAN	Real Assets - Core	\$1,131,621	\$124,126,380	0.91%
KNIGHTSBRIDGE	Private Equity - Distressed	\$50,911	\$6,832,509	0.75%
LBC CREDIT PARTNERS IV	Private Equity - Credit	\$494,643	\$17,613,960	2.81%
LEVINE LEICHTMAN III	Private Equity - Buyout	\$0	\$79,861	0.00%
LEVINE LEICHTMAN IV	Private Equity - Buyout	\$50,326	\$3,398,045	1.48%
LEXINGTON CAPITAL PART. VI-B	Private Equity - Fund Of Funds	\$16,185	\$2,446,276	0.66%
LIGHTSPEED VENTURE PART. VI	Private Equity - Venture Capital	\$0	\$144,920	0.00%
LOOMIS SAYLES	Global Fixed Income	\$318,391	\$97,321,684	0.33%
MONDRIAN INVESTMENTS	Internal Equity	\$600,172	\$139,828,472	0.43%
NEWSTONE CAPITAL	Private Equity - Mezzanine	\$74	\$17,968	0.41%
NEWSTONE CAPITAL II	Private Equity - Mezzanine	\$3,947	\$1,536,513	0.26%
NEWSTONE CAPITAL III	Private Equity - Mezzanine	\$22,902	\$11,378,785	0.20%
NT-EMERGING MKTS INDEX	International Equit - EM Index	\$0	\$0	
NT-RUSSELL 1000 INDEX	Domestic Equity/Large Cap	\$45,641	\$454,953,013	0.01%
OAKTREE GLOBAL CREDIT FUND	Global Fixed Income	\$618,348	\$123,562,060	0.50%
OAKTREE EUROPEAN DISLOCATION	Private Equity - Distressed	\$6,091	\$546,718	1.11%
OAKTREE FUND V	Private Equity - Distressed	\$0	\$63,047	0.00%
OAKTREE FUND VI	Private Equity - Distressed	\$0	-\$16,855	0.00%
OAKTREE FUND VII	Private Equity - Distressed	\$3,423	\$572,610	0.60%
OAKTREE FUND VIIIB	Private Equity - Distressed	\$8,067	\$442,911	1.82%
OAKTREE FUND VIII	Private Equity - Distressed	\$21,324	\$833,743	2.56%
OAKTREE FUND IX	Private Equity - Distressed	\$90,591	\$5,924,948	1.53%
OAKTREE FUND X	Private Equity - Distressed	\$119,630	\$6,255,257	1.91%
OAKTREE FUND XB	Private Equity - Distressed	\$2,354	\$279,480	0.84%
PAAAMCO/NEW PORT MESA	Low Volatility	\$1,162,964	\$129,218,225	0.90%
PEAK PARTNERS	Real Assets - Commodities	\$316,857	\$31,807,517	1.00%
SIGULER GUFF II ('E)	Private Equity - Distressed	\$18,520	\$598,290	3.10%
SIGULER GUFF III	Real Assets - Opportunistic	\$45,875	\$2,713,734	1.69%
SIGULER GUFF DREOF I	Private Equity - Distressed	\$58,609	\$6,255,562	0.94%
SIGULER GUFF DREOF II	Real Assets - Opportunistic	\$100,000	\$7,360,148	1.36%
SIGULER GUFF DREOF IIB	Private Equity - Distressed	\$53,409	\$2,400,883	2.22%
SUN CAPITAL V	Private Equity - Buyout	\$0	\$6,106,475	0.00%
TA ASSOC REALTY FUND X	Real Assets - Opportunistic	\$17,779	\$12,471,168	0.94%
TCW/CRESCENT MEZZ L.P. III	Private Equity - Mezzanine	\$0	\$298,362	0.00%
TCW/CRESCENT MEZZ L.P. IV	Private Equity - Mezzanine	\$1,669	\$44,254	3.77%
TCW/CRESCENT MEZ L.P. V	Private Equity - Mezzanine	\$11,267	\$781,607	1.44%
THOMPSON STREET II	Private Equity - Buyout	\$31,204	\$1,875,986	1.66%
THOMPSON STREET III	Private Equity - Buyout	\$73,077	\$4,724,332	1.55%
THOMPSON STREET IV	Private Equity - Buyout	\$132,567	\$5,310,455	2.50%
THOMPSON STREET V	Private Equity - Buyout	\$64,321	\$202,268	31.80%
WARBURG PINCUS X	Private Equity - Venture Capital	\$28,602	\$6,998,403	0.41%
WARBURG PINCUS XI	Private Equity - Venture Capital	\$40,240	\$6,868,513	0.59%
WARBURG PINCUS XII	Private Equity - Venture Capital	\$112,000	\$6,168,626	1.82%
WASATCH ADVISOR/COMERICA	International EM Small Cap	\$572,736	\$35,752,073	1.60%
WEATHERGAGE VC FUND I	Private Equity - Venture Capital	\$48,765	\$5,737,513	0.85%
WEATHERGAGE VC FUND II	Private Equity - Venture Capital	\$62,438	\$10,269,487	0.61%
WEATHERGAGE VC FUND IV	Private Equity - Venture Capital	\$100,000	\$3,233,037	3.09%
WELLINGTON GLOBAL TR FUND	Private Equity - Venture Capital	\$637,318	\$63,430,276	1.00%
Total		\$14,341,324	\$2,511,341,543	0.57%



OK LAW OVERVIEW

Manager	Asset Class/Style	2018 Total Fees Paid	Avg. Market Value	Fees (%)	2018 Securities Lending Income	2018 Commission Recapture	2018 Investment Consultant Fee	2018 Custody Fee
Hotchkis and Wiley Capital	Large Cap Value Equities	\$446,761	\$69,201,500	0.65%	\$228,113	\$18,277	\$150,000	\$104,000
Waddell and Reed (Pollen in Dec)	Large Cap Growth Equities	\$363,457	\$76,596,083	0.47%				
Kennedy Capital Management	Small Cap Value Equities	\$565,783	\$60,728,167	0.93%				
Wellington Management	Small Cap Growth Equities	\$514,918	\$64,367,000	0.80%				
Northern Trust S & P 500 Index	Passive Equities	\$48,749	\$75,552,083	0.06%				
Northern Trust Bond Index	Passive Fixed Income	\$23,037	\$76,516,500	0.03%				
TCW/Met West Investment Advisors	Opportunistic Fixed Income	\$337,968	\$103,620,833	0.33%				
Franklin Templeton Institutional	International Bonds	\$257,308	\$79,759,500	0.32%				
JP Morgan	Real Estate	\$645,789	\$64,180,500	1.01%				
UBS Trumbull	Real Estate	\$180,198.65	\$15,438,750	1.17%				
William Blair	Emerging Markets	\$301,409.65	\$37,344,250	0.81%				
Wasatch Advisors	Small Cap Emerging Markets	\$185,380.00	\$12,259,500	1.51%				
Mondrian Investments	International Equity	\$273,152.28	\$47,823,583	0.57%				
Baring International	International Equity	\$204,314.84	\$41,988,917	0.49%				
Gresham Tap Fund	Commodities	\$139,523.63	\$18,552,333	0.75%				
Grosvenor Investments	Long/Short Equity	\$833,454.00	\$102,383,333	0.81%				
Total		\$5,321,203	\$946,312,833	0.56%				

Asset Allocation Breakdown		
	<u>2018 % of Total Fund</u>	<u>2017 % of Total Fund</u>
Domestic Equity	32.7%	36.5%
% Active	25.1%	28.7%
% Passive	7.6%	7.8%
Fixed Income	28.7%	28.4%
% Active	20.2%	20.0%
% Passive	8.5%	8.4%
Int'l Equity	13.5%	10.8%
% Active	13.5%	10.8%
% Passive	0.0%	0.0%
Other	25.1%	24.3%
Calendar Year Return	-5.0%	14.7%



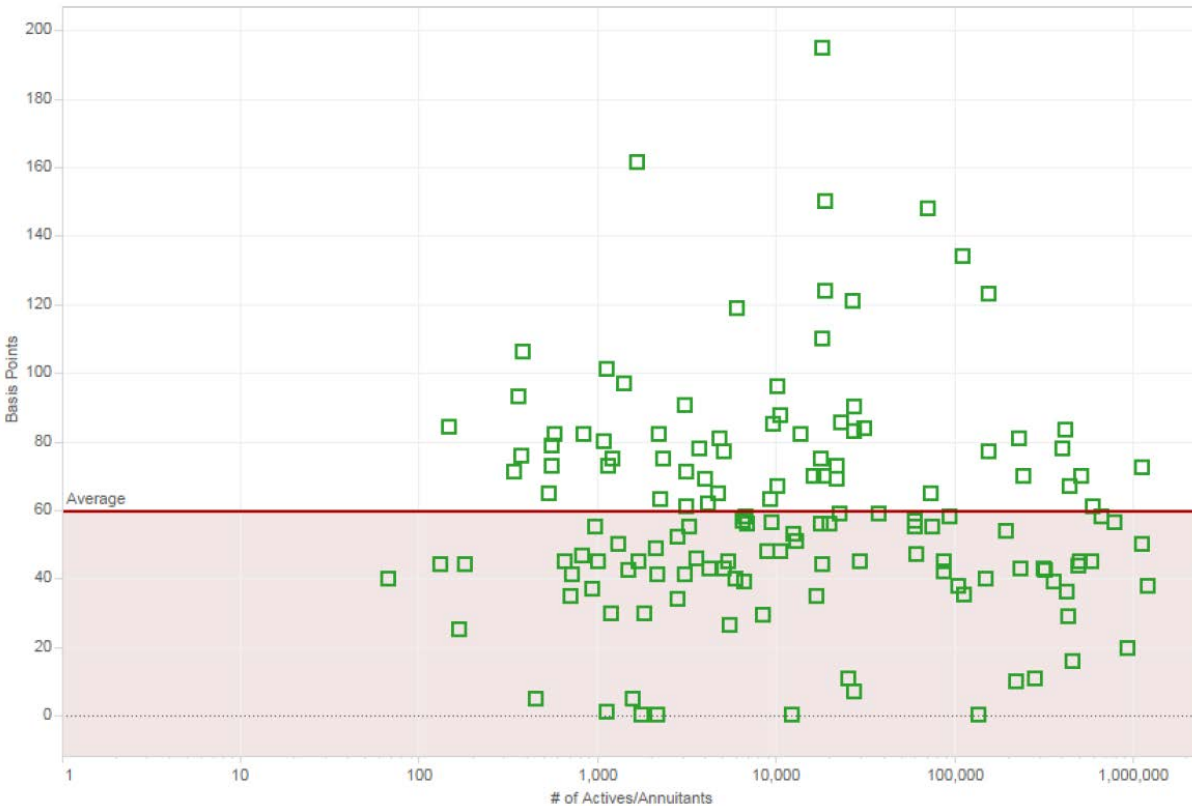
OK JUDGES & JUSTICES OVERVIEW

Manager	2018 Total Fees Paid	Avg. Market Value	Fees (%)	2018 Securities Lending Income	2018 Commission Recapture	2018 Investment Consultant Fee	2018 Custody Fee
BlackRock Financial	\$39,005	\$48,595,396	0.08%	\$0	\$0	\$7,903	\$1,129
Hoisington	\$15,559	\$10,910,860	0.14%				
BlackRock TIPS	\$948	\$10,332,902	0.01%				
MetWest	\$27,847	\$29,274,105	0.10%				
BlackRock R1000 Index	\$8,983	\$118,926,377	0.01%				
BlackRock R2000 Index	\$7,784	\$22,894,516	0.03%				
BlackRock ACWI x-US	\$27,167	\$94,712,585	0.03%				
Total	\$127,293	\$335,646,740	0.04%				

Asset Allocation Breakdown		
	<u>2018 % of Total Fund</u>	<u>2017 % of Total Fund</u>
Domestic Equity	40.3%	41.4%
% Active	0.0%	0.0%
% Passive	40.3%	41.4%
Domestic Fixed	32.4%	29.5%
% Active	29.1%	26.5%
% Passive	3.3%	3.0%
Int'l Equity	27.1%	26.6%
% Active	0.0%	0.0%
% Passive	27.1%	26.6%
Other	0.2%	2.5%
Calendar Year Return	-6.4%	16.9%

COMPARISON VS. OTHER PUBLIC FUNDS

2018 Total Plan Expense by Fund Size



- The 2018 *NCPERS* ("National Conference on Public Employee Retirement Systems") *Public Retirement Systems Study* includes responses from 167 state and local government pension funds across North America.
- The study showed that the overall average expense for administrative (consultant and custodial fees) and investment managers fees was 59.7 basis points.
- So while OK PPRS, OK Law, and OK Fire Plans seem high relative to the other OK Plans, we can see that they are actually at or below the national average.

APPENDIX

NEPC, LLC



NEPC, LLC

PERFORMANCE FEE FORMULA

Where:

- **BF** = **Base Fee, a substantial discount from the normal fee**
- **PF** = **Performance Fee**
- **NF** = **Normal Fee, manager's standard fee schedule for public fund**
- **RER** = **Required Excess Return, the premium to be earned above the benchmark or market rate of return to earn the normal fee**
- **PR** = **Portfolio Return**
- **MR** = **Benchmark, the market or other index return which represents the minimum performance standard**

$$(NF - BF) / (RER) \times (PR - MR - BF)$$

- (The Maximum Fee should be symmetrically balanced, i.e., the sum of the BF and the PF should equal the BF plus two times the sum of the NF minus the BF. In no event can the MF (PF plus the BF) exceed the BF plus two times the sum of the NF minus the BF)
- For the initial three quarters, the manager will receive a fee equal to the Base Fee. After the end of the fourth quarter under management an annualized fee calculation will be computed to award a performance fee due to the initial twelve-month period. If the Agreement is extended for the fifth through twelfth quarters, the annualized performance fee calculation will be made each quarter on a cumulative, annualized, basis. Thereafter, the performance fee calculation will be based on the cumulative, annualized returns for the immediately preceding twelve quarters.