



# Police and Fire Annual Fee Report - 2016

## Executive Summary

It is our pleasure to present the second annual Fee Report for the Police and Fire Department Retirement Plan (“Police and Fire”) covering calendar year 2016. Last year, staff released the first iteration for calendar year 2015 with a commitment to produce the report on an annual basis. The goal of the report is to provide insight into the management and incentive fees paid to investment managers along with the overall costs of operating the investment program. Pension plan fee data is generally underreported in the industry and only captures the portion of fees that are paid by invoice. This excludes often sizable embedded fees that are paid out of certain fund structures.

It is important to note that fees are a byproduct of asset allocation and portfolio construction, which are byproducts of the Board’s objectives, investment beliefs, and risk tolerance. Each year, the Board typically reviews the asset allocation considering updated capital market assumptions and the expected returns and volatility of the portfolio associated with those assumptions. The current asset allocation as illustrated in Tables 1 and 2 is an expression of the Board’s Investment Policy Statement that “Investments shall be diversified with the intent to minimize the risk of large investment losses”.

Asset allocation is typically one of the largest determinants of investment management fees at the portfolio level. Asset allocations that introduce alternative asset classes (Private Equity, Private Debt, Real Estate, Hedge Funds, etc.) will have higher levels of investment manager fees, because these asset classes or strategies have higher fee structures than traditional asset classes. Building a Private Equity allocation at the same fee level as an active or passive long-only Global Equity allocation is simply not possible. In addition, asset class structuring can have significant impact on fees. The use of active management versus passive management, as well as alternative strategies within traditional asset classes will increase fees. Finally, when evaluating investment managers, Staff places a significant emphasis on fees, negotiating for lower fees, and analyzing that expected value or return is worth the expected cost.

This year, the report includes a comparison to last year’s data, and highlights key changes to fee ratios and the drivers of those changes. Some are attributable to manager performance and others are due to investment manager line-up changes as outlined in the report.

**For calendar year 2016, management and incentive fees for the pension plan totaled \$38.1 million with a fee ratio of 1.21% as compared to \$33.3 million and 1.06% for calendar year 2015. The health care trust totaled \$0.2 million with a fee ratio of 0.28%,**

both figures consistent with 2015. Other investment-related costs (Staff, consultants, custodian bank, investment legal, etc.) for the pension plan were \$2.5 million with a fee ratio of 0.08% as compared to \$2.3 million and 0.07% for 2015, and the health care trust totaled \$0.1 million with a fee ratio of 0.11% as compared to \$0.1 million and 0.10% for 2015.

Table 1

Pension Average Asset Allocation for 2016

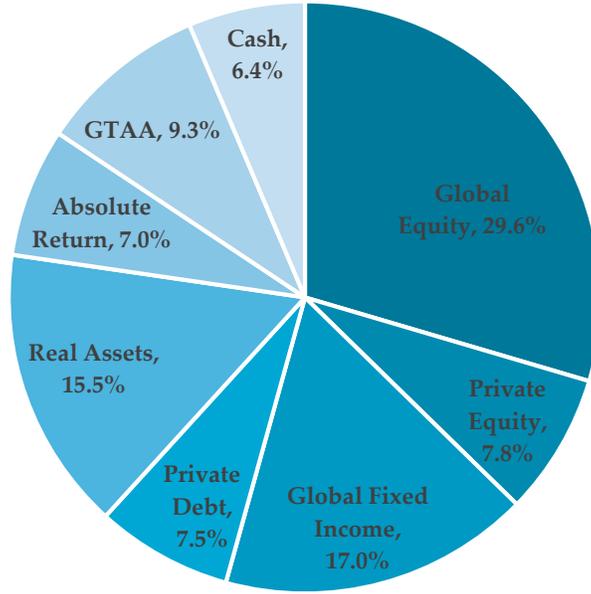
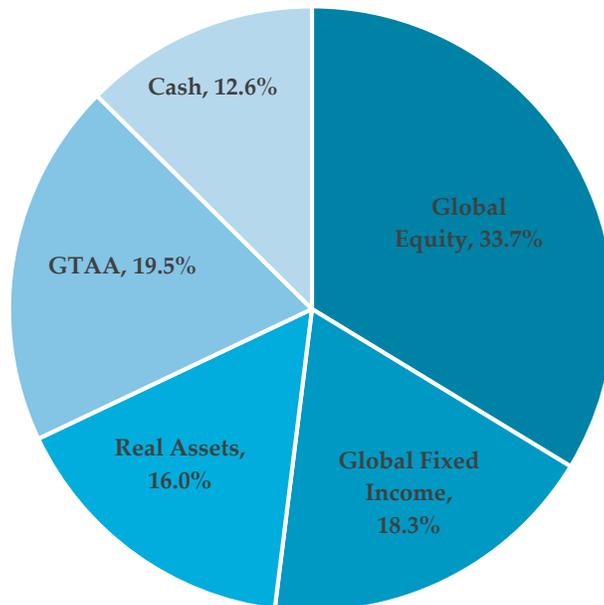


Table 2

Health Care Trust Average Asset Allocation for 2016



## Introduction

The fees in this report represent management fees, incentive fees, and other investment-related costs that were incurred during the calendar year. These amounts may include fees that were accrued for the year, but not paid out.

Management fees are fees charged by fund managers to invest and manage assets. Incentive fees are performance-based fees for exceeding a hurdle rate and are only applicable to certain fund structures. It's important to note that incentive fees are a form of shared economics that are only paid if the manager has produced positive returns or exceeded a predetermined hurdle rate. Incentive fees can be negative in the case of performance-based fee clawback provisions for underperformance. Both management and incentive fee amounts exclude fund operating expenses charged by investment managers for overhead not directly related to investment management. Trading expenses such as broker commissions are also excluded, as gross performance returns are reported after these expenses have been deducted. Other costs include salary and benefit compensation for investment staff (includes a 50% allocation for the CEO), cost of general consultant and Absolute Return consultant, custodian, and other third party vendors utilized by the investment program.

The fees in this report do not include indirect expenses and charges that may be paid to managers' affiliates, consultants or entities for services rendered to the managers, the funds or portfolio entities held by certain funds; nor is it intended to include all categories of fees, expenses and charges identified in the Institutional Limited Partners Association (ILPA) fee reporting template.

## Data Sources

Staff compiled this fee report using the best available information for each fund manager in order to develop a comprehensive view of fees. Fee amounts were reviewed for reasonableness and reconciled to fee schedules. Fees for all managers active at any point during the year are included in this report, including those that were funded or terminated during the year.

For most separately managed accounts and public markets commingled funds, quarterly fee invoices from the fund managers were used as the data source. Mutual funds, ETF's, short term investment funds (Cash), and certain public markets commingled funds that deduct fees directly from the funds were calculated by multiplying each fund's fee ratio

by the fund's average balances. The average balances were sourced from our custodian State Street.

The remaining manager fees were sourced from our managers directly. Absolute Return fees were provided by managers with independent quarterly re-calculations and reconciliations completed by our absolute return consultant Albourne. Private Equity fees were gathered by asking our managers to complete the Institutional Limited Partners Association (ILPA) fee reporting template or a similar template. The ILPA template is intended to unify and codify the presentation of fees, expenses, and carried interest information by fund managers to Limited Partners. The remaining manager fees in Global Fixed Income, Private Debt, Real Assets, and GTAA were obtained by having the fund managers fill out a fee template designed by staff.

Within the Other Costs section, consultant, custodian, and other vendor costs were sourced from fee invoices sent by the vendors. Investment staff salary and benefits were allocated to each of the 4 San Jose plans by pro-rating the total cost by the average monthly balance of each plan. Similarly, legal costs incurred by the Police and Fire Department were allocated between the pension plan and health care trust by pro-rating the total cost by the average monthly balance of each plan.

The pension plan uses an Overlay fund that includes investments across multiple asset classes. Overlay fees were allocated on a notional basis to the respective asset classes that were overlaid during the year.

## Changes from 2015 Report

In an effort to provide the most informative and consistent data possible, several changes have been retroactively made to the 2015 report. The methodology changes are outlined below and updated values are represented in the 2015 columns of the Year-over-Year comparison tables.

Updated fee data was received and updated from managers which increased the 2015 Pension Total Plan fee ratio from 1.01% to 1.06%. One manager was re-categorized from Active to Hedged management type.

Staff cost in 2015 only included cash compensation and was split evenly between the Federated and Police and Fire plans. The total cost has been updated to include both cash compensation and benefits and is now pro-rated to each of the 4 San Jose plans based on their average monthly balances.

In 2015, other third party vendors such as data vendors and investment oversight providers were excluded. These are now included in the Other Vendors column along with investment-related legal and research providers.

The Police and Fire pension plan includes a passive Russell 3000 proxy for Private Equity that was shown within the Global Equity asset class in 2015. The fees associated with this proxy have been moved to Private Equity.

Finally, the multi-asset Overlay collateral account balances were captured under the Cash asset class in 2015. The Overlay notional balance of each asset class is now allocated to the respective asset class that the overlay provided economic exposure to.

## Total Portfolio Fee Summaries

The following tables present fees by both asset class and management type. Fees by management type are presented by segregating investments into four “fund type” categories: passive, active, hedged, and private. Passive strategies are intended to generate a return that emulates a passive index. Active strategies include investment managers that attempt to outperform an index on a long only basis. Hedged strategies generally seek to achieve an absolute return (“alpha”) regardless of market direction (“beta”) by employing various strategies including long and short positions. Private strategies utilize a diverse set of approaches to invest in opportunities such as non-exchange listed companies, taking listed companies private, investing in the credit market by providing loans, and investing in non-exchange listed real estate.

## Year-over-Year Comparisons

The year-over-year comparison tables in this report present a time series of changes in average weights, fees, fee ratios, contribution to total plan fee ratios, and a year-over-year attribution. The year-over-year attribution uses the Brinson-Hood-Beebower methodology to decompose the change in contribution to total plan fee ratio into 1) impact due to weights and 2) impact due to fee ratios.

*Note: Some values on the report may not sum due to rounding. The dollar values displayed throughout the report are shown in thousands.*

Table 3

Pension Fees by Asset Class and Management Type

Asset Class	Mgmt Fees (\$000's)	Incent Fees (\$000's)	Mgmt and Incent Fees (\$000's)	Average Balance (\$000's)	Average Weight	Fee Ratio - Mgmt Fees	Fee Ratio - Incent Fees	Fee Ratio - Mgmt and Incent Fees	% of Total Plan Fee Ratio	Contrib to Total Plan Fee Ratio
Global Equity	5,200	100	5,300	932,100	29.6%	0.55%	0.02%	0.57%	13.9%	0.17%
Passive	300	-	300	462,100	14.7%	0.07%	0.00%	0.07%	0.9%	0.01%
Active	3,100	-	3,100	381,800	12.1%	0.80%	0.00%	0.80%	8.0%	0.10%
Hedged	1,800	100	1,900	88,200	2.8%	2.01%	0.16%	2.17%	5.0%	0.06%
Private Equity	2,800	1,900	4,600	244,500	7.8%	1.13%	0.76%	1.89%	12.1%	0.15%
Passive	30	-	30	88,600	2.8%	0.03%	0.00%	0.03%	0.1%	0.00%
Private	2,700	1,900	4,600	155,900	4.9%	1.76%	1.19%	2.95%	12.1%	0.15%
Global Fixed Income	4,300	4,400	8,700	535,600	17.0%	0.81%	0.81%	1.62%	22.8%	0.28%
Passive	60	-	60	300	0.0%	N/A	0.00%	N/A	0.2%	0.00%
Active	1,500	-	1,500	298,600	9.5%	0.50%	0.00%	0.50%	3.9%	0.05%
Hedged	2,800	4,400	7,100	236,700	7.5%	1.17%	1.84%	3.01%	18.7%	0.23%
Private Debt	3,100	-400	2,700	235,000	7.5%	1.32%	-0.16%	1.16%	7.1%	0.09%
Private	3,100	-400	2,700	235,000	7.5%	1.32%	-0.16%	1.16%	7.1%	0.09%
Real Assets	6,900	1,600	8,500	490,200	15.5%	1.40%	0.33%	1.73%	22.3%	0.27%
Passive	60	-	60	48,400	1.5%	0.13%	0.00%	0.13%	0.2%	0.00%
Active	1,100	-	1,100	187,000	5.9%	0.59%	0.00%	0.59%	2.9%	0.04%
Hedged	1,800	1,000	2,700	65,600	2.1%	2.69%	1.50%	4.19%	7.2%	0.09%
Private	3,900	600	4,600	189,200	6.0%	2.08%	0.34%	2.43%	12.0%	0.15%
Absolute Return	3,800	1,900	5,700	222,100	7.0%	1.70%	0.87%	2.57%	15.0%	0.18%
Hedged	3,800	1,900	5,700	222,100	7.0%	1.70%	0.87%	2.57%	15.0%	0.18%
GTAA	2,400	-	2,400	292,300	9.3%	0.82%	0.00%	0.82%	6.3%	0.08%
Active	2,400	-	2,400	292,300	9.3%	0.82%	0.00%	0.82%	6.3%	0.08%
Cash	220	-	220	201,200	6.4%	0.11%	0.00%	0.11%	0.6%	0.01%
Passive	220	-	220	201,200	6.4%	0.11%	0.00%	0.11%	0.6%	0.01%
<b>Total Plan</b>	<b>28,720</b>	<b>9,500</b>	<b>38,120</b>	<b>3,153,000</b>	<b>100.0%</b>	<b>0.91%</b>	<b>0.30%</b>	<b>1.21%</b>	<b>100.0%</b>	<b>1.21%</b>

The table above illustrates that management and incentive fees for the pension plan totaled \$38.1 million for 2016 which equated to a total plan fee ratio of 1.21%. The Global Fixed Income and Real Assets asset classes contributed the most to the total plan fee ratio at 0.28% and 0.27%, respectively. The GTAA and Private Debt asset classes contributed the least to the total plan fee ratio at 0.08% and 0.09%, respectively.

Table 4

Pension Fees by Management Type

Type	Mgmt Fees (\$000's)	Incent Fees (\$000's)	Mgmt and Incent Fees (\$000's)	Average Balance (\$000's)	Average Weight	Fee Ratio - Mgmt Fees	Fee Ratio - Incent Fees	Fee Ratio - Mgmt and Incent Fees	% of Total Plan Fee Ratio	Contrib to Total Plan Fee Ratio
Passive	700	-	700	800,500	25.4%	0.09%	0.00%	0.09%	1.8%	0.02%
Active	8,100	-	8,100	1,159,800	36.8%	0.70%	0.00%	0.70%	21.2%	0.26%
Hedged	10,100	7,400	17,500	612,600	19.4%	1.65%	1.21%	2.86%	45.8%	0.56%
Private	9,800	2,100	11,900	580,100	18.4%	1.69%	0.36%	2.05%	31.2%	0.38%
<b>Total Plan</b>	<b>28,720</b>	<b>9,500</b>	<b>38,120</b>	<b>3,153,000</b>	<b>100.0%</b>	<b>0.91%</b>	<b>0.30%</b>	<b>1.21%</b>	<b>100.0%</b>	<b>1.21%</b>

For the total pension plan, hedged management strategies accounted for 0.56% of the total plan fee ratio and represented about 19% of average plan assets. Private management strategies were the next largest contributor to the total plan fee ratio accounting for 0.38% of the total plan fee ratio and represented 18% of average plan assets. Passive and active management strategies accounted for 0.02% and 0.26% of the total plan fee ratio and represented 25% and 37% of plan assets, respectively.

**Table 5**

**Pension Other Investment Costs**

<b>Staff Salary and Benefits (\$000's)</b>	<b>Consultants (\$000's)</b>	<b>Custodian (\$000's)</b>	<b>Other Vendors (\$000's)</b>	<b>Total Other Costs (\$000's)</b>	<b>Other Costs Fee Ratio</b>
950	820	380	360	2,510	0.08%

Other investment costs for the pension plan equated to a total fee ratio of 0.08%. As previously discussed, other costs include salary and benefits for investment staff, cost of general consultant and Absolute Return consultant, custodian, and other vendors including investment-related legal costs and research tools used by Staff.

**Table 6**

**Health Care Fees by Asset Class and Management Type**

<b>Asset Class</b>	<b>Mgmt Fees (\$000's)</b>	<b>Incent Fees (\$000's)</b>	<b>Mgmt and Incent Fees (\$000's)</b>	<b>Average Balance (\$000's)</b>	<b>Average Weight</b>	<b>Fee Ratio - Mgmt Fees</b>	<b>Fee Ratio - Incent Fees</b>	<b>Fee Ratio - Mgmt and Incent Fees</b>	<b>% of Total Plan Fee Ratio</b>	<b>Contrib to Total Plan Fee Ratio</b>
<b>Global Equity</b>	37	-	37	28,400	33.7%	0.13%	0.00%	0.13%	15.8%	0.04%
Passive	37	-	37	28,400	33.7%	0.13%	0.00%	0.13%	15.8%	0.04%
<b>Global Fixed Income</b>	8	-	8	15,400	18.3%	0.05%	0.00%	0.05%	3.3%	0.01%
Passive	8	-	8	15,400	18.3%	0.05%	0.00%	0.05%	3.3%	0.01%
<b>Real Assets</b>	41	-	41	13,500	16.0%	0.30%	0.00%	0.30%	17.5%	0.05%
Passive	8	-	8	6,700	7.9%	0.12%	0.00%	0.12%	3.4%	0.01%
Active	33	-	33	6,800	8.1%	0.49%	0.00%	0.49%	14.1%	0.04%
<b>GTAA</b>	137	-	137	16,400	19.5%	0.84%	0.00%	0.84%	58.5%	0.16%
Active	137	-	137	16,400	19.5%	0.84%	0.00%	0.84%	58.5%	0.16%
<b>Cash</b>	12	-	12	10,600	12.6%	0.11%	0.00%	0.11%	5.0%	0.01%
Passive	12	-	12	10,600	12.6%	0.11%	0.00%	0.11%	5.0%	0.01%
<b>Total Plan</b>	<b>235</b>	<b>-</b>	<b>235</b>	<b>84,300</b>	<b>100.0%</b>	<b>0.28%</b>	<b>0.00%</b>	<b>0.28%</b>	<b>100.0%</b>	<b>0.28%</b>

The table above illustrates that management and incentive fees for the health care trust totaled \$235,000 for 2016 which equated to a total plan fee ratio of 0.28%. The GTAA

asset class contributed the most to the total plan fee ratio at 0.16%. The Global Fixed Income asset class contributed the least to the total plan fee ratio at 0.01%.

**Table 7**

**Health Care Fees by Management Type**

Type	Mgmt Fees (\$000's)	Incent Fees (\$000's)	Mgmt and Incent Fees (\$000's)	Average Balance (\$000's)	Average Weight	Fee Ratio - Mgmt Fees	Fee Ratio - Incent Fees	Fee Ratio - Mgmt and Incent Fees	% of Total Plan Fee Ratio	Contrib to Total Plan Fee Ratio
Passive	64	-	64	61,000	72.4%	0.11%	0.00%	0.11%	27.4%	0.08%
Active	170	-	170	23,200	27.6%	0.73%	0.00%	0.73%	72.4%	0.20%
<b>Total Plan</b>	<b>235</b>	<b>-</b>	<b>235</b>	<b>84,300</b>	<b>100.0%</b>	<b>0.28%</b>	<b>0.00%</b>	<b>0.28%</b>	<b>100.0%</b>	<b>0.28%</b>

For the total health care trust, active management strategies accounted for 0.20% of the total plan fee ratio and represented about 28% of average plan assets. Passive strategies accounted for 0.08% of the total plan fee ratio and represented 72% of plan assets.

**Table 8**

**Health Care Other Investment Costs**

Staff Salary and Benefits (\$000's)	Consultants (\$000's)	Custodian (\$000's)	Other Vendors (\$000's)	Total Other Costs (\$000's)	Other Costs Fee Ratio
25	19	42	10	96	0.11%

Other investment costs for the health care trust equated to a total fee ratio of 0.11%. As previously discussed, other costs include salary and benefits for investment staff, cost of general consultant, custodian, and other vendors including investment-related legal costs and research tools used by Staff.

Table 9

## Pension Year-over-Year Comparison by Asset Class and Management Type

Asset Class	Average Weight			Management Fees			Incentive Fees			Management and Incentive Fees			Fee Ratio			Contrib to Total Plan Fee Ratio			YoY Attribution	
	2015	2016	Change	2015 (\$000's)	2016 (\$000's)	Change (\$000's)	2015 (\$000's)	2016 (\$000's)	Change (\$000's)	2015 (\$000's)	2016 (\$000's)	Change (\$000's)	2015	2016	Change	2015	2016	Change	Due to Weight	Due to Fee Ratio
Global Equity	30.0%	29.6%	-0.4%	5,100	5,200	100	1,000	100	-900	6,100	5,300	-800	0.64%	0.57%	-0.08%	0.19%	0.17%	-0.03%	0.00%	-0.02%
Passive	15.2%	14.7%	-0.5%	400	300	-100	-	-	-	400	300	-100	0.08%	0.07%	-0.01%	0.01%	0.01%	0.00%	0.00%	0.00%
Active	12.6%	12.1%	-0.5%	3,300	3,100	-200	-	-	-	3,300	3,100	-200	0.83%	0.80%	-0.03%	0.10%	0.10%	-0.01%	0.00%	0.00%
Hedged	2.3%	2.8%	0.5%	1,300	1,800	500	1,000	100	-900	2,400	1,900	-500	3.37%	2.17%	-1.20%	0.08%	0.06%	-0.02%	0.02%	-0.03%
Private Equity	8.3%	7.8%	-0.5%	2,800	2,800	-	900	1,900	1,000	3,700	4,600	900	1.42%	1.89%	0.47%	0.12%	0.15%	0.03%	-0.01%	0.04%
Passive	3.3%	2.8%	-0.5%	30	30	-	-	-	-	30	30	-	0.03%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Private	5.0%	4.9%	0.0%	2,800	2,700	-100	900	1,900	1,000	3,700	4,600	900	2.36%	2.95%	0.59%	0.12%	0.15%	0.03%	0.00%	0.03%
Global Fixed Income	17.2%	17.0%	-0.2%	4,800	4,300	-500	900	4,400	3,500	5,600	8,700	3,100	1.03%	1.62%	0.59%	0.18%	0.28%	0.10%	0.00%	0.10%
Passive	-0.3%	0.0%	0.3%	24	60	36	-	-	-	24	60	36	0.24%	N/A	N/A	0.00%	0.00%	0.00%		
Active	9.3%	9.5%	0.2%	1,500	1,500	-	-	-	-	1,500	1,500	-	0.51%	0.50%	-0.01%	0.05%	0.05%	0.00%	0.00%	0.00%
Hedged	8.2%	7.5%	-0.7%	3,200	2,800	-400	900	4,400	3,500	4,100	7,100	3,000	1.58%	3.01%	1.43%	0.13%	0.23%	0.10%	-0.01%	0.11%
Private Debt	7.2%	7.5%	0.2%	3,300	3,100	-200	600	-400	-1,000	3,900	2,700	-1,200	1.72%	1.16%	-0.56%	0.12%	0.09%	-0.04%	0.00%	-0.04%
Private	7.2%	7.5%	0.2%	3,300	3,100	-200	600	-400	-1,000	3,900	2,700	-1,200	1.72%	1.16%	-0.56%	0.12%	0.09%	-0.04%	0.00%	-0.04%
Real Assets	15.8%	15.5%	-0.2%	4,500	6,900	2,400	2,000	1,600	-400	6,400	8,500	2,100	1.29%	1.73%	0.45%	0.20%	0.27%	0.07%	0.00%	0.07%
Passive	2.0%	1.5%	-0.4%	70	60	-10	-	-	-	70	60	-10	0.11%	0.13%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%
Active	7.3%	5.9%	-1.3%	1,300	1,100	-200	-	-	-	1,300	1,100	-200	0.57%	0.59%	0.02%	0.04%	0.04%	-0.01%	-0.01%	0.00%
Hedged	0.9%	2.1%	1.2%	700	1,800	1,100	1,500	1,000	-500	2,200	2,700	500	7.97%	4.19%	-3.78%	0.07%	0.09%	0.02%	0.10%	-0.08%
Private	5.7%	6.0%	0.3%	2,500	3,900	1,400	400	600	200	2,900	4,600	1,700	1.62%	2.43%	0.80%	0.09%	0.15%	0.05%	0.01%	0.05%
Absolute Return	4.6%	7.0%	2.4%	2,800	3,800	1,000	1,800	1,900	100	4,600	5,700	1,100	3.15%	2.57%	-0.58%	0.15%	0.18%	0.03%	0.08%	-0.04%
Hedged	4.6%	7.0%	2.4%	2,800	3,800	1,000	1,800	1,900	100	4,600	5,700	1,100	3.15%	2.57%	-0.58%	0.15%	0.18%	0.03%	0.08%	-0.04%
GTAA	10.5%	9.3%	-1.2%	2,800	2,400	-400	-	-	-	2,800	2,400	-400	0.84%	0.82%	-0.02%	0.09%	0.08%	-0.01%	-0.01%	0.00%
Active	10.5%	9.3%	-1.2%	2,800	2,400	-400	-	-	-	2,800	2,400	-400	0.84%	0.82%	-0.02%	0.09%	0.08%	-0.01%	-0.01%	0.00%
Cash	6.4%	6.4%	0.0%	200	220	20	-	-	-	200	220	20	0.10%	0.11%	0.01%	0.01%	0.01%	0.00%	0.00%	0.00%
Passive	6.4%	6.4%	0.0%	200	220	20	-	-	-	200	220	20	0.10%	0.11%	0.01%	0.01%	0.01%	0.00%	0.00%	0.00%
Total Plan	100.0%	100.0%	0.0%	26,300	28,720	2,420	7,200	9,500	2,300	33,300	38,120	4,820	1.06%	1.21%	0.15%	1.06%	1.21%	0.15%	0.05%	0.10%

Table 10

Pension Year-over-Year Comparison by Management Type

Type	Average Weight			Management Fees			Incentive Fees			Management and Incentive Fees			Fee Ratio			Contrib to Total Plan Fee Ratio			YoY Attribution	
	2015	2016	Change	2015 (\$000's)	2016 (\$000's)	Change (\$000's)	2015 (\$000's)	2016 (\$000's)	Change (\$000's)	2015 (\$000's)	2016 (\$000's)	Change (\$000's)	2015	2016	Change	2015	2016	Change	Due to Weight	Due to Fee Ratio
Passive	26.5%	25.4%	-1.2%	724	700	-24	-	-	-	724	700	-24	0.09%	0.09%	0.00%	0.02%	0.02%	0.00%	0.00%	0.00%
Active	39.6%	36.8%	-2.8%	8,900	8,100	-800	-	-	-	8,900	8,100	-800	0.71%	0.70%	-0.01%	0.28%	0.26%	-0.03%	-0.02%	-0.01%
Hedged	16.0%	19.4%	3.4%	8,000	10,100	2,100	5,200	7,400	2,200	13,300	17,500	4,200	2.64%	2.86%	0.22%	0.42%	0.56%	0.13%	0.09%	0.04%
Private	17.8%	18.4%	0.6%	8,600	9,800	1,200	1,900	2,100	200	10,500	11,900	1,400	1.87%	2.05%	0.18%	0.33%	0.38%	0.04%	0.01%	0.03%
<b>Total Plan</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>	<b>26,300</b>	<b>28,720</b>	<b>2,420</b>	<b>7,200</b>	<b>9,500</b>	<b>2,300</b>	<b>33,300</b>	<b>38,120</b>	<b>4,820</b>	<b>1.06%</b>	<b>1.21%</b>	<b>0.15%</b>	<b>1.06%</b>	<b>1.21%</b>	<b>0.15%</b>	<b>0.08%</b>	<b>0.07%</b>

Table 11

Pension Year-over-Year Comparison of Other Costs

	Staff Salary and Benefits (\$000's)	Consultants (\$000's)	Custodian (\$000's)	Other Vendors (\$000's)	Total Other Costs (\$000's)	Other Costs Fee Ratio
2015	890	830	250	300	2,270	0.07%
2016	950	820	380	360	2,510	0.08%
Change	60	-10	130	60	240	0.01%

Table 12

Health Care Year-over-Year Comparison by Asset Class and Management Type

Asset Class	Average Weight			Management Fees			Incentive Fees			Management and Incentive Fees			Fee Ratio			Contrib to Total Plan Fee Ratio			YoY Attribution	
	2015	2016	Change	2015 (\$000's)	2016 (\$000's)	Change (\$000's)	2015 (\$000's)	2016 (\$000's)	Change (\$000's)	2015 (\$000's)	2016 (\$000's)	Change (\$000's)	2015	2016	Change	2015	2016	Change	Due to Weight	Due to Fee Ratio
Global Equity	40.6%	33.7%	-6.9%	34	37	3	-	-	-	34	37	3	0.13%	0.13%	0.00%	0.05%	0.04%	-0.01%	-0.01%	0.00%
Passive	40.6%	33.7%	-6.9%	34	37	3	-	-	-	34	37	3	0.13%	0.13%	0.00%	0.05%	0.04%	-0.01%	-0.01%	0.00%
Global Fixed Income	17.5%	18.3%	0.7%	6	8	2	-	-	-	6	8	2	0.05%	0.05%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%
Passive	17.5%	18.3%	0.7%	6	8	2	-	-	-	6	8	2	0.05%	0.05%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%
Real Assets	17.3%	16.0%	-1.4%	34	41	7	-	-	-	34	41	7	0.30%	0.30%	0.00%	0.05%	0.05%	0.00%	0.00%	0.00%
Passive	9.5%	7.9%	-1.6%	7	8	1	-	-	-	7	8	1	0.11%	0.12%	0.01%	0.01%	0.01%	0.00%	0.00%	0.00%
Active	7.9%	8.1%	0.2%	26	33	7	-	-	-	26	33	7	0.51%	0.49%	-0.03%	0.04%	0.04%	0.00%	0.00%	0.00%
GTAA	19.7%	19.5%	-0.2%	104	137	33	-	-	-	104	137	33	0.82%	0.84%	0.01%	0.16%	0.16%	0.00%	0.00%	0.00%
Active	19.7%	19.5%	-0.2%	104	137	33	-	-	-	104	137	33	0.82%	0.84%	0.01%	0.16%	0.16%	0.00%	0.00%	0.00%
Cash	4.9%	12.6%	7.6%	3	12	9	-	-	-	3	12	9	0.10%	0.11%	0.01%	0.00%	0.01%	0.01%	0.01%	0.00%
Passive	4.9%	12.6%	7.6%	3	12	9	-	-	-	3	12	9	0.10%	0.11%	0.01%	0.00%	0.01%	0.01%	0.01%	0.00%
<b>Total Plan</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>	<b>181</b>	<b>235</b>	<b>54</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>181</b>	<b>235</b>	<b>54</b>	<b>0.28%</b>	<b>0.28%</b>	<b>0.00%</b>	<b>0.28%</b>	<b>0.28%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>

Table 13

Health Care Year-over-Year Comparison by Management Type

Type	Average Weight			Management Fees			Incentive Fees			Management and Incentive Fees			Fee Ratio			Contrib to Total Plan Fee Ratio			YoY Attribution	
	2015	2016	Change	2015 (\$000's)	2016 (\$000's)	Change (\$000's)	2015 (\$000's)	2016 (\$000's)	Change (\$000's)	2015 (\$000's)	2016 (\$000's)	Change (\$000's)	2015	2016	Change	2015	2016	Change	Due to Weight	Due to Fee Ratio
Passive	72.5%	72.4%	0.0%	51	64	13	-	-	-	51	64	13	0.11%	0.11%	0.00%	0.08%	0.08%	0.00%	0.00%	0.00%
Active	27.5%	27.6%	0.1%	130	170	40	-	-	-	130	170	40	0.73%	0.73%	0.00%	0.20%	0.20%	0.00%	0.00%	0.00%
<b>Total Plan</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>	<b>181</b>	<b>235</b>	<b>54</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>181</b>	<b>235</b>	<b>54</b>	<b>0.28%</b>	<b>0.28%</b>	<b>0.00%</b>	<b>0.28%</b>	<b>0.28%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>

Table 14

Health Care Year-over-Year Comparison of Other Costs

	Staff Salary and Benefits (\$000's)	Consultants (\$000's)	Custodian (\$000's)	Other Vendors (\$000's)	Total Other Costs (\$000's)	Other Costs Fee Ratio
2015	18	14	25	7	64	0.10%
2016	25	19	42	10	96	0.11%
Change	7	5	17	3	32	0.01%

## Analysis of Pension Year-over-Year Changes by Asset Class

As presented in Table 9, the pension total plan fee ratio increased by +15 bps from 1.06% in 2015 to 1.21% in 2016.

The largest asset class drivers of the increase were Global Fixed Income (+10 bps contribution) and Real Assets (+7 bps).

Average asset class weight changes contributed +5 bps to the year-over-year change in total plan fee ratio. The largest asset class weight changes came from a 2.4% increase in Absolute Return (+3 bps attribution due to weight), a 1.2% decrease in GTAA (-1 bp), and a 0.5% decrease in Private Equity (-1 bp).

Changes in fee ratios contributed +10 bps to the year-over-year change in total plan fee ratio. Global Fixed Income (+10 bps attribution due to fee ratio) and Real Assets (+7 bps) were the largest increases, partially offset by a decrease in Absolute Return (-4 bps).

A summary of the key drivers in year-over-year changes to pension fee ratios from 2015 to 2016 for each asset class is below along with comparisons of performance net of fees.

The **Global Equity** fee ratio declined from 0.64% in 2015 to 0.57% in 2016 due to lower incentive fees to hedged long/short equity managers. The Marketable Alternative Equity composite return declined from 4.5% in 2015 to 0.6% in 2016 leading to lower incentive fees and bringing the fee ratio for hedged Global Equity managers down from 3.37% in 2015 to 2.17% in 2016. Global Equity asset class performance improved from -0.8% in 2015 to 7.5% in 2016.

**Private Equity** saw a slight increase from 1.42% in 2015 to 1.89% in 2016 on the heels of higher incentive fees. The performance of Private Equity improved on a time-weighted return basis from 5.6% in 2015 to 9.0% in 2016.

**Global Fixed Income** increased from 1.03% in 2015 to 1.62% in 2016. The fee ratio for hedged Global Fixed Income strategies increased from 1.58% in 2015 to 3.01% in 2016 as incentive fee increased from strong returns of managers in this category. The performance of Global Fixed Income improved from -1.7% in 2015 to 6.6% in 2016.

**Private Debt** declined from 1.72% in 2015 to 1.16% in 2016 from lower incentive fees. Private Debt was spun out into a separate asset class from Global Fixed in the middle of 2015 so a full year of performance is not available for that year. Private Debt returned 2.6% in 2016.

**Real Assets** increased from 1.29% in 2015 to 1.73% in 2016 due to a combination of a spike in management fees for private funds and higher management fees in hedged funds offsetting a decline in incentive fees for hedged funds. Five new private Real Assets funds began calling capital in 2016. The Real Assets asset class was created as a combination of Real Estate, Commodities, and Infrastructure in the middle of 2015 so a full year of performance is not available for that year. Real Assets returned 8.2% in 2016.

**Absolute Return** had a notable decline from 3.15% in 2015 to 2.57% in 2016, even as performance improved slightly from 1.2% in 2015 to 1.3% in 2016. This is due in large part to negotiating more favorable and better aligned fee agreements with existing and newly hired managers.

The **GTAA** and **Cash** asset classes were roughly flat year over year.

## Analysis of Pension Year-over-Year Changes by Management Type and Other Costs

As shown in the Table 10 contribution to total plan fee ratio change column, the largest drivers of the +15 bps total plan fee ratio increase from fund management types were Hedged (+13 bps change in contribution) and Private (+4 bps), which were partially offset by a decline in Active (-3 bps).

Weight changes increased the total plan fee ratio by +8 bps with the largest contributor the 3.4% increase to hedged strategies (+9 bps attribution due to weight).

Changes to fee ratios increased the total plan fee ratio by +7 bps with the largest contributors being hedged strategies (+4 bps attribution due to fee ratio) and private strategies (+3 bps).

As displayed in Table 11, **Other Costs** increased slightly from 0.07% in 2015 to 0.08% in 2016 with custodian expenses contributing the most to the increase. State Street began providing performance, risk, and compliance services in the middle of 2015 and 2016 represents the first full year of these services.

## Analysis of Health Care Year-over-Year Changes by Asset Class, Management Type and Other Costs

As seen in Tables 12 and 13, the Health Care total plan fee ratio was unchanged at 0.28% with no material changes to report.

As displayed in Table 14, **Other Costs** increased slightly from 0.10% to 0.11% in 2016 with custodian expenses contributing the most to the increase. State Street began providing performance, risk, and compliance services in the middle of 2015 and 2016 represents the first full year of these services.