

Global Fixed Income
Annual Program Review

Arnold B. Phillips
Managing Investment Director

September 16, 2019

Annual Program Review Outline

Section	Page
Executive Summary	3-6
Executive Summary: Global Fixed Income (GFI)	3
Major Accomplishments (2018-2019)	4
Major Initiatives (2019-2020)	5
Investment Performance for Period Ending June 30, 2019	6
I. Program Overview	8-12
Program Role	9-10
Investment Beliefs	11
Governance & Sustainability Integration	12
II. Investment Review	13-16
Investment Objective	14
Investment Performance for Period Ending June 30, 2019	15
Portfolio Positioning	16
III. Business Review	17-23
Business Philosophy	18
Investment Office Organization Chart	19
Functional Organization Chart	20
Staffing Overview	21
Business Overview	22
Program Expenses	23

Executive Summary | Global Fixed Income (GFI)

1. Program Purpose – Manage GFI portfolio in support of the Total Fund

- Contribute to the long-term sustainability of the Total Fund through prudent fund management
- Participate in capital market surveillance and perspective to impact asset allocation decisions

2. Performance

- Strong absolute performance in past year
- Strong benchmark relative performance over all historical periods

3. Culture – One team, one mission

- Strong and integrated team focused on role and impact to the Total Fund
- Inclusive and collaborative culture within GFI, Investment Office (INVO), and CalPERS
- Committed to continuous improvement, technology use, and cost efficiency

Executive Summary | Major Accomplishments

2018-2019 Major Accomplishments

- Completed transition into Board-adopted Long Governments, Long Spread, and High Yield fixed income segments
 - ✓ Traded \$55bn in GFI securities to implement the segments
- Assisted in a more centralized capital allocation framework to manage Plan Level (Total Fund) leverage and liquidity in a cost-effective, transparent and risk-aware manner
- Helped create a rigorous, transparent internal hiring process to build a more effective and collaborative “Total Fund culture” and better implement Investment Belief 10
- Cross collaboration research:
 - ✓ Due diligence work with Opportunistic Strategies (OS) on future investment opportunities
 - ✓ Research work with Sustainable Investments (IS) on disruptive technologies, waters issues, and environmental, social, and governance (ESG) factors

Executive Summary | Major Initiatives

2019-2020 Major Initiatives

- Advance capital allocation framework through trust-level liquidity and leverage management
- Continue the focus on culture change and one team to assist with INVO Total Fund focus
- Continue research collaboration with TLPM to look for ways to improve and refine the segment portfolios and benchmarks with a focus on the stated roles of each segment

Executive Summary | Performance

For Period Ending June 30, 2019

Program	Ending Market Value (MM)	% of Assets	1-Mo		3-Mo		FYTD		1-Yr		3-Yr		5-Yr	
			Net Return	Excess bps	Net Return	Excess bps	Net Return	Excess bps	Net Return	Excess bps	Net Return	Excess bps	Net Return	Excess bps
Long Spread	56,730	53	2.33	3	4.20	28	9.47	49	9.47	49	-	-	-	-
International	8,722	8	3.83	31	4.44	54	5.46	79	5.46	79	2.32	59	(0.22)	57
Mortgage	20,808	20	0.77	3	2.21	16	6.55	18	6.55	18	2.79	69	3.66	107
Credit	19,842	19	3.51	3	6.25	3	14.25	44	14.25	44	-	-	-	-
High Yield	2,229	2	1.86	(33)	2.01	(22)	5.95	(81)	5.95	(81)	7.89	57	5.89	157
Sovereign	2,329	2	3.90	10	6.00	7	15.98	59	15.98	59	4.80	63	5.38	32
Income Spread Non-Core	2,752	3	0.18	0	1.39	0	4.45	0	4.45	-	-	-	-	-
High Yield	11,722	11	2.73	13	2.62	10	8.41	40	8.41	40	-	-	-	-
Long Treasury	37,840	36	1.26	(0)	5.03	(1)	10.50	(3)	10.50	(3)	-	-	-	-
Total Income	106,292	100	1.98	2	4.33	14	9.61	31	9.61	31	3.32	62	4.08	56

Appendix

I. Program Overview

I. Program Overview

II. Investment Review

III. Business Review

Program Role | Execute CalPERS Strategic Plan

CalPERS 2017-22 Strategic Goal

Strengthen the **long-term sustainability** of the pension fund, cultivate a **risk-intelligent** organization, and **reduce cost and complexity**.



Investment Office Mission (Generate Returns to Pay Benefits)

Manage portfolio in a cost effective, transparent, and risk-aware manner

Vision

- **Investment Beliefs and CalPERS Core Values:** principles underlying our investment decisions
- Operate with a focus on **repeatable, predictable, and scalable** portfolios and practices
- Seek **alignment of interests** with our primary stakeholders, our business partners, and ourselves
- Use clearly articulated **performance, risk, and cost metrics** to evaluate our value-add to the funds
- Investment and business activities are supported by a **solid platform of effective risk management and controls**

Program Role | Global Fixed Income

The Program has three strategies: Long Treasury, Long Spread, and High Yield, each defined as an “Asset Segment”, with the strategic objectives outlines below:

- The Long Treasury Segment of the Program has the following strategic objective:
 - The segment seeks to serve as an economic diversifier to equity and is a reliable source of liquidity

- The Long Spread Segment of the Program has the following strategic objective:
 - The segment seeks to provide a reliable source of income and an additional source of liquidity

- High Yield Segment of the Program has the following strategic objective:
 - The segment seeks to provide exposure to economic growth and be a reliable source of income

Investment Beliefs | Alignment and Integration

The Investment Beliefs are not a checklist to be applied by rote to every decision. They are a guide for making judgmental decisions that often require balancing multiple, inter-related decision factors.

	Short Name	Investment Belief
1	Liabilities	Liabilities must influence the asset structure
2	Long-Term Horizon	A long time investment horizon is a responsibility and an advantage
3	Stakeholders	CalPERS investment decisions may reflect wider stakeholder views
4	Three Forms of Capital	Long-term value creation requires effective management of three forms of capital: financial, physical, and human
5	Accountability	CalPERS must articulate its investment goals and performance measure, and ensure clear accountability for their execution
6	Strategic Allocation	Strategic asset allocation is the dominant determinant of portfolio risk and return
7	Risk Reward	CalPERS will take risk only where we have a strong belief we will be rewarded
8	Costs Matter	Costs matter and need to be effectively managed
9	Multi-faceted Risk	Risk to CalPERS is multi-faceted and not fully captured through measures such as volatility or tracking error
10	Resources / Process	Strong processes and teamwork and deep resources are needed to achieve CalPERS goals and objectives

Governance & Sustainability | GFI Integration

GFI integrates environmental, social, and governance considerations as follows:

1. Sold all portfolio holdings of Vale SA bonds following the collapse of Dam 1 at the Feijao mine in Minas Gerais, Brazil which released 12 million cubic meters of iron ore tailings and resulted in the deaths of at least 248 people. Vale will face enormous civil penalties and remediation costs as a result of the disaster.
2. Contacted Teck Resources management to obtain incremental disclosures regarding their portfolio of dam structures with an emphasis on upstream tailings dams. Disclosures were satisfactory and there was no change in portfolio exposure.
3. Purchased \$37mn of Utility Green Bonds in the corporate portfolio.
4. Reduced exposure to Duke Energy due to a combination of 1.) Environmental costs of coal ash remediation and potential lag in cost recovery which may pressure credit metrics/ratings and 2.) Bond valuation that is similar to comparable companies.
5. Increased exposure to water utilities which are aligned with positive ESG characteristics. Standard & Poor's cites the environmental stewardship of water supply and customer affordability as the core mission of water utilities. Investor owned utilities are also acquiring small water systems unable to meet safe drinking water standards and upgrading them, creating a growing asset base which generates predictable regulated returns.
6. Reduced exposure to Edison International following spread compression as the climate change impact on future wildfires is difficult to predict and wildfire legislation designed to help protect utility credit quality carries implementation risk.
7. Do not own drug distributors with potential exposure to the Opioid litigation.

II. Investment Review

Program Overview

Investment Review

Business Review

Investment Objective

GFI is managed in alignment with the CalPERS Total Fund Investment Policy's investment objectives as follows:

1. The Program seeks to meet or exceed the return generated by global fixed income securities as represented by the benchmark, specified in the CalPERS Total Fund Investment Policy benchmark appendix, while managing volatility relative to the benchmark.
2. The Program seeks to utilize active management in an effort to earn a rate of return in excess of the benchmark. The degree of active management deployed is constrained by various risk limits for the asset class to manage relative volatility.

Performance | Public Employees' Retirement Fund (PERF)

For Period Ending June 30, 2019

Asset Class	As of June 30, 2019			10-Yr			5-Yr			3-Yr			1-Yr		
	Ending Market Value (bil)	% of Total Fund Assets	Interim Policy Weight % ¹	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps
Growth	\$ 212.4	57.4%	58.00%	11.6%	12.1%	(49)	7.1%	7.5%	(37)	12.3%	12.9%	(60)	6.3%	6.3%	6
Public Equity	\$ 185.9	50.2%	50.0%	11.1%	10.9%	20	6.7%	6.7%	(8)	12.3%	12.5%	(25)	6.1%	6.2%	(16)
Cap Weighted	\$ 131.4	35.5%	35.0%	11.0%	10.8%	20	6.5%	6.5%	(9)	11.9%	12.2%	(27)	5.1%	5.3%	(20)
Factor Weighted	\$ 54.6	14.7%	15.0%	-	-	-	-	-	-	-	-	-	13.4%	13.5%	(10)
Private Equity	\$ 26.5	7.1%	8.0%	14.0%	16.6%	(254)	9.6%	10.3%	(80)	12.5%	14.1%	(156)	7.7%	4.0%	368
Income	\$ 106.3	28.7%	28.0%	6.6%	5.2%	137	4.1%	3.5%	56	3.3%	2.7%	62	9.6%	9.3%	31
Long Spread	\$ 56.7	15.3%	15.0%	-	-	-	-	-	-	-	-	-	9.5%	9.0%	49
Long Treasury	\$ 37.8	10.2%	10.0%	-	-	-	-	-	-	-	-	-	10.5%	10.5%	(3)
High Yield	\$ 11.7	3.2%	3.0%	-	-	-	-	-	-	-	-	-	8.4%	8.0%	40
Real Assets	\$ 40.9	11.0%	13.0%	4.1%	8.4%	(430)	7.5%	8.6%	(111)	6.4%	6.8%	(42)	3.7%	6.5%	(283)
Inflation ²	\$ 0.0	0.0%	0.0%	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Liquidity	\$ 3.7	1.0%	1.0%	1.1%	1.2%	(9)	1.3%	1.2%	10	1.7%	1.3%	37	2.6%	2.2%	45
Trust Level ³	\$ 7.0	1.9%	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Fund	\$ 370.3	100.0%	100.0%	9.1%	9.5%	(33)	5.8%	6.1%	(23)	8.8%	9.0%	(21)	6.7%	7.1%	(42)



Investment Office
Global Fixed Income

1. Interim policy weight reflects the weights in effect at the beginning of the first day of the subsequent month.

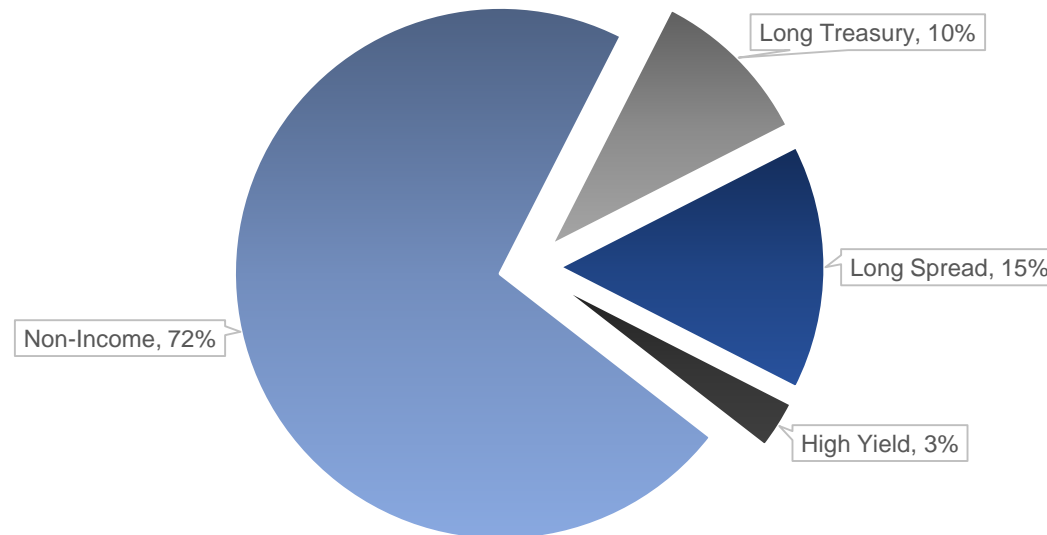
2. As of February 2019, the Inflation program has been liquidated and subsequently linked historical returns are no longer meaningful.

3. Trust Level includes Multi Asset Class, Completion Overlay, Risk Mitigation, Absolute Return Strategies, Plan Level Transition and other Total Fund level portfolios.

Portfolio Positioning | Income

For Period Ending June 30, 2019

Income Allocation of Total Fund



Long Spread Segment	Active %
US Government	2.39%
Sovereign	0.15%
Credit	0.70%
Mortgage	-2.52%
International	-1.52%
High Yield	-0.51%
Non-Core	4.30%
HY-BB/B	0.38%
Cash	-1.21%

III. Business Review

Program Overview

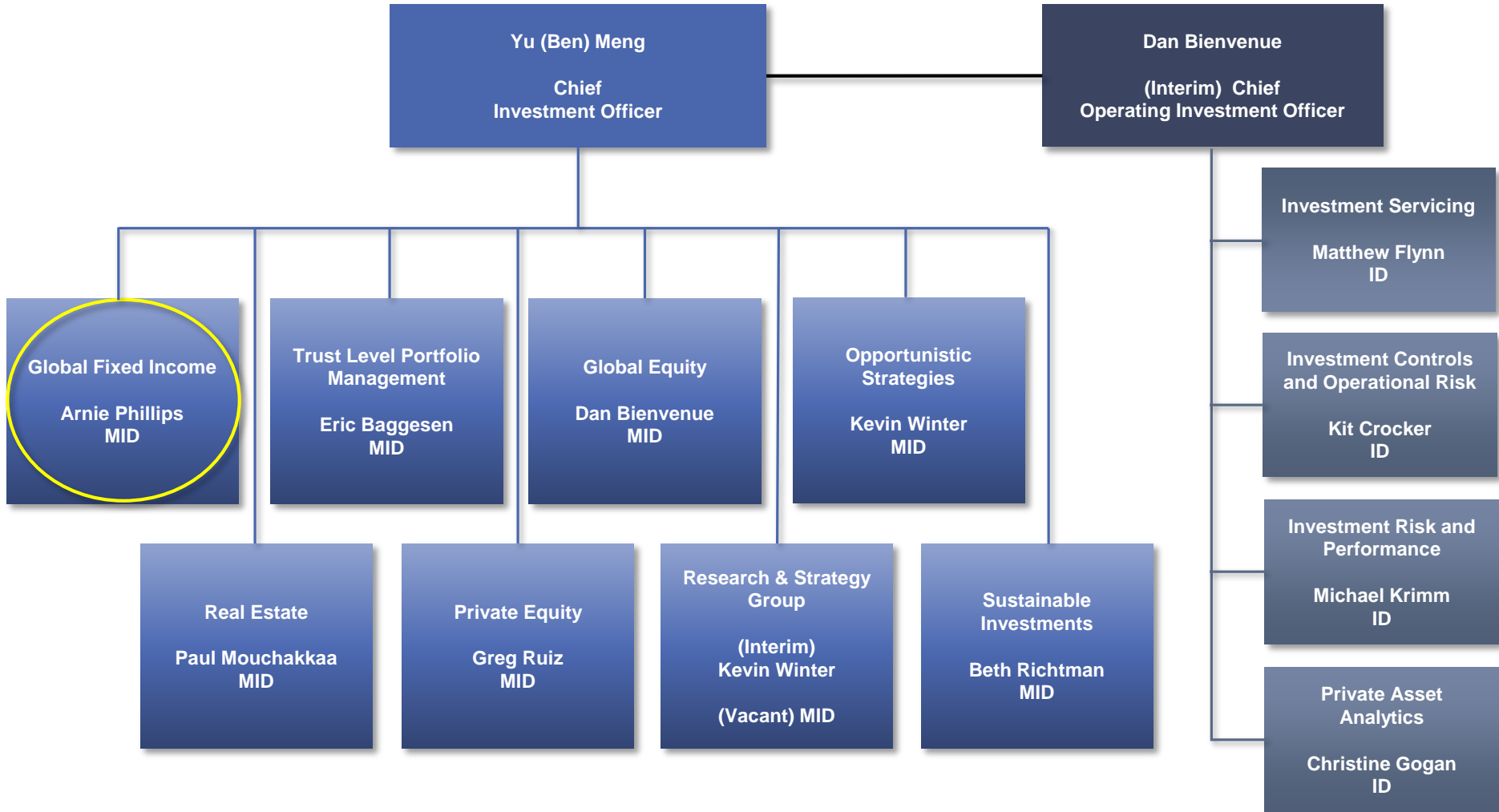
Investment Review

Business Review

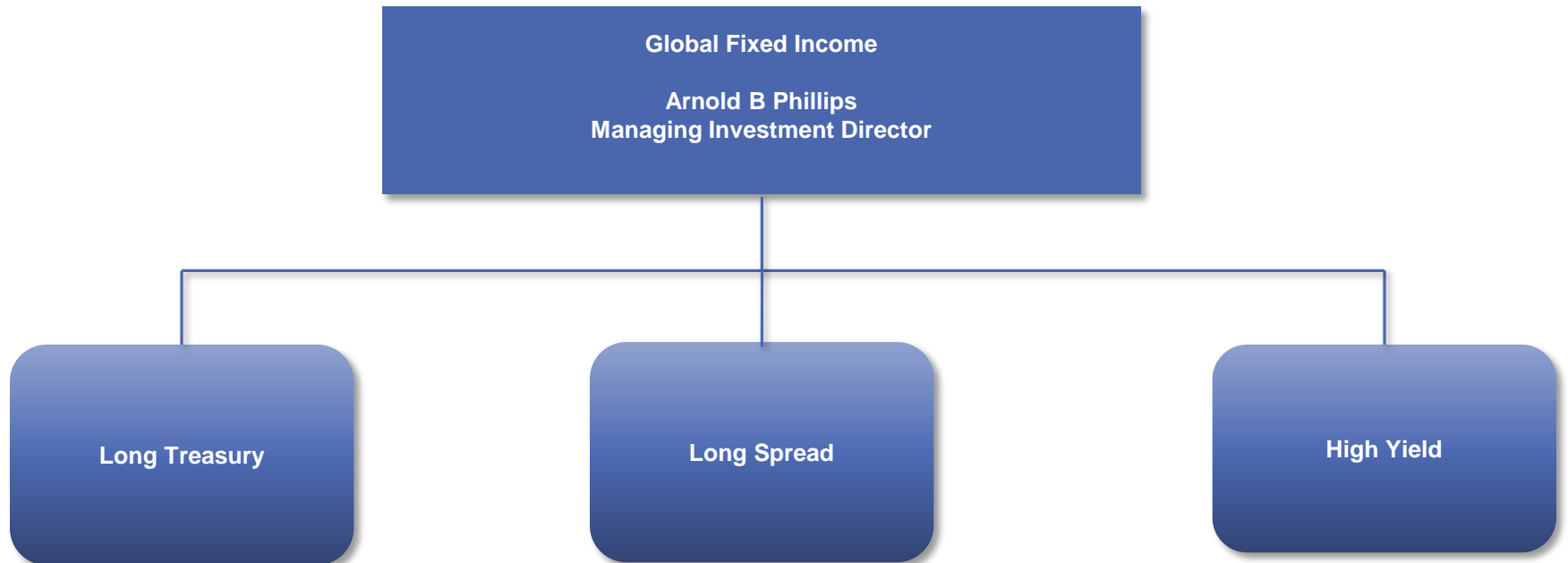
GFI Business Philosophy

- Internal management is cost effective
 - Over 96% of CalPERS Global Fixed Income is managed internally
- Internal expertise is critical to success
- Active management is human capital intensive
- Active management can add value in the fixed income markets
- CalPERS' long-term investment horizon is an advantage

Investment Office Organization Chart



Functional Organization Chart



Staffing Overview



Global Fixed Income Staff

- 1 Managing Investment Director (MID)
- 4 Investment Directors (ID)
- 7 Investment Managers (IM)
- 7 Associate Investment Managers (AIM)
- 12 Investment Officers (4-IO3s, 8-IO2s, 2-IO1s)



GFI Organizational Updates

- Transitioned Economics and Quantitative Analysis from GFI Reporting Line to Total Fund Research and Strategy Group (RSG)
- Transitioned 2 GFI Staff to TLPM
- Transitioned 1 vacant IO3 position to Investment Servicing Division (ISD)



Recruitments

- | | |
|-------------------|--------------------------------|
| • 2 ID Positions | Target Start Date: By 12/30/19 |
| • 2 IM Positions | Target Start Date: By 12/30/19 |
| • 1 AIM Positions | Target Start Date: By 12/30/19 |
| • 2 IO2 Positions | Target Start Date: By 12/30/19 |

Business Overview | GFI Functions

Global Fixed Income

The Program seeks to diversify and reduce overall risk for CalPERS investment programs while enhancing CalPERS total returns

Long Treasury

The segment seeks to serve as an economic diversifier to equity and is a reliable source of liquidity

Long Spread

The segment seeks to provide a reliable source of income and an additional source of liquidity

High Yield

The segment seeks to provide exposure to economic growth and be a reliable source of income

Program Expenses

	2018-19			2017-18		
	AUM (\$millions)	Fees Paid (\$millions)	Fees Paid ² (BPS)	AUM (\$millions)	Fees Paid (\$millions)	Fees Paid ² (BPS)
Internal Management	\$ 103,801	\$ 10.1	1	\$ 105,785	\$ 10.8	1
External Management ¹	\$ 6,196	\$ 14.0	23	\$ 5,873	\$ 11.3	19
Consultants Expense	N/A	\$ 1.1	0	N/A	\$.0	0
Technology & Operating Expense	N/A	\$ 14.4	1	N/A	\$ 13.1	1
Total Program	\$ 109,997	\$ 39.6	4	\$ 111,659	\$ 35.2	3

1. Includes base and performance fees

2. BPS calculated on fee type AUM. Internal Management, Consultants and Technology & Operating Expense BPS calculated on Total Program AUM

AUM Sourced from INVO-IRP Total Fund Package.
Expense Fees are derived from FINO Expense Reports