

Investment Practices and Performance Evaluation Consultant Report



Investment Practices and Performance Evaluation

Background

- To assist Irving Firemen's Relief & Retirement Fund ("Irving Fire") with the preparation and filing of the first independent evaluation report required by Texas Government Code Section 802.109(a)(1-5), Irving Fire has engaged Meketa Investment Group, Inc. (the "Consultant" or "Meketa") to prepare and file with the Board a report (the "Report") that includes the topics required to be analyzed and/or reviewed by the Law.
- This report was prepared in March and April 2020. Any references to current exposure, policies, or procedures were accurate or applicable at that time and may not be the same or accurate in the future.

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Disclosure Statement by Independent Firm

- Meketa is a corporation organized in the Commonwealth of Massachusetts and which is owned entirely by its senior professionals. Meketa has no parent organization.
- Meketa does not have any affiliations with brokerage firms, nor any broker-dealer relationships. Meketa
 does not receive soft dollars, finder fees, commissions, or third-party marketing fees. Meketa's line of
 business is providing investment consulting and advisory services. Meketa works only for its clients.
- Effective June 2019, Meketa entered into an agreement with Irving Fire to serve as its general investment consultant ("Agreement").
- Under the Agreement, Meketa receives its fees for the services it provides to Irving Fire from Irving Fire directly and does not receive any fees other than those set forth in the Agreement.
- Meketa does not (directly or indirectly) manage Irving Fire's investments. Meketa's role is strictly limited to non-discretionary advice.

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Qualifications

- Meketa is a full-service independent investment-consulting firm.
- Meketa has been providing consulting services for over four decades (since 1978) and currently consults
 on over \$1.4 trillion for over 200 institutional clients.
- Meketa has over 198 full-time employees and operates out of seven offices.
- Investment professionals at Meketa average 11 years with the firm and 21 years of investment experience.
 Meketa currently has 40 CFA Charter holders and 24 CAIA Charter holders.
- Meketa's mission is to provide the highest quality investment advisory services. Meketa aims to utilize, and continuously hone, the best practices that have been developed over its 40-year plus history. Meketa seeks to be a thought leader by evaluating investment industry information with healthy skepticism and performing value-added original research.

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Scope

- Sec. 802.109. INVESTMENT PRACTICES AND PERFORMANCE REPORTS.
- (a) Except as provided by Subsection (e) and subject to Subsections (c) and (k), a public retirement system shall select an independent firm with substantial experience in evaluating institutional investment practices and performance to evaluate the appropriateness, adequacy, and effectiveness of the retirement system's investment practices and performance and to make recommendations for improving the retirement system's investment policies, procedures, and practices.
- Each evaluation must include:
 - (1) an analysis of any investment policy or strategic investment plan adopted by the retirement system and the retirement system's compliance with that policy or plan;
 - (2) a detailed review of the retirement system's investment asset allocation, including:
 - (A) the process for determining target allocations;
 - (B) the expected risk and expected rate of return, categorized by asset class;
 - (C) the appropriateness of selection and valuation methodologies of alternative and illiquid assets; and
 - (D) future cash flow and liquidity needs;



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Scope (continued)

- (3) a review of the appropriateness of investment fees and commissions paid by the retirement system;
- (4) a review of the retirement system's governance processes related to investment activities, including investment decision-making processes, delegation of investment authority, and board investment expertise and education; and
- (5) a review of the retirement system's investment manager selection and monitoring process.

Section 802.109 - Subsection (a) 1



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Section 802.109 - Subsection (a) 1

Law	Requirement		
Sec. 802.109, Subsection (a) 1	"an analysis of any investment policy or strategic investment plan adopted by the retirement system and the retirement system's compliance with that policy or plan"		
Criteria or Topic	Irving Fire Status		
	 The most recent review occurred in February 2020. The Consultant presented a red-lined version to the Board for review and discussion. 		
Most Recent Investment Policy Statement ("IPS") Review?	 The Board and the Consultant discussed the recommended changes and rationale. 		
	 The Board approved the recommended changes at the next Board meeting in March 2020. 		
	 The IPS includes a historical list of the dates when prior revisions were adopted. 		
Historical Review Cycle	 It appears changes have been made annually (on average) dating back to 2003. 		

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Section 802.109 – Subsection (a) 1 (continued)

Criteria or Topic	Irving Fire Status		
Requirement for (at least) annual review?	• Yes		
Compliance with annual review?	• Yes		
	Section 1: Introduction		
	Section 2: Investment Objectives		
	Section 3: Duties of Parties Involved		
	Section 4: Asset Allocation and Rebalancing		
	Section 5: Investment Guidelines		
Current IPS Structure?	Section 6: Performance Measurement		
Cui i ent ips su actul e!	Section 7: Selection of Money Managers		
	Section 8: Meetings and Reports		
	Appendix A: Strategic Asset Allocation Policy		
	Appendix B: Asset Class and Strategic Policy Benchmarks		
	Appendix C: Twenty Year Asset Class Forecasts		

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Section 802.109 – Subsection (a) 1 (continued)

Consultant Analysis

- The IPS is well thought-out and in line with industry standards.
- The IPS covers Fund level items but also manager guidelines (e.g. concentration limitations, sector constraints, etc).
- It is consistent with guidance from the CFA Institute.
- Roles and responsibilities of all key parties involved are clearly outlined (Board of Trustees, Staff, Investment Consultant, Investment Managers, Custodian Bank).
- The document is written in "plain-English" and easy for a layperson to understand.
- There is no evidence of any known compliance violations with the IPS at this time.
- It is our opinion that the Board of Trustees and Staff will be able to stay committed to the guidance detailed in the IPS during a stressed or prolonged market scenario.
- Overall: The existing Investment Policy Statement appears appropriate, adequate, and effective in our opinion.

Recommendations

• In the most recent annual review, the Consultant and Board streamlined and simplified the IPS in many sections. The Consultant would like to see continued simplification, as the document is intended to be high-level in nature and not overly prescriptive.

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Section 802.109 - Subsection (a) 2



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Section 802.109 – Subsection (a) 2

Law	Requirement	
	"a detailed review of the retirement system's investment asset allocation, including:	
	(A) the process for determining target allocations;	
Sec. 802.109,	(B) the expected risk and expected rate of return, categorized by asset class;	
Subsection (a) 2	(C) the appropriateness of selection and valuation methodologies of alternative and illiquid assets; and	
	(D) future cash flow and liquidity needs"	

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Section 802.109 - Subsection (a) 2.A

Criteria or Topic	Irving Fire Status
Written policy for asset allocation development?	Yes, outlined in the IPS.
Who has formal approval authority of the strategic policy asset allocation?	Board of Trustees.
Frequency of review?	Not stated in the IPS.
Tactical vs. Strategic?	 Strategic. The Consultant (and the majority of investment research) advocates the importance of a long term strategic asset allocation approach. The Consultant is unaware of prior tactical decisions that may have been executed in prior years. The Consultant and the Board have executed rebalancing activities in the past year consistent with the long term strategic asset allocation policy.

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Section 802.109 – Subsection (a) 2.A (continued)

Timeline of Most Recent Asset Allocation Review and Adoption

- Irving Fire's approach to asset allocation is detailed in Section 4 of its IPS.
- The most recent significant asset allocation review was conducted over most of 2019. A detailed review of the timeline and process is listed below:

April 2019 – During the hiring process, Meketa shared its approach to asset allocation development with the Trustees and provided some preliminary observations of the Irving Fire Fund. The Trustees informed Meketa of the importance of improved liquidity and ability to model and manage potential large net benefit payments in their DROP program.

May 2019 – A subcommittee of Irving Fire Trustees visited Meketa's Carlsbad, California office. Meketa provided a mini-asset allocation review for the Trustees. The analysis compared the current target asset allocation vs. the 12/31/18 portfolio exposure vs. two alternative asset mixes ("Mix A and Mix B"). Meketa's suggested Mix A and Mix B each had less in alternative assets and more in high quality investment grade bonds. This was in response to the Trustees' previous comments addressing liquidity concerns. Mix A and Mix B both had less expected standard deviation and higher expected Sharpe Ratio relative to Irving Fire's target policy and current exposure at the time.

The analysis provided a number of stress tests, historical scenario analysis, value at risk, risk budgeting and liquidity analysis. In addition, Meketa highlighted the importance that the sequence of returns can have on a fund with negative cash flows. The analysis reviewed three scenarios that achieved the same twenty-year annualized return of 7.5% but with very different return paths. A linear 7.5% return was modeled along with a "Strong Early Returns" and a "Strong Late Returns." Those scenarios produced the same returns but the order in which the returns were generated was reversed. The analysis showed that a fund's market values would end up at the exact same value at the end of twenty years (only if there were no cash flows into or out of a fund). The analysis showed a very large difference in ending expected market value between the three return paths when cash flows were incorporated. Negative cash flows make it much harder for a fund to recover after a market downturn. The larger the cash outflows are, the more severe the impact (because the fund is forced to liquidate assets after downturns and has less assets in subsequent positive years). This analysis was key in leading to the eventual "bar-belled" asset allocation policy that the Trustees ultimately adopted (more details next page).

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Section 802.109 – Subsection (a) 2.A (continued)

Timeline of Most Recent Asset Allocation Review and Adoption (continued)

July 2019– As one of the first projects subsequent to being hired, Meketa produced a *Target Return Matrix and Preliminary Asset Allocation Review* at the request of the Trustees. This report helped the Trustees decide to reduce the actuarial target return for the Fund. The report evaluated the current asset allocation and a number of other possible asset allocations with different return targets. Potential asset allocation policy mixes were developed with return expectations ranging from 6.5% to 7.5%. The expected return and expected volatility of each were analyzed and evaluated against each other. Each possible mix had a number of common themes relative to Irving Fire's starting point. The themes included: increase in investment grade bonds for all mixes, decrease in real estate for all the mixes, introduction of U.S. Treasuries and TIPS across all mixes, and reduction in public equities across all mixes. The report also provided industry comparison data on what the average actuarial target return was for a number of public pension plans that participated in a NCPERS survey.

December 2019 – Subsequent to the July review the Trustees voted to reduce the actuarial target return to 7.0%. After a multi-month process of hiring a new custodian and transferring all assets to the new custodian, Meketa prepared a comprehensive asset allocation and liability review for discussion with the Trustees in early December. The key sections of the report were:

- Asset Allocation Overview
- Setting Capital Markets Expectations
- Policy Options
- Diversification and Risk Analysis
- Liquidity Analysis
- DROP Analysis

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Section 802.109 – Subsection (a) 2.A (continued)

Timeline of Most Recent Asset Allocation Review and Adoption (continued)

The report evaluated the current asset allocation exposure and presented three alternative asset allocation policies for Irving Fire to consider that each had a target return expectation of 7.0%. The report included various approaches to assessing risk in order to provide a "mosaic" of the risks faced by Irving Fire. Ultimately the Trustees adopted "Mix A" (see exhibit #1) which was expected to be the most liquid and lowest cost option of the three mixes. It was designed with a bar-bell approach. The bar-belled asset allocation approach should help mitigate the impact of negative returns with a negative cash flow fund. In negative return years, the risk mitigating assets like investment grade bonds and Treasuries should help the Fund meet required benefit payments (on the assumption they preserve value well). In positive return years, public equities should be a source of cash for benefit payments (trim winners after market appreciation). Overall, the structure is designed to help avoid locking in losses to pay benefit payments by seeking to avoid selling assets at distressed prices.

The report also included a DROP analysis with a number of assumptions and modeled scenarios to assist the Trustees in re-designing the DROP program. The analysis showed that a decrease in the DROP rate, or conversion to a variable rate structure tied to the performance of the overall Fund, would likely be beneficial to the stability of the Fund.

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Section 802.109 – Subsection (a) 2.B

Criteria or Topic	Irving Fire Status			
	According to the IPS (Section 2.4 Investment Costs):			
Active vs. Passive - Policy	 "The Board, with the advice of the Consultant, intends to monitor and control investment costs at every level of the Fund. Accordingly, where appropriate and practical: 			
	 passive portfolios will be considered to minimize management fees and portfolio turnover." 			

Active vs. Passive -Implementation

 Irving Fire has been actively increasing its use of passive exposure based on the recommendation of the Consultant. Below is a summary of passive exposure at certain periods in the recent past along with anticipated target exposure:

Date	% in Passive
June 30, 2019	1
December 31, 2019	13
March 31, 2020	30
Long term expected target ¹	45 - 50

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¹ Not a formal target but a Meketa assumption based on the expectation that 100% of investment grade bonds, 100% of short term investment grade bonds, 100% of TIPS, and 100% of Treasuries will be passive, along with anywhere from 25% to 33% of the public equity exposure.



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Section 802.109 – Subsection (a) 2.B (continued)

Criteria or Topic	Irving Fire Status		
	Irving Fire uses passive strategies in the following asset classes:		
	 Domestic large cap equity (S&P 500 Index) 		
	 International developed equity (MSCI EAFE Index) 		
Active vs. Passive –Implementation (continued)	 Investment grade bonds (Barclays Aggregate Index) 		
(66	 Short term investment grade bonds (Barclays US1-5 YR Gov/Credit) 		
	 Treasury Inflation Protected Securities (Barclays TIPS Index) 		
	 Long Term Treasuries (Barclays US Long Term Treasury Index) 		

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Section 802.109 – Subsection (a) 2.B (continued)

Criteria or Topic Irving Fire Status

A summary of Meketa's process is listed below.

- Meketa recommends its client use the 20 year projections.
 - Each year Meketa Investment Group conducts an Asset Study to attempt to forecast future expected returns, future expected risk and correlation measures for over 75 asset classes and sub-asset classes.

Irving Fire uses capital markets assumptions developed by its Consultant.

- The process relies on both quantitative and qualitative methodologies.
- First, a large set of quantitative models are used to arrive at a set of baseline expected ten-year annualized returns for major asset classes.
- These models attempt to forecast a gross "beta" return for each public market asset class; that is, it does not model "alpha," nor does it apply an estimate for management fees or other operational expenses¹.
- The models are fundamentally based (based on theoretically defined return relationship with current observable factors).
- Some of the models are more predictive than others. For this reason, a
 qualitative overlay is required, which takes the form of a data-driven
 deliberation among the research team at Meketa and the Investment
 Policy Committee at Meketa.

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Asset Class Return and Standard
Deviation Expectations Development

¹ Our expectations are net of fees where passive management is not available (e.g., private markets and hedge funds).



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Section 802.109 – Subsection (a) 2.B (continued)

Criteria or Topic Irving Fire Status

Asset Class Return and Standard Deviation Expectations Development (Continued)

- Return assumptions for hard-to-predict asset classes as well as those with limited data are influenced more heavily by the qualitative analysis.
- As a result of this process, ten-year annualized return expectations are calculated, which serve as the foundation of the longer-term, twenty-year expectations.
- The twenty-year annualized return expectations are formed by systematically considering historical returns on an asset class by asset class level. Qualitative assessments are made on the value of the historical data and the confidence we have (or lack thereof) that the historical average return is representative of future returns.
- Specifically, a weighted average of the ten-year expectations and average historical returns in each asset class is calculated.
- The weights are determined by a qualitative assessment of the value of the historical data. Generally, if there is little confidence that the historical average return is representative of what an investor can expect, the weight of the ten-year forecast will be greater. Therefore, the weight on the ten-year forecasts ranges from 0.5 to 0.9.

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¹ For example, Meketa has less confidence in historical data that do not capture many possible market scenarios or that are overly polluted by survivorship bias.



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Section 802.109 – Subsection (a) 2.B (continued)

Criteria or Topic Irving Fire Status

Asset Class Return and Standard Deviation Expectations Development (Continued) Volatility and correlation expectations are developed differently. These assumptions rely primarily on historical averages, with an emphasis given to the experience of the trailing ten years.

- Qualitative adjustments, when applied, usually serve to increase the correlations and volatility over and above the historical estimates (e.g., using the higher correlations usually observed during a volatile market).
- Adjustments to volatility are made based on the historical skewness of each asset class (e.g., increasing the volatility for an asset class that has been negatively skewed).
- In the case of private markets and other illiquid asset classes where historical volatility and correlations have been artificially dampened, public market equivalents are used as a base for estimates before applying any qualitative adjustments.
- These volatility and correlation expectations are then combined with our twenty-year return expectations to assist us in subsequent asset allocation work, including mean-variance optimization and scenario analyses.

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Exhibit #1 – Target Asset Allocation and Minimum/Maximum Weights

Strategic Target Asset Allocation ¹	Target Weight (%)	Minimum Weight (%)	Maximum Weight (%)
Growth Assets	45		
US Equity	25	20	30
Developed Market Equity (Non-US)	14	9	19
Emerging Market Equity	6	3	9
Risk Mitigating Assets	31		
Short-Term Investment Grade Bonds	10	5	15
Investment Grade Bonds	16	11	21
Treasuries	5	0	10
Diversifiers	24		
Real Estate	11	7	15
Timber	2	0	4
Bank Loans	6	3	9
TIPS	5	0	10
Expected Return (20 years)	7.0		
Expected Standard Deviation (20 years)	9.5		

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¹ Expected return and standard deviation are based upon Meketa Investment Group's 2019 Annual Asset Study. Throughout this document, returns for periods longer than one year are annualized.



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Exhibit #2 – Capital Market Assumptions

Asset Classes ¹	20 Year Return Expectations (%)	20 Year Standard Deviation Expectations (%)
US Equity	8.1	17.0
Developed Market Equity (Non-US)	8.5	19.0
Emerging Market Equity	10.4	24.0
Private Equity	9.8	23.0
Investment Grade Bonds	3.9	4.0
Short-Term Investment Grade Bonds	3.4	1.0
Hedge Fund of Funds	5.4	7.0
Treasuries (Long term Government Bonds)	3.7	12.0
Real Estate	7.0	15.0
Timber	6.0	11.0
Bank Loans	6.1	9.0
TIPS	3.6	7.0

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¹ Expected return and standard deviation are based upon Meketa Investment Group's 2019 Annual Asset Study. Throughout this document, returns for periods longer than one year are annualized.



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Section 802.109 – Subsection (a) 2.C

Criteria or Topic	Irving Fire Status
Alternative Investment Selection Process	 The last alternative investment made by Irving Fire was in the summer of 2018, prior to the engagement of the current Consultant. We are not aware of what criteria or process was used historically for selecting alternative investments. The most recent strategic asset allocation policy adopted by the Board will result in a decrease in alternative investments. We do not anticipate any new alternative investments in the foreseeable future.
Valuation Approach	 Irving Fire values its alternative investments based on fair value determinations provided by audited financial statements or appraisals provided to Irving Fire from its alternative investment managers.

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Section 802.109 – Subsection (a) 2.C (continued)

Criteria or Topic	Irving Fire Status			
	Asset Class	Previous Target (%)	3/31/20 Exposure (%)	New Policy Target (%)
Exposure to	Private Equity	6	3	0
Alternative	Hedge Funds	10	6	0
Investments	Real Estate	12	15	11
	Timber	3	2	2
	Total	31%	26%	13%

• Exposure to alternate investments has decreased and we expect that trend to continue based on the new asset allocation policy target.

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Section 802.109 – Subsection (a) 2.D

Criteria or Topic	Irving Fire Status
Actuarial Highlights	 Funded status (as of the most recent Actuarial Valuation Report December 31, 2017¹) was 76% funded based on the actuarial value of assets. Actuarial valuation reports are only prepared once every two years. The Fund hired a new actuary (Foster and Foster) in April 2019. Foster and Foster is currently (as of April 2020) preparing a December 31, 2019 actuarial valuation report. We expect to see a decrease in funded status given the change in actuarial assumed rate of return and the net outflows the fund has incurred over the past two years in benefit and DROP payments. Foster and Foster performed several benefit change analyses for the Board in 2109/early 2020. Ongoing discussions with the Board and City continue to take place regarding potential future benefit changes. No final decisions for future benefit changes had been made at time of report production (April 2020).
Recent Actuarial Work	 It is our understanding that the current stance of the Texas Pension Review Board is that each plan shall not have an amortization period of more than 30 years, with 10-25 years preferred. Irving Fire currently fails that test, and has an infinite amortization period. Over the course of the past year, Foster and Foster has prepared a number of special projection actuarial analysis to identify plan design changes. Foster and Foster conducted a formal Experience Study delivered to the Board in June 2019.

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¹ Valuation Report as of December 31, 2017 prepared by John Crider Jr. Consulting Actuary.



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Section 802.109 – Subsection (a) 2.D (continued)

Criteria or Topic	Irving Fire Status
Actuarial Work (continued)	 Numerous different plan design changes were identified and evaluated on both a standalone basis and combination basis.
	 According to the memos, reports and Experience Study prepared by Foster and Foster, most of the discussed changes are not significant enough to put Irving Fire into a compliant amortization period.
	 In November 2019, at the request of the Board of Trustees, Foster and Foster determined that "additional annual contributions of approximately 8% of payroll are needed to achieve a 40-year amortization period by calendar 2026."
	 As of April 2020, the Board (in consultation with the membership, Actuary, and Consultant) were still evaluating the best course of action to put the Fund on a compliant amortization path.
Actuarial Assumed Rate(s) of Return	 The Board has been actively reducing the actuarial assumed rate of return. The assumed rate of return is currently 7.0%. It was reduced in October 2019 when the Board lowered it from 7.5% to 7.0%. As recently as June 2018 it was 8.25%.

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Section 802.109 – Subsection (a) 2.D (continued)

Criteria or Topic	Irving Fire Status			
Annual Historical Contributions¹	Contributions	2017	2018	2019
	Employee (firefighters)	\$4.1 mm	\$4.4 mm	\$4.6 mm
	Employer (City)	\$5.4 mm	\$5.7 mm	\$6.0 mm
	Total	\$9.5 mm	\$10.1 mm	\$10.6 mm

Annual Historical Benefit Payments²

	2017	2018	2019
Total Annual Benefit Payments	\$14.0 mm	\$21.6 mm	\$37.9 mm

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¹ Source: Actuary Foster and Foster

² Source: Actuary Foster and Foster (benefit payments inclusive of DROP payments)



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Section 802.109 – Subsection (a) 2.D (continued)

Criteria or Topic		Irving Fire Status		
Annual Historical		2017	2018	2019
Administrative expenses ¹	Total Annual Administration Expenses	\$97,045	\$169,950	\$174,624
		2017	2018	2019
	Net Annual Cash Flows	-\$4.6 mm	-\$11.7 mm	-\$27.5 mm
Annual Historical Net Cash Flows ²	Fund Market Value at year end	\$184.8 mm	\$194.4 mm	\$195.7 mm
	Net annual cash flows as a % of Fund MV	-2.5%	-6.0%	-14.1%

• An acceleration of lump sum DROP withdrawals over the past few years (into 2020 as well) has led to a drastic increase in annual net cash outflows.

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¹ Source: Actuary Foster and Foster. Costs to run the Pension – primarily staff, office, etc.

² Meketa calculation based on data from actuary Foster and Foster.



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Section 802.109 – Subsection (a) 2.D (continued)

Criteria or Topic	Irving Fire Status					
	Contributions	2020 expected	2021 expected	2022 expected		
Projected Contributions ¹	Employee (firefighters)	\$4.8 mm	\$4.9 mm	\$5.0 mm		
	Employer (City)	\$6.1 mm	\$6.3 mm	\$6.5 mm		
	Total	\$10.9 mm	\$11.2 mm	\$11.5 mm		
	 The firefighters currently contribute 13.0% of pay. The city contributes 16.75% of pay. 					
Draincted Papafit	• According to the Actuary: "acc	umulated DDOD balances a	ro a cignificant nortion	of the Fund accete Di		

Projected Benefit Payments

• According to the Actuary: "accumulated DROP balances are a significant portion of the Fund assets. Due to the nature of the DROP provisions, it is extremely difficult to estimate the total benefit payments in any given year."

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¹ Source: Actuary Foster and Foster. Projections include assumption of 2.75% payroll growth.



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Section 802.109 – Subsection (a) 2

Consultant Analysis

- We are pleased with the Board's decision to reduce the actuarial assumed rate of return over the past few years. The current rate is in line with industry medians.
- The Board is mindful of adopting a return expectation that is realistic given capital market return expectations.
- In our opinion, the approach Irving Fire takes to formulate asset allocation is sound, consistent with best practices, and will lead to a well-diversified portfolio. At the time of this report production Irving Fire was still in a transition phase as it rebalanced to the new target asset allocation in accordance with the rebalance plan created by its Consultant.
- Given the size of the Fund, the negative net cash outflows for benefit payments and DROP payments, and the uncertainty surrounding plan design changes, we are pleased the Board has adopted a more conservative asset allocation policy with significantly less illiquid alternative investments.
- The pace of withdrawals from the DROP program is concerning and could be detrimental to the Fund if it is forced to sell assets at distressed prices in order to meet DROP withdrawal requests.
- The target asset allocation is well diversified and built with a global perspective in mind given the globally investable universe.
- Irving Fire's approach to passive management is consistent with industry best practices (e.g. passive is used in efficient asset classes).

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Section 802.109 – Subsection (a) 2 (continued)

Recommendations

- We recommend the Board continues to follow its rebalance plan to the new asset allocation policy.
- We recommend the Board and Staff closely monitor contribution levels, DROP withdrawals and expected net out flows.
- We recommend Irving Fire consider adjusting actuarial valuation assumptions as necessary based on the outcomes and advice of the actuary. The Fund will likely need to increase contributions, cut benefits, change the DROP program, or all of the above.
- We recommend the Fund conducts an Actuarial Valuation Report every year (rather than every two years).
- We recommend making changes to the DROP program to better align it with the long-term solvency of the Fund. Options to consider include (non-exhaustive list): reduce the DROP crediting rate, adopt a variable rate that is tied to the returns of the Fund, place limitations on the amount of DROP assets that can be redeemed from the Fund in any given month.

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Section 802.109 - Subsection (a) 3



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Section 802.109 – Subsection (a) 3

Law	Requirement
Sec. 802.109, Subsection (a) 3	"a review of the appropriateness of investment fees and commissions paid by the retirement system"

Criteria or Topic	Irving Fire Status			
	According to the IPS,			
	 "The Board, with the advice of the Consultant, intends to monitor and control investment costs at every level of the Fund. Accordingly, where appropriate and practical: 			
	 1) Professional fees will be negotiated, 			
Policy Language	 2) passive portfolios will be considered to minimize management fees and portfolio turnover; and 			
	 3) investment managers will be instructed to minimize brokerage and execution costs while seeking best execution". 			
	 – (Section 2: Investment Objectives, Subsection 2.4 Investment Costs). 			

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Section 802.109 – Subsection (a) 3 (continued)

Criteria or Topic	Irving Fire Status
Internal process for paying manager fees	 Most fees are deducted from manager account or NAV. When investment management fee invoices are received, the Pension Administrator emails the fee to the Board Chairman and cc's the Consultant and Custodian. Once approved by the Board Chairman, the Pension Administrator authorizes the custodian to pay the fee. If requested, the Consultant will perform an independent calculation (quarter ending market value x fee schedule x 1/4) as a sanity check.
	The overall process is not documented in any written formal policy.
Investment Manager Fees	 The Consultant monitors investment manager fees and appropriateness relative to similar investment strategies. An investment manager fee analysis is included in every quarterly report. It shows each manager's effective annual fee in both basis points and dollars. When hired in June 2019, the Consultant and the Board made a conscious effort to reduce investment management fees going forward. In October 2019, the Consultant prepared a portfolio Transition Plan with recommendations to eliminate many high fee strategies and increase the use of low cost passive index funds. The Board approved the Transition Plan. The Consultant predicts the total Fund level investment fees (inclusive of investment management fees, custodian fees and consultant fees) for Irving Fire will decrease from 0.98% effective fee to 0.61% effective fee once the transition is complete. A summary of the analysis is shown in exhibit #3 on the following page.

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Investment Practices and Performance Evaluation

Exhibit #3 - Example of Expected Fee Savings

Excerpt from 10/2019 Transition Plan

Fee Comparison – High Level

	Old Fee Summary	Prospective Fee Summary	Savings
asset management	\$ 1,579,094	\$ 1,048,717	\$ 530,376
investment advice/custody	\$ 384,325	\$ -	
investment advice	\$ -	\$ 120,000	\$ 219,605
custody	\$ -	\$ 44,721	
total	\$ 1,963,419	\$ 1,213,438	\$ 749,981
	Old Fee Summary	Prospective Fee Summary	Savings
asset management	0.79%	0.53%	0.27%
investment advice/custody	0.19%	0%	
investment advice	0%	0.06%	0.11%
custody	0%	0.02%	
total	0.98%	0.61%	0.38%

• Fee savings will be experienced at all levels of the investment framework (asset management, investment advice and custody).



Investment Practices and Performance Evaluation

Subsection 802.109 – Subsection (a) 3 (continued)

Criteria or Topic	Irving Fire Status
	 Based on our analysis (see Exhibit #4), we estimate Irving Fire paid a blended average fee of approximately 0.78% of Fund assets in calendar year 2019 to investment managers. This is above the industry average of 0.60% (according to recent NCPERS survey conducted).
	• The biggest source of fees was in private real estate, hedge funds and international equity.
	The calculations were based on the following:
	 For public markets managers the calculations are based on market values at the end of the fiscal year, multiplied by the basis points fee schedule. Strategies that were held for less than the full year were prorated based on the portion of the year held in the Irving Fire Fund.
Total Annual Fees	 For private markets managers the calculation is based on the commitment amount multiplied by the base fund management fee for the investment period. The calculation adjusts for funds that charge on invested (rather than committed) capital, as is common for funds later in their lifecycle.
	 The calculation does not take into consideration performance fees.
	 The calculation does not take into consideration the underlying fee each fund of funds pays to the underlying managers.
	 Total estimated fees paid for calendar year 2019 are detailed in Exhibit #4 (Consultant calculation).

¹ The 2018 NCPERS Public Retirement Systems Study includes responses from 167 state and local government pension funds with more than 18.7 million active and retired members and total assets of \$2.6 trillion. Roughly half the survey participants were Police/Fire pension plans.

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Exhibit #4 –Estimated Investment Management Fees Paid in 2019

	% of Fund	Year-end Market Value¹ (\$mm)	Estimated Annual Fee (\$)	Estimated Effective Fee (%)
Domestic Equity	31	60.9	293,011	0.48
International Equity	31	60.5	407,721	0.67
Fixed Income	12	24.1	111,706	0.46
Hedge Funds	6	11.7	304,571	2.59
Private Equity ²	3	6.2	52,513	0.84
Real Estate ²	14	26.9	331,112	1.23
Timber ²	2	3.3	31,107	0.95
Totals	100	195.7	1,531,742	0.78

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¹ Approximately \$2.1 mm (\$1 million) was held in cash at the end of the year.

² For private markets managers the calculation is based on the commitment amount multiplied by the base fund management fee (of the fund of funds manager) for the investment period. The calculation adjusts for funds that charge on invested capital (rather than committed), as is common for funds later in their lifecycle. The calculation does not take into consideration performance fees. The calculation does not take into consideration the underlying fee each fund of funds pays to the underlying managers.



Investment Practices and Performance Evaluation

Subsection 802.109 – Subsection (a) 3 (continued)

Criteria or Topic	Irving Fire Status
Communication to the Board	The Consultant shares its fee analysis with the Board and Staff.
Brokerage Fees and Commissions	 The public market managers pay explicit commission costs and implicit opportunity costs inherent in bid-ask spread differentials (equity and fixed income strategies, respectively). These cost are shared by all investors in a commingled trust or specific to Irving Fire in the investments that are structured as separately managed accounts. Commission costs were provided by each applicable investment manager. 2019's brokerage fees and commissions are detailed on the following page in Exhibit #5.
Legal Review	 According to the Pension Administrator, all legal contracts are completed by the Fund Chairman or Fund Attorney "if necessary".

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Exhibit #5 – Brokerage and Commissions Paid in 2019¹

Accounts	Number of Shares Traded	Total Brokerage and Commissions (\$)	Brokerage and Commissions Per Share (\$)
Equity Manager A	31,325	973	0.031
Equity Manager B	14,160	241	0.017
Equity Manager C	22,352	650	0.029
Equity Manager D	6,268	226	0.036
Equity Manager E	154,059	1,926	0.013
Equity Manager F	89,340	1,831	0.020
Equity Manager G	126,231	1,231	0.010
Totals	443,735 shares	\$7,077 commissions	\$0.016 per share

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¹ All data reflects trade activity after the Fund transitioned from Morgan Stanley to Frost Bank in late October 2019. While at Morgan Stanley, commissions were bundled into the total advisory/custody relationship fee. To get an estimate of potential total calendar year trade volumes and commissions we recommend multiplying the total numbers by 6 months to annualize.



Investment Practices and Performance Evaluation

Subsection 802.109 – Subsection (a) 3 (continued)

Consultant Analysis

- Irving Fire's increased use of passive index funds will help reduce overall costs for the Fund.
- The private markets related fees are expensive but not surprising, nor outside the norm for fund of funds.
- The use of fund of funds adds a double layer of cost to Irving Fire.
- The commissions paid appear reasonable and in-line with industry norms.
- It is unusual for Trustees to be involved in legal review/completion of paperwork required on new investments (other than signature execution after formal legal review).

Recommendations

- We recommend Irving Fire continues to increase its passive exposure in efficient market classes.
- We recommend that Staff, the Board, and the Consultant all remain diligent in monitoring fees.
- We recommend Irving Fire staff document its internal process for fee reconciliation and payment in a formal policy document.
- We recommend Fund counsel reviews all legal contracts when the Fund hires a new vendor or investment strategy.

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Section 802.109 - Subsection (a) 4



Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 4

Law	Requirement
Sec. 802.109,	"a review of the retirement system's governance processes related to investment activities, including investment
Subsection (a) 4	decision-making processes, delegation of investment authority, and board investment expertise and education"

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 4

Criteria or Topic Irving Fire Status

- The Irving Firemen's Relief & Retirement Fund is currently (April 2020) in the process of building its own website. Historically, and currently, the Fund has a web page on the City of Irving website.
- The City website is simple and easy to navigate.
- The City website includes (non-exhaustive list):
 - Trustee Names
 - Trustee term limits
 - Monthly meeting agendas
 - Monthly meeting minutes were not found on the City website
 - Plan document
 - Investment Policy Statement (from 2017)
 - Quarterly investment performance report (from 2Q19)
 - Cash flow spreadsheet (from 2015)
 - Actuary Valuation Report (from 2015)
 - Plan funding diagram (from 2014).
 - The stated standard meeting start time is inaccurate
- It is our understanding the "new" Fire Fund website is not live yet (as of April 2020). It is not discoverable by a Google search but is discoverable if a user enters in the exact website location www.irvingfirepension.com.
- The files and information on the new website are more up-to-date.

Website and Transparency

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Section 802.109 - Subsection (a) 4 (continued)

Criteria or Topic	Irving Fire Status
Delegation of Investment Authority?	 The Board of Trustees has investment authority. Any action by the Board requires a majority vote. Rebalancing recommendations are approved by the Board upon recommendation from the Consultant. Staff assists with the rebalancing efforts after Board approval. Three Trustees are listed as authorized signers. The Pension Administrator is not listed as authorized signer.
Investment Decision Making Process	 Most investment decisions are based on the recommendation of the Consultant, with conversation among the Board prior to approval. The Board of Trustees frequently debates the pros-and-cons of each investment decision in open public meetings. With the exception of one investment (common stock held in Uber that was received in-kind as part of a private placement investment with former Consultant) all investments are managed by external investment managers. The common stock in Uber is being liquidated on a three month timeline.
Investment Consultant	 Irving Fire hired Meketa Investment Group in June 2019 after conducting a national RFP process. Prior to the hire of Meketa, Irving Fire was engaged with one consulting firm for approximately 15 years. The prior firm served as consultant and custodian of assets.

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 4 (continued)

Criteria or Topic	Irving Fire Status
Investment Consultant (continued)	 Meketa Investment Group serves as a non-discretionary investment advisor. Meketa does not custody any assets. Meketa receives a hard dollar fee (specified in advance) from Irving Fire and does not receive any additional fees (unless pre-approved by the Board of Trustees for projects beyond the scope of the investment advisory agreement). Meketa's fee is transparent to the Trustees.
	 Meketa Investment Group is an independent employee owned organization with no affiliation to investment managers or brokerage firms.
	The Board is made up of seven (7) members:
	 The Mayor or Chief Executive Officer of the City or his delegate
	 The Chief Financial Officer of the City or his delegate
	- Two civilians who reside in the state of Texas who are appointed by the Board
Board Composition and	 Three active fire fighters elected by the fire fighter members of the Fund The Fund has a Trustee Election Policy consistent with TLFFRA Act Section 19.
Election Process	 The three active fire fighter positions are elected to three year terms, on a staggered basis, with one term ending each year.
	 Participants in the Fund vote at the pension office. The Board is expected to notify the membership of the results as soon as practical once the votes have been counted.
	• If no nominee receives a majority of the votes cast in the election, a run-off election shall be held between the two (2) nominees who received the highest number of votes in the election.

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Section 802.109 - Subsection (a) 4 (continued)

Criteria or Topic	Irving Fire Status
Board Leadership	 The Trustees nominate a Chairman. The current Chairman is an active firefighter. The previous Chairman was an active firefighter.
Board Investment Expertise	 Since at least 2009, the Board has had at least one Trustee with investment experience and who works, or has worked, in the investment industry.
Board Education	 Some Board members participate in the TEXPERs conferences as well as some national pension conferences (e.g. NCPERS). Each Trustee and the Fund Administrator must comply with the minimum and continuing education requirements under state law, including ethics and fiduciary training.
Code of Ethics Policy	 Irving Fire adopted a Board of Trustees Code of Ethics in November 2019. The "Code of Ethics is adopted in an effort to enhance and promote the professional management of the Retirement Fund and to be better able to provide retirement and related benefits to its qualified participants and beneficiaries." The Code lists a number of ethical responsibilities consistent with the Trustees' fiduciary responsibility, along with a number of professional responsibilities. Examples include: act with honor and integrity in the administration of the Retirement Fund. develop and maintain their skills and competence as trustees through continuing education. respect and protect any privileged or confidential information. not knowingly be a party to or condone any illegal, improper or unethical activity. The Code of Ethics also includes a number of conflicts of interest guidelines.

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 4 (continued)

Criteria or Topic	Irving Fire Status
Frequency of Board meetings	 Monthly meetings are required. The Consultant generally participates on a quarterly basis in the Board meetings (or more frequently as requested).
	 Most investment related decisions are accompanied by conversation among the Board members and Consultant.
	 The agenda for each investment meeting is set by the Pension Administrator in consultation with the Trustees and Consultant.
Board meeting	 Any Trustee can add a topic to the agenda.
dynamics	 The Consultant is also asked each month if there are any required investment topics.
	 Over the course of the second half of 2019 and first few months of 2020, significant time at Board meetings has been spent discussing the DROP program, contribution rates, benefits, and potential changes, in response to poor funding status and projected inability to reach fully funded status in the future.
	 Board meeting agendas are posted to the city website at least 72 hours prior to meetings.
Transparency of Board Activities	 Board meeting agendas are also posted on the kiosk in City Hall at least 72 hours prior to meetings. Evidence of posting is certified and time stamped by the Deputy Clerk of the City's Secretary's Office.
	 The meeting minutes are clear and succinct. In general, the member comments section is the most detailed section of the minutes (on average).

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 4

Consultant Analysis

- Monthly board meetings are common for public pension plans.
- The information on the City website is very out of date. The list of Trustees is not accurate and there are reports dating back to 2015 that are inferred to be current or up-to-date.
- Board discretion on all investment actions (i.e. not granting investment authority to staff) is common for a sub \$200 million pension fund.
- Irving Fire's board members appear to work well together. The size of the board is average (to small) relative to other pension plans. Generally we have observed better decision making, and less infighting, with small boards.
- Irving Fire's board meeting frequency is standard for public pension meetings. We have conducted surveys of large public pension plans and found that many are moving towards less frequent meetings but more in depth (lengthy) meetings.
- The number of items on each Agenda is frequently longer than we see from other public pension clients.

Recommendations

- Recommend switching to the new website soon or updating the out of date City website.
- Recommend posting all policies on the website.

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Section 802.109 - Subsection (a) 5



Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 5

Law	Requirement		
Sec. 802.109, Subsection (a) 5	"A review of the retirement system's investment manager selection and monitoring process"		
Criteria or Topic	Irving Fire Status		
Responsibility for selecting investment managers?	 Board of Trustees, with the advice and recommendation of the Consultant. According to the IPS, "Recognizing the vast number and broad spectrum of investment managers available, the Board has engaged the services of a professional investment consultant to aid in the selection of managers for the Fund by performing due diligence, narrowing the broad universe of managers to a more manageable group, and recommending a select set of specific managers for each asset class for the Board's final selection." (IPS Section 7: Selection of Money Managers). A number of minimum criteria is listed in the IPS for consideration when the Board is considering hiring an investment manager. The criteria is rules based in nature (e.g. must be registered investment advisor, must be registered to do business in Texas, must provide ADV, etc.) 		

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Section 802.109 - Subsection (a) 5 (continued)

Criteria or Topic		Irving Fire Status			
	Date [,]	Strategy	Funding Amount (\$ mm)	Asset Class	
Last Five	1/2020	Vanguard TIPS	5.0	TIPS	
Manager Hires	1/2020	Vanguard Short-Term Bond Index Fund	13.0	Short-term investment grade bonds	
	11/2019	Vanguard 500 Index	2.5	U.S. equity	
	11/2019	Vanguard Developed Markets Index	9.3	International equity	
	11/2019	Vanguard Total Bond Market Index	12.9	Investment grade bonds	

Evaluation process

- During the nine-month relationship so far between Irving Fire and the Consultant, the Fund has hired five passive index funds (at the recommendation of the Consultant) and has not conducted any searches for active investment manager strategies.
- One search for an active manager (bank loans) is expected to occur later in 2020. The Consultant outlined a multi-step process that first requires education on the asset class before presenting possible strategies to hire.
- Broadly, Meketa has a process where it continuously monitors and reviews investment managers in the industry. From this work, Meketa creates a "bullpen" of high conviction products that have been thoroughly vetted through Meketa's multi-phase process.

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¹ Dates in the table above are inception/ funding dates. Each strategy was funded intra-month so performance start dates are the first of the next month.



Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 5 (continued)

Criteria or Topic	Irving Fire Status
Evaluation process (continued)	 Meketa's multi-phase process looks at a manager's organization, investment team, investment philosophy, investment process, performance and fees (among other criteria). When presenting a short-list of possible strategies to a client, Meketa seeks to find competitive firms for the mandate. Typically Meketa will prepare a "Search-document" with three or four possible strategies. Meketa will typically provide an overview of each strategy and compare/contrast each strategy
	for discussion with a Board of Trustees.
Benchmarking	 Policy benchmarks for each asset class and the total Fund are included in Appendix B of the IPS as well as the standard quarterly report. The Consultant makes recommendations on which benchmarks are appropriate. Individual manager benchmarks are determined based on each investment strategy's mandate and will generally, but not always, match the recommended benchmark identified by the investment manager.

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Section 802.109 - Subsection (a) 5 (continued)

Criteria or Topic	Irving Fire Status	
Performance measurement	 Irving Fire's total fund performance and individual manager performance is monitored by Staff, Consultant, and the Board. The Consultant produces a quarterly performance report that is shared with Staff and the Board of Trustees. Among other things, the report includes: Net of fees performance. Quarterly cash flow summary. Total Fund performance relative to peer pension plans (InvestorForce Public Pension net performance for plans between \$50 mm -\$250 mm). Total Fund performance vs. strategic benchmark. Total Fund standard deviation and Sharpe Ratio. Total exposure vs. target weights. Trailing time weighted returns for investment managers, and asset classes, over recent trailing time periods (QTD, FYTD, 1YR, 3 YR, 5 YR, 10 YR and Since Inception) relative to benchmarks and peer groups. Risk statistics over trailing three year period including annualized standard deviation, information ratio, Sharpe Ratio, annualized upside and downside market capture. Estimated annual fee summary. 	

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 5 (continued)

Criteria or Topic	Irving Fire Status
Performance monitoring	 According to the IPS: "The performance of each manager will be measured by the Fund's consultant and shall be reviewed each quarter. This analysis should be taken in the context of the capital markets' conditions prevailing during that period and in relationship to that manager's style. The primary objectives of performance measurement are enhanced communication and understanding between the Fund and its managers, and the comparison of actual performance against the goals established in this document." (Section 6: Performance Measurement, Subsection 6.2 Monitoring of Money Managers.) The Consultant is primarily responsible for monitoring the performance of the investment managers and reporting to the Board. The Consultant conducts periodic meetings, conference calls and constant oversight of the investment managers.
	 The Consultant and the Board discuss individual strategies in more depth, as warranted.

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Investment Practices and Performance Evaluation

Section 802.109 - Subsection (a) 5

Consultant Analysis

- Performance monitoring and benchmarking is in-line with industry best practices.
- Active manager selection is untested with the current Board.

Recommendations

• We recommend Irving Fire formally documents the rationale for all hiring and firing decisions.

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Investment Practices and Performance Evaluation

Conclusions

Subsection	Overall Status	Adhering to established policies?
1. Investment Policy Statement analysis	Meets Industry Best Practices	Yes
2. Asset allocation (and liability) process review and execution	Meets Industry Best Practices	Yes
3. Fees review and procedures	Meets Industry Best Practices	Yes
4. Governance processes	Meets Industry Best Practices	Yes
5. Investment manager selection and monitoring	Meets Industry Best Practices	Yes

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Summary of Recommendations

Subsection (a) 1

• In the most recent annual review, the Consultant and Board streamlined and simplified .the IPS in many sections. The Consultant would like to see continued simplification, as the document is intended to be high-level in nature and not overly prescriptive.

Subsection (a) 2

- We recommend the Board continues to follow its rebalance plan to the new asset allocation policy.
- We recommend the Board and Staff closely monitor contribution levels, DROP withdrawals and expected net out flows.
- We recommend Irving Fire consider adjusting actuarial valuation assumptions as necessary based on the outcomes and advice of the actuary. The Fund will likely need to increase contributions, cut benefits, change the DROP program, or all of the above.
- We recommend the Fund conducts an Actuarial Valuation Report every year (rather than every two years).
- We recommend making changes to the DROP program to better align it with the long-term solvency of the Fund. Options to consider include (non-exhaustive list): reduce the DROP crediting rate, adopt a variable rate that is tied to the returns of the Fund, place limitations on the amount of DROP assets that can be redeemed from the Fund in any given month.

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Investment Practices and Performance Evaluation

Summary of Recommendations (continued)

Subsection (a) 3

- We recommend Irving Fire continues to increase its passive exposure in efficient market classes.
- We recommend that Staff, the Board, and the Consultant all remain diligent in monitoring fees.
- We recommend Irving Fire staff document its internal process for fee reconciliation and payment in a formal policy document.
- We recommend Fund counsel reviews all legal contracts when the Fund hires a new vendor or investment strategy.

Subsection (a) 4

- Recommend switching to the new website soon or updating the out of date City website.
- Recommend posting all policies on the website.

Subsection (a) 5

We recommend Irving Fire formally documents the rationale for all hiring and firing decisions.

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Sources Reviewed in Creation of the Report

Files	Files
Investment Policy Statement	Texas PRB Guidance for Inv. Practices and Perf. Evaluations
Irving Fire website	Texas PRB Intensive Actuarial Review report on Irving Fire (2018)
Meketa performance reports	Conversations with Staff
Meketa attendance at Board meetings	Conversations with Trustees
Statute Article 6243a-1	John Crider 2017 Actuarial Valuation Report
Irving Fire Board of Trustees Code of Ethics	Foster and Foster actuarial memos submitted to Board in 2019
Irving Fire Credit Card Policy	Past meeting minutes
Irving Fire Trustee Election Policy	Past meeting agendas
Irving Fire Travel Policy	
Irving Fire Trustee Attendance Policy	

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