Killeen Firefighter's Relief and Retirement Fund

Actuarial Valuation as of September 30, 2024

July 11, 2025

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July 11, 2025

Board of Trustees
Killeen Firefighter's Relief and
Retirement Fund
c/o Ms. Jennifer Hanna, Administrator
10766 FM 1097 West
Willis, TX 77318

Members of the Board of Trustees:

At the request of the Board of Trustees of the Killeen Firefighter's Relief and Retirement Fund, we have prepared this report of the results of the actuarial valuation of the fund as of September 30, 2024. This valuation was prepared to determine whether the fund has an adequate contribution arrangement.

In a separate report dated January 30, 2025, we provided the necessary disclosures for the fund's compliance with the Governmental Accounting Standards Board (GASB) Statement No. 67 for the plan year ending September 30, 2024. Similarly, we provided a separate report dated January 14, 2025 containing the pension expense, net pension liability, and disclosure information for the city's compliance with GASB 68 for the fiscal year ending September 30, 2024. GASB 68 prescribes the city's accounting for your fund, while this actuarial valuation report reflects the assumed continuation of the current contribution policy.

We certify that we are members of the American Academy of Actuaries who meet Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report.

Sincerely,

Mark R. Fenlaw

Mark R. Fenlaw, F.S.A.

Rebecca B. Morris

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Section I

Valuation Summary

An actuarial valuation of the assets and liabilities of the Killeen Firefighter's Relief and Retirement Fund as of September 30, 2024 has been completed. The valuation was based on the Plan Effective January 1, 2025 and the provisions of the Texas Local Fire Fighters' Retirement Act (TLFFRA). Section II shows the summary of key results of the actuarial valuation as of September 30, 2024 and discusses the significant changes since the prior valuation that we prepared as of September 30, 2022.

This valuation reflects an actuarially assumed total contribution rate of 27%, comprised of 12% by the firefighters and 15% by the city. The total contribution rate of 27% exceeds the normal cost rate of 16.68%, leaving 10.32% available to amortize the unfunded actuarial accrued liability (UAAL) of $36,566,402. Assuming that the total payroll increases at the rate of 2.75% per year in the future, the contributions in excess of the normal cost **will amortize the UAAL in 28.8 years.**

In order for a retirement plan to have an adequate contribution arrangement, contributions must be made that are sufficient to pay the plan's normal cost and to amortize the plan's UAAL over a reasonable period of time. Based on the Texas Pension Review Board guidelines for pension funding, our professional judgment, and the actuarial assumptions and methods used in making this valuation, we consider periods of 10 years to 20 years to be preferable and 30 years to be the current maximum acceptable period. Since the total contributions are sufficient to pay the fund's normal cost and to amortize the fund's UAAL within the maximum acceptable period, we are of the opinion that the fund **has an adequate contribution arrangement** based on present levels of benefits and contributions.

Projected Actuarial Valuation Results

In addition to completing this actuarial valuation, we estimated the amortization periods as of September 30, 2026 and as of September 30, 2028 by making projections from the September 30, 2024 actuarial valuation. These projections examine the effect on the amortization period in the next two actuarial valuations of the actuarial investment gains and losses that the fund experienced in the four years prior to the valuation date (gains in 2021, 2023, and 2024 and a loss in 2022) that have been only partially recognized as of September 30, 2024. As shown in Exhibit 8, a smoothing method is used to determine the actuarial value of assets (AVA) for this valuation. This method phases in over a five-year period any investment gains or losses (net actual investment return greater or less than the actuarially assumed investment return) that the fund has had. The AVA used in this current valuation is deferring recognition of various portions of the gains and the loss in 2021-2024 that the fund experienced. The AVA used in this valuation is $71,885,198. The market value of assets (MVA) is $74,651,683. The $2.77 million difference between the MVA and the AVA is the deferred net gain that will be recognized in the next two actuarial valuations.

The theory behind the AVA method is to allow time for investment gains and losses to partially offset each other and thereby dampen the volatility associated with the progression of the MVA over time. In practice, the timing and amounts of investment gains and losses can result in irregular effects on the AVA in a given year. However, as intended, the pattern of the AVA is smoother over time than the pattern of the market value of assets, as seen in Exhibit 9.

For the purpose of projecting the amortization period through 2028 we used several scenarios of various assumed annual rates of investment return, net of investment-related expenses, over the 2025-2028 projection period. These projections show the expected effects over the next four years after the valuation date (1) of the recognition of the portions of the past investment gains and loss over the past four years that are deferred as of September 30, 2024, and (2) of investment returns over the next four years different from the 7.25% assumption used in this valuation.

	Scenario					
	1	2	3	4	5	6
Assumed Investment Return for Fiscal Year Ending						
2025	7.25%	10.00%	10.00%	4.00%	0.00%	0.00%
2026	7.25	10.00	4.00	4.00	3.00	0.00
2027	7.25	7.25	4.00	4.00	10.00	10.00
2028	7.25	7.25	4.00	4.00	10.00	10.00
2029 and later	7.25	7.25	7.25	7.25	7.25	7.25
Amortization Period in Years as of September 30:						
2024 (actual)	28.8	28.8	28.8	28.8	28.8	28.8
2026 (projected)	27.0	25.1	26.4	29.4	31.9	32.7
2028 (projected)	20.8	17.3	22.8	28.2	28.5	31.1

The projected future September 30, 2028 valuation in Scenario 1 reveals that the amortization period is projected to decrease by 8.0 years instead of decreasing by the expected four years to 24.8 years. This is the result of the deferred net gain of $2.77 million that the fund has as of September 30, 2024. This result is not surprising when you consider that if the AVA were set equal to the MVA, recognizing all of the past gains and losses in this September 30, 2024 actuarial valuation, the amortization period would have been 24.8 years instead of 28.8 years. The primary conclusion from Scenario 1 is that without any future gains or losses, the deferred net investment gain will speed up the amortization of the UAAL between September 30, 2026 and September 30, 2028.

Scenario 2 indicates how favorable investment experience in 2025 and 2026 would accelerate the amortization of the UAAL by September 30, 2028. Scenarios 3-6 have increasingly adverse results, but only Scenario 6 has an amortization period over 30 years for both the September 30, 2026 and September 30, 2028 actuarial valuations.

We do not know what the investment experience will be for each of the next four fiscal years. Variations in experience from the underlying assumptions, other than investment return, will cause the actual amortization periods to be different from the periods shown above. However, investment experience will be the biggest influence on future actuarial valuations. The future investment experience in each of the next four fiscal years could be better or worse than the assumed rates shown. These scenarios present a range of plausible scenarios for the next two valuations assuming no changes in benefits or contribution rates or assumptions. See a summary of different types of risks that could affect the fund's future actuarial condition in Appendix B.

Participant and Asset Data

We have relied on and based our valuation on the active firefighter data, pensioner data, and asset data provided on behalf of the board of trustees by Ms. Jennifer Hanna, plan administrator for the board. We have not audited the data provided but have reviewed it for reasonableness and consistency relative to the data provided for the September 30, 2022 actuarial valuation. Exhibit 1 is a distribution of the active firefighters by age and service. The assumed 2025 plan year compensation used for projecting future contributions and benefits in the valuation were based on the actual pay for the 2024 plan year increased by 4% to reflect the effect of the 4% general pay increase effective October 2024. The total of the assumed 2025 compensation is our assumed annual covered payroll for the plan year beginning October 1, 2024 and is used in the valuation to determine the UAAL amortization period. The averages of the assumed compensation for the 2025 plan year are shown in Exhibit 1.

Exhibit 2 contains summary information on the pensioners. The monthly benefit payments are generally based on the amounts paid October 31, 2024. Exhibit 3 is a reconciliation of firefighters and pensioners from September 30, 2022 to September 30, 2024. Exhibit 4 shows a breakdown of the dollar level of the monthly benefits for retirees and surviving spouses. Exhibit 5 shows a historical comparison of the actuarial accrued liability and the actuarial value of assets.

The summary of assets contained in Exhibit 6 is based on the September 30, 2024 audited market value of assets shown in the fund's financial statements. This exhibit also shows a comparison of the market values and actuarial values of assets as of September 30, 2022 and September 30, 2024. Exhibit 7 contains the statement of changes in assets for fiscal years ending September 30, 2024 and September 30, 2023. Exhibit 8 shows the development of the actuarial value of assets. Exhibit 9 shows a historical comparison between the market value and actuarial value of assets. A comparison of the market value asset allocation by asset class as of September 30, 2022 and September 30, 2024 is shown in Exhibit 10.

Plan Change Since the Prior Actuarial Valuation

The board and the firefighters amended the plan provisions to add death benefit coverage for any deaths occurring on or after January 1, 2025 of active firefighters with 10 or more years of service. Previously, the plan required 20 or more years of service for an active firefighter whose death was not duty related to be eligible for benefits for the surviving spouse and children. This amendment was reflected in this actuarial valuation, and its effects on the UAAL and UAAL amortization period are included in Section II.

Assumptions

As a part of each actuarial valuation, we review the actuarial assumptions used in the prior actuarial valuation. As a result of our review, documented in our June 9, 2025 letter to the board, we have selected actuarial assumptions we consider to be reasonable and appropriate estimates of future experience for the fund for the long-term future. Their selection complies with the applicable actuarial standards of practice. Significant actuarial assumptions used in the valuation are:

1. 7.25% annual investment return net of investment-related expenses;

2. 2.75% annual general compensation increase combined with promotion, step, and longevity increases that average 2.28% per year over a 30-year career;
3. Retirement rates which result in an average expected age at retirement of 54.5; and
4. PubS-2016 total dataset mortality tables projected for mortality improvement using scale MP-2021.

The following actuarial assumption changes have been made, and the new assumptions are compared to those used in the September 30, 2022 valuation:

1. We changed the compensation increase assumption for promotion, step, and longevity increases to better reflect the pattern of increases in compensation in the September 30, 2022 and 2024 actuarial valuations census data. The new assumption projects somewhat greater increases over a 30-year career than the prior assumption.
2. We changed the assumed termination rates to better reflect the higher rates of termination that we have observed in the last eight years.
3. We changed the assumed retirement rates to better reflect the slightly lower ages at retirement that we have observed in the last six years.
4. We updated the mortality assumption from the PubS-2010 below-median income mortality tables, projected generationally using the projection scale MP-2018, to the PubS-2016 total dataset tables, projected for mortality improvement generationally using the projection scale MP-2021.
5. We lowered the assumed administrative expenses paid from the fund from 0.75% of payroll to 0.70% of payroll based on the average of the last four plan years as shown in Appendix A.

The effects of these changes in assumptions on the UAAL and on the UAAL amortization period are identified in Section II. A summary of all the assumptions and methods used in the valuation is shown in Exhibits 11 and 12. In our opinion, the assumptions used, both in the aggregate and individually, are reasonably related to the experience of the fund and to reasonable expectations. The assumptions represent a reasonable estimate of anticipated experience of the fund over the long-term future. In addition, we believe that the combined effect of the actuarial assumptions used is expected to have no significant bias, i.e., it is not significantly optimistic or pessimistic.

Supporting Exhibits

Exhibit 13 contains definitions of terms used in this actuarial valuation report. Exhibit 14 summarizes the plan provisions of the Present Plan. Appendix A summarizes our review of the economic assumptions.

Funding Policy

The funding policy adopted by the board of trustees effective December 20, 2019 says that each actuarial valuation report will include a benchmark actuarially determined contribution (ADC) rate using a closed amortization period of 30 years beginning with the first actuarial valuation completed after January 1, 2020, which was as of September 30, 2020. The closed amortization period declines by one each year; so the benchmark is 26 years for the

September 30, 2024 actuarial valuation. The fund's actuary is to compare the benchmark ADC rate and the actuarial valuation results in the two key metrics, the amortization period and the total contribution rate.

	Amortization Period	Total Contribution Rate
Benchmark ADC rate	26.0 years	27.57%
Actuarial valuation	28.8 years	27.00%
Difference	+2.8 years	-0.57%

The actuarially determined amortization period in this actuarial valuation of 28.8 years is more than the 26-year amortization period in the benchmark ADC rate. The total contribution rate reflected in this actuarial valuation of 27.0% is somewhat less than the benchmark ADC rate of 27.57%. Even though there is a negative divergence in these two metrics, they are reasonably in line with the benchmark.

Variability in Future Actuarial Measurement

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following:

- Plan experience differing from that anticipated by the current economic or demographic assumptions;
- Increases or decreases expected as part of the natural operation of the methodology used for these measurements;
- Changes in economic or demographic assumptions; and
- Changes in plan provisions.

Analysis of the potential range of such future measurements resulting from the possible sources of measurement variability was provided on pages 1-3 in the projected amortization periods for the next two biennial actuarial valuations under six scenarios. These projections were designed to assess the risk of variance of potential future investment rates of return in the four years following the actuarial valuation date from the assumed 7.25% rate and the potential effect on the amortization period. Additional or other sensitivity analysis could be performed in a subsequent report if desired by the board of trustees.

Respectfully submitted,
RUDD AND WISDOM, INC.

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Section II

Key Results of the Actuarial Valuation

	September 30, 2022[1]	September 30, 2024
1. Actuarial present value of future benefits		
a. Those now receiving benefits or former firefighters entitled to receive benefits	$ 35,116,000	$ 42,356,623
b. Firefighters	86,999,889	100,123,596
c. Total	$122,115,889	$142,480,219
2. Actuarial present value of future normal cost contributions	$ 35,480,514	$ 34,028,619
3. Actuarial accrued liability (Item 1c – Item 2)	$ 86,635,375	$108,451,600
4. Actuarial value of assets	$ 61,179,128	$ 71,885,198
5. Unfunded actuarial accrued liability (UAAL) (Item 3 - Item 4)	$ 25,456,247	$ 36,566,402
6. Contributions (percent of payroll)		
a. Firefighters	12.00%	12.00%
b. City of Killeen	15.00%	15.00%
c. Total	27.00%	27.00%
7. Normal cost (percent of payroll)	17.14%	16.68%
8. Percent of payroll available to amortize the UAAL (Item 6c - Item 7)	9.86%	10.32%
9. Annualized covered payroll	$ 19,038,500	$ 21,748,490
10. Years to amortize the UAAL	21.0	28.8
11. Funded ratio (Item 4 ÷ Item 3)[2]	70.6%	66.3%

[1] All items are from the September 30, 2022 actuarial valuation and reflect the prior Plan effective October 1, 2023.

[2] The funded ratio is not appropriate for assessing either the need for or the amount of future contributions or the adequacy of the assumed contribution rates. Using the market value of assets instead of the actuarial value of assets for Item 11 would have resulted in funded ratios of 62.2% as of September 30, 2022 and 68.8% as of September 30, 2024. **The best indicator of the fund's health is item 10.**

Changes in the Unfunded Actuarial Accrued Liability

In comparing this actuarial valuation to the prior one, the UAAL increased by $11,110,155 from $25,456,247 as of September 30, 2022 to $36,566,402 as of September 30, 2024. The table below summarizes the reasons for the increase.

Reason for Change	Amount
• Expected decrease (assumed amortization payments accumulated with interest greater than interest on UAAL)	$ (41,434)
• Investment loss for the two years (based on the AVA average annual return of 6.0%)	1,678,026
• Experience loss (net difference between actual experience and assumed experience for contributions, pay increases, retirements, mortality, and terminations)	2,129,449
• Net effect of changes in assumptions	6,941,029
• Change in death benefit provisions	403,085
Total	$11,110,155

Changes in the Amortization Period

The amortization period, based on the Present Plan provisions, was determined in the actuarial valuation as of September 30, 2022 to be 21.0 years. Since two years have passed since that valuation date, a 19.0-year amortization period would be expected if all actuarial assumptions had been exactly met, no changes had occurred (other than those expected) in the firefighter and pensioner data, and no changes in assumptions or plan provisions had been made. The amortization period is now 28.8 years. The actual experience occurring between September 30, 2022 and September 30, 2024 differed from the expected experience. In addition, there were changes in assumptions and plan provisions resulting in the amortization period being 28.8 years, which is 9.8 years more than the expected 19.0-year period for the following reasons:

1. The average annual rate of investment return, net of investment-related expenses, on the market value of assets during the two plan years ending in 2023 and 2024 was 14.9%. However, the actuarial value of assets (AVA) used in the valuation and the determination of the amortization period is based on an adjusted market value. The average annual rate of return on the AVA, net of investment-related expenses, for plan years ending in 2023 and 2024 was 6.0%, less than the assumed rate of return for those years of 7.25%. This resulted in an **increase** in the amortization period of 2.1 years.

2. The aggregate payroll increased at an average rate of 6.9% per year instead of the assumed 2.75% per year rate, which caused the amortization period to **decrease** by 2.5 years.

3. The net result of all experience other than the investment experience and the aggregate payroll experience had the combined effect of **increasing** the amortization period by 2.2 years. The primary reason was greater-than-expected pay increases combined with more unscheduled overtime compensation.

4. The changes in the assumptions (compensation, termination, retirement, mortality, and administrative expenses) had the effect of **increasing** the amortization period by 7.1 years.

5. The change in the plan death benefit provisions to provide a non-duty related death benefit for those dying with at least 10 years of service had the effect of **increasing** the amortization period by 0.9 of a year.

Exhibit 1

Distribution of Firefighters by Age and Service on September 30, 2024 with Average Annual Salary

Years of Service	Age									Total	Average Salary
	Under 25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60 or Over		
0	8	5	4	0	0	0	0	0	0	17	$60,000
1	13	9	8	2	0	0	0	0	0	32	61,861
2	5	3	3	1	0	0	0	0	0	12	65,692
3	3	6	4	1	0	0	0	0	0	14	76,823
4	1	3	2	3	1	0	0	0	0	10	79,310
5	0	3	5	1	0	0	0	0	0	9	86,308
6	0	0	5	2	0	0	0	0	0	7	85,129
7	0	3	3	1	1	0	0	0	0	8	80,921
8	0	3	5	5	3	0	0	0	0	16	88,925
9	0	1	0	2	1	0	0	0	0	4	88,155
10	0	0	2	1	2	0	0	0	0	5	91,971
11	0	0	1	0	1	1	0	0	0	3	90,488
12	0	0	1	2	2	1	0	0	0	6	97,156
13	0	0	1	2	3	1	0	0	0	7	110,820
14	0	0	1	0	0	0	0	0	0	1	110,756
15	0	0	0	2	2	0	0	0	0	4	102,487
16	0	0	0	2	2	1	0	0	0	5	95,590
17	0	0	0	5	6	4	2	0	0	17	106,744
18	0	0	0	5	5	5	2	0	0	17	112,438
19	0	0	0	2	6	3	0	0	0	11	112,624
20-24	0	0	0	0	9	8	4	2	0	23	117,864
25-29	0	0	0	0	1	4	5	0	1	11	124,877
30-34	0	0	0	0	0	0	0	1	0	1	158,414
35+	0	0	0	0	0	0	0	0	0	0	0
Totals	30	36	45	39	45	28	13	3	1	240	$ 90,619

Average Salary	$64,806	$79,140	$105,642	$120,396	$112,763	
	$70,518	$97,091	$110,095	$134,455	$90,619	

Average age	35.9
Average years of service	10.3
Average age at hire	25.6

Exhibit 2
Summary of Pensioner Data

Type of Benefit	Pensioner Data Used in September 30, 2024 Valuation	
	Number of Recipients	Total Monthly Benefit Payments
Paid Firefighter Pensioners		
Service Retirement	64	$ 246,985
Disability Retirement	0	0
Vested Terminated (Deferred)	18	50,065
Surviving Spouse	13	27,273
Surviving Child	5	1,330
Total	100	$325,653
Volunteer Firefighter Pensioners		
Service Retirement	1	$ 155
Disability Retirement	0	0
Vested Terminated (Deferred)	0	0
Surviving Spouse	3	315
Surviving Child	0	0
Total	4	$ 470
Total Pensioners	104	$ 326,123

Type of Benefit	Comparison of Pensioner Count by Type as of The Prior and Current Actuarial Valuations			
	September 30, 2022	New	Ceased	September 30, 2024
Paid Firefighter Pensioners				
Service Retirement	59 [1]	+6	-1	64 [1]
Disability Retirement	0	0	0	0
Vested Terminated (Deferred)	15	+4	-1	18
Surviving Spouse	12	+1	0	13
Surviving Child	0	+5	0	5
Total	86	+16	-2	100
Volunteer Firefighter Pensioners				
Service Retirement	2	0	-1	1
Disability Retirement	0	0	0	0
Vested Terminated (Deferred)	0	0	0	0
Surviving Spouse	4	+1	-2	3
Surviving Child	0	0	0	0
Total	6	+1	-3	4
Total Pensioners	92	+17	-5	104

[1] Includes four alternate payees according to the terms of a QDRO for a retired member.

Exhibit 3

Firefighter and Pensioner Reconciliation

	Firefighters	Current Payment Status	Vested Terminated Firefighters	Total
1. As of September 30, 2022	230	77 [1]	15	322
2. Change of status				
a. retirement	(5)	6	(1)	0
b. disability	0	0	0	0
c. death	(1)	(4)	0	(5)
d. survivor payment begins	0	7	0	7
e. withdrawal	(39)	0	0	(39)
f. vested termination	(4)	0	4	0
g. new QDRO	0	0	0	0
h. net changes	(49)	9	3	(37)
3. New firefighters	59 [2]	0	0	59
4. As of September 30, 2024	240	86 [1]	18	344

[1] Includes four alternate payees according to the terms of a QDRO for a retired member.
[2] Includes one John Doe to be hired subsequent following the valuation date.

Exhibit 4

Breakdown of Monthly Benefit Payment Amounts as of September 30, 2024

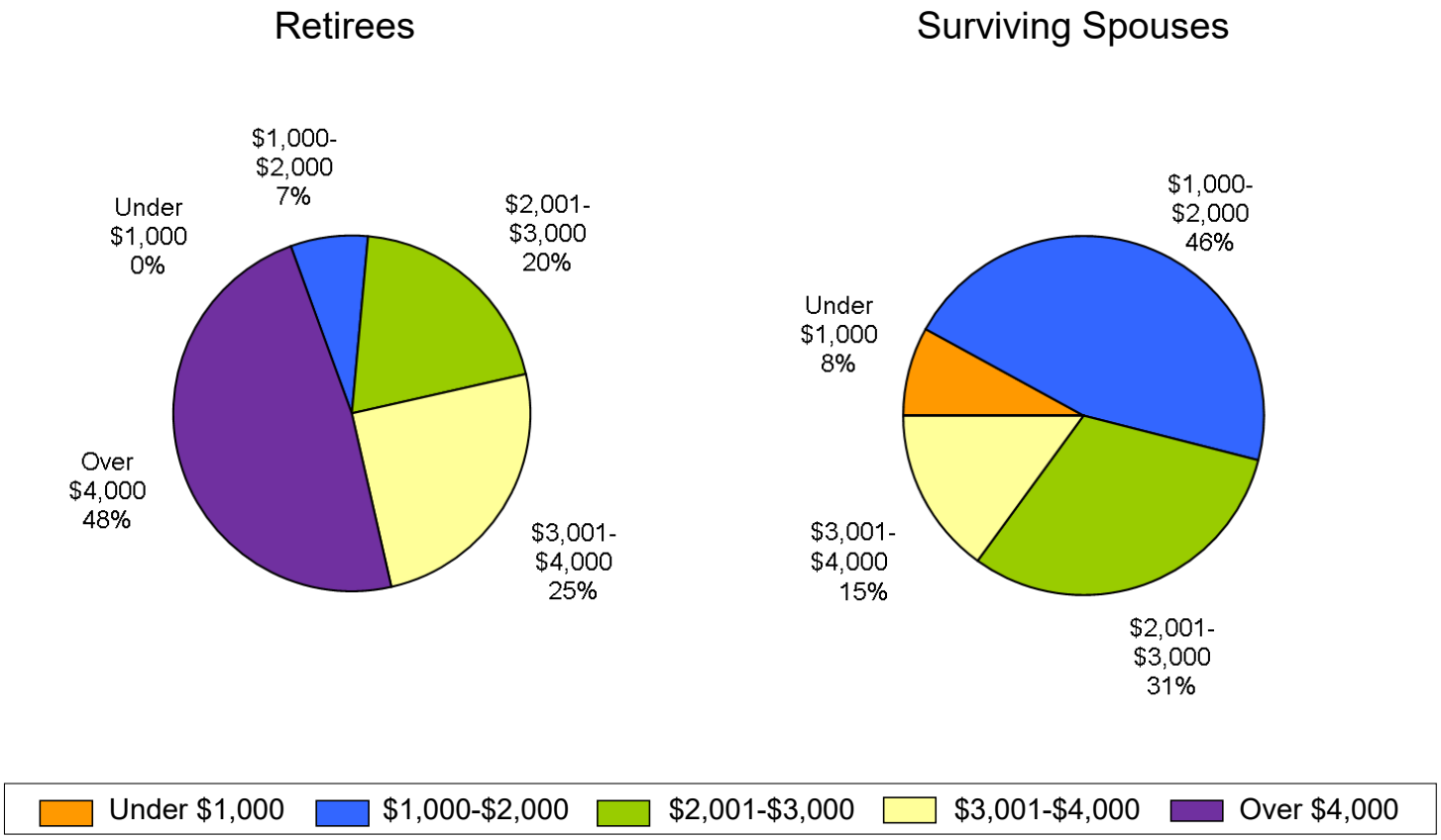


Exhibit 5

Historical Comparison of Actuarial Accrued Liability for Active Firefighters and Pensioners
(Present Plan Valuations as of September 30)

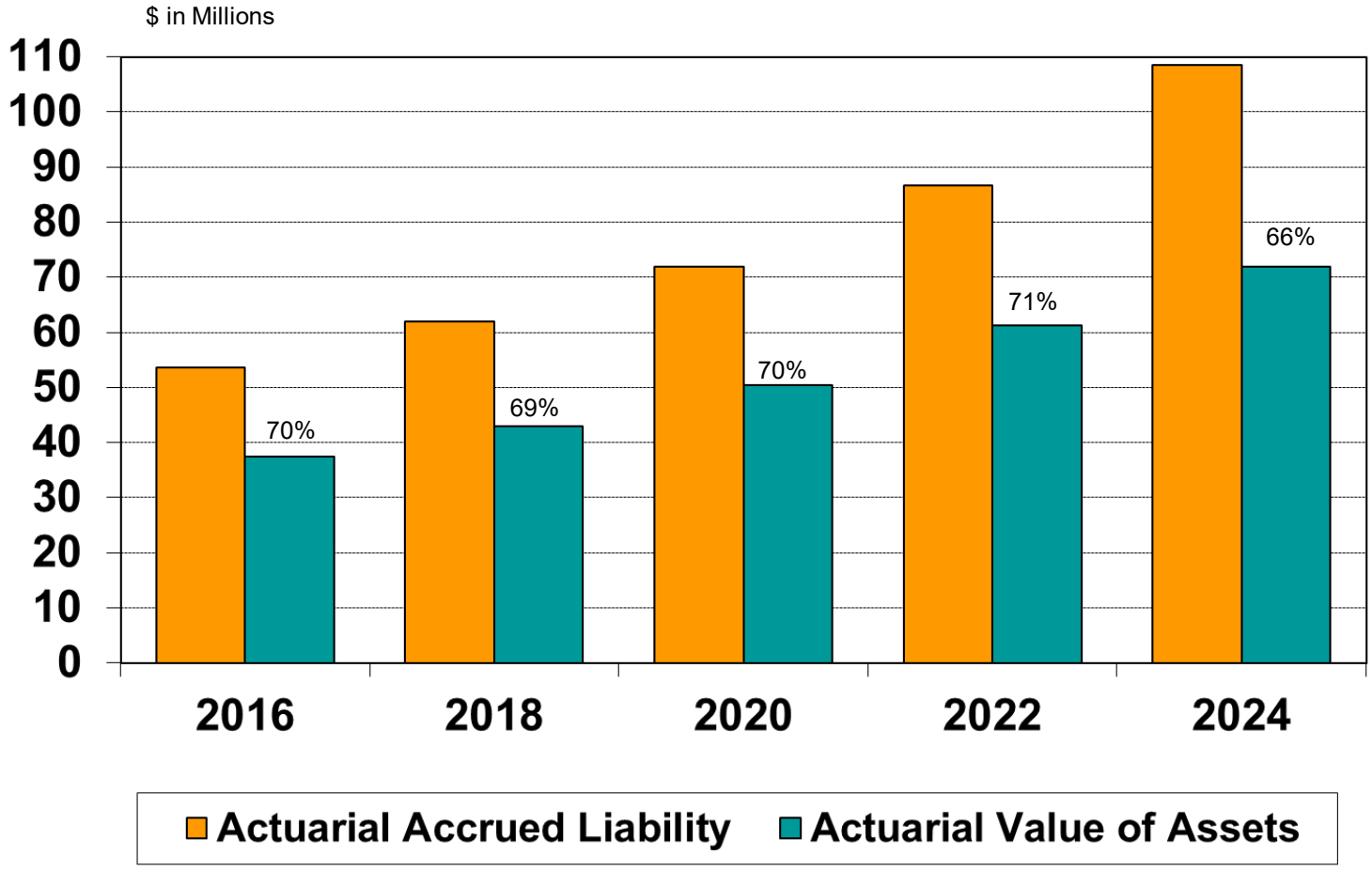


Exhibit 6

Summary of Asset Data

Asset Type	Market Value of Assets as of September 30, 2024	Allocation as a Percent of Grand Total
Domestic Equities		
Large Cap	$ 24,635,023	33.0%
Small/Mid Cap	4,316,031	5.8
Total	28,951,054	38.8
International Equities	9,743,489	13.0
Fixed Income		
Core Plus	12,622,266	16.9
Global	2,346,901	3.1
Direct Lending	1,677,068	2.3
Bank Loan	1,585,353	2.1
Total	18,231,588	24.4
Alternatives		
Multi-asset Fund	4,188,186	5.6
Real Estate	4,245,801	5.7
Tactical	1,247,211	1.7
Total	9,681,198	13.0
Cash, Payables, Receivables	8,044,354	10.8
Grand Total	$ 74,651,683[1]	100.0%

[1] The grand total is the audited amount. All of the investment amounts except "cash, payables, receivables" are from the September 30, 2024 report from the investment consultant. Cash is the balancing item.

Comparison of Asset Values as of the Prior and Current Actuarial Valuation Dates		
	September 30, 2022	September 30, 2024
Market Value	$53,899,683	$74,651,683
Actuarial Value	$61,179,128	$71,885,198
Actuarial Value as a Percent of Market Value	113.5%	96.3%

Exhibit 7

Statement of Changes in Audited Assets for the Years Ended September 30, 2024 and 2023

	9/30/2024	9/30/2023
Additions		
1. Contributions		
a. Employer	$ 3,122,109	$ 2,916,053
b. Employees	2,488,245	2,142,691
c. Total	$ 5,610,354	$ 5,058,744
2. Investment Income		
a. Interest and dividends	$ 2,319,978	$ 2,337,167
b. Net appreciation in fair value	9,650,191	3,737,343
c. Total	$ 11,970,169	$ 6,074,510
3. Other Additions	0	0
Total Additions	**$ 17,580,523**	**$ 11,133,254**
Deductions		
4. Benefit Payments		
a. Monthly benefits, RETRO DROP lump sums	$ 3,277,339	$ 3,020,149
b. Contribution refunds	424,058	674,687
c. Total	$ 3,701,397	$ 3,694,836
5. Expenses		
a. Direct investment-related	$ 142,943	$ 140,870
b. General administrative	142,224	139,507
c. Total	$ 285,167	$ 280,377
Total Deductions	**$ 3,986,564**	**$ 3,975,213**
Net Increase in Assets	**$ 13,593,959**	**$ 7,158,041**
Market Value of Assets (Fiduciary Net Position)		
Beginning of Year	$ 61,057,724	$ 53,899,683
End of Year	$ 74,651,683	$ 61,057,724
Rate of Return		
Net of All Expenses	18.84%	10.62%
Net of Investment-Related Expenses	19.09%	10.89%
Gross	19.35%	11.16%
Direct Investment-Related Expenses	0.26%	0.27%

Exhibit 8

Development of Actuarial Value of Assets

Calculation of Actuarial Investment Gain/(Loss) Based on Market Value for Plan Years Ending September 30				
	2024	2023	2022	2021
1. Market Value of Assets as of Beginning of Year	$ 61,057,724	$53,899,683	$ 61,488,557	$50,912,599
2. Firefighter Contributions	2,488,245	2,142,691	2,053,786	1,788,846
3. City Contributions	3,122,109	2,916,053	2,800,619	2,440,295
4. Benefit Payments and Administrative Expenses[1]	(3,843,621)	(3,834,343)	(3,234,387)	(3,368,473)
5. Expected Investment Return[2]	4,490,729	3,952,112	4,516,646	3,722,363
6. Expected Market Value of Assets as of End of Year	$ 67,315,186	$59,076,196	$ 67,625,221	$55,495,630
7. Actual Market Value of Assets as of End of Year	74,651,683	61,057,724	53,899,683	61,488,557
8. Actuarial Investment Gain/(Loss)	$ 7,336,497	$ 1,981,528	$(13,725,538)	$ 5,992,927
9. Market Value Rate of Return Net of Expenses	19.09%	10.89%	(14.78)%	18.92%
10. Rate of Actuarial Investment Gain/(Loss)	11.84%	3.64%	(22.03)%	11.67%

[1] Administrative expenses are included because the investment return assumption was net of investment-related expenses for all four years.
[2] Assuming uniform distribution of contributions and payments during the plan years; actuarially assumed investment return of 7.25%.

Plan Year	Investment Gain/(Loss)	Deferral Percentage	Deferred Gain/(Loss) as of 9/30/2024
2024	$ 7,336,497	80%	$ 5,869,198
2023	1,981,528	60%	1,188,917
2022	(13,725,538)	40%	(5,490,215)
2021	5,992,927	20%	1,198,585
Total			$ 2,766,485

Actuarial Value of Assets as of September 30, 2024	
11. Market Value of Assets as of September 30, 2024	$ 74,651,683
12. Deferred Gain/(Loss) to be Recognized in Future	2,766,485
13. Preliminary Value (Item 11 – Item 12)	$ 71,885,198
14. Corridor for Actuarial Value of Assets	
a. 80% of Market Value as of September 30, 2024 (minimum)	$ 59,721,346
b. 120% of Market Value as of September 30, 2024 (maximum)	$ 89,582,020
15. Actuarial Value as of September 30, 2024	$ 71,885,198
16. Write Up/(Down) of Assets (Item 15 – Item 11)	$ (2,766,485)

Exhibit 9

Historical Comparison of Market and Actuarial Value of Assets (Valuation as of September 30)

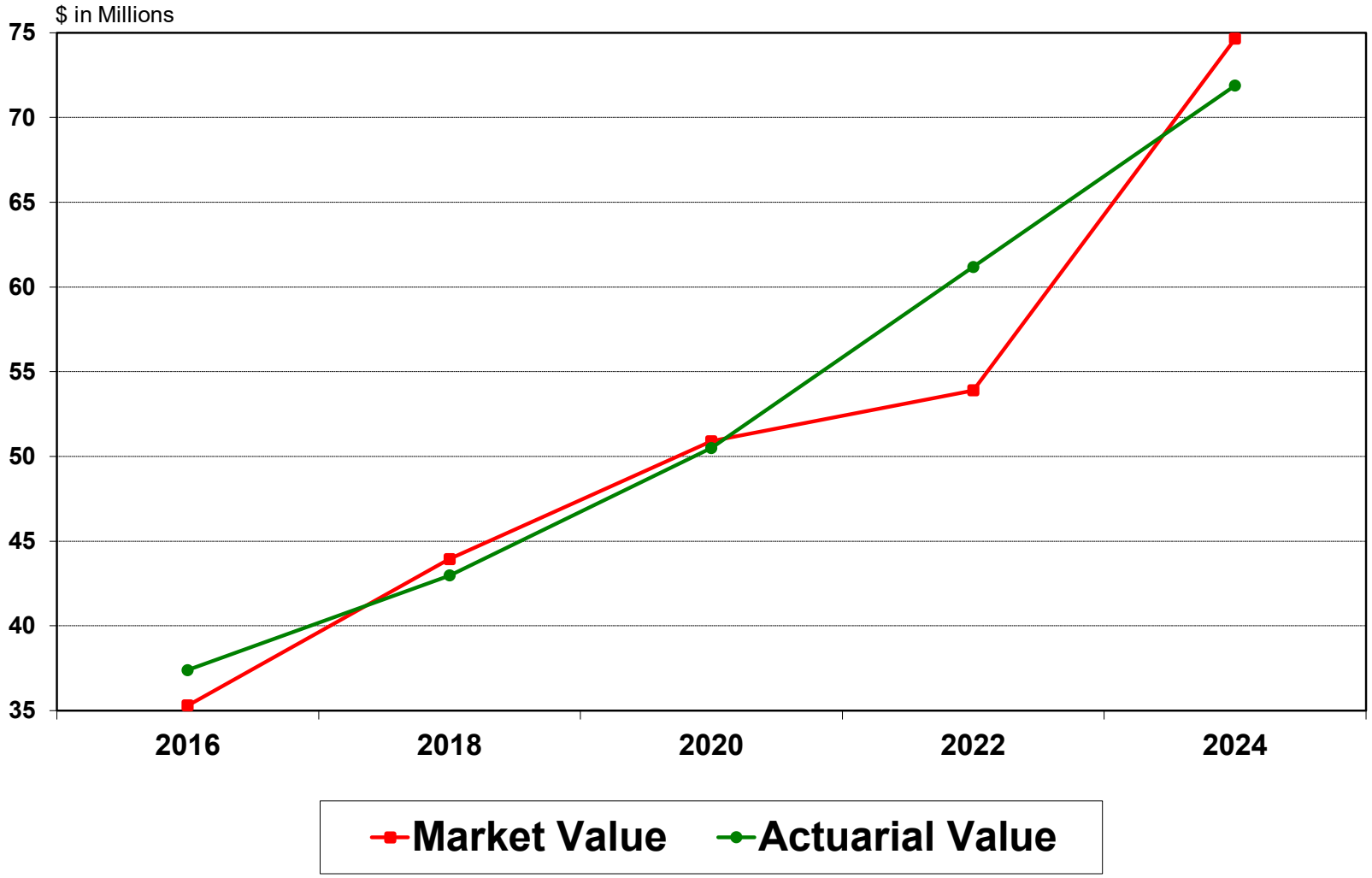
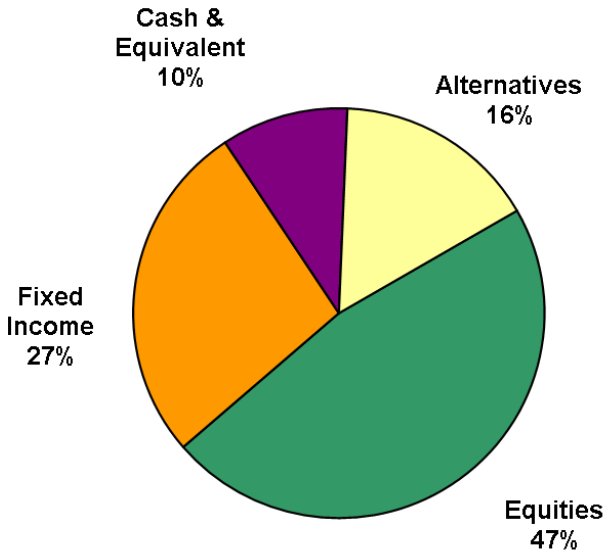


Exhibit 10

Comparison of Market Value Asset Investment Allocation as of the Prior and Current Actuarial Valuation Dates

September 30, 2022



September 30, 2024

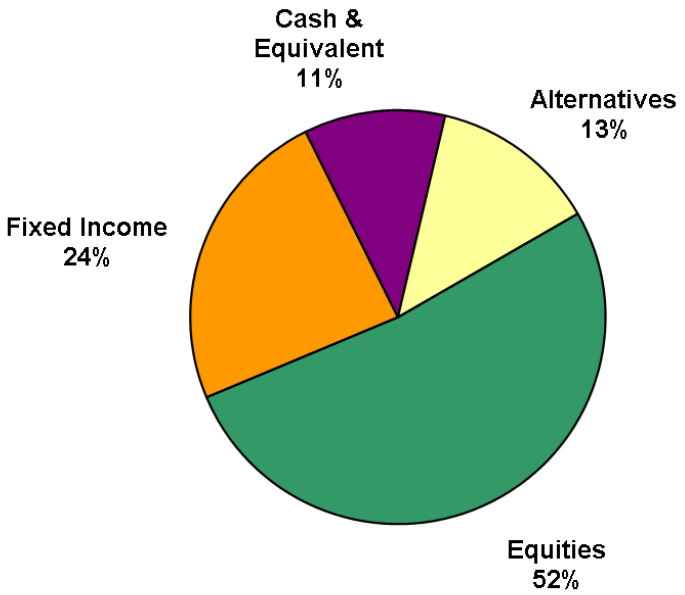


Exhibit 11

Actuarial Methods and Assumptions

A. Actuarial Methods

1. Actuarial Cost Method

The Entry Age Actuarial Cost Method is an actuarial cost method in which the actuarial present value of projected benefits of each active firefighter included in the valuation is allocated as a level percentage of compensation over the period from age at hire to the last age before 100% assumed retirement. Each active firefighter's normal cost is the current annual contribution in a series of annual contributions which, if made throughout the firefighter's total period of employment, would fund his expected benefits. Each firefighter's normal cost is calculated to be a constant percentage of his expected compensation in each year of employment. The normal cost for the fund is the sum of the normal costs for each active firefighter for the year following the valuation date. The normal cost as a percent of payroll reflects that contributions are made biweekly.

The fund's actuarial accrued liability is the excess of the actuarial present value of projected benefits over the actuarial present value of all future remaining normal cost contributions. The unfunded actuarial accrued liability (UAAL) is the amount by which the actuarial accrued liability exceeds the actuarial value of assets. The UAAL is recalculated each time a valuation is performed. Experience gains and losses, which represent deviations of the UAAL from its expected value based on the prior valuation, are determined at each valuation and are amortized as part of the newly calculated UAAL.

2. Amortization Method

The UAAL is assumed to be amortized with level percentage of payroll contributions (total assumed contribution rate less normal cost contribution rate) based on assumed payroll growth of 2.75% per year. The actuarial determination of the amortization period reflects that contributions are made biweekly.

3. Actuarial Value of Assets Method

All assets are valued at market value with an adjustment made to uniformly spread actuarial gains or losses (as measured by actual market value investment return vs. expected market value investment return) over a five-year period. The total adjustment amount shall be limited as necessary such that the actuarial value of assets shall not be less than 80% of market value nor greater than 120% of market value. See Exhibit 8.

B. Actuarial Assumptions

As a part of each actuarial valuation, we review the actuarial assumptions used in the prior actuarial valuation. The investment return assumption is reviewed using the building block approach that includes one or more asset allocations, assumed real rates of return for each asset class, an assumed rate of investment-related expenses, and an assumed

rate of inflation, with all assumptions for the long-term future. Our economic assumptions are influenced both by long-term historical experience and by future expectations of investment consultants and economists, but we select the economic assumptions and usually discuss them with the board before completing the actuarial valuation.

We review the termination and retirement experience since the prior valuation and periodically look back more than two years. We also periodically review the average salaries by years of service to get insights into the promotion, step, and longevity compensation patterns for the purpose of reviewing our compensation increase assumption. For the mortality assumptions, we use an appropriate published mortality table with projections for improvement beyond the valuation date. We are guided in our review and selection of assumptions by the relevant actuarial standards of practice. As a result of our review, we have selected actuarial assumptions we consider to be reasonable and appropriate estimates of future experience for the system for the long-term future.

1. Investment Return

   7.25% per year net of investment-related expenses.

2. Inflation

   2.75% per year included in compensation increases and investment return assumptions.

3. Mortality Rates

   PubS-2016 (safety employees) total dataset tables for employees and for retirees, projected for mortality improvement generationally using the projection scale MP-2021.

4. Compensation Increases

   General increases of 2.75% per year combined with promotion, step, and longevity increases that average 2.28% per year over a 30-year career. See Exhibit 12.

5. Retirement Rates

Age	Rate per Year for Paid Firefighters Eligible to Retire
50-52	20%
53-64	30
65	100

   The average expected retirement age for firefighters not yet eligible to retire based on these rates is 54.5.

6. RETRO DROP Election

   a. Percent of firefighters eligible electing RETRO DROP: 90% of service retirements eligible to elect at least a 12-month lump sum.

b. Months assumed for lump sum: Maximum they are eligible for, up to 24 months.

7. Termination Rates

   See Exhibit 12.

8. Disability Rates

   See Exhibit 12. The on-duty and off-duty rates are each 50% of the total rate at each age.

9. Reduction in Benefit after 2½ Years of Disability Retirement

   15% weighted average reduction in benefit.

10. Percent Married

    80% of the firefighters are assumed to be married at retirement, disability, or death while employed, with male firefighters having a spouse three years younger and female firefighters having a spouse three years older.

11. Payment Form for Retirement Benefits Due to Service Retirement, Disability Retirement, or Vested Termination

    - Joint and 2/3 to surviving spouse for the 80% assumed to be married
    - Life annuity for the 20% assumed to be single

    To the extent optional forms of payment are elected and the amounts are determined under an actuarial basis which differs from the basis used in the valuation, actuarial gains or losses will occur. These gains or losses are expected to be very small and will be recognized through the valuation process for those retiring since the prior valuation who made an optional election.

12. Surviving Child's Death Benefit

    None are assumed as a result of future deaths.

13. Firefighters' Contribution Rate

    12% of covered pay.

14. City's Assumed Contribution Rate

    15% of covered payroll for firefighters over the UAAL amortization period.

15. Covered Payroll for First Year Following Valuation Date

    The sum of actual (or annualized) 2024 pay for each firefighter increased by 4% to reflect the 4% general pay increase effective October 2024.

16. Administrative Expenses

The expenses paid by fund assets for other than investment-related expenses are assumed to be 0.70% of payroll. The normal cost rate as a percent of payroll is assumed to be 0.70% of payroll higher to reflect these expenses.

17. Timing of Assumptions

The demographic decrements occur at the beginning of the year, while the individual salary increases occur at the end of the year.

Exhibit 12

Disability and Termination Rates per 1,000 Active Members
Compensation Increases by Years of Service

Disability Rates[1]		Termination Rates		Compensation Increases	
Attained Age	Rate per 1,000	Years of Service	Rate per 1,000	Years of Service	Increase Percent
20	0.14	0	163	1	9.43%
21	0.15	1	146	2	9.43
22	0.16	2	130	3	9.43
23	0.17	3	115	4	9.43
24	0.18	4	100	5	9.43
25	0.19	5	86	6	5.32
26	0.21	6	74	7	5.32
27	0.23	7	65	8	5.32
28	0.25	8	58	9	5.32
29	0.28	9	52	10	5.32
30	0.31	10	45	11	4.81
31	0.35	11	38	12	4.81
32	0.40	12	32	13	4.81
33	0.45	13	29	14	4.81
34	0.49	14	26	15	4.81
35	0.52	15	25	16	4.81
36	0.54	16	24	17	4.81
37	0.57	17	22	18	4.81
38	0.62	18	21	19	4.81
39	0.73	19	20	20	4.81
40	0.92	20 & Over	0	21	4.81
41	1.14			22	4.81
42	1.32			23	2.75
43	1.48			24	2.75
44	1.73			25	2.75
45	2.09			26	2.75
46	2.55			27	2.75
47	2.98			28	2.75
48	3.34			29	2.75
49	3.62			30	2.75
50	3.79			31	2.75
51	3.92			32	2.75
52	4.04			33	2.75
53	4.24			34	2.75
54	4.56			35	2.75
55	0.00			36	2.75
56	0.00			37	2.75
57	0.00			38	2.75
58	0.00			39	2.75
59	0.00			40	2.75

[1] The on-duty and off-duty rates are each 50% of the total rate shown at each age.

Exhibit 13

Definitions

1. Actuarial Accrued Liability	That portion, as determined by the particular actuarial cost method used, of the Actuarial Present Value of future pension plan benefits as of the Valuation Date that is not provided for by the Actuarial Present Value of future Normal Costs.
2. Actuarial Assumptions	Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, termination, disablement and retirement; changes in compensation; rates of investment earnings and asset appreciation; and other relevant items.
3. Actuarially Equivalent	Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.
4. Actuarial Gain (Loss)	A measure of the difference between actual experience and that expected based on the Actuarial Assumptions during the period between two Actuarial Valuation dates, as determined in accordance with the particular actuarial cost method used.
5. Actuarial Present Value	The value of an amount or series of amounts payable or receivable at various times, determined as of a given date (the Valuation Date) by the application of the Actuarial Assumptions.
6. Actuarial Valuation	The determination, as of a Valuation Date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets and related Actuarial Present Values for a pension plan.
7. Actuarial Value of Assets	The value of cash, investments and other property belonging to a pension plan, as determined by a method and used by the actuary for the purpose of an Actuarial Valuation.

8. Entry Age Actuarial Cost Method	An actuarial cost method under which the Actuarial Present Value of the Projected Benefits of each individual included in the Actuarial Valuation is allocated as a level percentage of compensation between age at hire and last age before 100% assumed retirement. The portion of this Actuarial Present Value allocated to a valuation year is called the Normal Cost. The portion of this Actuarial Present Value not provided for at a Valuation Date by the Actuarial Present Value of future Normal Costs is called the Actuarial Accrued Liability. Under this method, Actuarial Gains (Losses), as they occur, reduce (increase) the Unfunded Actuarial Accrued Liability.
9. Plan Year	A 12-month period beginning October 1 and ending September 30.
10. Normal Cost	That portion of the Actuarial Present Value of pension plan benefits that is allocated to a valuation year by the actuarial cost method.
11. Projected Benefits	Those pension plan benefit amounts that are expected to be paid at various future times according to the Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future qualified service.
12. Overfunded Actuarial Accrued Liability	The excess, if any, of the Actuarial Value of Assets over the Actuarial Accrued Liability.
13. Unfunded Actuarial Accrued Liability	The excess, if any, of the Actuarial Accrued Liability over the Actuarial Value of Assets.
14. Valuation Date	The date upon which the Normal Cost, Actuarial Accrued Liability and Actuarial Value of Assets are determined. Generally, the Valuation Date will coincide with the end of a Plan Year, but it does not have to coincide.
15. Years to Amortize the Unfunded Actuarial Accrued Liability	The period is determined in each Actuarial Valuation as the number of years, beginning with the Valuation Date, to amortize the Unfunded Actuarial Accrued Liability with a level percent of payroll that is the difference between the expected total contribution rate and the Normal Cost contribution rate.

Exhibit 14

Summary of Present Plan

1.	Monthly Retirement Benefit for Firefighters as a Percentage of Highest 60-Month Average Salary	
	(a) For service and duty-related disability retirement benefit	58.40%
	(b) For duty-related death benefit to surviving spouse	38.93%
2.	Additional Monthly Retirement Benefit for Firefighters as a Percentage of Highest 60-Month Average Salary for Each Year of Service in Excess of 20 Years of Service	
	(a) For service and duty-related disability retirement benefit	2.275%
	(b) For duty-related death benefit to surviving spouse	1.517%
3.	Service Retirement Eligibility for Firefighters	Age 50 and 25 Years or Age 55 and 20 Years
4.	Retroactive Deferred Retirement Option Plan (RETRO DROP) provides a reduced monthly benefit and a lump sum	
	(a) Earliest RETRO DROP benefit calculation date	3.5 Years after Service Retirement Eligibility
	(b) Maximum RETRO DROP benefit accumulation period	24 Months
	(c) Earliest employment termination date with maximum RETRO DROP benefit accumulation period	Age 55.5 and 30.5 Years or Age 60.5 and 25.5 Years
	(d) RETRO DROP lump sum includes	
	(i) monthly benefits that would have been received between RETRO DROP benefit calculation date and termination of employment,	
	(ii) accumulated contributions made by the firefighter after the RETRO DROP benefit calculation date, and	
	(iii) no interest	
5.	Vested Termination Benefit	
	(a) Eligibility for firefighters	10 years
	(b) Percent vested with 10 years	50%
	(c) Additional percent vested for each year above 10 years	5%
	(d) Percent vested with 20 or more years	100%
	(e) Benefit is deferred to date person would have satisfied service retirement eligibility date	
	(f) Benefit is percent vested times service retirement benefit	

6. Disability Retirement Monthly Benefit for Firefighters Who Become Totally Disabled as a Result of Duties as a Firefighter
   (a) The benefit is (i) plus (ii) for the initial 30-month period if not able to perform job in fire department with equal or greater pay than before becoming disabled
      (i) Minimum monthly amount based on 20 years in 1(a)
      (ii) Additional monthly amount per year of service in excess of 20 years in 2(a)
   (b) Following the initial 30-month period, the status is periodically reviewed, and the benefit may be continued in full, reduced by half, or terminated, depending upon whether the member is able to perform any work for which he is reasonably suited by education, training, and experience.
   (c) Upon attaining eligibility for normal retirement, the member's vested retirement benefit becomes payable if the disability benefit has been reduced or terminated

7. Monthly Duty-Related Death Benefit for Children of Firefighters as a Percentage of Highest 60-Month Average Salary

(a) Where the spouse is receiving a benefit	7.79%
(b) Where the spouse is not receiving a benefit or there is no spouse	38.93%

8. Contributions As a Percentage of Pay by:

(a) Firefighters	12.00%
(b) City of Killeen	15.00%

9. Monthly Benefits for Volunteer Firefighters[1]

(a) Service retirement benefit	$155.00
(b) Duty-related disability retirement benefit	$155.00
(c) Duty-related spouse survivor benefit	$105.00
(d) Duty-related child survivor benefit:	
i. Where the spouse is receiving a benefit	$37.20
ii. Where the spouse is not receiving a benefit	$105.00

10. Service Retirement Eligibility for Volunteer Firefighters[1] — Age 55 and 20 Years

11. Vested Terminated Benefit Eligibility for Volunteer Firefighters[1] (Benefit Deferred to Age 55) — 20 Years

12. A prorated benefit is provided for firefighters with both paid and volunteer service.[1]

13. The normal form of annuity payment at retirement is a Joint and Two-Thirds to Surviving Spouse, and payment is the last day of each month. A Joint and 75% to Surviving Spouse Option and Joint and 100% to Surviving Spouse Option are available as optional forms of a service retirement benefit. A Social Security Leveling Option is also available.

14. Off-duty death benefits are provided for paid firefighters with more than 10 years of service with the same formula as for a duty-related death [Items 1(b) and 2(b)].

[1]The city discontinued using volunteers beginning in the second half of 2016.

15. Salary used to determine the Highest 60-Month Average Salary for paid firefighters includes regular pay, longevity and overtime pay and excludes (a) a lump sum distribution upon termination for unused sick leave or vacation and (b) deployment pay after January 1, 2019 for disaster response services outside of the City of Killeen. The average is based on the highest 130 consecutive biweekly pay periods during active participation in the fund or before the RETRO DROP benefit calculation date.

16. Refund of firefighters' accumulated contributions without interest will be made to firefighters who terminate employment and either are not eligible for any other benefit from the fund or request a refund from the fund.

Appendix A

Review of the Actuarial Economic Assumptions for the September 30, 2024 Actuarial Valuation

Section 1. Theoretical Investment Return Assumption Development

	Gross Annual Real Rate of Investment Return (ROR)[1]	Estimated Investment Expenses[2]	Net Real ROR	Asset Allocation 9/30/24 Actual[3]	Asset Allocation Current Target[4]
Equities					
Domestic large cap blend	6.5%	0.16%	6.34%	20.3%	15.0%
Domestic large cap value	6.5	0.77	5.73	6.1	7.5
Domestic large cap growth	6.5	0.15	6.35	6.6	7.5
Domestic small/mid cap	7.0	0.22	6.78	5.8	8.0
International developed value	7.0	0.56	6.44	6.9	7.5
International developed growth	7.0	0.61	6.39	6.1	7.5
				51.8	53.0
Fixed Income					
Domestic core plus	2.5	0.55	1.95	16.9	18.5
Global	2.5	0.87	1.63	3.1	5.0
Direct lending	3.0	1.13	1.87	2.3	2.5
Bank loan	3.0	0.84	2.16	2.1	3.0
				24.4	29.0
Alternatives					
Real estate	5.0	1.23	3.77	5.7	7.5
Multi-asset fund	4.0	0.65	3.35	5.6	6.0
Tactical strategies	5.0	1.37	3.63	1.7	2.5
				13.0	16.0
Cash	0.2	0.20	0.00	10.8	2.0
				100.0%	100.0%
Weighted Average Net Real ROR Assumption				4.22%	4.49%
Possible Theoretical Annual Investment Return Assumption (Total Net Annual ROR) – Net Real ROR Plus Assumed Annual Rate of Inflation					
Assumed 2.75% Inflation				6.97%	7.24%

[1] A gross annual real rate of investment return is the total annual rate of investment return, before any expenses, that is in excess of the assumed annual inflation rate. These are long-term assumptions made by Rudd and Wisdom, Inc.

[2] These assumed investment-related expenses are primarily based on information from Mariner Consulting as of September 30, 2024 for both direct and indirect expenses, with an addition of 0.12% for bank and investment consultant fees.

[3] This allocation is from Mariner Consulting's September 30, 2024 performance review and report and adjusted to reflect total assets from audited financial statement with cash as the balancing item.

[4] This target allocation is based on the target allocation in Mariner Consulting's September 30, 2024 performance review and report, adjusted to add a 2% cash allocation, with a 2% reduction in the domestic small/mid cap allocation.

Appendix A (continued)

Section 2. Price Inflation in the USA
Average Annual Rates of Increase in the CPI-U

Years (Dec. to Dec.)	Number of Years	Average Annual Increase
1959 – 2024	65	3.72%
1964 – 2024	60	3.93
1969 – 2024	55	3.94
1974 – 2024	50	3.68
1979 – 2024	45	3.19
1984 – 2024	40	2.78
1989 – 2024	35	2.66
1994 – 2024	30	2.52
1999 – 2024	25	2.55
2004 – 2024	20	2.56

Most inflation forecasts are for 10 years or less. For example, the average 10-year forecast in the June 2025 Livingston Survey published by the Federal Reserve Bank of Philadelphia was 2.26%. However, 10 years is too short a forecast period for a public employee defined benefit pension plan. In the 2025 annual report of the OASDI Trust Funds (Social Security), the ultimate inflation assumptions for their 75-year projections are 3.0%, 2.4%, and 1.8% for the low-cost, intermediate, and high-cost assumptions, respectively. Looking at the average annual increase in the CPI-U over historical periods of 30 to 65 years above and considering the Social Security forecasts, we believe that reasonable assumed rates of inflation for the long-term future would range from 2.25% to 3.00%.

Section 3. Administrative Expenses Paid by the Fund

Plan Year Ending 9/30 (1)	Administrative Expenses Paid by the Fund (2)	Covered Payroll (3)	% of Payroll (2) ÷ (3) (4)
2024	$142,224	$20,735,375	0.69%
2023	139,507	19,479,009	0.72
2022	133,671	18,670,782	0.72
2021	114,381	16,262,236	0.70
2021-2024	$529,783	$75,147,402	0.70%

The administrative expenses are not reflected in the investment return assumption but are reflected as a percent of payroll that is added to the normal cost contribution rate. For the September 30, 2024 actuarial valuation, we recommend 0.70%, which is the average developed above for the last four plan years. This is somewhat lower than the assumption of 0.75% used in the September 30, 2022 actuarial valuation. (The covered payroll was determined as the firefighter contributions for the plan year divided by the firefighter contribution rate during the plan year.)

Appendix A (continued)

Section 4. Comparison of 9/30/2022 Actuarial Economic Assumptions with 9/30/2024 Actuarial Economic Assumptions

Actuarial Assumption[1]	9/30/2022 Actuarial Economic Assumptions	9/30/2024 Actuarial Economic Assumptions
Inflation (Price)	2.75%	2.75%
Net real rate of return[2]	4.50	4.50
Net total investment return[2]	7.25%	7.25%
Firefighter pay increase[3]	4.72%	5.03%
Aggregate payroll increase	2.75%	2.75%
Admin. expenses (% of payroll)	0.75%	0.70%

[1] All assumptions are annual rates.
[2] Net of all investment-related expenses.
[3] For 9/30/2022, a 2.75% annual general compensation increase combined with promotion, step, and longevity pay increases that vary by length of service (highest in early years) and average 1.97% per year over a 30-year career. For 9/30/2024, a 2.75% annual general compensation increase combined with promotion, step, and longevity pay increases that average 2.28% per year over a 30-year career.

Appendix B

Other Disclosures as of September 30, 2024

Potential Risks

- Investment risk is the potential that investment returns will be different than assumed. Adverse investment experience would increase the unfunded actuarial accrued liability (UAAL) and the UAAL amortization period. Favorable investment experience would have the opposite effects.

- Compensation risk is the potential that compensation increases for individuals will be different than assumed. Greater-than-assumed increases would increase the UAAL and the UAAL amortization period. Less-than-assumed increases would have the opposite effects.

- Payroll risk is the potential that the total (aggregate) payroll will increase differently than assumed due to general compensation increases and changes in the number of active members. Greater-than-assumed aggregate payroll increases would lower the UAAL amortization period. Less-than-assumed aggregate payroll increases would increase the UAAL amortization period.

- Longevity risk is the potential that retirees and surviving spouses may live longer or shorter than expected.

- Other demographic risks are the potential that active members may terminate, become disabled, die, or retire at times other than assumed.

Plan Maturity Measures

The following measures may help the board and the city better understand some of the potential risks described above. The measures are for the actuarial valuation date or the year ending September 30.

Measure	2024	2022	2020	2018	2016	2014
1. Ratio of retired life actuarial accrued liability to total actuarial accrued liability	39.1%	41.1%	45.3%	47.4%	40.3%	39.9%
Commentary: Mature plans have 50% or more of the total actuarial accrued liability attributable to retirees and surviving spouses. Mature plans are generally more sensitive to investment risk. The decreases in the ratio are the result of the actuarial accrued liability of active members growing somewhat faster than the actuarial accrued liability of pensioners.						
2. Ratio of net cash flow (contributions less benefit payments less administrative expenses) to assets	2.5%	2.6%	0.7%	1.1%	3.1%	1.8%
Commentary: A positive net cash flow means benefit payments and administrative expenses are less than contributions. A certain amount of negative net cash flow is expected as a plan matures. The reason for the variability of the numbers is the variability of the RETRO DROP lump sums paid from year to year and contribution changes. Increases in contribution rates in 2020 and 2023 have increased the positive net cash flow.						
3. Ratio of actuarial value of assets to total payroll	3.31	3.21	3.28	2.97	2.64	2.62
Commentary: Maturing plans usually have the ratio generally increasing over time as the assets grow faster than the payroll. However, the ratio may not increase as much if the total payroll increases more than assumed over an extended period of years. Investment experience will also affect the growth of the actuarial value of assets.						

Appendix B (continued)

Negative Amortization

- As of this actuarial valuation, the fund is expected to have negative amortization for about eight more years. At that time, the unfunded actuarial accrued liability is expected to gradually decrease from one annual actuarial valuation to the next.

Reasonable Actuarially Determined Contribution Rate

- The benchmark actuarially determined contribution (ADC) rate in the section on funding policy on page 5 is a reasonable ADC rate consistent with actuarial standards of practice.

Actuarial Valuation Software

- We have utilized software licensed from Winklevoss Technologies, LLC in the development of the liabilities summarized in the report. We have independently confirmed the model developed by Winklevoss and have sufficiently tested it to ensure the model is an accurate representation of the system's liabilities.

Low-Default-Risk Obligation Measure (LDROM)

- The LDROM is a required disclosure calculated as of the date of the actuarial valuation using a discount rate based on high quality bond yields instead of the expected return on the fund's diversified investment portfolio.

Low-Default-Risk Obligation Measure	$188,745,453
Actuarial Accrued Liability	$108,451,600

- The difference between the LDROM and the actuarial accrued liability determined in this actuarial valuation could be viewed as the expected savings from investing in the fund's diversified portfolio instead investing only in high quality bonds.

- For our calculation of the LDROM, we have used the same actuarial cost method and actuarial assumptions from this actuarial valuation summarized in Exhibits 11 and 12, except for an assumed discount rate of 3.74% instead of the investment return assumption of 7.25%. To determine the assumed discount rate, we used the Bond Buyer Index of general obligation bonds with 20 years to maturity, which has an average rating roughly equivalent to Moody's Investors Services' Aa2 rating and Standard and Poor's Corporation AA. The weekly index closest to the September 30, 2024 measurement date was 3.74%.

- Because the fund's assets are not invested only in high-quality bonds, the LDROM does not reflect the fund's actuarial condition, nor does it offer insights into the total contribution required for an adequate contribution arrangement or the security of participant benefits.