

AUSTIN FIREFIGHTERS'
RELIEF AND RETIREMENT FUND

SPECIAL ACTUARIAL ANALYSIS
DEFERRED RETIREMENT OPTION PLAN

February 18, 2022



February 18, 2022

Board of Trustees
Austin Firefighters'
Relief and Retirement Fund
4101 Parkstone Heights Drive, Suite 270
Austin, TX 78746

Re: Deferred Retirement Option Plan (DROP) Analysis

Dear Board:

This report has been prepared for the Board of Trustees of the Austin Firefighters' Relief and Retirement Fund ("Fund") and its stakeholders by Foster & Foster Inc. which includes an examination of the financial impact, if any, on the retirement system for offering DROP to its participants.

The findings, conclusions, and any recommendations for consideration presented in this report are specific to the Fund. Foster & Foster may produce different findings or arrive at different conclusions in other situations or even in cases involving similar Plans. As such, it is important to keep in mind that the use of this information for purposes other than those expressed here may not be appropriate.

To the best of our knowledge, the analysis was prepared in accordance with the applicable Actuarial Standards of Practice issued by the Actuarial Standards Board.

When reviewing the results, it is important to keep in mind that future actuarial measurements may differ significantly from current measurements due to such factors as: plan experience differing from that anticipated by the assumptions, changes in assumptions, changes in plan provisions or applicable law.

Please also note that the true cost of any DROP program cannot be fully recognized until each DROP participant ultimately becomes deceased and all payments are made. The findings presented in this report are based on assumptions of future experience. Deviations from expectations may lead to significant changes in actuarial measurements. Due to the limited scope of the analysis, we did not perform an analysis of the potential range of such future measurements. This report does not consider all possible scenarios.

Unless otherwise stated, all assumptions and methods used are the same as described in the December 31, 2020 actuarial valuation report. It should be noted that changes to retirement benefits could potentially affect participants' retirement or termination behavior. In reviewing the results presented in this report, it should be noted that there are risks that may not be inherently apparent to the reader that should be carefully considered. While we have identified a few key risks, providing numerical analysis of all such risks is outside the scope of this report. For additional key risks please see the Discussion of Risk section of the December 31, 2020 actuarial valuation report.

Foster & Foster does not provide legal, investment or accounting advice. Thus, the information in this report is not intended to supersede or supplant the advice or the interpretations of the System or its affiliated legal, investing or accounting partners.

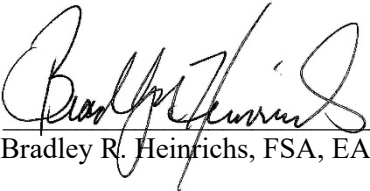
In performing the analysis, we used third-party software to model (calculate) underlying liabilities and costs. These results are reviewed in the aggregate and for individual sample lives. The output from the software is either used directly or input into internally developed models to generate the costs. All internally developed models are reviewed as part of the process. As a result of this review, we believe that the models have produced reasonable results. We do not believe there are any material inconsistencies among assumptions or unreasonable output produced due to the aggregation of assumptions.

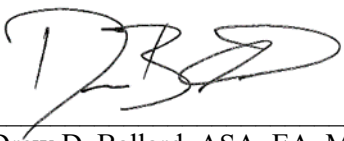
The undersigned are familiar with the relevant aspects of retirement benefit valuations and collectively meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All the sections of this report, including any appendices and attachments, are considered an integral part of the actuarial opinions.

We look forward to presenting the conclusions contained in this report to the Board and are available to answer any questions concerning its contents.

Respectfully submitted,

FOSTER & FOSTER INC.

By: 
Bradley R. Heinrichs, FSA, EA, MAAA

By: 
Drew D. Ballard, ASA, EA, MAAA

SECTION I. INTRODUCTION

Deferred Retirement Option Plans (DROP) were first introduced in the 1980s by public-sector employers and have become a highly attractive and utilized benefit design feature for public pension programs across the country. DROP programs are typically implemented by local and state governments to meet human resource management and financial objectives or are viewed as a benefit enhancement to plan participants. A primary objective of the plan sponsor surrounds employee retention: specifically, incentivizing plan participants to extend their anticipated retirement age.

Consistent with other defined benefit provisions, the DROP benefit design can vary dramatically from one system to the next. Essentially, a DROP program affords eligible participants the opportunity to continue employment (and earn wages) in conjunction with commencing their pension benefits (directed to a notional, deferred account).

Upon election to participate in DROP, a participant's pension benefit is calculated (based upon service and salary) as if the participant were retiring on the effective DROP date. Subsequent to the effective DROP date, such benefits are credited to a notional DROP account while the participant continues employment earning regular compensation. At the time of termination of employment, participants will receive their accumulated DROP account balance in the form of a lump-sum and will begin collecting the monthly benefit amount that was previously credited to the DROP account.

Based on information provided on the system's website, below is a history of the DROP program for the City of Austin Firefighters:

- ❖ Established in 1995 with a maximum participation period of two (2) years.
- ❖ Amended in 1997 to increase the maximum participation period to five (5) years.
- ❖ Amended in 1999 to incorporate increased benefit multiplier (3.10%) and to afford DROP to eligible survivors of members who die before retirement but after becoming eligible for DROP.
- ❖ Amended in 2001 to incorporate increased benefit multiplier (3.30%) and to increase the maximum participation period to seven (7) years.

The primary features of the system's DROP, in its current form, include:

- ❖ The calculated monthly benefit (based upon service and salary at the time of DROP) is credited to the participant's DROP account for each month of DROP participation.
- ❖ During participation in DROP, participants continue to make contributions to the system based on the effective member contribution rate. While participating in DROP, 100% of member contributions (plus interest) are credited to the participant's DROP account. No member contributions are retained by the system.
- ❖ During participation in DROP, individual DROP accounts are credited with fixed interest at the end of each calendar month at a rate equal to one-twelfth (1/12) of five percent (5%) on the monthly benefit deposits and member contributions deposited during the DROP participation period.
- ❖ The maximum permissible DROP participation period is seven (7) years.
- ❖ Upon termination of employment, participants are allowed the opportunity to retain their accumulated DROP balance with the system and continue to earn guaranteed interest at the 5% (per annum) fixed rate.
- ❖ DROP entry does not require an irrevocable election as participants are allowed to retroactively elect DROP at the time of termination of employment.

SECTION II. COST ANALYSIS – ASSUMING NO CHANGE IN RETIREMENT BEHAVIOR

As previously mentioned, DROP programs are typically implemented by local and state governments to meet human resource management and financial objectives or are viewed as a benefit enhancement to plan participants. As you review the results throughout the remainder of this report, please keep in mind that the costs associated with implementing a DROP program encompass factors external to the retirement system. This makes examining the financial impact of DROP programs difficult to quantify when considering all interrelationships that exist within and outside the normal operation of the system. We will do our best to convey, consider and analyze these interrelationships in conjunction with this analysis.

In fact, the Government Finance Officers Association (GFOA) recommends that government defined benefit plans do not include DROPs and the first stated reason is that “The cost impact of a DROP is difficult to assess.” Further, they state “Testing the cost impact of a proposed or implemented DROP requires making assumptions about when members would have retired without the DROP. Such assumptions cannot be tested by experience because the presence or absence of the DROP impacts the real-world retirement decisions that employees make. Furthermore, economic conditions, health insurance coverage, and other factors may drive changes in retirement utilization that make it difficult to isolate the effect of the DROP on retirement decisions.” While Foster & Foster does not agree with the GFOA’s recommendation that defined benefit plans should not include DROP, we do agree that calculating the explicit cost of any DROP program is a herculean task.

It is well-known that a primary objective for plan sponsors implementing a DROP program is to increase employee retention, including for those who have reached retirement eligibility. For this reason, we will examine the financial impact of the DROP program differently in Sections II and III by incorporating an assumed change in retirement behavior. In our experience, the existence of a DROP program will result in a higher average retirement age within a pension system.

There are several components that need to be considered when one tries to analyze a DROP program’s financial impact on a retirement system. From a benefit perspective, we feel it is important to illustrate and examine a comparison of the benefit value members will receive as a DROP participant versus regular service retirement. Section II will focus on examining this comparison of benefit values under the assumption that existence of the DROP program results in no change in retirement behavior. Thus, the framework presented in Section II will provide the foundation of analyzing DROP purely from a benefit value perspective.

Retiree/DROP Comparison Calculations

Plan Member Demographics

Based on the current active population, the retirement/DROP comparison calculations will include six (6) members with varying hire ages. Then we assigned weights to these hire ages to better resemble the active demographics of the Austin Firefighters. Also, based on current valuation assumptions, we have included the average expected retirement age corresponding to each hire age.

Average Hire Age	Average Expected Retirement Age	Proportion
23	54	15%
26	56	15%
28	56	20%
30	56	20%
32	56	10%
35	56	20%

Calculation Illustration

This subsection includes a sample illustration to demonstrate the calculation details/methodology that is applied for each of the retiree/DROP comparison calculations. The sample illustration is based on the following details:

- Hire Age – 28
- Earliest Retirement Eligibility – 45/17
- Retirement Age – 56
- DROP Period – 3 Years
- Salary Increases (during DROP period) – 3.25% per year

Year	Salary	3-Year Average	18.7% Member Contributions x Salary	Member Contributions (with 5% interest)
t (final year)	\$150,000	\$145,328	\$28,050	\$88,036
t-1	\$145,278	\$140,754	\$27,167	\$56,333
t-2	\$140,706	\$136,323	\$26,312	\$27,036
t-3	\$136,277	\$132,032	\$25,484	N/A

* NOTE: The final year salary is for illustrative purposes only and is not reflective of actual plan data. Since the pension benefits are a percentage of final average pay, the assumed final year salary has no bearing on the results (when expressed in percentage terms).

The tables below show the calculations of the accrued benefits (in accordance with the system's current benefit formula) at retirement/DROP, as well as the value of the DROP lump-sum.

Regular Retirement Annuity			DROP Retirement Annuity		
Service	28		Service	25	
Benefit Rate	3.30%		Benefit Accrual	3.30%	
3-Year Avg Salary	\$145,328	year = t (final year) = 28 x 0.033 x	3-Year Avg Salary	\$132,032	year = t-3 = 25 x 0.033 x
Accrued Benefit	\$134,283	\$145,328	Accrued Benefit	\$108,926	\$132,032
Age 56 Payment Factor	12.7874		Age 56 Payment Factor	12.7874	
Actuarial Present Value	\$1,717,130	= \$134,283 x 12.7874	Actuarial Present Value	\$1,392,880	= \$108,926 x 12.7874

DROP Retirement Lump-Sum		
DROP Balance	\$353,236	With 5% interest
Member Contributions	\$88,036	year = t (final year)
DROP Account Balance	\$441,272	

The table below summarizes the comparison of the present value of benefits for retirement/DROP.

Results Summary				
	Annuity	Present Value (Annuity)	Lump-Sum	Total Present Value
Regular Retirement	\$134,283	\$1,717,130	N/A	\$1,717,130
DROP Retirement	\$108,926	\$1,392,880	\$441,272	\$1,834,152
Increase in PV				\$117,022
% Increase/Decrease				6.8%

As you can see, the net impact of electing DROP versus regular service retirement for this member based on the parameters specified was an increase in present value of \$117,022, or 6.8% of the actuarial present value of benefits.

Summary of Results – Current Plan Design

We performed the same calculation methodology repeatedly for the various members with differing hire ages while applying the assumed retirement rates, DROP utilization rates and DROP durations as stated in the December 31, 2020 actuarial valuation.

Below is a summary of the retiree/DROP comparison calculations for each of the members listed on page 3. When reviewing the results, please keep in mind that the difference in present value indicates the increase in costs due to DROP when compared to regular service retirement. Please also keep in mind the results were developed under the presumption that existence of DROP will not impact retirement behavior.

Hire Age	Population Proportion	Difference in Present Value
23	15%	8.2%
26	15%	8.3%
28	20%	7.7%
30	20%	6.9%
32	10%	6.1%
35	20%	4.5%
100%		6.9%*

***Weighted average**

As you can see, the present value of the DROP benefits is larger than regular service retirement (between 4.5% to 8.3%). This means that if implementing DROP had no impact on retirement behavior, meaning that everybody will retire at the same age regardless, the DROP plan would add cost to the system. Again, please note that these results are based on various assumptions, and actual retirement/DROP experience that varies from historical averages could significantly impact the results.

Based on the proportion assumed for each respective hire age derived from an examination of Austin Firefighters' data, the expected increase in actuarial liabilities when comparing DROP versus regular service retirement is approximately 6.9%. This represents an impact of about 10.5 years of amortization on an actuarial asset value basis and 4.5 years of amortization on a market asset value basis.

One of the primary features of the system's DROP program is that upon termination of employment, participants are allowed the opportunity to retain their accumulated DROP balances with the system and continue to earn guaranteed interest at the 5% (per annum) fixed rate. While this may present additional risk to the system (discussed later), over the long-term it presents an expected opportunity to reduce costs as plan assets are currently assumed to earn 7.3% per year. From an actuarial present value of benefits perspective, this savings opportunity is expected to reduce the long-term costs of the DROP program, but the actual interest savings (or costs) are dependent on a variety of factors such as post-retirement DROP utilization and actual Fund investment performance.

If we assume that 50% of DROP retirees will elect to retain their DROP account in the system until age 65 and the Fund earns 7.3% per year, the weighted average DROP cost would be reduced from 6.9% to 5.2% when comparing DROP versus regular service retirement.

Summary of Results – Plan Design Components

This subsection focuses on examining the primary features of DROP to determine the impact amending a specific feature may have on the expected long-term cost of the DROP program. The primary DROP features are listed in detail on page 1. For purposes of this subsection, we studied the expected financial impact of:

- ❖ Shortening the maximum DROP participation period from seven (7) years (current provision) to either five (5) or three (3) years
- ❖ Removing the 5% (per annum) interest credits during the DROP period
- ❖ Removing the return of employee contributions made during the DROP period

Maximum DROP Period	Return of Contributions	Interest Credited	Estimated Long-Term Cost of DROP Program*
7 (Current)	Y (Current)	Y (Current)	6.9%
5	Y	Y	5.7%
3	Y	Y	3.2%
7	Y	N	2.9%
5	Y	N	3.5%
3	Y	N	2.4%
7	N	N	-2.9%
5	N	N	-0.8%
3	N	N	0.2%

* These amounts are exclusive of the net savings expected from retiree DROP balances that remain in the Fund.

It is also important to point out that amending the benefit features of DROP could possibly result in a change to the DROP election behavior, resulting in a smaller percentage of the membership electing DROP. For purposes of this analysis, we maintained the current assumptions.

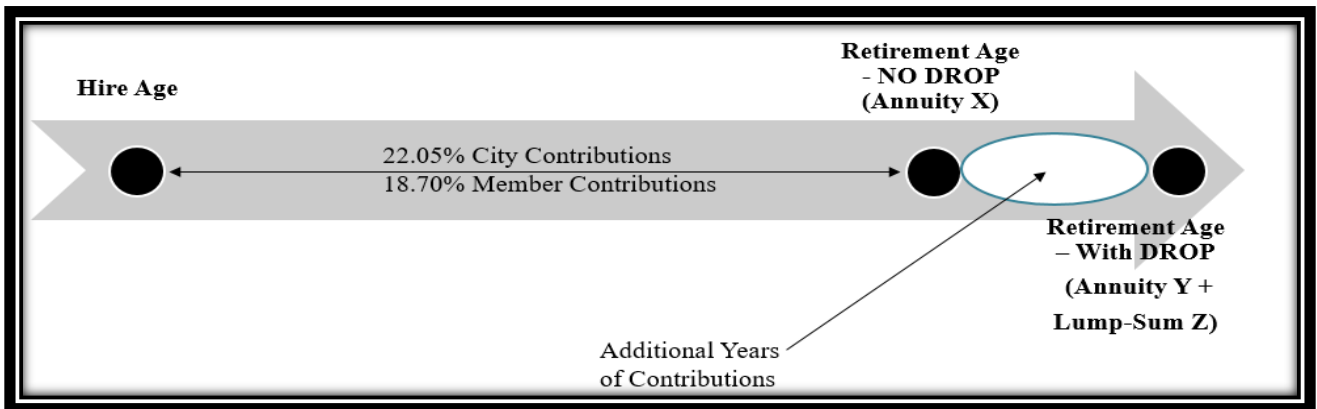
SECTION III. COST ANALYSIS – ASSUMING DROP EXTENDS ULTIMATE RETIREMENT AGE

Section III expands on the foundational work presented in Section II by examining the financial impact of DROP assuming that the existence of DROP leads to participants retiring at a later age than they otherwise would have.

Recall the statement provided on page 2 from the GFOA which stated “Testing the cost impact of a proposed or implemented DROP requires making assumptions about when members would have retired without the DROP. Such assumptions cannot be tested by experience, because the presence or absence of the DROP impacts the real-world retirement decisions that employees make. Furthermore, economic conditions, health insurance coverage, and other factors may drive changes in retirement utilization that make it difficult to isolate the effect of the DROP on retirement decisions.”

While we agree with this specific remark from the GFOA, we also feel that it is fair to conclude that the implementation of the system’s DROP program may have contributed to an increase in the average retirement age. In our experience, implementation of DROP plans often times increases the retirement age by as much as two (2) years. For purposes of our analysis presented in this section, we have examined the financial impact of DROP using a broad assumption that the existence of DROP has increased the retirement age by an average of two (2) years over the long-term.

When evaluating the financial impact of any DROP program, one must consider the net contributions (to the system) for the benefit value received (from the system) at retirement. For DROP members, the system will receive additional years of contributions at a higher salary than if the member retired at an earlier age and was replaced with a new hire at the entry salary rate, based on the presumption that DROP extends the average retirement age. Consider the illustration below as it applies to any hypothetical member of the system.



The illustration portrays that the retirement age (with DROP) will be at an age beyond what the regular service retirement age would have been had DROP not been implemented decades ago. The white oval in the illustration indicates the period of the member’s career in which the system will generate additional year(s) of contributions. The net effect of these additional contributions when compared to the difference in the benefit values (DROP versus retirement) allows us to examine an instrumental component when examining the financial impact of DROP on the retirement system.

Considering the same member demographics as established in Section II, the information below details the calculation methodology we will employ for examining the financial impact of DROP in this section.

- ❖ Step 1 – Calculate the actuarial present value of benefits of Annuity X at regular service retirement age (no DROP)
- ❖ Step 2(a) – Calculate the actuarial present value of benefits of {Annuity Y + Lump-Sum Z} at DROP retirement age, discounted back to Step 1 retirement age
- ❖ Step 2(b) – Determine additional contributions received by the system between regular service retirement age (no DROP) and DROP retirement age, less the Normal Cost for a new entrant (assumed to be 29.6% of salary), discounted to Step 1 retirement age
- ❖ Step 3 – Compare Step 1 to {Step 2(a) minus Step 2(b)}

Calculation Illustration

This subsection includes a sample illustration to demonstrate the calculation details/methodology that is applied for each of the retiree/DROP comparison calculations.

The sample illustration is based on the following details (same as Section II):

- Hire Age – 28
- Earliest Retirement Eligibility – 45/17
- Retirement Age – 56
- DROP Period – 3 Years
- Salary Increases (during DROP period) – 3.25% per year

Year	Salary	3-Year Average	18.7% Member Contributions x Salary	Member Contributions (with 5% interest)
t (final year)	\$150,000	\$145,328	\$28,050	\$88,036
t-1	\$145,278	\$140,754	\$27,167	\$56,333
t-2	\$140,706	\$136,323	\$26,312	\$27,036
t-3	\$136,277	\$132,032	\$25,484	N/A

* NOTE: The final year salary is for illustrative purposes only and is not reflective of actual plan data. Since the pension benefits are a percentage of final average pay, the assumed salary in the final year of employment has no bearing on the results (when expressed in percentage terms). Also, we have assumed that the new entrant salary rate (for illustrative purposes) is \$50,000 in the initial year of employment and \$55,000 in the second year of employment.

Step 1 – Calculate the actuarial present value of benefits of Annuity X at regular service retirement age (no DROP)

Regular Retirement Annuity		
Service	26	2-years prior to DROP retirement
Benefit Rate	3.30%	
3-Year Average Salary	\$136,323	year = t-2
Accrued Benefit	\$116,965	= 26 x 0.033 x \$136,323
Age 54 Payment Factor	12.9581	2-years prior to DROP retirement
Actuarial Present Value	\$1,515,644	= \$116,965 x 12.9581

Step 2(a) – Calculate the actuarial present value of benefits of {Annuity Y + Lump-Sum Z} at DROP retirement age, discounted back to Step 1 retirement age

DROP Retirement Annuity		
Service	25	
Benefit Rate	3.30%	
3-Year Average Salary	\$132,032	year = t-3
Accrued Benefit	\$108,926	= 25 x 0.033 x \$132,032
Age 56 Payment Factor	12.7874	
Actuarial Present Value	\$1,392,880	= \$108,926 x 12.7874
Discount Factor (2 years)	0.8686	to Retirement Age (no DROP)

DROP Retirement Lump-Sum		
DROP Balance	\$353,236	With 5% interest
Member Contributions	\$88,036	year = t (final year)
DROP Account Balance	\$441,272	

Step 2(b) – Determine additional contributions received by the system between regular service retirement age (no DROP) and DROP retirement age, less the Normal Cost for a new entrant (assumed to be 29.6% of salary), discounted to Step 1 retirement age

Year	DROP Salary	Replacement Salary	(a) DROP Salary Contributions (40.75%)	(b) Replacement Salary Contributions (40.75%)	(c) = (a) – (b) Additional Contributions	(d) Normal Cost (29.6%)	(e) Discount Factor	{(c) – (d)} x (e) Present Value
1	\$145,278	\$50,000	\$59,201	\$20,375	\$38,826	\$14,800	0.9654	\$23,195
2	\$150,000	\$55,000	\$61,125	\$22,413	\$38,712	\$16,280	0.8997	\$20,182

Step 3 – Compare Step 1 to {Step 2(a) minus Step 2(b)}

Results Summary					
	Annuity	Present Value (Annuity)	Lump-Sum	Discount Factor	Present Value
Regular Retirement	\$116,965	\$1,515,644	N/A	1	\$1,515,644
DROP Retirement	\$108,926	\$1,392,880	\$441,272	0.8686	\$1,593,144
			Increase in PV		\$77,500
			PV (Additional Cont)		(\$43,377)
			Net Increase		\$34,123
			% Increase		2.3%

As you can see, the net impact of electing DROP versus regular service retirement for this hypothetical member based on the parameters specified was an increase in present value of \$34,123, or 2.3% of the actuarial present value of benefits.

Summary of Results – Current Plan Design

We performed the same calculation methodology repeatedly for the various members with differing hire ages while applying the assumed retirement rates, DROP utilization rates and DROP durations as stated in the December 31, 2020 actuarial valuation.

Below is a summary of the retiree/DROP comparison calculations for each of the members listed on page 3. When reviewing the results, please keep in mind that the difference in present value indicates the increase in costs due to DROP when compared to regular service retirement. Please also keep in mind the results were developed under the presumption that existence of DROP will increase the average retirement age by two (2) years.

Hire Age	Population Proportion	Difference in Present Value
23	15%	3.7%
26	15%	3.7%
28	20%	3.3%
30	20%	2.7%
32	10%	2.1%
35	20%	1.0%
	100%	2.7%*

***Weighted average**

As you can see, the value of the DROP benefits is larger than regular service retirement (between 1.0% to 3.7%). Again, please note that these results are based on various assumptions, and actual retirement/DROP experience could significantly impact the results.

Based on the proportion assumed for each respective hire age derived from an examination of Austin Firefighters' data, the expected increase in actuarial liabilities when comparing DROP versus regular service retirement is approximately 2.7%.

One of the primary features of the system's DROP program is that upon termination of employment, participants are allowed the opportunity to retain their accumulated DROP balance with the system and continue to earn guaranteed interest at the 5% (per annum) fixed rate. While this may present additional risk to the system (discussed later), over the long-term it presents an expected opportunity to reduce costs as plan assets are currently assumed to earn 7.3% per year. From an actuarial present value of benefits perspective, this savings opportunity is expected to reduce the long-term costs of the DROP program, but the actual interest savings (or costs) are dependent on a variety of factors such as post-retirement DROP utilization and actual Fund investment performance.

If we assume that 50% of DROP retirees will elect to retain their DROP account in the system until age 65 and the Fund earns 7.3% per year, the weighted average DROP cost would be reduced from 2.7% to 1.0% when comparing DROP versus regular service retirement.

Summary of Results – Plan Design Components

This subsection focuses on examining the primary features of DROP to determine the impact amending a specific feature may have on the expected long-term cost of the DROP program. The primary DROP features are listed in detail on page 1. For purposes of this subsection, we studied the expected financial impact of:

- ❖ Shortening the maximum DROP participation period from seven (7) years (current provision) to either five (5) or three (3) years
- ❖ Removing the 5% (per annum) interest credits during the DROP period

Please note, unlike Section II, we did not include the expected financial impact of removing the return of contributions made during the DROP period. Since the primary focus of this section is based on the presumption that existence of DROP increases the average retirement age, we do not feel this would be realistic as participants would not elect DROP if they were required to forego a return of their own contributions made during the DROP period.

Maximum DROP Period	Return of Contributions	Interest Credited	Estimated Long-Term Cost of DROP Program*
7 (Current)	Y (Current)	Y (Current)	2.7%
5	Y	Y	1.5%
3	Y	Y	0.3%
7	Y	N	-1.2%
5	Y	N	-0.6%
3	Y	N	-0.4%

* These amounts are exclusive of the net savings expected from retiree DROP balances that remain in the Fund.

On the following page, we have also included a results summary which illustrates the estimated amortization period impact.

DROP Provisions			AVA Basis		MVA Basis	
Maximum DROP Period	Return of Contributions	Interest Credited	Amortization Period (years)	Decrease in Period (years)	Amortization Period (years)	Decrease in Period (years)
7 (Current)	Y (Current)	Y (Current)	23.3	n/a	7.9	n/a
5	Y	Y	20.8	2.5	6.9	1.0
3	Y	Y	18.6	4.7	6.0	1.9
7	Y	N	16.3	7.0	5.0	2.9
5	Y	N	17.1	6.2	5.4	2.5
3	Y	N	17.5	5.8	5.6	2.3
No DROP Provisions			18.1	5.2	5.8	2.1

SECTION IV. RISK DISCUSSION / ADDITIONAL CONSIDERATIONS

Risk Discussion

Actuarial Standards of Practice (ASOP) NO. 51, *Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions*, states that the actuary should identify risks that, in the actuary's professional judgment, may reasonably be anticipated to significantly affect the plan's future financial condition.

As stated many times throughout this report, the results generated were determined under various actuarial assumptions. These results are based on the premise that all future plan experience will align with the plan's actuarial assumptions; however, there is no guarantee that actual plan experience will align with the plan's assumptions. It is possible that actual plan experience will differ from anticipated experience in an unfavorable manner that will negatively impact the plan.

Below is a non-exhaustive list of potential risks a retirement system may face in conjunction with offering a DROP program to its participants. We have identified the below risks as the most significant risks facing the system based on the characteristics of the DROP program.

- ❖ *Adverse Selection* – Whenever participants are given a choice (for example, to elect DROP, to retire, or to remain active without electing DROP), it is important to consider that adverse selection is likely to occur periodically on an individual basis. That is, participants are likely to elect the option that will be most beneficial to them, resulting in higher overall plan costs. The potential for adverse selection is further magnified for your plan since participants are offered the benefit of hindsight in conjunction with a retroactive DROP. For example, a participant may not elect to enter DROP (or retire) if they are in line for a promotion or are expecting a significant increase in pay. On the other hand, if a participant has not received increases in pay as expected during their eligible DROP period, they will most likely elect DROP.

When examining the financial impact of DROP on a retirement system, the assumed rate of salary increases during the DROP period plays an integral role in calculating the anticipated costs. As stated, the results determined in Sections II and III were derived utilizing a 3.25% salary increase assumption which is in line with the current valuation assumption during high service periods.

What if the actual experience yielded an average salary increase of 2.25% during the participant's eligible DROP period? We have determined that the average expected DROP cost (assuming no change in retirement behavior) would increase from 6.9% to 10.8% and the average expected DROP cost (assuming DROP extends the retirement age by two years) would increase from 2.7% to 5.1%.

The smaller the pay increases during the eligible DROP period, the greater chance adverse selection will occur and generate additional costs to the system. Allowing for a 7-year DROP period increases the opportunity for adverse selection to occur.

- ❖ *Investment Return / DROP Liquidity* – The current DROP program guarantees all DROP participants a guaranteed return of 5.00% (per annum) during their DROP participation period and for any length of period following retirement in which the participant elects to retain their accumulated DROP balance in the Fund. While the long-term expectation is to outperform the guaranteed rate of 5% per year, this creates additional pressure on the

Fund's investment performance on an annual basis. When the rate of return on Fund assets falls short of the guaranteed 5% interest credited to DROP accounts, this produces an actuarial loss. The potential actuarial loss is magnified as the DROP asset ratio (the accumulated DROP balances to the market value of assets) increases. The DROP asset ratio also presents potential fund liquidity risks which could impact Fund performance depending on the timing/amount of DROP distributions in coordination with movements in the financial markets.

Over the last several years, the DROP asset ratio has continued to increase in the system, thereby increasing the risk of potential losses from investment returns. As of the December 31, 2020 valuation, the DROP balances represented nearly 12% of total Fund assets (\$138.5 million / \$1.16 billion).

What would be the expected actuarial loss if the Fund earned 0% while crediting DROP accounts the guaranteed 5% rate? We have estimated the actuarial loss attributable to the DROP accounts to be approximately \$7 million, which would increase the current amortization period by around 2 years. Keep in mind this only reflects the expected loss on crediting interest to accumulated DROP balances and does not reflect the expected actuarial loss due to the Fund's investment return falling short of the current 7.3% assumed rate, which would further impact the amortization period.

The larger the DROP asset ratio, the more pressure on the Fund to produce investment returns above the 5% guaranteed rate and the larger the risk and magnitude of potential actuarial losses.

Additional Considerations

While the risk discussion focused on the potential liability impact with respect to the DROP program, we felt it would be valuable to also consider other factors that may result due to the existence of the DROP. As previously mentioned, several interrelationships exist within and outside the normal operation of the system. Below is a list of some of these relationships that may exist, or external factors to the retirement system that should be considered.

- ❖ Typically, existence of DROP in a retirement system comes with an increase in the level of administrative expenses of the system.
- ❖ Providing significant lump-sum payments at the time of retirement is likely viewed as a benefit to plan participants, but this introduces an element of longevity risk to the participant in the event of imprudent use of the lump-sum amount. DROP participants effectively exchange a larger annual payment in order to receive a lump-sum payment.
- ❖ Long tenured employees who utilize the DROP will work longer than they otherwise would have, prohibiting promotional opportunities for younger employees.
- ❖ Active and retiree health care costs may be impacted due to the existence of DROP.
- ❖ Department hiring/training costs for replacements may be reduced.
- ❖ Department payroll costs may be higher since more senior members of the department may work longer and delay their replacement with a lower-wage new hire.
- ❖ Since a vast majority of public safety retirement plans have DROP programs, any serious modifications or removal of the program altogether may result in a human resource issue.

SECTION V. CONCLUSION

As requested, we have completed a special actuarial analysis which includes an examination of the financial impact, if any, on the retirement system for offering DROP to its participants. As presented throughout our analysis, there are several variables that must be considered and assumptions that must be made when examining the financial impact a DROP plan has on a retirement system. One of the key considerations discussed and an integral part of this analysis is the assumption that implementing DROP will have an impact on retirement behavior.

In Sections II and III, we performed numerous analyses across plan member demographics. These analyses allowed us to apply calculation methodologies to illustrate and examine a comparison of the benefit value members will receive as a DROP participant versus regular service retirement.

The primary difference in the calculation methodologies is that the results in Section II were developed under the presumption that the existence of DROP has no impact on the member's ultimate retirement age and the results in Section III were developed under the presumption that the existence of DROP extends the average retirement age by two (2) years. Keep in mind it is nearly impossible to isolate the effect of the DROP on retirement decisions, but it has been our experience that DROP plans do typically lead to longer working lifetimes.

We estimated that absent a change in retirement behavior, the current DROP structure increases the long-term costs of the system by 5.2-6.9%. We further estimated that if DROP has the effect of extending the average retirement age by two (2) years, the current DROP structure increases the long-term costs of the system by 1.0-2.7%. We also provided a summary which details the estimated impact if the primary features of the current DROP structure were amended (for example, the maximum DROP participation period was reduced to five (5) years). It is important to keep in mind that the true cost of any DROP program cannot be fully recognized until each DROP participant ultimately becomes deceased and all benefits are paid.

Implementing a DROP program not only generates potential costs to a retirement system, but it also generates additional risks. It is important to keep in mind that the existence of a DROP invites the potential for adverse selection, and certain individuals will benefit financially from the existence of DROP. We feel that the potential for adverse selection is magnified under the plan's current structure which allows for retroactive DROP in combination with a maximum 7-year DROP participation period. We also feel that the current DROP asset ratio (approximately 12% of Fund assets) presents additional unnecessary pressure on future investment performance and may result in significant actuarial losses if the system continues to credit DROP accounts with a guaranteed return of 5% per year.

All told, we feel that the existence of the current DROP program adds approximately 1% to the total cost of the system, which translates to about 2.2 years of amortization (actuarial asset value basis) or 0.8 years of amortization (market asset value basis).

We hope the findings and conclusions presented throughout this analysis serve an educational purpose for the Board to help understand the costs/risks that may present themselves for any retirement system that offers DROP to its participants. There are several additional cost mitigation strategies that can be explored which will have the impact of reducing the costs/risks of DROP including, but not limited to:

- ❖ Implement a maximum return of member contributions allocated to DROP accounts. For example, of the current 18.7% member contribution rate, 13.7% could be allocated to the participant's DROP account while the other 5.0% is retained by the system.
- ❖ Amend the interest rate credited to DROP accounts. This can be done several different ways. For example, lowering the guaranteed rate, tying the rate to a low-risk security index, tying the rate to actual plan performance, etc.
- ❖ Require that DROP participants withdraw their lump-sum balances as soon as administratively possible following retirement. While this will eliminate the risk and adverse leverage on the system during poor investment years, it also eliminates the potential long-term savings associated with earning 7.30% versus 5.0%
- ❖ Implement a DROP "fee/charge" to the monthly benefit amount for participants electing DROP. For example, the monthly benefit is reduced by 5% for utilization of DROP. The "fee/charge" could be applied only during the DROP participation period or could be applied throughout retirement.

APPENDIX A

Below we have included a table which shows the Retro-DROP provisions from other Fire funds across the state of Texas. Please note that these provisions reflect the information provided in the TLFFRA Pension Report published in March 2020. The DROP provisions shown below may not reflect current provisions of the below retirement systems.

Retirement System	Interest Credit	DROP Maximum Duration	Employee Contribution Credited
Abilene	None	3 years	Yes
Amarillo	None	2 years	Yes
Atlanta	None	2 years	Yes
Beaumont	None	5 years or 7 years	Yes
Brownwood	None	2 years	Yes
Cleburne	None	5 years	Yes
Corpus Christi	None	3 years or 4 years	Yes
Corsicana	None	3 years	Yes
Denton	None	4 years	Yes
Galveston	None	3 years	Yes
Greenville	None	2 years	Yes
Harlingen	None	N/A ¹	No
Irving	Val interest rate less 2%	9 years	Yes
Killeen	None	2 years	Yes
Laredo	None	2 years	Yes
Longview	None	3 years	Yes
Lubbock	None	2 years	Yes
Lufkin	None	3 years	Yes
McAllen	None	2 years	Yes
Midland	4%	3 years	Yes
Odessa	None	3 years	Yes
Orange	None	3 years	Yes
Paris	None	2 years	Yes
Plainview	None	2 years	Yes
Port Arthur	None	3 years	Yes
San Angelo	6%	4 years	Yes
Sweetwater	None	2 years	No
Temple	None	2 years	Yes
Texarkana	None	3 years	Yes
Texas City	None	30 months	Yes
Tyler	None	3 years or 5 years	Yes
University Park	None	2 years	Yes
Waxahachie	None	3 years	Yes
Wichita Falls	None	2 years	No

¹ Reduced benefit and lump sum elected upon retirement.

APPENDIX B

Below we have included a table which shows the DROP provisions from other larger retirement systems across the state of Texas. Please note that these provisions reflect the information provided in the Guide to Public Retirement Systems in Texas published in March 2021 and/or the Retirement System data provided on the Pension Review Board website. The DROP provisions shown below may not reflect current provisions of the below retirement systems.

Retirement System	Interest Credit	DROP Maximum Duration	Employee Contribution Credited	Additional Details: DROP Lump Sum
Austin ERS	None	5 years	No	90% of DROP date monthly benefit x months of Retro DROP
Austin Police	None	7 years	No	COLA credited to DROP Account Balance
Austin Fire	5%	7 years	Yes	COLA credited to DROP Account Balance
Dallas ERF	None	N/A	No	No DROP Provisions
Dallas Police and Fire	None while Active	10 years	Unknown	Forward DROP; interest credited to DROP Account Balance upon retirement; rate based on Treasury-based interest rate determined by Board
Houston MEPS	50% rolling 5-year net investment return (min 2.5%, max 7.5%)	No maximum	No	Forward DROP; members hired on/after 1/1/2008 are not eligible; COLA credited after 1/1/2018 if member > 62 years
Houston Police	65% of 5-year compounded average return (min 2.5%)	20 years	No	Also offer Forward DROP with 20-year max; Retro-DROP provision discontinued 7/1/2016; members hired on/after 10/9/2004 are not eligible
Houston Fire	65% of 5-year compounded average return (min 2.5%)	3 years	No	Also offer Forward DROP with 10 year max; members hired on/after 7/1/2017 are not eligible
San Antonio Fire/Police	None	5 years	No	None