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Robert Theller, Esq.
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City of Fresno Retirement Systems
2828 Fresno Street, Suite 201
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Re: City of Fresno Retirement Systems
Review of Cost Neutrality for Deferred Retirement Option Plan (DROP)

Dear Rob:

As requested by your office, we have reviewed the cost neutrality of the DROP based on data, assumptions, and methods from the most recent actuarial valuation as of June 30, 2022.

The primary purpose of this review is to determine the cost neutrality of the DROP for the Employees Plan and each Tier of the Fire & Police Plan, and to aid the Retirement Boards in setting the annual effective DROP interest rates in accordance with Sections 3-353(d), 3-424(d) and 3-566(d) of the Municipal Code. We note that while the Retirement Boards are in the process of considering additional measures that would allow the DROP to remain cost neutral, those measures have not been finalized nor adopted by the employer. As a result, we have not taken those measures into account in preparing this report.

There are three parts to our review (note that in our prior studies, Part Three below was Part Two, and in our 2020 study we introduced Part Two below as Part Three):

1. In Part One, **for current active members who have not elected DROP** as of June 30, 2022, we analyzed **projected experience** (i.e., what we anticipate the costs to be for current active members expected to elect DROP in the future). This is necessary for determining whether the DROP would be expected to remain cost neutral for future DROP members based on the most current actuarial assumptions.

2. In Part Two, for **current active members who have elected but not yet retired from the DROP** as of June 30, 2022, we analyzed **historical and projected experience** by comparing the total present value of benefits expected to be paid to those members (i.e., current and future accumulations in the DROP account plus future monthly benefits expected to be paid upon retirement from the DROP) to the total present value of benefits that would theoretically have been paid if they had never elected DROP. This is necessary for determining whether the DROP would be considered cost neutral for the current group of DROP members.

3. In Part Three, **for members who have already elected DROP** (including members who have already retired from the DROP as of June 30, 2022), we analyzed **historical experience** by comparing, in the aggregate, the actual and the theoretical amounts (i.e., what the amount would be if accumulated at the assumed interest rates) in their DROP accounts. This is necessary for determining whether the interest already credited to existing DROP accounts would be considered cost neutral.

In keeping with established past practice, we have included the analysis of the Employees Plan and the Fire and Police Tier 1 and Tier 2 Plan in a single report. This is because, with the exception of the actual results that differ by Plan, the issues and discussions that follow apply equally to both the Employees and the Fire and Police Plans.

This letter provides the results as well as the methodology used in this study.

Summary of Results

Part One – Cost neutrality of DROP for active members who have not elected DROP

Comparison of DROP Baseline & Interest Crediting Rate Reduction with "No DROP" Scenarios A, B, and C (Net Present Value $ in Thousands)

	Fire and Police Tier 1	Fire and Police Tier 2	Fire and Police Total	Employees
Baseline – With DROP and Full 5-year Average Interest Crediting	N/A	$847,835	$847,835	$552,709
With DROP, and with Annual Interest Crediting Rate Reduced by 3%	N/A	$823,751	$823,751	Not Calculated
Scenario A – Without DROP, Retirements as Originally Assumed	N/A	$747,797	$747,797	$559,900
Full Interest Crediting		113%	113%	99%
Interest Crediting Reduced by 3%		110%	110%	N/A
Scenario B – Without DROP, Retirements 2 Years Earlier	N/A	$787,883	$787,883	$562,759
Full Interest Crediting		108%	108%	98%
Interest Crediting Reduced by 3%		105%	105%	N/A
Scenario C – Without DROP, Retirements 3 Years Earlier	N/A	$807,925	$807,925	Not Calculated
Full Interest Crediting		105%	105%	
Interest Crediting Reduced by 3%		102%	102%	

Note: The two percentages shown below each dollar amount are ratios determined by dividing the Baseline with Full 5-year Average Interest Crediting and the DROP with Annual Interest Crediting Rate Reduced by 3%, respectively, by the dollar values for each Scenario. For example, a ratio of 113% indicates that the cost with the DROP is 13% higher than the corresponding cost without DROP Scenario.

- Consistent with prior studies, the DROP is deemed to be "cost neutral" if the net present value of benefits ("cost") determined under the Baseline is at or below 102% of the estimated cost determined assuming that DROP were not in effect.
- The Baseline scenario shows the cost of the plans with the DROP, including crediting DROP accounts with the 5-year average net rate of return.[1]

[1] The Municipal Code defines the "Average Net Rate of Return" as the average of the net rates of return earned by the System's entire investment portfolio for each of the five prior fiscal years, including realized and unrealized gains and losses and as reduced by all investment expenses. For the purpose of this study, the Average Net Rate of Return is assumed to be the same as the Plans' long term net investment return assumption of 6.75% used in the June 30, 2022 valuations.

- We also show the cost of the plans with the DROP and with the interest crediting rate reduced by 3 percent. This is discussed further below.
- Three scenarios are provided to represent the hypothetical cost assuming that DROP were not in effect. Each scenario has a different assumption about how the DROP may impact when members choose to retire:
  - *Scenario A* assumes that entering the DROP has no impact on when members retire. Under this scenario, members are assumed to retire when they would have exited the DROP under the Baseline "With DROP" scenario, utilizing the assumptions from the June 30, 2022 valuation.
  - *Scenario B* assumes that entering the DROP delays a member's retirement by 2 years on average. Under this scenario, members are assumed to retire 2 years earlier than they would have exited the DROP under the Baseline. **This was the basis used for comparison in determining DROP cost neutrality prior to the 2020 study.**
  - *Scenario C* assumes that entering the DROP delays a member's retirement by 3 years on average. Under this scenario, members are assumed to retire 3 years earlier than they would have exited the DROP under the Baseline. We added this scenario in the most recent study in 2020 to provide another comparison point to the extent that the Retirement Boards would find it reasonable to assume that retirement might have occurred 3 years earlier without the DROP, but we pointed out during our subsequent presentations of our 2020 study that any assumption for even earlier retirement without the DROP would become harder and harder to justify.
- Similar to the result of the 2020 study, the DROP for the Employees' Plan is deemed to be cost neutral because the Baseline has a lower cost than both "without DROP" Scenarios A and B (ratios of 99% and 98%, respectively).
- Similar to the result of the 2020 study, the DROP for Tier 2 members of the Fire & Police Plan is deemed not to be cost neutral because the Baseline cost is more than 102% of the cost of each "without DROP" Scenario A, B and C (ratios of 113%, 108%, and 105%, respectively).
- If the DROP is deemed not to be cost neutral, the Fire & Police Board may reduce the annual effective DROP interest rate until it is deemed to be cost neutral, but the interest rate cannot be set lower than 3 percent below the average net rate of return.
- Similar to the action taken by the Fire & Police Board following the 2020 study, if the DROP interest crediting rate is reduced by 3% (the maximum reduction currently allowed in the Municipal Code), the DROP for Tier 2 members of the Fire & Police Plan could be deemed to be cost neutral under Scenario C because the cost of the Baseline is 102% of the estimated cost under Scenario C, but would still be considered not cost neutral under Scenarios A and B (ratios of 100% and 105%, respectively).
- Several factors influence whether a DROP is cost neutral. When a member enters DROP, they can remain active but begin to receive benefits into their DROP account earlier than they would have otherwise. This results in a greater number of payments made to the member. All else equal, this would increase the cost of the Plan.

However, the member's benefit is determined based on the salary, service, and benefit factor as of a member's date of DROP entry. Generally, these components would be expected to increase over time. Therefore, determining the benefit level at an earlier DROP entry date would generally result in a lower benefit payable, and decrease the cost to the Plan. Whether the greater number of benefit payments or lower payment amount has a greater impact on cost depends on the assumptions and plan provisions in effect.

- For members of the Employees' Plan, there is no cap on the service or benefit factor. The later a member chooses to have their benefit determined (whether by entering DROP or retiring outright), the greater the benefit. Consequently, the DROP would be expected to have little to no impact on the cost of the Plan provided the benefit factor is close to actuarially equivalent. This is consistent with the results shown.
- For Tier 2 members of the Fire & Police Plan, the benefit factor is capped at 2.7% at age 55, and the final benefit is capped at 75% of final average compensation. This means that once a member reaches age 55 and accumulates approximately 28 years of service, delaying DROP entry or retirement would only increase their benefit from a higher future salary. For plans like Tier 2 with an annual cost-of-living-adjustment (COLA) to the benefits paid to the retirees, unless the salary increases are substantial the increase in benefit would not be enough to compensate for forgoing earlier payments. Consequently, the time when a member chooses to enter DROP has a significant impact on the cost to the Plan, and whether the DROP is deemed to be cost neutral will depend on when members are assumed to enter DROP.
- As a result of a significantly greater number of Tier 2 DROP elections in recent years, since the two most recent experience studies recommending assumptions for use starting in the June 30, 2022 and June 30, 2019 valuations, the DROP election rates were expanded to use both age and service in determining whether a member would enter DROP. Generally, we observed that Tier 2 members with large (15+) service entered DROP with greater frequency when their benefit factor hit the maximum 2.7% at age 55. In other words, the current assumptions anticipate that a greater number of Tier 2 members are choosing to enter DROP when their benefit is maximized. This is the principal reason why in this study and the last study the DROP is no longer deemed to be cost neutral for Tier 2 members.

Part Two - Cost neutrality of DROP for active members who have elected but not yet retired from DROP

Comparison of DROP Baseline & Interest Crediting Rate Reduction with "No DROP" Scenarios A, B, and C (Net Present Value $ in Thousands)

	Fire and Police Tier 1	Fire and Police Tier 2	Fire and Police Total	Employees
Modified Baseline – With DROP, expected 2022 COLA's, and Full 5-year Average Interest Crediting	$17,279	$130,288	$147,567	$184,646
With DROP, expected 2022 COLA's, and with Annual Interest Crediting Rate Reduced by 3%	$17,247	$126,517	$143,764	Not Calculated
Scenarios Determined By Using Actual Salaries for DROP Members as of June 30, 2022 and Projecting Those Salaries to Assumed Date of Retirement				
Scenario A – Without DROP, Retirements as Originally Assumed	$13,382	$109,830	$123,212	$179,799
Full Interest Crediting	129%	119%	120%	103%
Interest Crediting Reduced by 3%	129%	115%	117%	N/A
Scenario B – Without DROP, Retirements 2 Years Earlier	$13,383	$117,093	$130,476	$180,297
Full Interest Crediting	129%	111%	113%	102%
Interest Crediting Reduced by 3%	129%	108%	110%	N/A
Scenario C – Without DROP, Retirements 3 Years Earlier	$13,383	$120,304	$133,687	Not Calculated
Full Interest Crediting	129%	108%	110%	
Interest Crediting Reduced by 3%	129%	105%	108%	
Scenarios Determined By Using Actual Salaries for DROP Members as of Date of DROP Participation and Projecting Those Salaries to Assumed Date of Retirement				
Scenario A – Without DROP, Retirements as Originally Assumed	$13,849	$111,637	$125,486	$184,548
Full Interest Crediting	125%	117%	118%	100%
Interest Crediting Reduced by 3%	125%	113%	115%	N/A
Scenario B – Without DROP, Retirements 2 Years Earlier	$13,850	$118,934	$132,783	$185,120
Full Interest Crediting	125%	110%	111%	100%
Interest Crediting Reduced by 3%	125%	106%	108%	N/A
Scenario C – Without DROP, Retirements 3 Years Earlier	$13,850	$122,154	$136,004	Not Calculated
Full Interest Crediting	125%	107%	109%	
Interest Crediting Reduced by 3%	125%	104%	106%	

Note: The two percentages shown below each dollar amount are ratios determined by dividing the Baseline with Full 5-year Average Interest Crediting and the DROP with Annual Interest Crediting Rate Reduced by 3%, respectively, by the dollar values for each Scenario. For example, a ratio of 113% indicates that the cost with the DROP is 13% higher than the corresponding cost without DROP Scenario.

- Part Two expands upon the analysis in Part One to include active members who have elected but not yet retired from DROP.
- In 2022, due to the high inflation environment, COLAs were granted well in excess of the assumed inflation rate for members in both Systems as required by the Municipal Code. This resulted in an increase in the present value of DROP member benefits of approximately 3%-4%. In contrast, no such excess increases were observed in DROP member salaries. This disparity **increased** the observed baseline cost of the DROP because these members have elected DROP and so have become eligible for those higher COLAs in exchange for giving up comparatively lower salary increases (which would translate into comparatively lower benefits when calculated at a later retirement date).

  While we cannot know for sure how long the current relatively high inflationary environment will continue, based on the recent trend towards lower inflationary increases, we believe it is reasonable to assume it will be transitory. Accordingly, for the purposes of determining the cost neutrality of the DROP for current DROP members in this study, we have used a Modified Baseline in which lower expected 2022 COLAs are assumed to be granted to current DROP members. We believe this adjustment will produce results that better reflect the expected long-term costs of the DROP. However, we note that if, over the long term, high inflation persists and COLAs for retirees outpace salary growth for active members close to retirement, then the costs of the DROP program could increase. Without this adjustment in <u>this</u> study, the DROP would <u>not</u> be cost neutral for current DROP members in <u>either</u> the Fire & Police or Employees Systems.
- The DROP is deemed to be "cost neutral" for current DROP members if the net present value of benefits (cost) determined under the Modified Baseline is at or below 102% of the estimated cost determined assuming that DROP were not in effect. This is the same definition of cost neutrality made in Part One of this analysis.
- Similar to Part One, the Modified Baseline scenario shows of the cost of the plans with the DROP, including crediting DROP accounts with the 5-year average net rate of return.
- Again as in Part One, we also show the cost of the plans with the DROP and with the interest crediting rate reduced by 3 percent.
- Three scenarios are provided to represent the hypothetical cost assuming that DROP were not in effect. Each scenario has a different assumption about how the DROP may impact when members choose to retire:
  - *<u>Scenario A</u>* assumes that entering the DROP has no impact on when members retire. Under this scenario, members are assumed to retire when they would have exited the DROP under the Modified Baseline.
  - *<u>Scenario B</u>* assumes that entering the DROP delays a member's retirement by 2 years on average. Under this scenario, members are assumed to retire 2 years earlier than they would have exited the DROP under the Modified Baseline. **This was the basis used for comparison in determining DROP cost neutrality in studies prior to the 2020 study in Part One for members who have not elected DROP.**
  - *<u>Scenario C</u>* assumes that entering the DROP delays a member's retirement by 3 years on average. Under this scenario, members are assumed to retire 3 years earlier than they

would have exited the DROP under the Modified Baseline. (Please refer to earlier discussion of this scenario, which was first included starting in our 2020 study).

Lower (or higher) than expected salary increases among DROP participants over their time in DROP can result in a higher (or lower) deemed cost of the DROP. This is because the benefits determined at DROP entry exclude any future salary increases beyond that date. If future salary increases turn out to be significantly lower than anticipated, salary related benefit increases that are foregone by electing DROP are decreased, and therefore the relative value (and so the deemed cost) of the plan with the DROP is increased.

This could cause the DROP to appear not to be cost neutral even if it would have otherwise been so under normal salary experience. Accordingly, to determine the ongoing cost of the DROP without this divergent salary experience we have also provided the three scenarios above using actual salaries for DROP members as of date of DROP participation and projecting those salaries to their assumed date of retirement.

- Without the above adjustment to salaries, the DROP for Tier 1 and Tier 2 members of the Fire & Police Plan could be deemed not to be cost neutral because the Modified Baselines have higher costs than each “without DROP” scenario (ranging from 108% to 129%). We note that the results for the Employees’ Plan ranges from 102% to 103%.
- With the adjustment to salaries, the ratio is reduced from 102% to 100% for the Employees’ Plan. The DROP for the Employees’ Plan is deemed to be cost neutral because the Modified Baseline has the same cost as both “without DROP” Scenarios A and B (100%).
- Even with the adjustment to salaries, the DROP for Tier 1 and Tier 2 members of the Fire & Police Plan would still not be cost neutral. Under the most favorable Scenario C, the Modified Baselines under Tier 1 and Tier 2 each has a higher cost (125% and 107%, respectively).
- As discussed in Part One, if the DROP is deemed not to be cost neutral, the Board may reduce the annual effective DROP interest rate until it is deemed to be cost neutral, but the interest rate cannot be set lower than 3 percent below the average net rate of return.
- If the DROP interest crediting rate is reduced by 3% (the maximum reduction currently allowed in the Municipal Code), the DROP for Tier 1 members of the Fire & Police Plan would still be deemed not to be cost neutral because the Modified Baseline has a higher cost than each “without DROP” Scenario A, B and C (125%, 125%, and 125%, respectively). In the most recent prior study, the DROP for Tier 2 members of the Fire & Police Plan could be deemed to be cost neutral under Scenario C because the cost of the Modified Baseline was 102% of the estimated cost under Scenario C. However, in this study, this is no longer the case as that ratio is now 104%.

Part Three - Interest Crediting to DROP Accounts

Fire and Police DROP Account Ending Balance
($ in Thousands)

Start Date of Period Ending June 30, 2022	Actual (5-Year Trailing Average Market Return)	Investment Return Assumption*,**	Actual Market Value Rate of Return**	Actual Actuarial Value Rate of Return**
3-year period beginning June 30, 2019***	$156,132	$155,681	$155,735	$161,077
17-year period beginning June 30, 2005***	$156,132	$162,466	$124,487	$137,544

Employees DROP Account Ending Balance
($ in Thousands)

Period Ending June 30, 2022	Actual (5-Year Trailing Average Market Return)	Investment Return Assumption*,**	Actual Market Value Rate of Return**	Actual Actuarial Value Rate of Return**
3-year period beginning June 30, 2019	$161,451	$159,697	$159,463	$165,105
17-year period beginning June 30, 2005	$161,451	$163,927	$145,814	$151,646

* 8.25% for years ending June 30, 2005–2010. 8.0% for years ending June 30, 2010–2013. 7.5% for years ending June 30, 2013–2016. 7.25% for years ending June 30, 2016–2019. 7.00% for years ending June 30, 2019–2022.

** Assuming DROP deposits and withdrawals are, on average, made at the middle of the year.

*** For Fire & Police, actual 5-year trailing average market return beginning July 1, 2020 has been reduced by 3%. However, the 3% reduction in the interest crediting rate has not been taken into account in the investment return, actual market rate of return, and actual actuarial value of rate of return scenarios.

- Actual ending balances of the DROP accounts as of June 30, 2022 are about 0%-1% higher than the ending balances would be if we instead apply the assumed investment return assumption of 7.00% over that three-year period from 2019. We note that a 6.75% investment return assumption was adopted effective with the June 30, 2022 valuations.
- If we include all the account balance information (from 2005) that we have used since we prepared the 2011 DROP cost neutrality study, we observe that the DROP did not increase the cost of the plans with respect to the interest credited to the DROP accounts.
- Considering this, we conclude that the DROP is cost neutral with respect to the interest credited to the DROP accounts, relative to the assumed investment return assumption.
- In developing the account balances using the actual market value rate of return and the actual actuarial value rate of return, we have made the hypothetical assumption that members who have retired from the City after entering DROP would have their residual DROP account balance credited with those returns. However, in practice, the DROP account balance for those members would only be credited with the rate of return assumed in the annual valuation.
- We note that consistent with our prior studies, we have <u>NOT</u> analyzed the cost neutrality of applying the assumed valuation interest rate to provide an annuity certain for those retirees who chose to receive their DROP account balance in installments instead of a lump sum when they retired from the City.

Discussion and Conclusions

Part One - Cost neutrality of DROP for active members who have not elected DROP

We have continued the methodology used in our last cost neutrality study dated June 30, 2020. Under that method, the DROP is deemed cost neutral if the present value of benefits payable to the active members under the current Plans with the DROP provisions is within 2% of what the present value of benefits payable under the Plans would be without the DROP provisions. Furthermore, when determining the present value of benefits under the Plans without the DROP provisions, we included an analysis of the timing of when the members would have retired if the DROP were not in effect. We did that by assuming alternatively that the members would have retired at the same time[2] as (Scenario A), two years earlier than (Scenario B), or three years earlier than (Scenario C) what we assumed as the date of retirement for the current Plans with the DROP provisions[3]. In our opinion, that method is a reasonable basis to evaluate the cost neutrality of the DROP provisions.

Based on that method, we concluded in the **last study** dated June 30, 2020 that as of June 30, 2019, that the DROP was cost neutral for the Employees Plan because the increase in the value of benefits under the DROP does not exceed 2% even without assuming members would have retired two years earlier without the DROP. However, in order for the Fire and Police Plan to be cost neutral, we needed to examine the impact of an alternative assumption that the DROP program shifts member retirement three years later instead of two years later when compared to if the DROP were not in effect and analyze the effect of exercising the Board's authority, as defined under the Municipal Code, to reduce the rate of interest credited to the members' DROP accounts so as to achieve cost neutrality under the methodology of this report, i.e., to bring the present value of benefits with the DROP to be within 2% of the present value of benefits without the DROP. We found that the DROP only becomes cost neutral for active members who have not elected DROP if we reduce the interest crediting rate for the DROP account to 3 percent below the average net rate of return (the maximum reduction allowed in the Municipal Code) together with the alternative assumption that the Fire and Police Plan members would have retired three years earlier without the DROP.

Based on that same method, we conclude in the **current study** as of June 30, 2022 that the DROP is cost neutral for the Employees Plan but is <u>not</u> cost neutral for the Fire and Police Plan without utilizing the alternative assumption that the DROP program delays member retirement

[2] As we discussed in the last and the current studies, the results calculated assuming the members would have retired at the same time without the DROP have been provided for reference only because we believe it is reasonable to expect that the DROP would still have some impact on influencing the retirement behavior of some members.

[3] We added this scenario in the 2020 study to provide another comparison point to the extent that the Retirement Boards would find it reasonable to assume that retirement might have occurred 3 years earlier without the DROP, but we pointed out during our subsequent presentations of our 2020 study that any assumption for even earlier retirement without the DROP would become harder and harder to justify.

by three years and reducing the rate of interest credited to the members' DROP accounts by 3 percent.

As discussed in the Methodology section below, the primary reason why the DROP is not cost neutral under this Part One (which includes only Tier 2 members) without both of these changes is the plan design features of Tier 2 (benefit factor is capped at 2.7% at age 55 and total benefit is limited to 75% of final average compensation).

Part Two - Cost neutrality of DROP for active members who have elected but not yet retired from DROP

In this part of the study, we recommend applying the same 2% threshold that we have been using for Part One of the study. Similarly, as with Part One of the Study we also recommended analyzing the impact of the DROP on member retirement by assuming alternatively that the members retire at the same time[4] as (Scenario A), two years earlier than (Scenario B), or three years earlier than (Scenario C) they would have retired if the DROP were not in effect.

Under that method, the DROP would be deemed cost neutral for the active members who elected but have not yet retired from DROP, if the total present value of benefits expected to be paid to those members (i.e., current and future accumulations in the DROP account plus future monthly benefits paid upon retirement from the DROP) is within 2% of the total present value of benefits that would theoretically have been paid if the DROP were not in effect.

Part Two was introduced with the 2020 study to provide a more comprehensive review of DROP cost neutrality for members who have elected the DROP. This is in addition to our established practice to review the accumulation in these members' DROP accounts as provided in Part Three. In addition, as we stated in our 2020 study, we plan to expand Part Two in future studies by tracking comparable present values for members who retire from the DROP on or after July 1, 2019. However, because there are relatively few Tier 2 Fire & Police who have retired from the DROP as of June 30, 2022, we have not yet included an analysis of this data as a part of **this** study.

In 2022, due to the high inflation environment, COLAs were granted well in excess of the assumed inflation rate for members in both Systems as required by the Municipal Code. This resulted in an increase in the present value of DROP member benefits of approximately 3%-4%. In contrast, no such excess increases were observed in DROP member salaries. This disparity **increased** the observed baseline cost of the DROP because these members have elected DROP and so have become eligible for those higher COLAs in exchange for giving up comparatively lower salary increases (which would translate into comparatively lower benefits when calculated at a later retirement date).

While we cannot know for sure exactly how long the current relatively high inflationary environment will continue, based on the recent trend towards lower inflationary increases, we believe it is reasonable to assume it will be transitory. Accordingly, for the purposes of determining the cost neutrality of the DROP for current DROP members in this study, we have

[4] This is provided for reference only based on the same reason outlined in footnote (2).

used a Modified Baseline in which lower, expected 2022 COLAs are assumed to be granted to current DROP members. We believe this adjustment will produce results that better reflect the expected long-term costs of the DROP. However, we note that if, over the long term, high inflation persists and COLAs for retirees outpace salary growth for active members close to retirement, then the costs of the DROP program could increase. Without this adjustment in this study, the DROP would not be cost neutral for current DROP members in either the Fire & Police or Employees Systems.

Based on the above, for the Employees Plan, we conclude in this Part Two of the current study as of June 30, 2022 that the DROP is cost neutral (specifically that the present value of benefits with the DROP is about the same compared to the present value of benefits assuming the DROP were not in effect) after applying both of the following conditions: (1) members would have retired two years earlier without the DROP and (2) from the date they enrolled in the DROP to June 30, 2022 members would have received salary increases as assumed in the actuarial valuations as opposed to the lower salary increases they actually received during that period. We believe applying the extra condition of using projected salary increases from the date of DROP to June 30, 2022 is reasonable because actual salary increases granted during the last several years have been lower than our long-term assumption.

For the Fire and Police Plan, the DROP is not cost neutral regardless of whether we assume members would have retired two years or three years earlier without the DROP. For the Tier 2 members, the increase in the value of benefits is over 2% even after we (1) reduce the interest crediting rate for the DROP account to 3 percent below the average net rate of return[5] (the maximum reduction currently allowed in the Municipal Code), (2) apply the alternative assumption that the Tier 2 members would have retired three years earlier without the DROP and (3) assume members received salary increases as assumed in the actuarial valuations from the date they enrolled in the DROP to June 30, 2022. Similarly, for the Tier 1 members, even under all three of these conditions there is still an increase in the present value of plan benefits with the DROP that exceeds 2%.

Part Three - Accumulated amounts in the DROP accounts for DROP participants

For members who had elected DROP (including members who have already retired from the DROP as of June 30, 2022), we have compared, in the aggregate, the actual and the theoretical amounts (i.e., what the amount would be if accumulated at the assumed investment return used in the actuarial valuations) in their DROP accounts.

In the 2020 study, the total actual balance accumulated in the DROP account for both the Employees and Fire and Police Plans were about 1% to 2% higher than the theoretical balance due to the continued market recovery experienced by the Plans in the three-year period immediately preceding June 30, 2019. However, if we include all the account balance

[5] The Municipal Code defines the “Average Net Rate of Return” as the average of the net rates of return earned by the System's entire investment portfolio for each of the five prior fiscal years, including realized and unrealized gains and losses and as reduced by all investment expenses. For the purpose of this study, the Average Net Rate of Return is assumed to be the same as the Plans’ long term net investment return assumption of 6.75%.

information (from 2005) that we have used since we prepared the 2011 DROP cost neutrality study, we observe that the DROP did not increase the cost of the plans with respect to the interest credited to the DROP accounts.

In the current study as of June 30, 2022, the total actual balance accumulated in the DROP account for both the Employees and Fire and Police Plans were about 0% to 1% higher than the theoretical balance due to the continued market recovery experienced by the Plans in the three-year period immediately preceding June 30, 2022. However, if we include all the account balance information (from 2005) that we have used since we prepared the 2011 DROP cost neutrality study, we observe that the DROP did not increase the cost of the plans with respect to the interest credited to the DROP accounts.

Background

In 2005, the Systems' prior actuary reviewed the cost neutrality of the DROP and concluded that the change in the present value of benefits for the then current active employees under the Plans with the DROP provisions came within 2% of the present value of benefits for the Plans without the DROP provisions.

In 2011, 2014 and 2017, we reviewed the cost neutrality of the DROP and concluded that the change in the present value of benefits for the then current active employees under the Plans with the DROP provisions came within 2% of the present value of benefits for the Plans without the DROP.[6] In the 2020 cost neutrality study, we concluded that while the Employees Plan was cost neutral, the Fire and Police Plan was not cost neutral.

In each cost neutrality study the present value of benefits for the Plans with the DROP provisions are calculated based on the same actuarial assumptions[7] used by the Boards in the most recent regular valuations to set the contribution rate requirements for the City and the active members. Those assumptions are set based on actual experience observed for the members who signed up for the DROP. In particular, in the 2020 triennial experience study there was a significant increase in the number of members who elected the DROP in the Fire and Police Tier 2 Plan[8] which allowed us to develop a more robust set of assumptions to anticipate future DROP elections[9] in that Tier. However, in determining what the present value of benefits would be for the Plans without the DROP provisions, additional hypothetical assumptions have to be made as to the age the active employees would have retired from the Plans and the levels of benefit that would have been earned in the absence of the DROP. The

[6] The studies in 2011 and 2014 actually showed for the Fire and Police Plan a reduction in the value of benefits under the DROP that exceeded 2%.

[7] These assumptions include: the ages active employees were anticipated to sign up for the DROP, the probability of signing up for the DROP at each of those ages, the number of years the active employee was expected to stay in the DROP before retirement from the City, etc.

[8] There were 48 Tier 2 members who elected the DROP during the period July 1, 2019 to June 30, 2022. Those were higher than the 38, 21, and 11 Tier 2 members who elected DROP during the period July 1, 2016 to June 30, 2019, July 1, 2013 to June 30, 2016, and July 1, 2010 to June, 30, 2013, respectively.

[9] The new DROP elections assumptions are now set and applied based on both age and years of service.

hypothetical aspect of the retirement age assumptions without the DROP provisions is discussed in more detail later in this report.

Beginning with the last DROP cost neutrality study, for actives who have elected but not yet retired from the DROP we included a comparison of (1) the actual plus future accumulations in the DROP account balance plus the value of the future retirement benefits earned by each DROP electing member at their date of retirement with (2) the value of the benefit the member would have earned based on their actual age, service and final average compensation at retirement in the absence of the DROP. We will continue to track the comparable present values for members who retire from the DROP on or after July 1, 2019 so that they will be included in our future studies once there is a sufficient number retirements from DROP among Tier 2 members of the Fire & Police System.

In addition to the above analysis for the active members, for all members who had ever enrolled in the DROP, we compare the interest actually credited to those members' DROP accounts (using a contingent rate calculated based on the Plans' actual average rate of return from investments over the last five years) since the date of the last cost neutrality study to the theoretical investment return assumption assumed by the Boards for the actuarial valuations during that same period.

Consistent with the prior actuarial study of the DROP, our review is limited to the analysis of the cost of providing pension benefits with and without the DROP. We have not analyzed any possible impact of the DROP program on any other non-pension benefits or costs, such as the retaining of experienced employees relative to the training of new employees, or the relative cost or savings of providing health benefit to a member as an active employee (while participating in the DROP) relative to providing such benefits to a member as a retiree (in the absence of the DROP) should the City offer such benefits outside of the Retirement Plans.

Method used for measuring cost neutrality in Part One and Part Two of the study

A particular actuarial measure has to be chosen by the Retirement Boards as the basis for measuring the cost neutrality of the DROP program. A DROP program may provide an incentive for a member to remain in service longer for the City, depending on when a member signs up for the DROP and how long the member stays in the DROP. These decisions made by the member may change the total present value of benefits paid by the Plans, as well as the allocation of that present value of benefits between service already rendered by the member (i.e., actuarial accrued liability) and future service (i.e., future normal cost).

The method used in the last study was to compare the present value of the total pension benefit with the DROP (including the DROP account) to the present value of the pension benefit without the DROP. As employees are only required to make member contributions into the Plans before electing DROP[10], the two present values have to be adjusted to reflect the appropriate projected

[10] The Plans were amended so that any new active members entering DROP after around February 2011 would be required to continue making member contributions into the Plans. However, we have not taken that amendment

member contributions. In that earlier study, the DROP was deemed cost neutral if the difference between the two net present values was within 2%. We believe that this net present value measurement used in the prior study is still reasonable and we have continued to apply that method in this study.

Part One of this study determines the actual impact of the DROP on the total present value of pension benefits for all current active members who have not signed up for the DROP. This study examines the impact of the DROP based on complete valuation results for the entire active plan membership as of the most recent valuation date, in this case June 30, 2022.

Note that these valuations in Part One of the study address the prospective cost impact of the DROP on current active members, excluding members currently in the DROP. In Part Two of this study, we include a retrospective analysis of the value of benefits for members who have already signed up for the DROP but have not retired after participating in the DROP. The experience of members who elected DROP (especially those who have retired after participating in the DROP) is included in Part Three of the study which is our analysis of the actual interest credited to the DROP accounts versus the theoretical interest that would have been credited using the expected investment return assumption adopted by the Board for use by the Plans between 2019 and 2022.

The analysis provided in the rest of this report includes discussion of the net present value method, including the assumptions used in applying that method, and the results associated with measuring the net present value of the Plans with the DROP and without the DROP.

Method and assumptions used to measure the net present value with the DROP

In our July 1, 2018 to June 30, 2021 triennial experience studies for the Employees and the Fire and Police Plans, we provided our recommended actuarial assumptions for use in the pension valuations. Included in our recommendations were the time periods active employees were anticipated to sign up for the DROP once they become eligible for the program, the probability of signing up for the DROP at each of those time periods, and the number of years the active employee would be expected to stay in the DROP before retirement from the City. Those assumptions were then utilized in the June 30, 2022 valuations.

During the prior experience study (July 1, 2015 to June 30, 2018), we observed a significant increase in the number of members who elected the DROP in the Fire and Police Tier 2 Plan. This allowed us to develop a more robust set of assumptions for anticipating members who would be expected to elect DROP in the future. For example, the newer assumptions anticipate lower probabilities of electing DROP for eligible members with less than 15 years of service, and increasingly higher probabilities of electing DROP for members with between 15-19 and over 20 years of service, respectively. The assumptions prior to the June 30, 2019 valuations did not consider years of service directly, and were only a function of years since the members reached

into account since those member contributions would be deposited into the member's DROP account and therefore not available to defray the City's net present value of pension benefits as described above.

DROP eligibility. This change in the assumptions used to anticipate which members in Tier 2 would elect DROP is the primary reason why the DROP was no longer cost neutral for Tier 2 in the 2020 cost neutrality study and remains not cost neutral in this 2023 cost neutrality study.

In addition, unlike in our 2020 study, even with the 3% reduction in interest crediting, the DROP is not cost neutral for current Tier 2 DROP members (104% vs. 102% in 2020). Compared to Tier 2 DROP members in our 2020 study, current Tier 2 DROP members entered the DROP at slightly younger ages and with more service. These characteristics increase the relative cost of the DROP for this group because more of these members would reach their maximum benefit (75% of FAS) sooner, so that the DROP allows them to start receiving benefits earlier with effectively no reduction in benefit.

Method and assumptions used to measure the net present value without the DROP in Part One and Part Two of the study

In order to determine what the net present value of pension benefits would have been without the DROP, we would have to know when the members would have retired if the DROP were not in effect. This is because, everything else being equal, if members would have retired earlier, then the cost of the Plans without the DROP would have been calculated using the age, service and final average compensation at such earlier date. This introduces two considerations: how would earlier retirements affect the cost of the plan and would members in fact retire earlier without the DROP.

The cost of a pension plan can be higher or lower at an earlier retirement age depending on whether the benefit accrual factor used for each year of service stays unchanged or decreases at the earlier retirement age. Other factors that influence the change in cost include the shorter service and lower final average compensation at the earlier retirement age and the additional post-retirement COLA paid upon such earlier retirement, among others. However, it is the different benefit accrual factors that can produce different cost neutrality results for different tiers of benefits.

For Fire and Police Tier 1 members, there is no reduction in the benefit accrual factor at an earlier retirement age because members can retire on or after age 50 with a benefit of 2.75% of final average compensation for each of the first 20 years of service plus 2.00% per year of service thereafter. (We note that all Fire and Police Tier 1 active members have either elected DROP or retired based on the data as of June 30, 2022.)

For Fire and Police Tier 2 members, those retiring at age 50 receive a benefit of 2.00% per year of service, and that benefit accrual factor increases to a maximum of 2.70% per year of service for retirements at and beyond age 55. Also, there is a benefit cap of 75% of final average compensation which a Tier 2 member retiring at 55 can attain with just below 28 years of service. This means that between ages 50 and 55 earlier retirements can reduce the benefit accrual if the member has less than 28 years of service.

For the Employees Plan, the benefit accrual factor continues to increase with age indefinitely, and is not subject to a cap. For example, the benefit accrual factor is 1.00% per year of service for retirements at age 55, 1.30% per year of service for retirements at age 65, 1.70% at age 75, 2.10% at age 85, so on and so forth. For an 85 year old retiring with 60 years of service, the benefit would be 126% of final average compensation. This means that earlier retirements can reduce the benefit accrual at all retirement ages.

As for whether members would retire earlier without the DROP, when comparing the present value of plan benefits "with and without the DROP" we know the value "with the DROP" from the annual valuations. We then need to determine the higher or lower "without the DROP" plan present value so we can compare it to the present value of the plan benefits with the DROP structure. Therefore, the question of "how much earlier would members have retired if it were not for the DROP" is crucial in determining whether the DROP is cost neutral.

In practice, it is impossible to really know when members would have retired without the DROP as the program has been in existence since 1998. This means that the question of whether the DROP is cost neutral will depend on a somewhat subjective assessment or estimate of when members would have retired without the DROP.

As in prior studies, in this study we have determined the net present value of benefits without the DROP by assuming that the DROP caused delays in retirement of two years. We did this by taking the current June 30, 2022 valuation results and shortening the length of DROP participation assumption by two years. In other words, if the DROP were not in effect, we assumed that members who were originally expected to elect DROP and remain in DROP for the assumed duration (6 years for members of the Employee Plan and 7 years for members of the Fire and Police Plan) would retire two years earlier than the originally assumed DROP exit date. The results prepared under this assumption are referred to as the Scenario B results.

Given that the DROP has been in existence since 1998, one could consider that the DROP may no longer have much influence in delaying a member's decision to retire from the Plans because the member may consider the DROP as part of his/her long-term retirement planning. We have also determined the net present value of benefits without the DROP if we assume that members who were originally expected to elect DROP would continue to work until the originally assumed DROP exit date. The results prepared under this assumption are referred to as the Scenario A results.

However, given that the results of the cost neutrality study are very sensitive to when members would have retired without the DROP especially for the Fire and Police Plan, in the 2020 study we also introduced a new Scenario C where we assume that members would have retired three years earlier than the originally assumed DROP exit date. Again, while we do not have any data from the City or the Retirement Systems to validate that assumption, a cursory comparison of the average age at retirement from the DROP for Tier 2 members in the City's Fire and Police Plan with the average age at retirement from just the law enforcement members from Fresno County does provide some evidence of earlier retirement from Fresno County that does not offer a DROP.[11] However, due to the difference in job assignment before retirement and level of pension benefit after retirement, it would be very difficult to draw any definitive conclusion by looking at just the average age at retirement from these two employers.

As we discussed above, while it is impossible to really know when members would have retired without the DROP because of the underlying plan designs we believe it reasonable to expect that the DROP would still have some impact on influencing the retirement behavior of some members. Therefore, we have labeled the results under Scenario A as being made available for reference only.

[11] The average age at retirement of the Tier 2 DROP members from the City's Fire and Police Plan, along with the adjustments under Scenarios B and C, are as follows:

Average Age at DROP Entry	54.3
Average Age at Retirement from DROP	59.8
Average Age at Retirement from DROP Minus Two Years	57.8
Average Age at Retirement from DROP Minus Three Years	56.8

The average age at retirement of the law enforcement members from the Fresno County (and the level of benefit per year of service they receive), are as follows:

Average Age at Retirement for Safety Tier 1 (3.27% per year of service at 55)	54.3
Average Age at Retirement for Safety Tier 2 (3.00% per year of service at 55)	54.1
Average Age at Retirement for Safety Tier 4 (2.62% per year of service at 55)	56.9
Average Age at Retirement for Safety Tier 5 (2.70% per year of service at 57)	56.8

Part One - Cost neutrality results for active members who have never elected DROP

We can now compare the June 30, 2022 net present value of pension benefits with the DROP (as determined in the June 30, 2022 valuation) to the net present value without the DROP, under the alternative estimates of retirement behavior without the DROP just described.

As the DROP is no longer cost neutral for the Fire and Police Plan when we compare the Baseline results with those provided under Scenarios A, B, and C, we have also included the financial impact of the option available at the Board's discretion to reduce the annual interest crediting rate for the DROP account for up to 3.00% (i.e., from an annual rate of 6.75% assumed in our calculations to an annual rate of 3.75%).

Baseline — With the DROP
(Net Present Value $ in Thousands)

		Fire and Police Tier 1	Fire and Police Tier 2	Fire and Police Total	Employees
1.	Present Value of Pension Benefits for Active Members	N/A	$935,673	$935,673	$671,653
2.	Present Value of Member Contributions up to Date of DROP	N/A	$87,838	$87,838	$118,944
3.	Net Present Value of Benefits	N/A	$847,835	$847,835	$552,709
4.	Impact of Reducing Annual Interest Crediting Rate into DROP Account by 3 Percent[12]	N/A	$24,084	$24,084	Not Calculated
5.	Item (3), less Item (4) if applicable	N/A	$823,751	$823,751	Not Calculated

[12] Includes the impact of reducing the annual interest crediting rate for monthly pension benefits $(20,856,000) and contributions to be deposited into the DROP Account $(3,228,000) in the future.

Scenario A — For Reference Purposes Only Without the DROP, Assuming Retirements Occur on Originally Assumed DROP Exit (Net Present Value $ in Thousands)

		Fire and Police Tier 1	Fire and Police Tier 2	Fire and Police Total	Employees
1.	Present Value of Pension Benefits for Active Members	N/A	$858,953	$858,953	$709,001
2.	Present Value of Member Contributions up to Date of Retirement	N/A	$111,156	$111,156	$149,101
3.	Net Present Value of Benefits	N/A	$747,797	$747,797	$559,900
4.	Interest Crediting at the Average Net Rate of Return[13] - Baseline Item (3) / Item (3)	N/A	113%	113%	99%
5.	Interest Crediting at 3 Percent Below the Average Net Rate of Return[13] - Baseline Item (5) / Item (3)	N/A	110%	110%	Not Calculated

Scenario B — For Use in Determining DROP Cost Neutrality Without the DROP, Assuming Retirements Occur 2 Years Earlier than Originally Assumed DROP Exit (Net Present Value $ in Thousands)

		Fire and Police Tier 1	Fire and Police Tier 2	Fire and Police Total	Employees
1.	Present Value of Pension Benefits for Active Members	N/A	$896,247	$896,247	$702,413
2.	Present Value of Member Contributions up to Date of Retirement	N/A	$108,364	$108,364	$139,654
3.	Net Present Value of Benefits	N/A	$787,883	$787,883	$562,759
4.	Interest Crediting at the Average Net Rate of Return[13] - Baseline Item (3) / Item (3)	N/A	108%	108%	98%
5.	Interest Crediting at 3 Percent Below the Average Net Rate of Return[13] - Baseline Item (5) / Item (3)	N/A	105%	105%	Not Calculated

[13] The Municipal Code defines the “Average Net Rate of Return” as the average of the net rates of return earned by the System's entire investment portfolio for each of the five prior fiscal years, including realized and unrealized gains and losses and as reduced by all investment expenses. For the purpose of this study, the Average Net Rate of Return is assumed to be the same as the Plans’ long term net investment return assumption of 6.75%.

Scenario C — For Use in Determining DROP Cost Neutrality Without the DROP, Assuming Retirements Occur 3 Years Earlier than Originally Assumed DROP Exit (Net Present Value $ in Thousands)

	Fire and Police Tier 1	Fire and Police Tier 2	Fire and Police Total	Employees
1. Present Value of Pension Benefits for Active Members	N/A	$912,624	$912,624	Not Calculated
2. Present Value of Member Contributions up to Date of Retirement	N/A	$104,699	$104,699	Not Calculated
3. Net Present Value of Benefits	N/A	$807,925	$807,925	Not Calculated
4. Interest Crediting at the Average Net Rate of Return[14] - Baseline Item (3) / Item (3)	N/A	105%	105%	Not Calculated
5. Interest Crediting at 3 Percent Below the Average Net Return[14] - Baseline Item (5) / Item (3)	N/A	102%	102%	Not Calculated

The following are points of note about the results:

- For the Employees Plan, the net present value of benefits under the Baseline ($552.7 million) is lower than the present value of benefits under Scenario B ($562.8 million). There is a cost reduction of about 2% of the net present value of benefits for that Plan.
- For the Fire and Police Plan, all active Tier 1 members have elected the DROP as of June 30, 2022. With respect to the Tier 2 members, we conclude in this study that the DROP is not cost neutral because the present value of benefits under the DROP in the Baseline ($823.8 million) even after a reduction in the interest crediting rate for the DROP account is 5% higher compared to the present value of benefits under Scenario B ($787.9 million).

  If we assume the Tier 2 members would have retired three years earlier without the DROP, then the present value of benefits as provided under Scenario C ($807.9 million) is within 2% of the present value of benefits under the DROP in the Baseline ($823.8 million) but only after a reduction in the interest crediting rate for the DROP account.
- The results under Scenarios A, B and C for both the Employees Plan and the Fire and Police Plan show how sensitive the results are to the hypothetical assumption of date of retirement without the DROP.

[14] The Municipal Code defines the “Average Net Rate of Return” as the average of the net rates of return earned by the System's entire investment portfolio for each of the five prior fiscal years, including realized and unrealized gains and losses and as reduced by all investment expenses. For the purpose of this study, the Average Net Rate of Return is assumed to be the same as the Plans’ long term net investment return assumption of 6.75%.

Part Two - Cost neutrality results for active members who have elected but not yet retired from DROP

Part Two of the study is similar to Part One except it is performed for active members enrolled in the DROP as of June 30, 2022. However, in evaluating the present value of benefits with the DROP, we have evaluated the impact based on an alternative condition assuming that the DROP members would have received 2022 COLAs consistent with the COLAs assumed in the valuation (Modified Baseline). This was done because the recent high inflation environment led to 2022 COLAs well in excess of the assumed inflation rate for members in both Systems, and recent trends suggest such high inflation is likely transitory. In evaluating the present value of benefits without the DROP, we have also evaluated the impact of an alternative condition assuming that the DROP members would have received salary increases from the date they enrolled in the DROP to June 30, 2022 consistent with the salary increases assumed in the valuation as opposed to the lower salary increases they actually received during that period. We believe evaluating the impact of that alternative condition is reasonable because actual salary increases granted during the last several years had been lower than our long term assumption. This is important because forgoing salary increases from the date of participation in the DROP through the date of retirement from DROP that would have been used to calculate retirement benefit without the DROP is one of the features to maintain DROP cost neutrality.

As in Part One we have included the impact of exercising the Board's authority to reduce the rate of interest credited to the members' DROP accounts so as to achieve cost neutrality.

Baseline — With the DROP
(Net Present Value $ in Thousands)

		Fire and Police Tier 1	Fire and Police Tier 2	Fire and Police Total	Employees
1.	Present Value of Benefits for Benefits paid after Valuation Date	$11,889	$116,437	$128,326	$145,320
2.	a Total DROP Account Balance	$5,930	$20,921	$26,851	$55,584
	b Member contributions deposited into DROP Account	$506	$2,804	$3,310	$9,258
	c Monthly pension benefits deposited into DROP Account	$5,424	$18,117	$23,541	$46,326
3.	Total Present Value of Benefits	$17,313	$134,554	$151,867	$191,646
4.	Impact of Reducing Annual Interest Crediting Rate for DROP Account by 3 Percent[15]	$31	$3,786	$3,817	Not Calculated
5.	Item (3), less Item (4)	$17,282	$130,768	$148,050	Not Calculated

[15] Includes the impact of reducing the annual interest crediting rate for monthly pension benefits and contributions already deposited into the DROP Account, as well as the impact of reducing the annual interest crediting rate for monthly pension benefits and contributions to be deposited into the DROP Account in the future.

Modified Baseline — With the DROP and expected 2022 COLA's
(Net Present Value $ in Thousands)

		Fire and Police Tier 1	Fire and Police Tier 2	Fire and Police Total	Employees
1.	Present Value of Benefits for Benefits paid after Valuation Date	$11,855	$112,171	$124,026	$138,320
2.	a Total DROP Account Balance	$5,930	$20,921	$26,851	$55,584
	b Member contributions deposited into DROP Account	$506	$2,804	$3,310	$9,258
	c Monthly pension benefits deposited into DROP Account	$5,424	$18,117	$23,541	$46,326
3.	Total Present Value of Benefits	$17,279	$130,288	$147,567	$184,646
4.	Impact of Reducing Annual Interest Crediting Rate for DROP Account by 3 Percent[16]	$32	$3,771	$3,803	Not Calculated
5.	Item (3), less Item (4)	$17,247	$126,517	$143,764	Not Calculated

[16] Includes the impact of reducing the annual interest crediting rate for monthly pension benefits and contributions already deposited into the DROP Account, as well as the impact of reducing the annual interest crediting rate for monthly pension benefits and contributions to be deposited into the DROP Account in the future

Scenario A — For Reference Purposes Only Without the DROP, Assuming Retirements Occur on Originally Assumed DROP Exit (Net Present Value $ in Thousands)

	Fire and Police Tier 1	Fire and Police Tier 2	Fire and Police Total	Employees
Determined By Using Actual Salaries for DROP Members as of June 30, 2022 and Projecting Those Salaries to Assumed Date of Retirement				
1. Present Value of Benefits for Benefits paid after Valuation Date	$13,907	$115,168	$129,075	$192,776
2. a Member contributions deposited into DROP Account[17]	$506	$2,804	$3,310	$9,258
b Present Value of Member Contributions up to Date of Retirement	$19	$2,534	$2,553	$3,719
3. Net Present Value of Benefits	$13,382	$109,830	$123,212	$179,799
4. Interest Crediting at the Average Net Rate of Return[18] - Baseline and Modified Baseline Item (3) / Item (3)	129% 129%	123% 119%	123% 120%	107% 103%
5. Interest Crediting at 3 Percent Below the Average Net Rate of Return[18] - Baseline and Modified Baseline Item (5) / Item (3)	129% 129%	119% 115%	120% 117%	Not Calculated
Determined By Using Actual Salaries for DROP Members as of Date of DROP Participation and Projecting Those Salaries to Assumed Date of Retirement				
6. Present Value of Benefits for Benefits paid after Valuation Date	$14,374	$116,982	$131,356	$197,525
7. a Member contributions deposited into DROP Account[17]	$506	$2,804	$3,310	$9,258
b Present Value of Member Contributions up to Date of Retirement	$19	$2,541	$2,560	$3,719
8. Net Present Value of Benefits	$13,849	$111,637	$125,486	$184,548
9. Interest Crediting at the Average Net Rate of Return[18] - Baseline and Modified Baseline Item (3) / Item (8)	125% 125%	121% 117%	121% 118%	104% 100%
10. Interest Crediting at 3 Percent Below the Average Net Rate of Return[18] - Baseline and Modified Baseline Item (5) / Item (8)	125% 125%	117% 113%	118% 115%	Not Calculated

[17] Includes interest, which was calculated using a proration of the monthly benefits paid into the DROP Account in relation to the amount of contributions deposited into the DROP Account

[18] The Municipal Code defines the “Average Net Rate of Return” as the average of the net rates of return earned by the System's entire investment portfolio for each of the five prior fiscal years, including realized and unrealized gains and losses and as reduced by all investment expenses. For the purpose of this study, the Average Net Rate of Return is assumed to be the same as the Plans’ long term net investment return assumption of 6.75%.

Scenario B — For Use in Determining DROP Cost Neutrality Without the DROP, Assuming Retirements Occur 2 Years Earlier than Originally Assumed DROP Exit[19] (Net Present Value $ in Thousands)

		Fire and Police Tier 1	Fire and Police Tier 2	Fire and Police Total	Employees
Determined By Using Actual Salaries for DROP Members as of June 30, 2022 and Projecting Those Salaries to Assumed Date of Retirement					
1.	Present Value of Benefits for Benefits paid after Valuation Date	$13,908	$122,034	$135,942	$191,184
2.	a Member contributions deposited into DROP Account[20]	$506	$2,804	$3,310	$9,258
	b Present Value of Member Contributions up to Date of Retirement	$19	$2,137	$2,156	$1,629
3.	Net Present Value of Benefits	$13,383	$117,093	$130,476	$180,297
4.	Interest Crediting at the Average Net Rate of Return[21] - Baseline and Modified Baseline Item (3) / Item (3)	129% 129%	115% 111%	116% 113%	106% 102%
5.	Interest Crediting at 3 Percent Below the Average Net Rate of Return[21] - Baseline and Modified Baseline Item (5) / Item (3)	129% 129%	112% 108%	113% 110%	Not Calculated
Determined By Using Actual Salaries for DROP Members as of Date of DROP Participation and Projecting Those Salaries to Assumed Date of Retirement					
6.	Present Value of Benefits for Benefits paid after Valuation Date	$14,375	$123,884	$138,259	$196,007
7.	a Member contributions deposited into DROP Account[20]	$506	$2,804	$3,310	$9,258
	b Present Value of Member Contributions up to Date of Retirement	$19	$2,146	$2,166	$1,629
8.	Net Present Value of Benefits	$13,850	$118,934	$132,783	$185,120
9.	Interest Crediting at the Average Net Rate of Return[21] - Baseline and Modified Baseline Item (3) / Item (8)	125% 125%	113% 110%	114% 111%	104% 100%
10.	Interest Crediting at 3 Percent Below the Average Net Rate of Return[21] - Baseline and Modified Baseline Item (5) / Item (8)	125% 125%	110% 106%	111% 108%	Not Calculated

[19] 8 members in Fire and Police Tier 1 have been in the DROP for at least 6 years, and 10 members in Fire and Police Tier 2 have been in the DROP for at least 6 years. For those members, we have assumed they would have retired on June 30, 2022 if the 2 years earlier than originally assumed DROP exit date was prior to June 30, 2022.

[20] Includes interest, which was calculated using a proration of the monthly benefits paid into the DROP Account in relation to the amount of contributions deposited into the DROP Account

[21] The Municipal Code defines the "Average Net Rate of Return" as the average of the net rates of return earned by the System's entire investment portfolio for each of the five prior fiscal years, including realized and unrealized gains and losses and as reduced by all investment expenses. For the purpose of this study, the Average Net Rate of Return is assumed to be the same as the Plans' long term net investment return assumption of 6.75%.

Scenario C — For Use in Determining DROP Cost Neutrality Without the DROP, Assuming Retirements Occur 3 Years Earlier than Originally Assumed DROP Exit[22] (Net Present Value $ in Thousands)

		Fire and Police Tier 1	Fire and Police Tier 2	Fire and Police Total	Employees
Determined By Using Actual Salaries for DROP Members as of June 30, 2022 and Projecting Those Salaries to Assumed Date of Retirement					
1.	Present Value of Benefits for Benefits paid after Valuation Date	$13,908	$124,640	$138,548	Not Calculated
2.	a Member contributions deposited into DROP Account[23]	$506	$2,804	$3,310	Not Calculated
	b Present Value of Member Contributions up to Date of Retirement	$19	$1,532	$1,551	Not Calculated
3.	Net Present Value of Benefits	$13,383	$120,304	$133,687	Not Calculated
4.	Interest Crediting at the Average Net Rate of Return[24] - Baseline and Modified Baseline Item (3) / Item (3)	129% 129%	112% 108%	114% 110%	Not Calculated
5.	Interest Crediting at 3 Percent Below the Average Net Rate of Return[24] - Baseline and Modified Baseline Item (5) / Item (3)	129% 129%	109% 105%	111% 108%	Not Calculated
Determined By Using Actual Salaries for DROP Members as of Date of DROP Participation and Projecting Those Salaries to Assumed Date of Retirement					
6.	Present Value of Benefits for Benefits paid after Valuation Date	$14,375	$126,495	$140,870	Not Calculated
7.	a Member contributions deposited into DROP Account[23]	$506	$2,804	$3,310	Not Calculated
	b Present Value of Member Contributions up to Date of Retirement	$19	$1,537	$1,556	Not Calculated
8.	Net Present Value of Benefits	$13,850	$122,154	$136,004	Not Calculated
9.	Interest Crediting at the Average Net Rate of Return[24] - Baseline and Modified Baseline Item (3) / Item (8)	125% 125%	110% 107%	112% 109%	Not Calculated
10.	Interest Crediting at 3 Percent Below the Average Net Rate of Return[24] - Baseline and Modified Baseline Item (5) / Item (8)	125% 125%	107% 104%	109% 106%	Not Calculated

[22] 10 members in Fire and Police Tier 1 have been in the DROP for at least 5 years, and 16 members in Fire and Police Tier 2 have been in the DROP for at least 5 years. For those members, we have assumed they would have retired on June 30, 2022 if the 3 years earlier than originally assumed DROP exit date was prior to June 30, 2022.

[23] Includes interest, which was calculated using a proration of the monthly benefits paid into the DROP Account in relation to the amount of contributions deposited into the DROP Account

[24] The Municipal Code defines the "Average Net Rate of Return" as the average of the net rates of return earned by the System's entire investment portfolio for each of the five prior fiscal years, including realized and unrealized gains and losses and as reduced by all investment expenses. For the purpose of this study, the Average Net Rate of Return is assumed to be the same as the Plans' long term net investment return assumption of 6.75%.

The following are points of note about the results:

- The Employee Plan is cost neutral as the present value of benefits with the DROP ($184.6 million) under the Modified Baseline is about the same compared to the present value of benefits assuming members would have retired two years earlier without the DROP after we adjust the salaries for those members from the date they enrolled in the DROP to June 30, 2022) using the salary increases assumed in the valuation ($185.1 million).
- For the Fire and Police Plan, the DROP is not cost neutral because the present value of benefits with the DROP even after we reduce the interest crediting rate ($143.8 million) under the Modified Baseline is more than 2% greater than the present value of benefits without the DROP even after we adjust the salaries for those members from the date they enrolled in the DROP to June 30, 2022 using the salary increases assumed in the valuation ($132.8 million under Scenario B and $136.0 million under Scenario C).
- For the Tier 2 members, the increase in the present value of benefits with the DROP is 4% after we reduce the interest crediting rate for the DROP accounts, as well as assume that the Tier 2 members would have retired three years earlier without the DROP (Scenario C $122.2 million compared to the Modified Baseline $126.5 million). For the Tier 1 members, even after we reduce the interest crediting rate for the DROP accounts and assume those members would have retired three years earlier without the DROP, there is still an increase in the present value with the DROP of 25% (Scenario C $13.9 million compared to the Modified Baseline $17.2 million).

Part Three - Interest Crediting to DROP Accounts

The Systems provided us with historical data for DROP balances, DROP deposits and withdrawals, and actual interest credited to the DROP accounts for the three-year period since the date of the last cost neutrality study (July 1, 2016) to June 30, 2022. We understand that the actual interest credited to the DROP accounts is based on a five-year trailing average of actual investment returns, net of investment expenses.

In the tables below, we have compared the ending balance of the DROP accounts as of June 30, 2022 to the theoretical ending balances assuming the interest credited were to be based on the investment return assumption of 7.00% assumed by the Boards for the actuarial valuations during that same period[25], consistent with the method used in our last study.

In addition to the assumed investment return rate, we have also included two alternative calculations based on the actual market value rate of return and the smoothed actuarial value rate of return that was used in the actuarial valuation to establish the City and the active member contribution rates in the historical actuarial valuations from July 1, 2019 to June 30, 2022.

Fire and Police DROP Account Ending Balance
($ in Thousands)

As of June 30	Actual (5-Year Trailing Average Market Return)	Investment Return Assumption of 7.25%[25,26]	Actual Market Value Rate of Return[26]	Actual Actuarial Value Rate of Return[26]
2019	$144,291			
2020	$148,781	$148,356	$140,566	$146,631
2021[27]	$151,994	$152,428	$176,286	$156,584
2022[27]	$156,132	$155,681	$155,735	$161,077

Employees DROP Account Ending Balance
($ in Thousands)

As of June 30	Actual (5-Year Trailing Average Market Return)	Investment Return Assumption of 7.00%[25,26]	Actual Market Value Rate of Return[26]	Actual Actuarial Value Rate of Return[26]
2019	$136,301			
2020	$144,777	$144,939	$137,439	$143,267
2021	$152,107	$152,837	$176,706	$156,992
2022	$161,451	$159,697	$159,463	$165,105

[25] Note that the investment return assumption for the June 30, 2022 valuations was reduced to 6.75%.

[26] Assuming DROP deposits and withdrawals are, on average, made at the middle of the year.

[27] For Fire & Police, actual 5-year trailing average market return beginning June 30, 2020 has been reduced by 3%. However, the 3% reduction in the interest crediting rate has not been taken into account in the investment return, actual market rate of return, and actual actuarial value of rate of return scenarios.

The following are points of note about the results:

- Our analysis shows that the actual ending balances of the DROP accounts as of June 30, 2022 are about 1% higher than the ending balances would be if we instead apply the assumed investment return assumption of 7.00% over that three-year period.

  This is similar to the last study due to the significant market recovery experienced by the Plans in the three-year period immediately preceding June 30, 2019.

- If we include all the account balance information (from 2005) that we have used since we prepared the 2011 DROP cost neutrality study, we observe that the DROP did not increase the cost of the plans with respect to the interest credited to the DROP accounts.

Fire and Police DROP Account Ending Balance
($ in Thousands)

As of June 30	Actual (5-Year Trailing Average Market Return)	Investment Return Assumption[28, 29]	Actual Market Value Rate of Return[29]	Actual Actuarial Value Rate of Return[29]
2005	$56,473			
2006	$64,160	$65,866	$67,886	$66,993
2007	$73,067	$75,379	$83,545	$80,330
2008	$85,529	$86,520	$82,706	$93,484
2009	$95,577	$96,104	$67,599	$97,575
2010	$99,704	$103,232	$76,544	$97,205
2011	$103,184	$108,928	$92,037	$97,513
2012	$106,889	$113,693	$87,735	$94,644
2013	$110,829	$119,959	$96,406	$99,451
2014	$115,802	$125,551	$109,348	$105,832
2015	$123,505	$131,497	$109,126	$112,112
2016	$130,484	$137,308	$105,703	$116,204
2017	$135,163	$142,043	$115,535	$120,797
2018	$139,944	$146,008	$119,164	$124,457
2019	$144,291	$149,829	$118,699	$125,698
2020	$148,781	$154,281	$114,592	$126,963
2021[30]	$151,994	$158,769	$142,413	$134,718

[28] 8.25% for years ending June 30, 2005–2010. 8.0% for years ending June 30, 2010–2013. 7.5% for years ending June 30, 2013–2016. 7.25% for years ending June 30, 2016–2019. 7.00% for years ending June 30, 2019–2022

[29] Assuming DROP deposits and withdrawals are, on average, made at the middle of the year.

[30] For Fire & Police, actual 5-year trailing average market return beginning July 1, 2020 has been reduced by 3%. However, the 3% reduction in the interest crediting rate has not been taken into account in the investment return, actual market rate of return, and actual actuarial value of rate of return scenarios.

2022[30]	$156,132	$162,466	$124,487	$137,544

Employees DROP Account Ending Balance
($ in Thousands)

As of June 30	Actual (5-Year Trailing Average Market Return)	Investment Return Assumption[31,32]	Actual Market Value Rate of Return[32]	Actual Actuarial Value Rate of Return[32]
2005	$26,629			
2006	$30,952	$31,754	$32,710	$32,421
2007	$35,813	$36,920	$40,874	$39,419
2008	$44,812	$45,241	$43,118	$48,735
2009	$52,494	$52,638	$37,226	$53,168
2010	$57,178	$59,462	$45,195	$55,741
2011	$61,642	$65,732	$57,617	$58,755
2012	$67,524	$72,531	$58,753	$60,676
2013	$73,140	$80,222	$68,451	$67,449
2014	$81,027	$88,869	$82,914	$76,760
2015	$93,331	$99,279	$88,973	$87,629
2016	$105,406	$109,999	$92,527	$97,262
2017	$114,835	$119,795	$107,735	$107,361
2018	$126,597	$130,571	$119,181	$118,384
2019	$136,301	$139,754	$125,121	$125,666
2020	$144,777	$148,633	$126,093	$132,019
2021	$152,107	$156,790	$161,912	$144,486
2022	$161,451	$163,927	$145,814	$151,646

Considering this, we conclude that the DROP is cost neutral with respect to the interest credited to the DROP accounts, relative to the assumed investment return assumption.

- The balance calculated using the same actual smoothed actuarial value rates of return that Segal uses for the actuarial valuation is different than that calculated using the five-year trailing average of actual investment returns developed by the Systems. Even though these numbers are both based on five years of actual returns, we believe that difference can be explained by the differences in the methods used in calculating the two returns. We are available to further review that difference if requested to do so by the Systems.
- In developing the account balances using the actual market value rate of return and the actual actuarial value rate of return, we have made the hypothetical assumption that members who have retired from the City after entering DROP would have their residual DROP account balance credited with those returns. However, in practice, the DROP account balance for those members would only be credited with the rate of return assumed in the annual valuation.

[31] 8.25% for years ending June 30, 2005–2010. 8.0% for years ending June 30, 2010–2013. 7.5% for years ending June 30, 2013–2016. 7.25% for years ending June 30, 2016–2019. 7.00% for years ending June 30, 2019–2022

[32] Assuming DROP deposits and withdrawals are, on average, made at the middle of the year.

- We note that consistent with our prior studies, we have NOT analyzed the cost neutrality of applying the assumed valuation interest rate to provide an annuity certain for those retirees who chose to receive their DROP account balance in installments instead of a lump sum when they retired from the City.

We are Members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial option herein.

We look forward to discussing this report with you.

Sincerely,

Paul Angelo, FSA, EA, FCA, MAAA
Senior Vice President & Actuary

Andy Yeung, ASA, MAAA, FCA, EA
Vice President and Actuary

JY/bbf