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June 19, 2017

Ms. Mary Elizabeth Reich
Chief Financial Officer
City of Dallas
1500 Marilla Street
Dallas, TX 75201

Re: Actuarial Analysis of City of Dallas Police and Fire Pension (DPFP) Fund HB 3158

Dear Ms. Reich:

As you requested, we have estimated the liabilities and contribution rates for the DPFP plan as outlined in the final HB 3158 signed by the Governor, using participant information as of January 1, 2017 as provided by DPFP Fund.

The key features of HB 3158 include:

- Effective date of September 1, 2017
- Benefit multiplier of 2.5% for service accrued after the effective date
- Modification of Normal Retirement Age, Early Retirement Age, and Early Retirement Reduction
- Modification of 20 & Out Retirement requirements and Benefit Multiplier
- Vesting after five years of service
- Cost-of-living adjustments (COLA) may be provided once certain financial benchmarks are reached, up to 4% annually
- Prospective elimination of Supplemental Benefit
- Elimination of DROP interest and DROP COLA
- Modification of DROP distribution options
- Deposits of pension benefit into Active DROP cease after 10 years
- Employee contribution rate of 13.5% of computation pay for all active participants
- Employer contribution rate of 34.5% of computation pay with a floor for seven years, plus $13 million per year until 2024.

A comparison of plan provisions for the current plan and HB 3158 are provided in the Appendix to this letter.

The calculations included in this document rely significantly on the actuarial assumptions and methods used to develop those projections. The assumptions and methods used are the same as those used in our letter dated January 23, 2017, evaluating the City's original proposed plan changes, and are detailed in the Appendix. The actuarial assumptions and methods were approved by the City. We believe these assumptions and methods are reasonable for the purpose of the measurements. There will be differences between forward-looking information and actual results because actual experience will almost certainly be different than assumed, and those differences may be material.

Participant data and preliminary asset information as of January 1, 2017 provided by the DPFP Fund were used as the basis for these actuarial estimates and were assumed to be complete and accurate for purposes of the projections contained in this document. The City also provided information regarding expected salary increases included in the meet and confer agreement negotiated in 2016 and projected computation pay for 2017 through 2037 based on the City's hiring plan. The table below shows comparative estimates between the current plan with no changes and HB 3158 plan provisions as of January 1, 2017. These estimates are based on the assumption that changes are effective September 1, 2017.

	As of 1/1/2017 ($Millions)	Current Plan	HB 3158	Impact
1	Total Normal Cost*, before administrative expenses	$85	$61	($24)
2	Normal Cost as a % of Pay	23.0%	16.4%	(6.6%)
3	Actuarial Accrued Liability total	$5,671	$4,284	($1,387)
4	Actuarial value of Assets	$2,153	$2,153	$0
5	Unfunded Liability: (3) - (4)	$3,518	$2,131	($1,387)
6	Funded Ratio: (4) / (3)	38.0%	50.3%	12.3%
7	Effective Amortization Period based on Funding Policy	Never	39	N/A
8	Long-Term Normal Cost as a % of Pay	12.6%	13.2%	0.6%

* Based on estimated 2017 computation pay of $372 million

Based on the assumptions and methods summarized in the Appendix, the plan is projected to be fully funded in 2056, 39 years from the valuation date. This is two years sooner than we previously estimated during final negotiations of HB 3158. The reason for the change in projected full funding date is due to the higher additional contributions in the final bill ($13M vs. $11M) and the slightly lower projected normal costs that resulted from the demographics of the January 1, 2017 census being different than expected.

It is important to note that even with the new amendments, the Plan still faces significant risks. The employee and City contributions are prescribed by the legislation and are not tied to an amortization policy. Any gains or losses due to investment performance, plan experience, or assumption changes will impact the effective amortization period and could result in the need to further adjust benefits or increase contributions. The City of Dallas should monitor future funding projections regularly to understand the impact on the projected full funding date.

A summary of the plan changes, the actuarial assumptions used for these calculations, and a chart showing the projected plan funded ratio and estimated employer contributions are provided in the Appendix.

OTHER MATTERS

Future actuarial measurements may differ significantly from the current measurements presented in this analysis due to such factors as the following: actual plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operations of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's actual future funded status); and changes in plan provisions or applicable law. Our scope did not include analyzing the potential range of such future measurements based on potential impacts of these factors; therefore we did not perform such an analysis.

The undersigned with actuarial credentials collectively meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

This analysis was prepared solely for the benefit and internal use of the City of Dallas. This analysis is not intended for the benefit of any other party and may not be relied upon by any third party for any purpose, and Deloitte Consulting accepts no responsibility or liability with respect to any party other than the City of Dallas.

To the best of our knowledge, no employee of the Deloitte U.S. Firms is an officer or director of the employer. In addition, we are not aware of any relationship between the Deloitte U.S. Firms and the employer that may impair or appear to impair the objectivity of the work included in this analysis.

Please feel free to contact us (Judy at jstromback@deloitte.com; (612) 397-4024, or Michael at mdeleon@deloitte.com; (612) 397-4681) if you have any questions or need further information.

Sincerely,

Deloitte Consulting LLP

By: Judy K. Stromback

Judy K. Stromback, FSA, FCA, EA, MAAA
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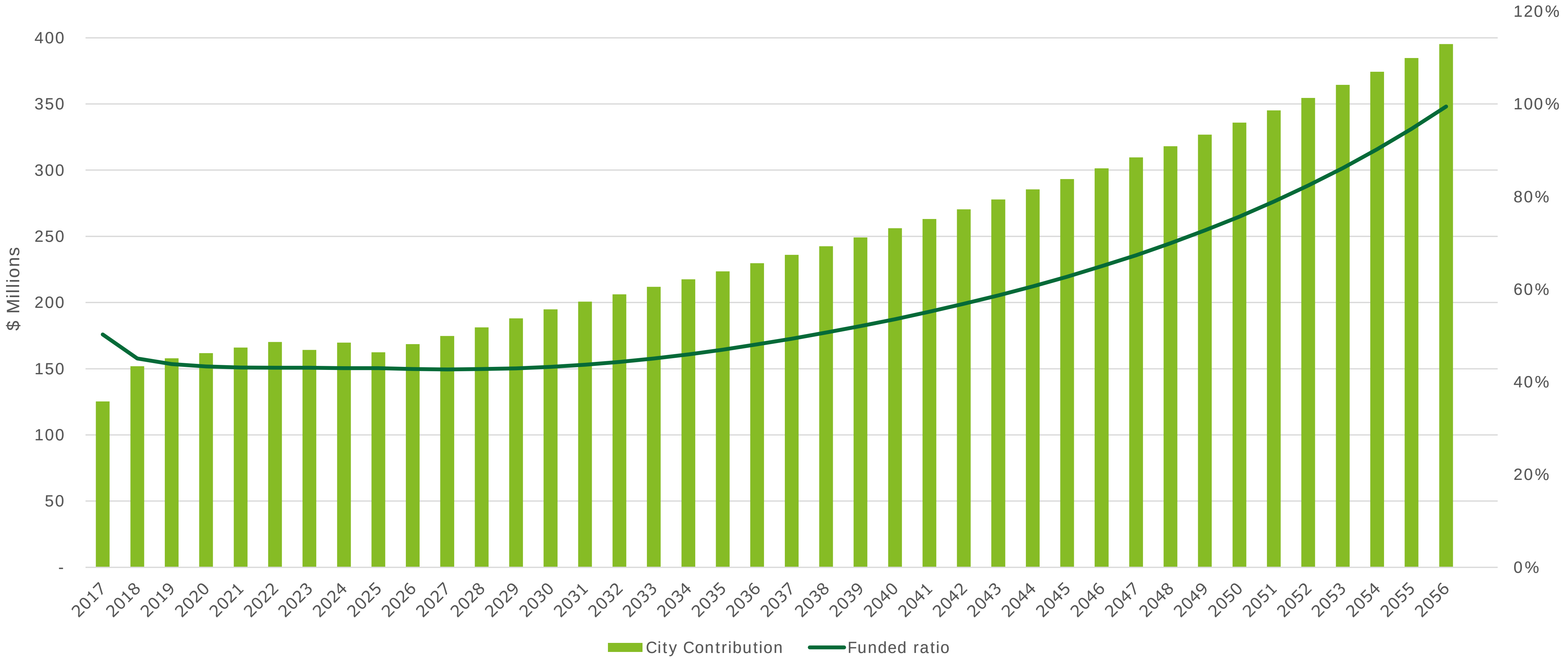
Specialist Leader

cc: Jeannie Chen – Deloitte Consulting

Appendix

HB 3158 – Projection of Estimated Plan Funded Ratio and City Contributions

The graph below shows the projection of estimated City contributions and plan funded ratio on a market value basis until the plan is fully funded.



Summary of HB 3158 Plan Changes

	Benefit Feature	Current Plan	HB 3158
1.	Benefit Multiplier*	Tiers 1 and 2: 3.0% for each year of service at normal retirement age of 50 with 5 years of service Tier 3: 2.0% for the first 20 years, 2.5% next 5 years, 3.0% thereafter at normal retirement age of 55 with 10 years of service	Tiers 1 and 2: 2.5% for service on or after 9/1/17 Tier 3: 2.5% for all years of service
2.	Early Retirement Age	Tiers 1 and 2: Age 45 Tier 3: N/A	Tiers 1 and 2: Age 45 as of 9/1/17 or age 53 after 9/1/17 Tier 3: Age 53
3.	Early Retirement Reduction without 20 years of service	Tiers 1 and 2: 2/3 of 1% per month if retire after age 45 and prior to age 50 Tier 3: N/A	Tiers 1 and 2: 2/3 of 1% per month if retire after reaching 1) age 45 as of 9/1/17 and prior to age 50; or 2) age 53 after 9/1/17 and prior to age 58 Tier 3: 2/3 of 1% per month if retire after age 53 and prior to age 58
4.	20 & Out Retirement	Tiers 1 and 2: 20 years of service Tier 3: N/A	20 years of service
5.	20 & Out Retirement Benefit Multiplier	Age 49: 2.75% Age 48: 2.75% Age 47: 2.50% Age 46: 2.25% Age 45 and younger: 2.00%	Age 57: 2.40% Age 56: 2.30% Age 55: 2.20% Age 54: 2.10% Age 53 and younger: 2.00%

* *The benefit is bifurcated between service pre-9/1/17 and post-9/1/17. The Normal Retirement Age is age 58 with 5 years of service for the portion of the benefit under the new multiplier.*

Summary of HB 3158 Plan Changes (cont.)

	Benefit Feature	Current Plan	HB 3158
6.	Vesting for Tier 3 participants	10 years	5 years
7.	Average Computation Pay for Tier 1 and 2 participants	36 month averaging period	60 months averaging period, prospectively with benefits bifurcated based on service pre-9/1/17 and post-9/1/17
8.	Maximum Benefit for Tier 1 and 2 participants	96% of computation pay	90% of computation pay
9.	COLA	Tier 1: 4.0% simple COLA on Base Benefit Tier 2 and 3: Ad hoc COLA not to exceed 4.0% simple COLA on Base Benefit	Ad hoc COLA not to exceed 4.0% simple COLA on base benefit; granting of COLA dependent on reaching certain financial benchmarks. Ad hoc COLA may not be granted until funding reaches 70% and is then subject to Board approval.
10.	Supplemental benefit	Greater of 3% or $75 per month with supplement amount being applied to member's benefit at age 55	Eliminated prospectively; frozen for those for whom the supplement was already granted
11.	Active DROP – Interest	6% effective 10/1/16; 5% effective 10/1/17; based on funded ratio effective 10/1/18 (currently estimated to be 0%)	None
12.	Active DROP – COLA	Included	Excluded
13.	Years in Active DROP	No limit	10 years (effective 1/1/2018)

Summary of HB 3158 Plan Changes (cont.)

	Benefit Feature	Current Plan	HB 3158
14.	Retiree DROP – Deferrals	No limit	No future deferrals
15.	Retiree DROP – Distributions and Interest	Lump sum; or Substantially equal payments over a specific period of time; or Regular installment amounts added to the monthly benefit payment; Interest payments consistent with active DROP interest detailed above	An annuity based on the participant's life expectancy; interest paid based on Treasury-based rate to be determined by the Board.
16.	Equity Adjustment	None	Can be enacted by the Board with 2/3 vote
17.	Employee Contributions	8.5% for non-DROP active participants 4.0% for DROP active participants	13.5% of computation pay effective 9/1/17
18.	Employer Contributions	27.5% of total pay	34.5% of computation pay effective 9/1/17 with a floor for 7 years, plus $13 Million per year until 2024. The 7 year floor is as follows: • $5.173 million per biweekly from 9/1/17 – 12/31/17; • $5.344 million per biweekly in calendar year 2018; • $5.571 million per biweekly in calendar year 2019; • $5.724 million per biweekly in calendar year 2020; • $5.882 million per biweekly in calendar year 2021; • $6.043 million per biweekly in calendar year 2022; • $5.812 million per biweekly in calendar year 2023; • $6.024 million per biweekly in calendar year 2024; In 2024, an independent actuarial analysis shall be conducted with the actuary making recommendations to the Board for changes to bring the plan in line with funding guidelines set by the Texas Pension Review Board if needed. The Board shall adopt changes based on the recommendations to meet the funding amortization period required by the Texas Government Code.

Summary of Actuarial Assumptions and Methods

The assumptions and methods are the same as those used in our letter dated January 23, 2017 evaluating the City's original proposed plan changes, except mandatory assumptions to address the provisions of the final bill and the removal of those no longer applicable. The full set of assumptions and methods utilized for this analysis and approved by the City are provided herein.

Mortality

- Pre-retirement: RP-2014 Employee Mortality Table, set back two years for males, projected generationally using Scale MP-2015
- Healthy annuitants: RP-2014 Blue Collar Healthy Annuitant Mortality Table, set forward two years for females, projected generationally using Scale MP-2015
- Disabled annuitants: RP-2014 Disabled Retiree Mortality Table, set back three years for males and females, projected generationally using Scale MP-2015

Disability and Withdrawal Rates Before Retirement

Withdrawal (%)		
Years of Service	Police	Fire
0	14.00	5.50
1	6.00	4.50
2	5.50	4.00
3	5.00	3.50
4	4.50	3.00
5	4.00	1.50
6	3.50	1.00
7	3.00	0.75
8	2.50	0.50
9	2.00	0.50
10-37	1.00	0.50
38+	0.00	0.00

Disability (%)		
Age	Police	Fire
20	0.10	0.10
25	0.15	0.15
30	0.20	0.20
35	0.25	0.25
40	0.30	0.30
45	0.35	0.35
50	0.40	0.40

Summary of Actuarial Assumptions and Methods (cont.)

Retirement Rates

- Active DROP participants

Police (%)		
Age	**2017**	**2018+**
Under 50	50.00	1.00
50-52	50.00	3.00
53-54	50.00	7.00
55	50.00	15.00
56-57	50.00	20.00
58-64	50.00	25.00
65-66	50.00	50.00
67	50.00	100.00

Fire (%)		
Age	**2017**	**2018+**
Under 50	50.00	0.75
50-54	50.00	2.50
55	50.00	12.00
56-58	50.00	12.00
59-64	50.00	25.00
65-66	50.00	30.00
67	50.00	100.00

- Active DROP participants are also assumed to retire immediately after participating in DROP for 10 years.

- Active participants not currently in DROP

Police (%)		
Age	**2017**	**2018+**
Under 50	11.00	1.00
50-52	13.00	3.00
53-54	17.00	7.00
55	25.00	15.00
56-57	30.00	20.00
58	35.00	50.00
59-64	35.00	25.00
65-66	60.00	50.00
67	100.00	100.00

Fire (%)		
Age	**2017**	**2018+**
Under 50	10.75	0.75
50-54	12.50	2.50
55-57	22.00	12.00
58	22.00	37.00
59-64	35.00	25.00
65-66	40.00	30.00
67	100.00	100.00

- Current terminated vested participants are assumed to retire at age 50.

- Future terminated vested participants are assumed to retire at age 58.

Summary of Actuarial Assumptions and Methods (cont.)

Salary Increases

- Salary is assumed to increase as noted in the table below for 2017 – 2018 to reflect the impact of the 2016 meet & confer agreement and based on the valuation assumption for all other years.

Salary increases for 2017-2018

	Rate (%)	
Years of Service	**2017**	**2018**
0 – 10	5%	10%
11 – 12	2%	7%
12+	2%	2%

Salary increases for 2019 and beyond

	Rate (%)	
Years of Service	**Police**	**Fire**
1	5.20	5.20
2	5.00	5.05
3	4.80	4.90
4	4.60	4.75
5	4.40	4.60
6	4.20	4.45
7	4.00	4.30
8	3.80	4.15
9	3.60	4.00
10	3.40	3.85
11	3.20	3.70
12	3.00	3.55
13	3.00	3.40
14	3.00	3.25
15	3.00	3.10
16 & Over	3.00	3.00

Summary of Actuarial Assumptions and Methods (cont.)

Discount Rate

- 7.25%, net of investment fees

Investment Return, net of investment fees

- Market value returns assumed to be -1.74% in 2017, 5.00% in 2018, 6.50% in 2019, 7.00% in 2020, and 7.25% thereafter for the purpose of solvency projections. Assumed rates of return were provided by the DPFP Fund.

Payroll Growth Rate

- Payroll of $372 million in 2017 growing to $581 million in 2031 and increasing by 2.75% thereafter, provided by the City based on revised hiring expectations

- For the current plan, total pay assumed to be 11% higher than computation pay

Administrative Expenses

- $10,000,000 per year or 1% of payroll, whichever is greater for the purpose of solvency projections

Cost of Living Adjustments (COLA)

- 0% in all future years

Percent Married:

- 75%

Age of Spouse/Children:

- Females are assumed to be three years younger than males.
- The age of the youngest child is assumed to be ten years.

Summary of Actuarial Assumptions and Methods (cont.)

Retiree Form of Payment for non-DROP benefits:

- 100% of married members are assumed to elect a Joint and Survivor annuity

DROP Utilization

- It is assumed that there will be no future entrants into DROP.

DROP Distributions

- DROP accounts are assumed to be paid out over the expected lifetime for the participant with 2.75% interest

Actuarial Value of Assets

- Set equal to the market value of assets
- 1/1/17 market value of assets of $2,153 million

Actuarial Cost Method

- Entry Age Normal as a level percent of pay

Effective Date:

- The HB 3158 plan provisions were assumed to be effective as of September 1, 2017 for illustrative purposes of this analysis