



December 5, 2023

Mr. Matthew Lue
Director of Finance
City of Columbia
Municipal Building
701 East Broadway, 5th Floor
Columbia, MO 65205

Re: City of Columbia – Projected Employer Contribution Rates With Additional \$1 Million Annual Lump Sum Contribution Into the Fund

Dear Mr. Lue:

The letter provides an analysis of the projected employer contribution rates for the City of Columbia based on the September 30, 2022 annual valuation. The projections include a baseline scenario under current valuation assumptions and methods. An alternate scenario is included which demonstrates the impact on the employer contribution rate if the City contributes an additional \$1 million dollars annually to the Fund beginning in fiscal year (FY) 2024 and ending in FY 2051.

Active member data (includes members participating in the DROP) included in the September 30, 2022 actuarial valuation is shown below:

Active Members as of September 30, 2022

<u>Division</u>	<u>Number</u>	<u>Payroll</u>	<u>Avg. Pay</u>	<u>Avg. Age</u>	<u>Avg. Benefit Service</u>	<u>Avg. Vesting Service</u>
Police	153	\$10,204,661	\$66,697	36.5 years	8.6 years	8.6 years
Fire	143	11,186,790	78,229	39.2 years	10.2 years	10.2 years

Unless otherwise noted, the methods and assumptions used were the same as those used in the annual actuarial valuations as of September 30, 2022. In particular, the assumed rate of investment return was 6.25% and the assumed rate of payroll growth was 2.75%. The amortization period for the September 30, 2022 actuarial valuation was a closed 29-year period.

Notes regarding the projections:

- 1) **For purposes of the projections, it was assumed that all actuarial assumptions would be realized unless otherwise noted.** In particular, it was assumed that future market rates of return that would produce the scheduled investment losses in FYs 2023 through 2025 shown on page B-19 of the September 30, 2022 valuation report, allocated to the Police and Fire groups based on the ratio of assets between the groups as of September 30, 2022.
- 2) The allocation of the \$1 million annual lump sum payment by the City was divided equally among Police and Fire (i.e., \$500,000 each).
- 3) Estimated projected payroll is based upon the valuation payroll, increased each future year by 2.75%.
- 4) The actual employer contribution rates for future valuation dates will be based upon actual data as of the future valuation date.

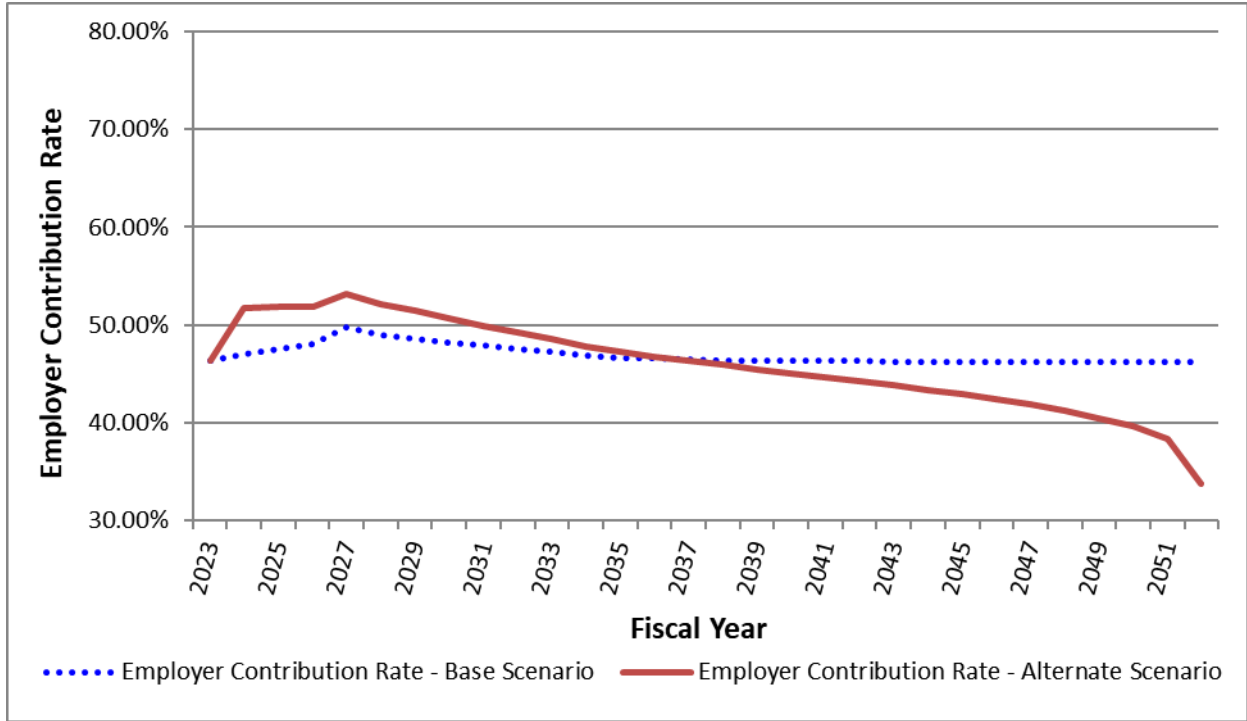
Shown below is a 30-year projection of the employer contribution rates for the **Police** division. The estimated employer contribution rates are shown under two scenarios. The base scenario is under the current amortization policy with no additional lump sum payments. The alternate scenario is the same as the base scenario plus annual lump sum payments of \$500,000 until the unfunded actuarial accrued liability (UAAL) is paid off. In both scenarios, the UAAL is fully paid off as of September 30, 2052. The estimated employer contribution rate drops to the employer normal cost of 11.62% for Post 10/1/2012 hires in FY 2053.

Fiscal Year	Estimated Projected Payroll	Base Scenario			Alternate Scenario				Change in Employer Contribution Dollars	
		29-Year Amortization of UAAL			29-Year Amortization of UAAL with Lump Sum Payments of \$500,000 Until UAAL Paid Off					
		Estimated Employer Contribution		Estimated Difference Between AAL and AVA	Estimated Employer Contribution			Estimated Difference Between AAL and AVA		
		Annual Dollars	As a % of Payroll		Annual Dollars	Lump Sum Payments	Total Contribution			As a % of Payroll
2023	\$ 10,485,289	\$ 4,853,640	46.29%	\$ 60,469,923	\$ 4,853,640	\$ 0	\$ 4,853,640	46.29%	\$ 60,469,923	\$ 0
2024	10,773,634	5,070,395	47.06%	62,631,322	5,070,395	500,000	5,570,395	51.70%	62,115,854	500,000
2025	11,069,909	5,263,052	47.54%	64,809,065	5,234,295	500,000	5,734,295	51.80%	63,775,560	471,243
2026	11,374,331	5,464,343	48.04%	69,324,201	5,405,394	500,000	5,905,394	51.92%	67,771,407	441,051
2027	11,687,125	5,809,588	49.71%	69,483,847	5,718,920	500,000	6,218,920	53.21%	67,412,009	409,332
2028	12,008,521	5,881,087	48.98%	69,538,710	5,757,069	500,000	6,257,069	52.11%	66,949,769	375,982
2029	12,338,755	6,001,369	48.64%	69,479,085	5,842,262	500,000	6,342,262	51.40%	66,376,897	340,893
2030	12,678,071	6,115,827	48.24%	69,294,573	5,919,767	500,000	6,419,767	50.63%	65,685,157	303,940
2031	13,026,718	6,237,466	47.89%	68,974,038	6,002,451	500,000	6,502,451	49.92%	64,865,852	264,985
2032	13,384,953	6,367,993	47.58%	68,505,556	6,091,870	500,000	6,591,870	49.25%	63,909,806	223,877
2033	13,753,039	6,493,890	47.22%	67,876,361	6,174,331	500,000	6,674,331	48.53%	62,807,354	180,441
2034	14,131,248	6,614,707	46.81%	67,072,795	6,249,190	500,000	6,749,190	47.76%	61,548,331	134,483
2035	14,519,857	6,776,237	46.67%	66,080,244	6,362,020	500,000	6,862,020	47.26%	60,122,064	85,783
2036	14,919,153	6,946,819	46.57%	64,883,083	6,480,902	500,000	6,980,902	46.79%	58,517,379	34,083
2037	15,329,430	7,124,716	46.48%	63,464,602	6,603,806	500,000	7,103,806	46.34%	56,722,598	(20,910)
2038	15,750,989	7,309,387	46.41%	61,806,940	6,729,842	500,000	7,229,842	45.90%	54,725,566	(79,545)
2039	16,184,141	7,503,508	46.37%	59,891,010	6,861,276	500,000	7,361,276	45.49%	52,513,682	(142,232)
2040	16,629,205	7,704,335	46.33%	57,696,414	6,994,870	500,000	7,494,870	45.07%	50,073,947	(209,465)
2041	17,086,508	7,911,613	46.31%	55,201,367	7,129,766	500,000	7,629,766	44.66%	47,393,061	(281,847)
2042	17,556,387	8,125,988	46.29%	52,382,600	7,265,858	500,000	7,765,858	44.23%	44,457,545	(360,130)
2043	18,039,188	8,346,554	46.27%	49,215,267	7,401,288	500,000	7,901,288	43.80%	41,253,936	(445,266)
2044	18,535,266	8,573,588	46.26%	45,672,841	7,535,087	500,000	8,035,087	43.35%	37,769,086	(538,501)
2045	19,044,986	8,809,360	46.26%	41,727,007	7,667,854	500,000	8,167,854	42.89%	33,990,618	(641,506)
2046	19,568,723	9,051,618	46.26%	37,347,549	7,794,994	500,000	8,294,994	42.39%	29,907,666	(756,624)
2047	20,106,863	9,300,536	46.26%	32,502,221	7,913,236	500,000	8,413,236	41.84%	25,512,093	(887,300)
2048	20,659,802	9,556,303	46.26%	27,156,623	8,017,368	500,000	8,517,368	41.23%	20,800,685	(1,038,935)
2049	21,227,947	9,819,101	46.26%	21,274,058	8,098,287	500,000	8,598,287	40.50%	15,779,452	(1,220,814)
2050	21,811,716	10,089,126	46.26%	14,815,386	8,137,943	500,000	8,637,943	39.60%	10,473,441	(1,451,183)
2051	22,411,538	10,366,578	46.26%	7,738,868	8,091,664	500,000	8,591,664	38.34%	4,955,371	(1,774,914)
2052	23,027,855	10,651,659	46.26%	-	7,782,935	-	7,782,935	33.80%	-	(2,868,724)

AAL = Actuarial Accrued Liability
 AVA = Actuarial Value of Assets
 UAAL = Unfunded Actuarial Accrued Liability



The lump sum payments included in the alternate scenario results in higher employer contributions initially. However, the remaining amortization payments become smaller due to the lump sum payments and eventually the employer contributions are lower than in the base scenario. The below graph shows the relationship between employer contribution rates for the **Police** division in the base and alternate scenarios.



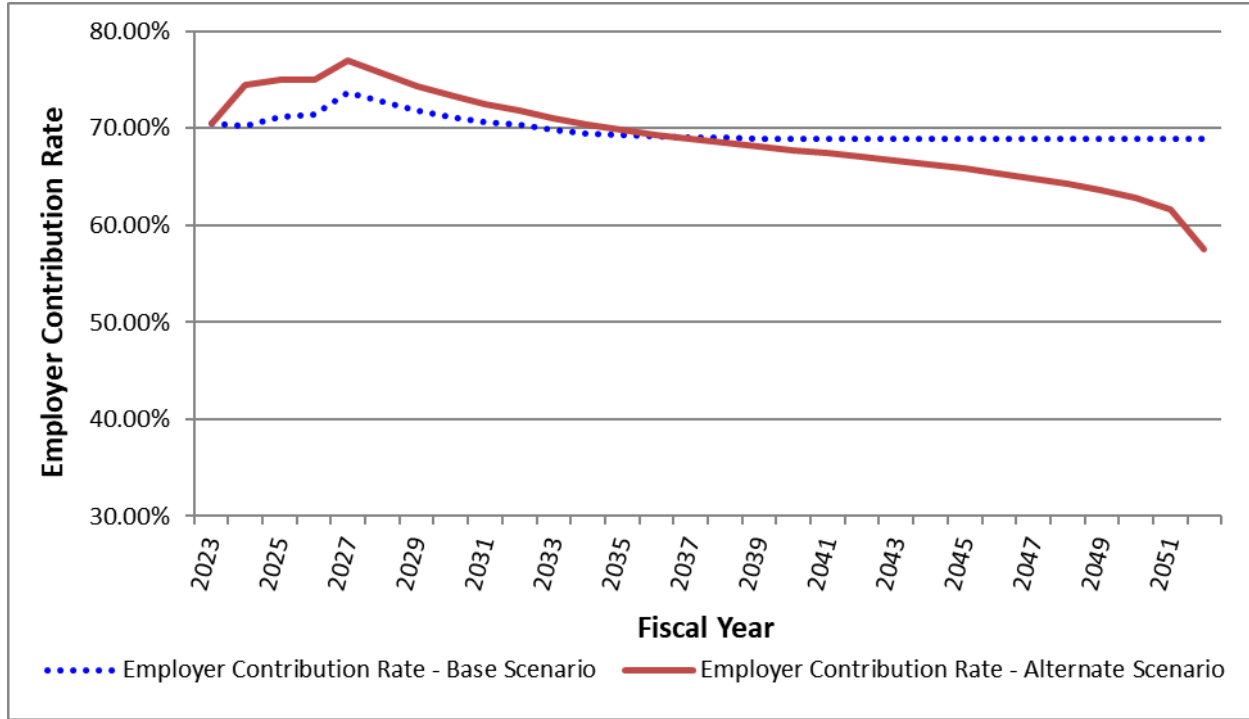
Shown below is a 30-year projection of the employer contribution rates for the **Fire** division. The estimated employer contribution rates are shown under two scenarios. The base scenario is under the current amortization policy with no additional lump sum payments. The alternate scenario is the same as the base scenario plus annual lump sum payments of \$500,000 until the unfunded actuarial accrued liability (UAAL) is paid off. In both scenarios, the UAAL is fully paid off as of September 30, 2052. The estimated employer contribution rate drops to the employer normal cost of 20.27% for Post 10/1/2012 hires in FY 2053.

Fiscal Year	Estimated Projected Payroll	Base Scenario			Alternate Scenario				Change in Employer Contribution Dollars	
		29-Year Amortization of UAAL			29-Year Amortization of UAAL with Lump Sum Payments of \$500,000 Until UAAL Paid Off					
		Estimated Employer Contribution		Estimated Difference Between AAL and AVA	Estimated Employer Contribution			Estimated Difference Between AAL and AVA		
		Annual Dollars	As a % of Payroll		Annual Dollars	Lump Sum Payments	Total Contribution			As a % of Payroll
2023	\$ 11,494,427	\$ 8,096,674	70.44%	\$ 92,053,958	\$ 8,096,674	\$ 0	\$ 8,096,674	70.44%	\$ 92,053,958	\$ 0
2024	11,810,524	8,293,408	70.22%	95,603,620	8,293,408	500,000	8,793,408	74.45%	95,088,152	500,000
2025	12,135,313	8,636,920	71.17%	99,190,735	8,608,163	500,000	9,108,163	75.05%	98,157,230	471,243
2026	12,469,034	8,907,694	71.43%	106,686,376	8,848,745	500,000	9,348,745	74.97%	105,133,582	441,051
2027	12,811,932	9,445,797	73.72%	106,932,061	9,355,128	500,000	9,855,128	76.92%	104,860,224	409,331
2028	13,164,260	9,586,284	72.82%	107,016,493	9,462,266	500,000	9,962,266	75.68%	104,427,553	375,982
2029	13,526,277	9,717,677	71.84%	106,924,733	9,558,571	500,000	10,058,571	74.36%	103,822,545	340,894
2030	13,898,250	9,895,517	71.20%	106,640,780	9,699,457	500,000	10,199,457	73.39%	103,031,363	303,940
2031	14,280,452	10,092,679	70.67%	106,147,494	9,857,664	500,000	10,357,664	72.53%	102,039,306	264,985
2032	14,673,164	10,318,389	70.32%	105,426,523	10,042,265	500,000	10,542,265	71.85%	100,830,772	223,876
2033	15,076,676	10,530,601	69.84%	104,458,224	10,211,042	500,000	10,711,042	71.04%	99,389,216	180,441
2034	15,491,285	10,765,334	69.49%	103,221,576	10,399,818	500,000	10,899,818	70.36%	97,697,111	134,484
2035	15,917,295	11,030,824	69.30%	101,694,092	10,616,606	500,000	11,116,606	69.84%	95,735,912	85,782
2036	16,355,021	11,312,334	69.16%	99,851,723	10,846,418	500,000	11,346,418	69.37%	93,486,019	34,084
2037	16,804,784	11,607,603	69.07%	97,668,755	11,086,692	500,000	11,586,692	68.95%	90,926,751	(20,911)
2038	17,266,916	11,912,807	68.99%	95,117,699	11,333,262	500,000	11,833,262	68.53%	88,036,325	(79,545)
2039	17,741,756	12,231,131	68.94%	92,169,180	11,588,899	500,000	12,088,899	68.14%	84,791,852	(142,232)
2040	18,229,654	12,563,072	68.91%	88,791,810	11,853,607	500,000	12,353,607	67.76%	81,169,344	(209,465)
2041	18,730,969	12,906,211	68.90%	84,952,061	12,124,364	500,000	12,624,364	67.40%	77,143,756	(281,847)
2042	19,246,071	13,260,132	68.90%	80,614,123	12,400,002	500,000	12,900,002	67.03%	72,689,069	(360,130)
2043	19,775,338	13,624,006	68.89%	75,739,760	12,678,740	500,000	13,178,740	66.64%	67,778,430	(445,266)
2044	20,319,160	13,998,418	68.89%	70,288,149	12,959,918	500,000	13,459,918	66.24%	62,384,395	(538,500)
2045	20,877,937	14,383,375	68.89%	64,215,716	13,241,870	500,000	13,741,870	65.82%	56,479,327	(641,505)
2046	21,452,080	14,778,917	68.89%	57,475,955	13,522,293	500,000	14,022,293	65.37%	50,036,071	(756,624)
2047	22,042,012	15,185,337	68.89%	50,019,245	13,798,038	500,000	14,298,038	64.87%	43,029,115	(887,299)
2048	22,648,167	15,602,934	68.89%	41,792,644	14,063,999	500,000	14,563,999	64.31%	35,436,705	(1,038,935)
2049	23,270,992	16,032,015	68.89%	32,739,678	14,311,201	500,000	14,811,201	63.65%	27,245,071	(1,220,814)
2050	23,910,944	16,472,894	68.89%	22,800,114	14,521,711	500,000	15,021,711	62.82%	18,458,169	(1,451,183)
2051	24,568,495	16,925,900	68.89%	11,909,719	14,650,986	500,000	15,150,986	61.67%	9,126,222	(1,774,914)
2052	25,244,129	17,391,362	68.89%	-	14,522,639	-	14,522,639	57.53%	-	(2,868,723)

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The lump sum payments included in the alternate scenario results in higher employer contributions initially. However, the remaining amortization payments become smaller due to the lump sum payments and eventually the employer contributions are lower than in the base scenario. The below graph shows the relationship between employer contribution rates for the **Fire** division in the base and alternate scenarios.



This report was prepared using our proprietary valuation model and related software which, in our professional judgment, has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

Mita Drazilov is a member of the American Academy of Actuaries and meets the Qualification Standards of the Academy of Actuaries to render the actuarial opinions contained herein.

Let us know if you have any questions.

Sincerely,
Gabriel, Roeder, Smith & Company

Mita D. Drazilov, ASA, FCA, MAAA

MDD:rmn

cc: Heidi Barry, (GRS)

