

May 19, 2016

Board of Trustees
Hannibal Policemen and Firemen Retirement Fund

Cost statement of Proposed Changes to the Plan

Dear Board Members:

According to Missouri Revised Statute 105.665: 1. The legislative body or committee thereof which determines the amount and type of plan benefits to be paid shall, before taking final action on any substantial proposed change in plan benefits, cause to be prepared a statement regarding the cost of such change.

The following cost statement employs the methods used in preparing the most recent periodic actuarial valuation for the plan and addresses the requirements in the order they are requested in the Statute:

(1) The total level normal cost of plan benefits currently in effect, is \$165,973. Expressed as a percent of active employee payroll is 4.6%.

(2) The contribution for unfunded accrued liabilities currently payable by the plan is \$861,927. Expressed as a percent of active employee payroll over a period of 20 years is 23.7%;

(3) The total contribution rate, which is the total of the normal cost percent plus the contribution percent for unfunded accrued liabilities adjusted with interest is \$1,066,446. Expressed as a percent of active employee payroll over a period of 20 years is 29.4%;

(4) The legislative body is currently paying more than the total contribution rate as defined in subdivision (3) of this subsection;

(5) The plan's actuarial value of assets, market value of assets, actuarial accrued liability, and funded ratio as defined in section 105.660 as of the most recent actuarial valuation is:

| | |
|-----------------------------|--------------|
| Actuarial Value of Assets | \$15,285,088 |
| Market Value of Assets | \$15,285,088 |
| Actuarial Accrued Liability | \$27,598,708 |
| Funded Ratio | 55.4% |

(6) The total post-change contribution rate is \$1,030,391. Expressed as a percent of active employee payroll over a period of 20 years is 28.4%;

(7) By mitigating the risk of unexpected future plan liabilities without increasing costs, the proposed change will improve the ability of the plan to meet its obligations with respect to all benefits offered by the Plan thereof in effect at the time the proposal is made. Please see attached actuarial projections.

(8) No additional contributions are mandated by the proposed change;

(9) The proposed change would not, in any way, impair the ability of the plan to meet the obligations thereof in effect at the time the proposal is made;

(10) All assumptions relied upon to evaluate the present financial condition of the plan and all assumptions relied upon to evaluate the impact of the proposed change upon the financial condition of the plan, which are those assumptions used in preparing the most recent periodic actuarial valuation for the plan, are:

(a) Investment return of 7.50%;

(b) Pay increases of 4.0%;

(c) Mortality of employees and officials, and other persons who may receive benefits under the plan is the RP 2000 Combined Blue Collar mortality table projected to the valuation year by scale AA;

(d) Withdrawal (turnover) is based on past experience of the Plan. Sample rates are as follows:

| Annual Rates | Age | of Termination |
|--------------|-----|----------------|
| | 25 | 10.0% |
| | 30 | 7.5 |
| | 35 | 5.0 |
| | 40 | 4.0 |
| | 45 | 2.0 |
| | 50 | 1.0 |

(e) Disability is based on past experience of the Plan. Sample rates are as follows:

Annual Rates of Disability

| Age | Rate |
|-----|-------|
| 25 | 0.18% |
| 30 | 0.18 |
| 40 | 0.30 |
| 50 | 0.79 |
| 55 | 1.35 |
| 60 | 2.00 |

(f) Retirement rate is 75% at 25 years of service. If a Member has at least 20 years of service, the rate is 10% through age 61, 25% at age 62, 10% at age 63, 15% at age 64 and 100% for age 65 and older.;

(g) There has been no change in active employee group size;

(11) As the Plan actuary I certify that the assumptions used for the valuation produce results which, in the aggregate, are reasonable;

(12) Actuarial Method Used for the Valuation – Entry Age Normal

Normal Cost. Normal cost and the allocation of actuarial present values between service rendered before and after the valuation date were determined using an individual entry-age actuarial cost method having the following characteristics:

The annual normal costs for each individual active Member, payable from date of hire to date of retirement, are sufficient to accumulate the value of the Member's benefit at the time of retirement;

Each annual normal cost is a constant percentage of the Member's year-by-year projected covered pay.

The excess of accrued assets over actuarial accrued assets was amortized as a level percent-of-payroll over 20 years.

Respectfully submitted,



Traci M. Christian, EA, MAAA, MSPA, FCA

Current Plan Provisions

| Year | Total Normal Cost | Employer Normal Cost | Amortization | Recommended City Contribution | Expected 35% City Contribution | Payroll | Recommended Contribution as a % of Payroll | Expected Benefit Payments | Assets | Accrued Liability | Unfunded Liability | Funded Ratio |
|------|-------------------|----------------------|--------------|-------------------------------|--------------------------------|-----------|--|---------------------------|------------|-------------------|--------------------|--------------|
| 2015 | 510,783 | 165,973 | 861,927 | 1,066,446 | 1,270,354 | 3,629,583 | 29.4% | 1,659,255 | 15,285,088 | 27,598,708 | 12,313,620 | 55.4% |
| 2016 | 528,660 | 171,782 | 872,750 | 1,083,702 | 1,314,816 | 3,756,618 | 28.8% | 1,640,902 | 16,027,985 | 28,496,226 | 12,468,241 | 56.2% |
| 2017 | 547,164 | 177,794 | 882,502 | 1,100,057 | 1,360,835 | 3,888,100 | 28.3% | 1,823,515 | 16,891,770 | 29,499,317 | 12,607,547 | 57.3% |
| 2018 | 566,314 | 184,017 | 891,034 | 1,115,366 | 1,408,464 | 4,024,184 | 27.7% | 1,798,693 | 17,678,622 | 30,408,070 | 12,729,447 | 58.1% |
| 2019 | 586,135 | 190,457 | 898,189 | 1,129,471 | 1,457,760 | 4,165,030 | 27.1% | 1,875,128 | 18,599,657 | 31,431,319 | 12,831,662 | 59.2% |
| 2020 | 606,650 | 197,123 | 903,792 | 1,142,200 | 1,508,782 | 4,310,806 | 26.5% | 2,089,774 | 19,561,612 | 32,473,318 | 12,911,706 | 60.2% |
| 2021 | 627,883 | 204,023 | 907,653 | 1,153,364 | 1,561,589 | 4,461,684 | 25.9% | 2,086,271 | 20,425,954 | 33,392,825 | 12,966,871 | 61.2% |
| 2022 | 649,859 | 211,164 | 909,567 | 1,162,758 | 1,616,245 | 4,617,843 | 25.2% | 2,199,493 | 21,413,543 | 34,407,754 | 12,994,211 | 62.2% |
| 2023 | 672,604 | 218,554 | 909,309 | 1,170,158 | 1,672,814 | 4,779,468 | 24.5% | 2,281,713 | 22,414,439 | 35,404,960 | 12,990,520 | 63.3% |
| 2024 | 696,145 | 226,204 | 906,635 | 1,175,320 | 1,731,362 | 4,946,749 | 23.8% | 2,307,286 | 23,463,789 | 36,416,103 | 12,952,314 | 64.4% |
| 2025 | 720,510 | 234,121 | 901,279 | 1,177,977 | 1,791,960 | 5,119,885 | 23.0% | 2,506,053 | 24,626,052 | 37,501,858 | 12,875,805 | 65.7% |
| 2026 | 745,728 | 242,315 | 892,955 | 1,177,842 | 1,854,678 | 5,299,081 | 22.2% | 2,535,356 | 25,732,135 | 38,489,015 | 12,756,880 | 66.9% |
| 2027 | 771,828 | 250,796 | 881,349 | 1,174,600 | 1,919,592 | 5,484,549 | 21.4% | 2,531,280 | 26,955,842 | 39,546,917 | 12,591,075 | 68.2% |
| 2028 | 798,842 | 259,574 | 866,122 | 1,167,909 | 1,986,778 | 5,676,508 | 20.6% | 2,634,552 | 28,342,904 | 40,716,448 | 12,373,544 | 69.6% |
| 2029 | 826,802 | 268,659 | 846,907 | 1,157,399 | 2,056,315 | 5,875,186 | 19.7% | 2,773,030 | 29,796,556 | 41,895,589 | 12,099,033 | 71.1% |
| 2030 | 855,740 | 278,062 | 823,304 | 1,142,668 | 2,128,286 | 6,080,818 | 18.8% | 2,630,791 | 31,287,706 | 43,049,551 | 11,761,845 | 72.7% |
| 2031 | 885,691 | 287,794 | 794,882 | 1,123,277 | 2,202,776 | 6,293,646 | 17.8% | 2,649,256 | 33,112,935 | 44,468,742 | 11,355,807 | 74.5% |
| 2032 | 916,690 | 297,867 | 761,173 | 1,098,754 | 2,279,873 | 6,513,924 | 16.9% | 2,700,019 | 35,133,183 | 46,007,412 | 10,874,229 | 76.4% |
| 2033 | 948,774 | 308,292 | 721,669 | 1,068,585 | 2,359,669 | 6,741,911 | 15.8% | 2,709,114 | 37,332,270 | 47,642,140 | 10,309,869 | 78.4% |
| 2034 | 981,981 | 319,083 | 675,822 | 1,032,213 | 2,442,257 | 6,977,878 | 14.8% | 2,697,613 | 39,769,641 | 49,424,526 | 9,654,885 | 80.5% |
| 2035 | 1,016,350 | 330,250 | 623,036 | 989,035 | 2,527,736 | 7,222,104 | 13.7% | 2,705,388 | 42,487,433 | 51,388,222 | 8,900,789 | 82.7% |

The results presented here are ESTIMATES. They are based on the data, assumptions, methods and plan provisions outlined in this report.

These projections assume a future contribution rate of 35% of payroll.

These results are for **discussion purposes only** and should not be relied upon for purposes of making cash contributions to the Plan nor for any other purposes.

Post Change

| Year | Total Normal Cost | Employer Normal Cost | Amortization | Recommended City Contribution | Expected 35% City Contribution | Payroll | Recommended Contribution as a % of Payroll | Expected Benefit Payments | Assets | Accrued Liability | Unfunded Liability | Funded Ratio |
|------|-------------------|----------------------|--------------|-------------------------------|--------------------------------|-----------|--|---------------------------|------------|-------------------|--------------------|--------------|
| 2015 | 476,031 | 131,221 | 861,927 | 1,030,391 | 1,270,354 | 3,629,583 | 28.4% | 1,659,255 | 15,285,088 | 27,598,708 | 12,313,620 | 55.4% |
| 2016 | 492,692 | 135,813 | 870,135 | 1,043,672 | 1,314,816 | 3,756,618 | 27.8% | 1,640,902 | 16,027,985 | 28,458,867 | 12,430,882 | 56.3% |
| 2017 | 509,936 | 140,567 | 876,984 | 1,055,709 | 1,360,835 | 3,888,100 | 27.2% | 1,823,515 | 16,891,770 | 29,420,491 | 12,528,721 | 57.4% |
| 2018 | 527,784 | 145,487 | 882,302 | 1,066,330 | 1,408,464 | 4,024,184 | 26.5% | 1,798,693 | 17,678,622 | 30,283,312 | 12,604,690 | 58.4% |
| 2019 | 546,257 | 150,579 | 885,902 | 1,075,349 | 1,457,760 | 4,165,030 | 25.8% | 1,875,128 | 18,599,657 | 31,255,784 | 12,656,128 | 59.5% |
| 2020 | 565,375 | 155,849 | 887,583 | 1,082,560 | 1,508,782 | 4,310,806 | 25.1% | 2,089,774 | 19,561,612 | 32,241,749 | 12,680,137 | 60.7% |
| 2021 | 585,164 | 161,304 | 887,123 | 1,087,742 | 1,561,589 | 4,461,684 | 24.4% | 2,086,271 | 20,425,954 | 33,099,518 | 12,673,564 | 61.7% |
| 2022 | 605,644 | 166,949 | 884,282 | 1,090,653 | 1,616,245 | 4,617,843 | 23.6% | 2,199,493 | 21,413,543 | 34,046,527 | 12,632,983 | 62.9% |
| 2023 | 626,842 | 172,792 | 878,800 | 1,091,028 | 1,672,814 | 4,779,468 | 22.8% | 2,281,713 | 22,414,439 | 34,969,110 | 12,554,670 | 64.1% |
| 2024 | 648,781 | 178,840 | 870,394 | 1,088,581 | 1,731,362 | 4,946,749 | 22.0% | 2,307,286 | 23,463,789 | 35,898,371 | 12,434,582 | 65.4% |
| 2025 | 671,489 | 185,100 | 858,757 | 1,083,001 | 1,791,960 | 5,119,885 | 21.2% | 2,506,053 | 24,626,052 | 36,894,379 | 12,268,327 | 66.7% |
| 2026 | 694,991 | 191,578 | 843,555 | 1,073,950 | 1,854,678 | 5,299,081 | 20.3% | 2,535,356 | 25,732,135 | 37,783,278 | 12,051,144 | 68.1% |
| 2027 | 719,316 | 198,283 | 824,426 | 1,061,061 | 1,919,592 | 5,484,549 | 19.3% | 2,531,280 | 26,955,842 | 38,733,707 | 11,777,866 | 69.6% |
| 2028 | 744,492 | 205,223 | 800,978 | 1,043,934 | 1,986,778 | 5,676,508 | 18.4% | 2,634,552 | 28,342,904 | 39,785,797 | 11,442,893 | 71.2% |
| 2029 | 770,549 | 212,406 | 772,788 | 1,022,138 | 2,056,315 | 5,875,186 | 17.4% | 2,773,030 | 29,796,556 | 40,836,712 | 11,040,156 | 73.0% |
| 2030 | 797,518 | 219,840 | 739,393 | 995,205 | 2,128,286 | 6,080,818 | 16.4% | 2,630,791 | 31,287,706 | 41,850,787 | 10,563,081 | 74.8% |
| 2031 | 825,431 | 227,535 | 700,297 | 962,625 | 2,202,776 | 6,293,646 | 15.3% | 2,649,256 | 33,112,935 | 43,117,482 | 10,004,547 | 76.8% |
| 2032 | 854,321 | 235,498 | 654,959 | 923,850 | 2,279,873 | 6,513,924 | 14.2% | 2,700,019 | 35,133,183 | 44,490,029 | 9,356,846 | 79.0% |
| 2033 | 884,222 | 243,741 | 602,796 | 878,282 | 2,359,669 | 6,741,911 | 13.0% | 2,709,114 | 37,332,270 | 45,943,906 | 8,611,636 | 81.3% |
| 2034 | 915,170 | 252,272 | 543,176 | 825,277 | 2,442,257 | 6,977,878 | 11.8% | 2,697,613 | 39,769,641 | 47,529,533 | 7,759,891 | 83.7% |
| 2035 | 947,201 | 261,101 | 475,415 | 764,136 | 2,527,736 | 7,222,104 | 10.6% | 2,705,388 | 42,487,433 | 49,279,282 | 6,791,849 | 86.2% |

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