

City of Los Angeles
Proposed Tier of New Benefits for New Employees in the
Los Angeles City Employees' Retirement System
2\% @ 65 with Actuarial Equivalent Early Benefits
Actuarial Analysis

## TABLE OF CONTENTS

SECTION

1. Comments 1 ..... 1
2. Summary of Results ..... 3
3. Outline of Potential Plan Design ..... 5
4. Actuarial Assumptions ..... 8
5. Participant Data ..... 9
6. Tier II Savings Projection ..... 10
7. Effect of Early Retirement Rates ..... 13
8. Cost-Sharing of Unfunded Payment ..... 14

## SECTION 1

## Introduction

Bartel Associates has prepared this estimate of the costs a proposed new tier of benefits for future new hires in the Los Angeles City Employees’ Retirement System. These cost estimates were prepared by using the group of current plan participants hired in the three years ending June 30, 2011 as a proxy for future new hires. This is the same methodology and the same group of participants used by The Segal Company, Inc. in their previous analysis of the cost of two different proposed new tiers: $2 \% @ 65$ and $2 \% @ 67$. The costs for the current program are included here for comparison purposes. Except as noted, we have used the same actuarial methods and assumptions in developing the costs for the proposed new tier as in previous actuarial studies, so that the results will be directly comparable.

The purpose of this study is to provide the City with information about the relative costs of this proposed future plan design, as summarized in this report. The actual future costs will differ from those presented in this report due to differences in the demographics of actual covered employees as well as the actuarial methods and assumptions used at that time.

Finally, note that this report considers only funding costs for the pension and OPEB plans and therefore does not address accounting requirements under the new GASB Statements 67 and 68. Our report also does not consider any funding or plan design requirements that may be implemented in 2012 or later for California public pension plans.

## Comments

Pay Basis. This report shows results on two bases: Base Pay Only and Base Plus Bonuses specified as pensionable in MOUs. The Base Plus Bonus results assume that benefits are calculated using base pay plus bonuses specified as pensionable in MOUs. We have used the same assumption as the Segal Company in their studies: that these bonuses are on average $2 \%$ of base pay. The costs for these benefits are shown as a percentage of base pay plus the specified bonuses. The Base Pay Only results assume that benefits are calculated using base pay only, and show the resulting costs and contributions as a percentage of base pay.

Retirement Rates. As discussed in Section 7, we have used Retirement Rates that we believe will best estimate retirement behavior of new tier employees until such time as an experience study can be made.

Contribution Rates. The employee contribution rates contemplated by all of the benefit design in this study, including the current plan, are significantly higher than they have historically been. This is even more so if the plan develops a large Unfunded Actuarial Accrued Liability and employees are required to fund a portion of the amortization payments. This will lead to employees accumulating larger contribution account balances, while at the same time, their expected retirement benefits will be lower than in the past. We expect this will likely lead to changes in employee termination rates and contributions withdrawal experience. However, we have not anticipated this change in our analysis.

Social Security. We believe the proposed 2\%@65 formula will qualify under the Defined Benefit Retirement System Safe Harbor rules, and not require participants to join Social Security. However, we made this determination as actuaries and the City's legal counsel should review our findings.

## SECTION 1

Comments

Projected Unit Credit Funding Method. The projected unit credit (PUC) funding method which has been used in the LACERS actuarial valuations attributes the cost of benefits to the time when they accrue. Under the current plan, a portion of the disability benefit ( $1 / 3$ of pay) is accrued by employees immediately upon hire, even though they cannot receive the benefit until they satisfy the 5 year eligibility requirement. This immediately-accrued benefit results in newly entered employees having a relatively substantial accrued liability relating to the disability benefit. In the annual valuation, this liability would be amortized as a loss and is not and will not be part of the Normal Cost. Thus, to evaluate the full cost of all current plan benefits under the PUC funding method we have added the amortization of the initial liability to the normal cost.

The proposed new tier benefit eliminates this $1 / 3$ of pay minimum disability benefit.
It should be noted that the PUC and Entry Age Normal (EAN) funding methods produce different cost patterns over time, with EAN's cost generally starting higher but increasing more slowly over time. For this reason we have shown the costs for the all of the current and proposed benefits under both funding methods, for comparison purposes. Please see the Tier II Savings Projection section for more detail.

To the best of our knowledge, this report is complete and accurate and has been conducted using generally accepted actuarial principals and practices. This study was prepared by the undersigned, who are members of the American Academy of Actuaries meeting the Academy Qualification Standards.


John E. Bartel, ASA, MAAA, FCA
President


## SECTION 2

SUMMARY OF RESULTS

## Comparison of Estimated Contribution Rates: <br> Current \& Proposed (2\% @ 65, Actuarial Early, Base + Bonus) Formulas

All Amounts are Average Per New Employee
Blue Italics amounts developed from Segal's reports

|  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Pension: <br> Current <br> Plan | Pension: <br> Proposed <br> 2\% @ 65 <br> Base+ <br> Bonus | OPEB: Current Plan | OPEB: Proposed Plan | Total: Current Plan | Total: Proposed Plan |
| Base Pay | \$64,030 | \$64,030 | \$64,030 | \$64,030 | \$64,030 | \$64,030 |
| Base Pay + Included Bonus | 65,337 | 65,337 | 65,337 | 65,337 | 65,337 | 65,337 |
|  | Entry Age Normal |  |  |  |  |  |
| Employer Normal Cost | \$ 7,337 | \$ 1,825 | \$(620) | \$ 351 | \$6,717 | \$ 2,175 |
| Employee Normal Cost | 4,574 | 5,467 | 2,613 | 1,052 | 7,187 | 6,519 |
| Total Normal Cost | 11,911 | 7,291 | 1,993 | 1,403 | 13,904 | 8,694 |

Cost as \% of Base + Bonus

- Employer Cost \% of Pay
- Employee Normal Cost \% of Pay
- Total Cost \% of Pay
11.23\%
2.79\%
(0.95\%)
0.54\%
10.28\%
3.33\%
7.00\%
8.37\% 4.00\%
1.61\% 11.00\%
9.98\%
18.23\%
11.16\%
3.05\%
2.15\%
21.28\%
13.31\%

Employer Cost Portion
61.6\%
25.0\% (31.1\%)
25.0\% 48.3\%
25.0\%

Employee Cost Portion
38.4\%
75.0\% 131.1\%
75.0\%
51.7\% 75.0\%

|  | Projected Unit Credit |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Employer Normal Cost | $\$ 3,691$ | $\$ 1,324$ | $\$(1,228)$ | $\$ 241$ | $\$ 2,463$ | $\$ 1,565$ |
| Employee Normal Cost | $\underline{3,574}$ | $\underline{3,969}$ | 2,613 | $\underline{722}$ | $\underline{7,187}$ | $\underline{4,691}$ |
| Total Normal Cost | 8,265 | 5,293 | 1,385 | 963 | 9,650 | 6,256 |
| Accrued Liability | 14,000 | - | - | - | 14,000 | - |
| 15-Year Amortization of AL | 1,168 | - | - | $\bar{z}$ | $\underline{1,168}$ | - |
| Total Cost | 9,433 | 5,293 | 1,385 | 963 | 10,818 | 6,256 |

Cost as \% of Base + Bonus

- Employer Cost \% of Pay
- Employee Normal Cost \% of Pay
- Total Cost \% of Pay

| $7.44 \%$ | $2.03 \%$ | $(1.88 \%)$ | $0.37 \%$ | $5.56 \%$ | $2.40 \%$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $7.00 \%$ | $\underline{6.07 \%}$ | $\underline{4.00 \%}$ | $\underline{1.11 \%}$ | $\underline{11.00 \%}$ | $\underline{7.18 \%}$ |
| $14.44 \%$ | $8.10 \%$ | $2.12 \%$ | $1.47 \%$ | $16.56 \%$ | $9.57 \%$ |
| $51.5 \%$ | $25.0 \%$ | $(88.7 \%)$ | $25.0 \%$ | $33.6 \%$ | $25.0 \%$ |
| $48.5 \%$ | $75.0 \%$ | $188.7 \%$ | $75.0 \%$ | $66.4 \%$ | $75.0 \%$ |
|  |  |  |  |  |  |


| Employer Cost Portion | $51.5 \%$ | $25.0 \%$ | $(88.7 \%)$ | $25.0 \%$ | $33.6 \%$ | $25.0 \%$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Employee Cost Portion | $48.5 \%$ | $75.0 \%$ | $188.7 \%$ | $75.0 \%$ | $66.4 \%$ | $75.0 \%$ |
| Employee contributions payable bi-weekly |  |  |  |  |  |  |
| Employer contributions payable July $15^{\text {th }}$ |  |  |  |  |  |  |
| Employee contributions allocated to OPEB paid to Retirement Trust. |  |  |  |  |  |  |

SECTION 2
SUMMARY OF RESULTS
Comparison of Estimated Contribution Rates:
Current \& Proposed (2\% @ 65, Actuarial Early, Base Pay Only) Formulas
All Amounts are Average Per New Employee
Blue Italics amounts developed from Segal's reports

|  | Pension: <br> Current <br> Plan | Pension: <br> Proposed <br> 2\% @ 65 <br> Base Pay | OPEB: <br> Current <br> Plan | OPEB: <br> Proposed Plan | Total: Current Plan | Total: Proposed Plan |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Base Pay | \$64,030 | \$64,030 | \$64,030 | \$64,030 | \$64,030 | \$64,030 |
| Base Pay + Included Bonus | 65,337 | 65,337 | 65,337 | 65,337 | 65,337 | 65,337 |
|  |  |  | Entry Ag | e Normal |  |  |
| Employer Normal Cost | \$ 7,337 | \$ 1,789 | \$(620) | \$ 351 | \$6,717 | \$ 2,139 |
| Employee Normal Cost | 4,574 | 5,360 | 2,613 | 1,052 | 7,187 | 6,412 |
| Total Normal Cost | 11,911 | 7,148 | 1,993 | 1,403 | 13,904 | 8,551 |
| Cost as \% of Base Pay |  |  |  |  |  |  |
| - Employer Cost \% of Pay <br> - Employee Normal Cost \% | $11.46 \%$ | 2.79\% | (0.97\%) | 0.55\% | 10.49\% | 3.34\% |
| of Pay <br> - Total Cost \% of Pay | $\frac{7.14 \%}{18.60 \%}$ | $\begin{array}{r} \frac{8.37 \%}{11.16 \%} \end{array}$ | $\frac{4.08 \%}{3.11 \%}$ | $\frac{1.64 \%}{2.19 \%}$ | $\frac{11.22 \%}{21.71 \%}$ | $\frac{10.01 \%}{13.35 \%}$ |
| Employer Cost Portion | 61.6\% | 25.0\% | (31.1\%) | 25.0\% | 48.3\% | 25.0\% |
| Employee Cost Portion | 38.4\% | 75.0\% | 131.1\% | 75.0\% | 51.7\% | 75.0\% |
|  | Projected Unit Credit |  |  |  |  |  |
| Employer Normal Cost | \$3,691 | \$ 1,299 | \$ $(1,228)$ | \$ 241 | \$2,463 | \$ 1,540 |
| Employee Normal Cost | 4,574 | 3,893 | 2,613 | 722 | 7,187 | 4,615 |
| Total Normal Cost | 8,265 | 5,192 | 1,385 | 963 | 9,650 | 6,155 |
| Accrued Liability | 14,000 | - | - | - | 14,000 | - |
| 15-Year Amortization of AL | 1,168 | - | $=$ | $=$ | 1,168 | $=$ |
| Total Cost | 9,433 | 5,192 | 1,385 | 963 | 10,818 | 6,155 |
| Cost as \% of Base Pay |  |  |  |  |  |  |
| - Employer Cost \% of Pay | 7.59\% | 2.03\% | (1.92\%) | 0.38\% | 5.67\% | 2.41\% |
| - Employee Normal Cost \% of Pay | 7.14\% | 6.08\% | 4.08\% | 1.13\% | 11.22\% | 7.21\% |
| - Total Cost \% of Pay | 14.73\% | 8.11\% | 2.16\% | 1.50\% | 16.89\% | 9.61\% |
| Employer Cost Portion | 51.5\% | 25.0\% | (88.7\%) | 25.0\% | 33.6\% | 25.0\% |
| Employee Cost Portion | 48.5\% | 75.0\% | 188.7\% | 75.0\% | 66.4\% | 75.0\% |
| Employee contributions payable bi-weekly Employer contributions payable July $15^{\text {th }}$ |  |  |  |  |  |  |

## SECTION 3

OUTLINE OF Proposed Plan DEsign

|  | Current Pension Plan | Proposed Pension: $\text { 2\% @ } 65$ |
| :---: | :---: | :---: |
| Benefit | 2.16\% @ 60 | 2.0 \% @ 65 |
| Maximum benefit | 100\% | 75\% |
| Normal (Unreduced) Retirement | $\begin{aligned} & 55 / 30 \\ & 60 / 10 \\ & 70 / 0 \end{aligned}$ | $\begin{aligned} & \text { 65/10 } \\ & 70 / 0 \\ & \hline \end{aligned}$ |
| Early Retirement Eligibility | 55/10 or /30 yrs | 55/10 |
| Reduction for Early Retirement (see next page) | 1.5\% per year after 55 | Actuarial (7.5\%/yr) |
| Employee Contribution Rate | 7\% for pension | 75\% of Normal Cost 8.37\% pay for pension EAN, 6.07\% PUC |
| Final Average Compensation | 1 year, Base + some bonus, IRS limits | 3 years <br> Base Only OR Base + pensionable bonus specified in MOU, IRS limits |
| COLA | 3\% | 2\% (add'l coverage purchasable) |
| Disability Eligibility | 5 years | 10 years |
| Disability | Greater of: <br> $1 / 3$ of pay OR $1 / 70$ <br> (1.43\%) x pay x svc. <br> No early ret. reduction. | 1/90 (1.11\%) x pay x service. No early ret. reduction. |
| Vested Termination | $\begin{aligned} & \text { - = Early ret. } \\ & \text { - Return of Contr.@ } 55 \text { If } \\ & \text { <10 years } \\ & \hline \end{aligned}$ | $\begin{aligned} & \text { - = Early ret. } \\ & \text { - Return of Contr.@ } 55 \text { If } \\ & <10 \text { years } \\ & \hline \end{aligned}$ |
| Post-Retirement Death | -Married: 50\% J\&S <br> - Else: Life Annuity, Return survivor contr. - $\$ 2,500$ LS death benefit | - Life annuity (add’l coverage purchasable) - $\$ 2,500$ LS death benefit |
| Payment for Unfunded Liabilities (Gains and Losses) | 100\% Employer paid | 50\% Employer, 50\% Employee paid. Ee rate fixed for 3-year periods. Applies to UAL for Tier II benefits only. |

## SECTION 3 <br> OUtline of Proposed Plan Design

| Retirement <br> Age | Current <br> Pension Plan | Proposed <br> Pension: <br> 2\% @ 65 |
| :--- | :---: | :---: |
| Age 55 | $2.00 \%$ | $0.77 \%$ |
| Age 56 | $2.03 \%$ | $0.84 \%$ |
| Age 57 | $2.06 \%$ | $0.92 \%$ |
| Age 58 | $2.10 \%$ | $1.01 \%$ |
| Age 59 | $2.13 \%$ | $1.11 \%$ |
| Age 60 | $2.16 \%$ | $1.22 \%$ |
| Age 61 | $2.16 \%$ | $1.34 \%$ |
| Age 62 | $2.16 \%$ | $1.48 \%$ |
| Age 63 | $2.16 \%$ | $1.63 \%$ |
| Age 64 | $2.16 \%$ | $1.81 \%$ |
| Age 65 | $2.16 \%$ | $2.00 \%$ |
| Age 66 | $2.16 \%$ | $2.00 \%$ |
| Age 67 | $2.16 \%$ | $2.00 \%$ |


| Employee <br> Contribution <br> Rates | $7.0 \%$ | 8.57\% (EAN) |
| :--- | :--- | :--- |



## SECTION 3 <br> OUtLine of Proposed Plan Design

|  | Current OPEB Plan | Proposed OPEB Plan |
| :---: | :---: | :---: |
| Pre-Medicare Benefit | \$1,190/mo cap in 2012 | \$596/mo cap in 2012 |
| Post-Medicare Benefit | \$623.3/mo cap in 2012 | \$596/mo cap in 2012 |
| Dependents Covered | Yes | No |
| Benefit Increase | Kaiser 2-party rate | Lowest 1-party rate |
| Employee Contribution Rate <br> (Paid in Pension Plan) | 4\% for OPEB | 75\% of Normal Cost <br> $1.64 \%$ of base pay ( $1.61 \%$ <br> base + bonus) for OPEB <br> EAN, 1.13\% (1.11\% base <br> + bonus) PUC |
| Non-Medicare "Vesting" | 40\% @10 yrs, 4\%/yr after. <br> 100\% @25 yrs | 40\% @10 yrs, $3 \%$ per yr after. 100\% @30 yrs |
| Medicare "Vesting" | 75\% @10 yrs, 90\% @15 yrs, 100\% @20 yrs | 75\% @10 yrs, 90\% @15 yrs, 100\% @20 yrs |
| Dental Benefit | \$44.14/mo in 2012. Assume 5\%/yr increase | \$44.14/mo in 2012. Assume 5\%/yr increase |
| Dental "vesting" | Same as non-Medicare | Same as non-Medicare |
| Medicare Part B | \$99.9/mo in 2012. <br> Assume 5\%/yr increase | None |
| Eligibility | Same as pension including deferred vested | Same as pension. Minimum commencement age 55 |
| Disability Eligibility | Same as pension | Minimum 55/10 for 40\% subsidy |

## SECTION 4 <br> Actuarial Assumptions

The same assumptions were used as in Segal's 6/30/11 and Proposed New Tier reports, except for the Early Retirement Rates as discussed in Section 7. Key assumptions are summarized below.

| Valuation Date | July 30, 2011 |  |  |
| :---: | :---: | :---: | :---: |
| Actuarial Funding Methods | PUC (Projected Until Credit) with attribution following the accrual rate. EAN (Entry Age Normal) with normal cost a level percentage of pay. |  |  |
| Discount Rate | 7.75\% |  |  |
| Early Retirement Rates | Depend on benefit program and age \& service. The average age at retirement produced by each set of rates is shown below. |  |  |
|  |  | Under 30 years | Over 30 years |
|  | Current Plan | 60.2 | 60.2 |
|  | Proposed Pension \& OPEB: 2\% @ 65 | 63.0 | 61.9 |
| Salary Increases | Aggregate payroll increases - 4.25\% Individual - Based on age/service, $11.25 \%$ to $4.65 \%$ per year |  |  |
| Mortality | RP-2000 Combined healthy, set back 2 years for males and 1 year for females |  |  |
| Withdrawal | Based on age/service, $11.25 \%$ to 1.75\%/year |  |  |
| Disability | Based on age, from $0.01 \%$ to 0.2\%/year |  |  |
| Healthcare Trend | Medical: $8.75 \%$ for 2012-2013, decreasing $1 ⁄ 2 \%$ per year to $5 \%$ after 8 years. <br> Dental: 5\% <br> Medicare Part B: 5\% after 2012-3 |  |  |
| Health Care Participation at Retirement | Based on service:$65 \%$ @ 10 yrs <br> $80 \%$ @ 15 yrs <br> $90 \%$ @ 20 yrs <br> $95 \%>25 \mathrm{yrs}$ |  |  |
| Marriage \% | Pension - 76\% of males, $50 \%$ of females married, husbands 3 years older than wives. <br> OPEB - $60 \%$ of males, $30 \%$ of females cover dependents. Male employees 4 years older, female employees 2 years younger than their spouses. |  |  |
| Benefit commencement (vested terminated) | Age 57 |  |  |

## SECTION 5 <br> PARTICIPANT DATA

This study uses data based on participants hired during the three years preceding June 30, 2011. A summary of the participant data follows:

|  | Distribution of Study Participants by Entry Age and Salary |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \text { Under } \\ \$ 25,000 \end{gathered}$ | $\begin{gathered} \$ 25,000 \\ \text { to } \\ \$ 50,000 \end{gathered}$ | $\begin{aligned} & \$ 50,000 \\ & \text { to } \\ & \$ 75,000 \end{aligned}$ | $\begin{gathered} \$ 75,000 \\ \text { to } \\ \$ 100,000 \end{gathered}$ | $\begin{gathered} \$ 100,000 \\ \text { to } \\ \$ 125,000 \end{gathered}$ | $\begin{gathered} \$ 125,000 \\ \text { to } \\ \$ 150,000 \end{gathered}$ | $\begin{gathered} \$ 150,000 \\ \text { to } \\ \$ 175,000 \end{gathered}$ | $\begin{gathered} \$ 175,000 \\ \text { to } \\ \$ 200,000 \end{gathered}$ | $\begin{gathered} \text { Over } \\ \$ 200,000 \end{gathered}$ | Total |
| Under 20 | 0 | 12 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| 20-24 | 0 | 63 | 54 | 12 | 0 | 0 | 0 | 0 | 0 | 129 |
| 25-29 | 0 | 93 | 102 | 40 | 3 | 0 | 0 | 0 | 0 | 238 |
| 30-34 | 0 | 41 | 84 | 31 | 3 | 4 | 0 | 0 | 0 | 163 |
| 35-39 | 0 | 38 | 58 | 26 | 3 | 2 | 0 | 1 | 0 | 128 |
| 40-44 | 0 | 29 | 28 | 29 | 3 | 0 | 2 | 0 | 1 | 92 |
| 45-49 | 0 | 33 | 41 | 31 | 2 | 2 | 2 | 1 | 0 | 112 |
| 50-54 | 0 | 23 | 21 | 15 | 3 | 2 | 3 | 1 | 2 | 70 |
| 55-59 | 0 | 13 | 10 | 12 | 2 | 1 | 3 | 2 | 2 | 45 |
| 60-64 | 0 | 8 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 19 |
| Over 65 | 0 | 4 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 6 |
| Total | 0 | 357 | 404 | 199 | 21 | 12 | 11 | 6 | 6 | 1,016 |

## SECTION 6 <br> Tier II Savings Projections

The Cost Projections in this section estimate costs on both the current Projected Unit Credit (PUC) and the future Tier II Entry Age Normal (EAN) funding method. The cost patterns of the two funding methods are very different, making the comparison of costs and benefits between the methods complex. The two charts below illustrate the cost patterns of the two funding methods. These charts use actual valuation projections of Normal Cost for one employee, and so take into account probabilities of retirement and the decreasing likelihood that the participant will remain employed at the later ages. The dollar amount of Normal Cost declines after retirement eligibility because a portion of the employee is assumed to have already retired.



## SECTION 6 <br> Tier II SAvings Projections

In projecting the Tier II payroll, we used the same actuarial assumptions as in the actuarial valuation to project the payroll of the Tier I group, taking into account the termination and retirement rates as well as assumed salary increases. Also, we assumed that during the period of no total payroll growth that current employees would receive no cost-of-living pay increase (but would continue to receive promotion increases).

The chart below shows Tier II payroll as a percentage of total payroll.


## SECTION 6 <br> Tier II SAvings Projections

The following chart estimates the savings from implementing the proposed Tier II benefits. The columns headed "Tier II Savings (Actual)" show the difference between the cost of the current plan benefits, as currently funded using the PUC funding method, and the proposed Tier II funded on the EAN method. The columns headed "Tier II Savings (EAN) show the difference between the current benefits and the proposed Tier II benefits if both were funded using the EAN method.

| Estimated Savings (\$000's) |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| YR | FY | PAYROLL GROWTH | BASE <br> PAY- <br> ROLL | $\begin{array}{\|l\|} \hline \text { TIER } \\ \text { II \% } \\ \text { PAY- } \\ \text { ROLL } \\ \hline \end{array}$ | TIER II PAYROLL | TIER II SAVINGS <br> (Actual) |  | TIER II SAVINGS (EAN) |  |
|  |  |  |  |  |  | ANNUAL | $\begin{aligned} & \text { CUMU- } \\ & \text { LATIVE } \end{aligned}$ | ANNUAL | $\begin{aligned} & \text { CUMU- } \\ & \text { LATIVE } \end{aligned}$ |
| 1 | 2013 | 0.00\% | 1,817,662 | 4\% | 67,367 | 1,502 | 1,502 | 4,682 | 4,682 |
| 2 | 2014 | 0.00\% | 1,817,662 | 8\% | 136,678 | 3,386 | 4,889 | 9,499 | 14,181 |
| 3 | 2015 | 0.00\% | 1,817,662 | 11\% | 207,949 | 5,699 | 10,588 | 14,452 | 28,634 |
| 4 | 2016 | 0.00\% | 1,817,662 | 16\% | 283,423 | 8,522 | 19,110 | 19,698 | 48,332 |
| 5 | 2017 | 0.00\% | 1,817,662 | 17\% | 312,176 | 10,769 | 29,879 | 21,696 | 70,028 |
| 6 | 2018 | 4.25\% | 1,894,913 | 22\% | 425,062 | 15,156 | 45,035 | 29,542 | 99,570 |
| 7 | 2019 | 4.25\% | 1,975,447 | 28\% | 546,806 | 20,433 | 65,468 | 38,003 | 137,573 |
| 8 | 2020 | 4.25\% | 2,059,403 | 33\% | 679,002 | 26,743 | 92,211 | 47,191 | 184,763 |
| 9 | 2021 | 4.25\% | 2,146,928 | 38\% | 819,567 | 34,140 | 126,351 | 56,960 | 241,723 |
| 10 | 2022 | 4.25\% | 2,238,172 | 43\% | 965,192 | 42,647 | 168,997 | 67,081 | 308,804 |
| 11 | 2023 | 4.25\% | 2,333,295 | 48\% | 1,115,214 | 52,339 | 221,337 | 77,507 | 386,311 |
| 12 | 2024 | 4.25\% | 2,432,460 | 52\% | 1,269,267 | 63,298 | 284,635 | 88,214 | 474,525 |
| 13 | 2025 | 4.25\% | 2,535,839 | 56\% | 1,424,722 | 75,551 | 360,186 | 99,018 | 573,544 |
| 14 | 2026 | 4.25\% | 2,643,612 | 60\% | 1,583,829 | 89,224 | 449,410 | 110,076 | 683,620 |
| 15 | 2027 | 4.25\% | 2,755,966 | 63\% | 1,748,234 | 102,970 | 552,380 | 121,502 | 805,122 |
| 16 | 2028 | 4.25\% | 2,873,094 | 67\% | 1,916,818 | 115,467 | 667,847 | 133,219 | 938,341 |
| 17 | 2029 | 4.25\% | 2,995,201 | 70\% | 2,089,671 | 128,420 | 796,266 | 145,232 | 1,083,573 |
| 18 | 2030 | 4.25\% | 3,122,497 | 73\% | 2,269,178 | 142,202 | 938,469 | 157,708 | 1,241,281 |
| 19 | 2031 | 4.25\% | 3,255,203 | 76\% | 2,457,795 | 158,141 | 1,096,610 | 170,817 | 1,412,098 |
| 20 | 2032 | 4.25\% | 3,393,549 | 78\% | 2,653,146 | 175,088 | 1,271,698 | 184,394 | 1,596,491 |
| 21 | 2033 | 4.25\% | 3,537,775 | 81\% | 2,855,257 | 190,178 | 1,461,876 | 198,440 | 1,794,932 |
| 22 | 2034 | 4.25\% | 3,688,130 | 83\% | 3,064,089 | 205,081 | 1,666,957 | 212,954 | 2,007,886 |
| 23 | 2035 | 4.25\% | 3,844,876 | 85\% | 3,277,472 | 220,003 | 1,886,960 | 227,784 | 2,235,670 |
| 24 | 2036 | 4.25\% | 4,008,283 | 87\% | 3,494,302 | 235,651 | 2,122,611 | 242,854 | 2,478,524 |
| 25 | 2037 | 4.25\% | 4,178,635 | 89\% | 3,719,586 | 251,233 | 2,373,844 | 258,511 | 2,737,035 |
| 26 | 2038 | 4.25\% | 4,356,227 | 91\% | 3,954,290 | 266,521 | 2,640,365 | 274,823 | 3,011,858 |
| 27 | 2039 | 4.25\% | 4,541,367 | 92\% | 4,195,988 | 282,114 | 2,922,479 | 291,621 | 3,303,480 |
| 28 | 2040 | 4.25\% | 4,734,375 | 94\% | 4,442,743 | 298,311 | 3,220,790 | 308,771 | 3,612,250 |
| 29 | 2041 | 4.25\% | 4,935,586 | 95\% | 4,692,460 | 315,663 | 3,536,453 | 326,126 | 3,938,376 |
| 30 | 2042 | 4.25\% | 5,145,348 | 96\% | 4,943,534 | 333,771 | 3,870,224 | 343,576 | 4,281,952 |
| Current present value of 30 -year savings using $7.75 \%$ discount rate |  |  |  |  |  |  | \$ 806,690 |  | \$ 967,625 |
| Current present value of 30 -year savings using $3.75 \% * *$ discount rate |  |  |  |  |  |  | \$1,734,523 |  | \$1,985,351 |

* Figures are provided for illustrative purposes only and are based on various assumptions, including annual growth, payroll, and Tier II \% of payroll. ** Approximation of GASB 68 AA Bond rate.


## SECTION 7

## EARLY RETIREMENT RATES

Bartel Associates developed proposed early retirement rates under which participants retire, on average, at the age where their benefit under the proposed formula is the same percentage of pay as under the current formula. Those rates were used in our valuation of the proposed New Tier II benefits. We believe these rates are appropriate to use until an experience study can be completed.

The chart below compares the two sets of rates. Rather than show the actual rate table, we show the number of employees remaining active at each age. The blue horizontal line marks $50 \%$. Where this line crosses the retirement rate curves is the point where half of the participants have retired.


## SECTION 8 <br> Cost-Sharing of Unfunded Payment

In the future, if actuarial assumptions are not exactly met, the Plan will develop an unfunded or an overfunded actuarial liability (UAL), as the plan assets will not exactly equal the Actuarial Accrued Liability (AAL). The City believes that the employees should bear a portion of the cost of the required amortization payments on the UAL. We agree that this is appropriate since the UAL would not exist if the Normal Cost payments had always been exactly correct. If a UAL exists it means that on average, past Normal Costs have been too small, and thus employees have benefitted from a lower Normal Cost rate than otherwise.

The proposed Tier II includes the provision that $50 \%$ of the amortization payments attributable to the Tier II participants be allocated to employees as additional required employee contributions. To minimize fluctuations, the employee contribution rate is determined every 3 years as the average of the previous 3 years' amortization payments.

We offer the following comments on cost sharing of amortization payments.
"Generational equity" is one consideration. The employees who benefitted from lower Normal Cost rates will not be exactly the same employees who must make increased contributions to amortize the UAL. But similarly, the taxpayers who benefitted from the City's lower normal cost rates are not the same ones who must pay higher taxes for the additional UAL amortization.

Significance. In the early years of Tier II, the group's assets and liabilities are small in dollar amount as well as a percentage of Tier II payroll. The dollar amounts of any gains and losses and amortization payments will also be small and perhaps immaterial. However, as the plan's assets and liabilities grow these have the potential to become much more significant.

Calculation of Amortization Payments. The illustrations that follow assume that amortization payments will continue to be calculated as in the past, as an amortization of the UAL attributable to Tier II employees, and spread over a period of years as a level percentage of Tier II payroll. In the past, and in our illustrations, that calculation has assumed payroll will grow at $4.25 \%$ per year. However, the Tier II group is expanding and so its payroll increases much faster than 4.25\% per year. The resulting amortization payments actually decrease over time as a percentage of Tier II total payroll.

Administration. In order to implement any cost sharing, the assets attributable to Tier II participants will need to be tracked separately, as will all actuarial gains and losses and amortization bases and payments. In considering a cost-sharing methodology, we believe ease of administration is very important. We believe any attempt to segregate gains and losses by type (asset losses, liability/demographic losses, changes in actuarial assumptions, etc.) will unnecessarily complicate the calculation. Similarly, we believe the use of a "corridor" where a certain level of gains or losses would not be allocated to employee contributions would be difficult to develop the required employee contribution rate, and is not necessary if a smoothing method is used as proposed.

There are several sets of illustrations to show how this would work under various scenarios.

## SECTION 8 <br> Cost-Sharing of Unfunded Payment

| Scenario: Sample: One-year large asset loss average to 0. |  |  |  |
| :---: | :---: | :---: | :---: |
| Percentage (Gain) or Loss in each Year |  |  |  |
|  |  |  | Assumption |
|  |  | Assets |  |
| 2013 | 0\% | 0\% | 0\% |
| 2014 | 0\% | 0\% | 0\% |
| 2015 | 0\% | 0\% | 0\% |
| 2016 | 0\% | 0\% | 0\% |
| 2017 | 0\% | 0\% | 0\% |
| 2018 | 0\% | 0\% | 0\% |
| 2019 | 0\% | 0\% | 0\% |
| 2020 | 0\% | 0\% | 0\% |
| 2021 | 0\% | 40\% | 0\% |
| 2022 | 0\% | 0\% | 0\% |
| 2023 | 0\% | 0\% | 0\% |
| 2024 | 0\% | 0\% | 0\% |
| 2025 | 0\% | 0\% | 0\% |
| 2026 | 0\% | 0\% | 0\% |
| 2027 | 0\% | 0\% | 0\% |
| 2028 | 0\% | 0\% | 0\% |
| 2029 | 0\% | 0\% | 0\% |
| 2030 | 0\% | 0\% | 0\% |
| 2031 | 0\% | 0\% | 0\% |
| 2032 | 0\% | 0\% | 0\% |
| 2033 | 0\% | 0\% | 0\% |
| 2034 | 0\% | 0\% | 0\% |
| 2035 | 0\% | 0\% | 0\% |
| 2036 | 0\% | 0\% | 0\% |
| 2037 | 0\% | 0\% | 0\% |
| 2038 | 0\% | 0\% | 0\% |
| 2039 | 0\% | 0\% | 0\% |
| 2040 | 0\% | 0\% | 0\% |
| 2041 | 0\% | 0\% | 0\% |
| 2042 | 0\% | 0\% | 0\% |




## SECTION 8 <br> Cost-Sharing of Unfunded Payment

| Scenario: Sample: Fluctuating Gains and Losses, |  |  |  |
| :---: | :---: | :---: | :---: |
| average to 0. |  |  |  |
| Percentage (Gain) or Loss in each Year |  |  |  |
| 2013 | $2 \%$ | Assets |  |




## SECTION 8 <br> Cost-Sharing of Unfunded Payment

| Scenario: Fluctuating Gains and Losses, opposite direction to previous scenario |  |  |  |
| :---: | :---: | :---: | :---: |
| Percentage (Gain) or Loss in each Year |  |  |  |
|  |  |  | Assumption |
|  |  | Assets | Change |
| 2013 | -2\% | 0\% | 0\% |
| 2014 | -2\% | 0\% | 0\% |
| 2015 | -2\% | 0\% | 0\% |
| 2016 | -2\% | 0\% | 0\% |
| 2017 | -2\% | 0\% | 0\% |
| 2018 | 3\% | 0\% | 0\% |
| 2019 | 3\% | 0\% | 0\% |
| 2020 | 3\% | 0\% | 0\% |
| 2021 | 3\% | 0\% | 0\% |
| 2022 | 3\% | 0\% | 0\% |
| 2023 | -1\% | 0\% | 0\% |
| 2024 | -1\% | 0\% | 0\% |
| 2025 | -1\% | 0\% | 0\% |
| 2026 | -1\% | 0\% | 0\% |
| 2027 | -1\% | 0\% | 0\% |
| 2028 | 2\% | 0\% | 0\% |
| 2029 | 2\% | 0\% | 0\% |
| 2030 | 2\% | 0\% | 0\% |
| 2031 | 2\% | 0\% | 0\% |
| 2032 | 2\% | 0\% | 0\% |
| 2033 | -2\% | 0\% | 0\% |
| 2034 | -2\% | 0\% | 0\% |
| 2035 | -2\% | 0\% | 0\% |
| 2036 | -2\% | 0\% | 0\% |
| 2037 | -2\% | 0\% | 0\% |
| 2038 | 2\% | 0\% | 0\% |
| 2039 | 2\% | 0\% | 0\% |
| 2040 | -1\% | 0\% | 0\% |
| 2041 | 0\% | 0\% | 0\% |
| 2042 | 0\% | 0\% | 0\% |




## SECTION 8 <br> Cost-Sharing of Unfunded Payment

| Scenario: Persistent Asset Losses |  |  |  |
| :---: | :---: | :---: | :---: |
| Percentage (Gain) or Loss in each Year |  |  |  |
|  |  |  | Assumption |
|  |  | Assets | Change |
| 2013 | 0\% | 0\% | 0\% |
| 2014 | 0\% | 0\% | 0\% |
| 2015 | 0\% | 0\% | 0\% |
| 2016 | 0\% | 0\% | 0\% |
| 2017 | 0\% | 0\% | 0\% |
| 2018 | 0\% | 0\% | 0\% |
| 2019 | 0\% | 0\% | 0\% |
| 2020 | 0\% | 0\% | 0\% |
| 2021 | 0\% | 0\% | 0\% |
| 2022 | 0\% | 30\% | 0\% |
| 2023 | 0\% | 25\% | 0\% |
| 2024 | 0\% | 5\% | 0\% |
| 2025 | 0\% | -5\% | 0\% |
| 2026 | 0\% | 0\% | 0\% |
| 2027 | 0\% | 5\% | 0\% |
| 2028 | 0\% | -5\% | 0\% |
| 2029 | 0\% | -2\% | 0\% |
| 2030 | 0\% | -2\% | 0\% |
| 2031 | 0\% | -2\% | 0\% |
| 2032 | 0\% | -2\% | 0\% |
| 2033 | 0\% | 2\% | 0\% |
| 2034 | 0\% | 2\% | 0\% |
| 2035 | 0\% | 2\% | 0\% |
| 2036 | 0\% | 2\% | 0\% |
| 2037 | 0\% | 2\% | 0\% |
| 2038 | 0\% | 0\% | 0\% |
| 2039 | 0\% | 0\% | 0\% |
| 2040 | 0\% | 0\% | 0\% |
| 2041 | 0\% | 0\% | 0\% |
| 2042 | 0\% | 0\% | 0\% |




