



500 North Broadway, Suite 1750  
St. Louis, MO 63102  
**Tel** +1 314 231.3031  
**Fax** +1 314 231.0249  
www.milliman.com

July 2, 2019

Ms. Laura Rider  
City of Ladue  
9345 Clayton Road  
St. Louis, MO 63124

***RE: City of Ladue Non-Uniform Pension Plan –  
Section 105.665 Cost Statement***

Dear Ms. Rider:

The purpose of this letter is to provide the City of Ladue with a cost statement that is required under the Missouri Revised Statute Section 105.665 in connection with the proposed plan changes.

A summary of the proposed “changes in plan benefits” that are subject to this statement are as follows:

The proposed changes are to update the benefit multiplier from 1.25% to 1.5% times years of service (for all service), add an unreduced retirement age of age 60 with at least 5 years of service, and add a COLA not to exceed 2.0% per year with a 20% lifetime cap. The proposed changes will only apply to employees who are active on or after September 1, 2019. (See attached Exhibit 3).

This cost statement is based upon the January 1, 2019 valuation results using the actuarial methods and assumptions employed in that report as required by 105.665.2 except as specifically noted above. For the purpose of this cost statement, we have assumed that the benefit provision changes were effective as of the 1/1/2019 valuation date.

Our cost statement, numbered to correspond with Section 105.665, follows below:

1. The level percent of pay normal cost of plan benefits currently in effect is \$167,334 or 8.6% of active payroll.
2. Amortization of Unfunded Actuarial Accrued Liability is \$48,310 or 2.5% of active payroll.

3. The total employer contribution rate from items one and two above, with interest to expected time of payment is \$218,921 or 11.3% of active payroll.
4. The City is paying the total contribution rate.
5. As of the January 1, 2019 Actuarial Valuation, the plan's actuarial value of assets is \$5,014,047; the market value of assets is \$4,617,332; the actuarial accrued liability is \$5,423,766; the funded ratio is 92.4%.
6. The estimated actuarially determined employer post-change contribution rate is \$340,746 or 17.6% of active payroll.
7. A ten-year projection of annual plan costs and funded ratios for both: i) the current plan and ii) the current plan as modified by the proposed legislation is presented in Exhibit 2. The funded ratio under the proposed plan decreased initially, and by the end of the projection period the proposed plan is projected to have a lower funded percentage than the current plan.
8. The proposed change does not directly mandate such additional contributions. However, the City has shown a history of contributing at or above the actuarially determined contribution.
9. The proposed change is not projected to impair the ability of the plan to meet the obligations.
10. The actuarial assumptions used in the January 1, 2019 actuarial valuation are contained in the attached pages from the January 1, 2019 Actuarial Valuation Report. Any changes to the assumptions warranted by the proposed plan changes are presented in Exhibit 3.
11. Section 105.665 requires that:
  - a. all assumptions used in this cost study be those used in the most recent actuarial valuation, and
  - b. the actuary certify that the assumptions used in the cost study produce results which in aggregate, are reasonable

Modifications to the assumptions are allowed to be modified if the nature of the proposed plan changes warrant alternate assumptions. For the purpose of this cost statement, the change in expected retirement rates are presented in Exhibit 3.
12. The actuarial funding method used in preparing the valuation is described in the attached pages from the January 1, 2019 Actuarial Valuation Report.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the City. This information includes, but is not limited to, Plan documents and

provisions, employee data, and financial information. Since the results are dependent on the integrity of the data supplied, the results can be expected to differ if the underlying data is incomplete or missing. It should be noted that if any data or other information is inaccurate or incomplete, our calculations may need to be revised.

Since the valuation results are dependent on the integrity of the data supplied, the results can be expected to differ if the underlying data is incomplete or missing. It should be noted that if any data or other information is inaccurate or incomplete, our calculations may need to be revised.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the principles prescribed by the Actuarial Standards Board and the Code of Professional Conduct and Qualification Standards for Public Statements of Actuarial Opinion of the American Academy of Actuaries. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Actuarial computations included in this report are for the exclusive purposes cited in this report. Determinations for purposes other than those specifically referenced in this report may be significantly different. Accordingly, additional determinations may be needed for other purposes, such as judging benefit security on a settlement basis.

These cost estimates are subject to the uncertainties of a regular actuarial valuation; the costs are inexact because they are based on assumptions that are themselves necessarily inexact, even though we consider them reasonable. Thus, the emerging costs may vary from those presented in this letter to the extent actual experience differs from that projected by the actuarial assumptions.

We have not explored any legal issues with respect to the proposed plan changes. We are not attorneys and cannot give legal advice on such issues.

This report has been prepared for the internal use of and is only to be relied upon by the City; it is not for the use or benefit of any third party for any purpose. No portion of this report may be disclosed to any other party (other than Missouri State legislative and regulatory personnel) without Milliman's prior written consent. In the event such consent is given, the report must be provided in its entirety, unless prior written consent is obtained from Milliman. We recommend that any such party have its own actuary or other qualified professional review this report to ensure that the party understands the assumptions and uncertainties inherent in our estimates. We respectfully submit the following exhibits, and we look forward to discussing them with you.

We are available to address any questions that you may have.

Sincerely,



Michael J. Zwiener, FSA  
Consulting Actuary



William D. Wunningham, EA  
Consulting Actuary

MJZ/WDW

Enclosures: Exhibit 1  
Exhibit 2  
Exhibit 3  
Assumptions and Methods

**The City of Ladue Pension Plan for  
Non-Uniform Employees**

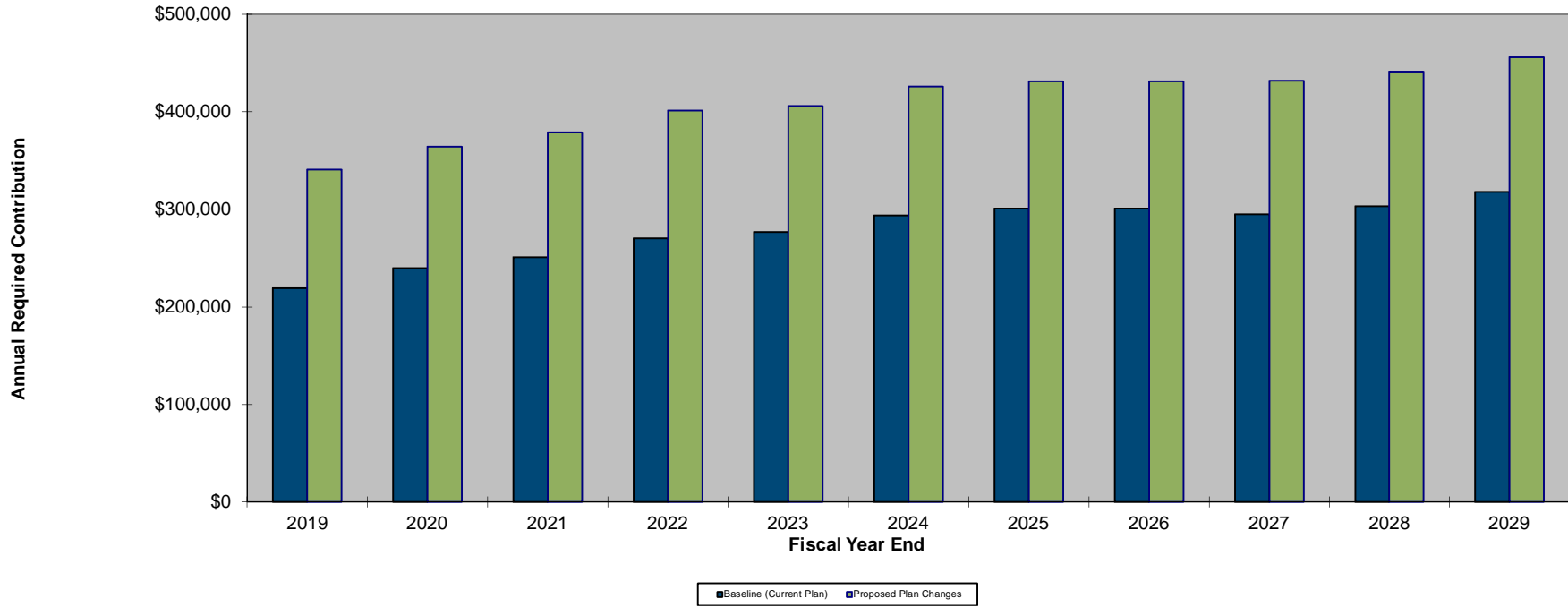
**Impact of Proposed Plan Changes  
as of January 1, 2019**

**Development of Recommended Contribution**

	<u>January 1, 2019</u>	<u>Proposed Change</u>
1. Entry Age Accrued Liability		
a. Active Members	2,446,448	3,257,461
b. Terminated Vested Members	175,781	175,781
c. Retired Members	2,719,777	2,719,777
d. Beneficiaries	81,760	81,760
e. Disabled Members	<u>0</u>	<u>0</u>
f. Total	5,423,766	6,234,779
2. Actuarial Value of Assets	5,014,047	5,014,047
3. Funded Ratio: (2) / (1f)	92.4%	80.4%
4. Entry Age Unfunded Accrued Liability: (1f) - (2)	409,719	1,220,732
5. Entry Age Normal Cost	147,999	194,226
6. Assumed Expenses at Beginning of Year (\$20,000 at mid year)	19,335	19,335
7. Normal Cost Including Expenses: (5) + (6)	167,334	213,561
8. Covered Payroll	1,935,507	1,935,507
9. Amortization of Unfunded Actuarial Accrued Liability	48,310	119,856
10. Recommended Contribution at Beginning of Year: (7) + (9)	215,644	333,417
11. Recommended Contribution, with Interest to Expected Payment Date	218,921	340,746
12. Recommended Contribution as a Percentage of Payroll	11.3%	17.6%

*This work product was prepared solely for the City of Ladue for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.*

## The City of Ladue Non-Uniform Pension Plan Proposed Plan Changes as of January 1, 2019



	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>
<b>Baseline (Current Plan)</b>											
City DB Contributions	\$219,000	\$240,000	\$251,000	\$270,000	\$277,000	\$294,000	\$301,000	\$301,000	\$295,000	\$303,000	\$318,000
Accrued Liability	\$5,424,000	\$5,646,000	\$5,869,000	\$6,070,000	\$6,333,000	\$6,552,000	\$6,832,000	\$7,133,000	\$7,452,000	\$7,770,000	\$8,111,000
Actuarial Value of Assets	\$5,014,000	\$5,120,000	\$5,292,000	\$5,443,000	\$5,589,000	\$5,830,000	\$6,140,000	\$6,477,000	\$6,839,000	\$7,205,000	\$7,599,000
Unfunded Accrued Liability	\$410,000	\$526,000	\$578,000	\$628,000	\$744,000	\$722,000	\$692,000	\$656,000	\$613,000	\$564,000	\$512,000
Funded Percentage	92.4%	90.7%	90.2%	89.7%	88.3%	89.0%	89.9%	90.8%	91.8%	92.7%	93.7%
Actual Asset Return	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%
<b>Proposed Plan Changes</b>											
City DB Contributions	\$341,000	\$364,000	\$379,000	\$401,000	\$406,000	\$426,000	\$431,000	\$431,000	\$432,000	\$441,000	\$456,000
Accrued Liability	\$6,235,000	\$6,558,000	\$6,889,000	\$7,202,000	\$7,586,000	\$7,931,000	\$8,333,000	\$8,760,000	\$9,210,000	\$9,673,000	\$10,164,000
Actuarial Value of Assets	\$5,014,000	\$5,241,000	\$5,542,000	\$5,827,000	\$6,120,000	\$6,513,000	\$6,974,000	\$7,467,000	\$7,993,000	\$8,540,000	\$9,121,000
Unfunded Accrued Liability	\$1,221,000	\$1,317,000	\$1,347,000	\$1,374,000	\$1,466,000	\$1,417,000	\$1,359,000	\$1,292,000	\$1,217,000	\$1,134,000	\$1,044,000
Funded Percentage	80.4%	79.9%	80.4%	80.9%	80.7%	82.1%	83.7%	85.2%	86.8%	88.3%	89.7%
Actual Asset Return	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%

*This work product was prepared solely for the City of Ladue for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.*

**The City of Ladue Pension Plan for  
Non-Uniform Employees  
Plan Change Assumption Modifications**

**1. Retirement Rate Prior to  
Plan Changes**

<u>Retirement Age</u>	Rates at Selected Ages: Percent Retiring in <u>The Next Year</u>
60	0%
61	0%
62	30%
63	20%
64	10%
65	100%

**2. Retirement Rate After Plan  
Changes**

<u>Retirement Age</u>	Rates at Selected Ages: Percent Retiring in <u>The Next Year</u>
60	20%
61	10%
62	30%
63	20%
64	10%
65	100%

*This work product was prepared solely for the City of Ladue for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.*

**The City of Ladue Pension Plan for  
Non-Uniform Employees**

**January 1, 2019 Actuarial Valuation**

**Actuarial Assumptions and Methods**

**Interest (adopted 01/01/2013)**

7.0% per annum, compounded annually

**Salary Increases (adopted 01/01/2013)**

4.5% per annum, compounded annually

**Inflation (adopted 01/01/2013)**

2.5% per annum

**Mortality (adopted 01/01/2019)**

Healthy Lives: RP-2014 Healthy Annuitant Mortality Projected Generationally from 2006 using MP-2018 Projection Scale.

Disabled Lives: RP-2014 Disabled Mortality Projected Generationally from 2006 using MP-2018 Projection Scale.

**Withdrawal**

Rates vary by age and gender. Rates at selected ages are:

	Male Percent	Female Percent
<u>Age</u>	<u>Withdrawing</u>	<u>Withdrawing</u>
20	20.0%	22.5%
25	15.0	17.5
30	10.0	12.5
35	7.5	9.0
40	5.0	6.5
45	3.4	4.5
50	2.0	3.0
55	1.0	1.5
60	0.0	0.0

*This work product was prepared solely for the City of Ladue for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.*



The City of Ladue Pension Plan for  
Non-Uniform Employees

January 1, 2019 Actuarial Valuation

Actuarial Assumptions and Methods

**Retirement**

Rates vary by age as follows:

<u>Age</u>	<u>Percent Retiring</u>
62	30%
63	20
64	10
65	100

Terminated vested participants are assumed to retire at Normal Retirement Age.

**Disability**

Rates vary by age and gender. Rates at selected ages are:

<u>Age</u>	<u>Male Percent Becoming Disabled</u>	<u>Female Percent Becoming Disabled</u>
35	0.00	0.00
40	0.05	0.10
45	0.10	0.20
50	0.20	0.30
55	0.31	0.45
60	0.45	0.63
65	0.00	0.00

**Administrative Expenses**

\$20,000 per year

**Marriage**

*This work product was prepared solely for the City of Ladue for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.*

**The City of Ladue Pension Plan for  
Non-Uniform Employees**

**January 1, 2019 Actuarial Valuation**

**Actuarial Assumptions and Methods**

80% of members are assumed to be married at the time of withdrawal, retirement, death or disability. Males are assumed to be 4 years older than their spouses.

**Actuarial Cost Method (adopted 01/01/2013)**

The Entry Age Normal Cost Method on a closed group basis was used. Normal costs are computed as a level percent of pay. The Entry Age Normal Unfunded Accrued Liability (UAL) is amortized on a level dollar basis over a closed 20 year period with future changes in UAL resulting in separate 20-year amortization bases.

**Asset Valuation Method**

An asset valuation method is used to help smooth short term fluctuations in market value. The actuarial value of assets is equal to the prior year's actuarial value of assets adjusted as follows:

1. increased with actual contributions for the year;
2. reduced by actual benefit payments and expenses for the year;
3. increased by expected investment income calculated using the assumed rate of return
4. increased by phased in investment gains/(losses)
5. limited to no less than 80% of market value and no more than 120% of market value

Each year, the amount of investment gain/(loss) to be phased in is equal to the excess of the plan's market value over the sum of the expected asset value and the unrecognized balances of investment gains/(losses) for the previous five years. 20% of this amount plus 20% of the similar amounts calculated in each of the four preceding years are summed and recognized as the amount of phased-in gains recognized in the current year.

**The City of Ladue Pension Plan for  
Non-Uniform Employees**

**January 1, 2019 Actuarial Valuation**

**Summary of Plan Provisions**

A summary of the current primary provisions of the Plan is presented below. A complete description of the provisions can be found in Ordinance 1931.

**Effective Date**

Originally effective January 1, 1968; most recently restated effective November 19, 2007 and amended December 17, 2012.

**Eligibility**

Any regular, full-time, permanent employee of the City of Ladue who is not covered by the City of Ladue Firemen and Policemen's Pension Plan becomes eligible the first day of the month following hire date.

**Employee Contributions**

Employees are no longer required to contribute to the Pension Fund. Contributions accumulate at an interest rate of 4% as established by the Retirement Committee.

**Compensation**

Calendar year compensation paid to an employee by the City of Ladue, including LTD premiums, temporary disability payments, and employee contributions to an eligible deferred compensation plan, cafeteria plan, or transportation expense program.

**Final Average Compensation (FAC)**

Average monthly salary during the highest 36 consecutive months of salary within the last 120 months of employment, or average monthly salary during an employee's entire employment if employed less than 36 months. The FAC for a disabled participant is determined as of the Date of Disability.

**Credited Service**

Completed months of continuous service from date of hire to date of termination, including periods on disability and Family and Medical Leave.

*This work product was prepared solely for the City of Ladue for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.*

**The City of Ladue Pension Plan for  
Non-Uniform Employees**

**January 1, 2019 Actuarial Valuation**

**Summary of Plan Provisions**

**Normal Retirement**

Eligibility: Age 62.

Benefit: 1.25% of FAC multiplied by Credited Service not in excess of 35 years.

Members who terminated on or after January 1, 2000 are also entitled to a refund of any accumulated employee contributions with interest.

**Disability Benefit**

Eligibility: 10 years of Credited Service including period of Disability.

Benefit: The Disability Benefit is paid outside the Plan by the City's Long-Term Disability Plan for disabilities that occur after January 1, 2008. Upon attaining Early or Normal Retirement eligibility, a disabled member is entitled to the Early or Normal Retirement Benefit based on FAC at Date of Disability and Credited Service including the period while on LTD.

**Early Retirement**

Eligibility: Age 55 with 10 years of Credited Service.

Benefit: Accrued Benefit based on FAC and Credited Service at retirement actuarially reduced for early commencement.

Members who terminated on or after January 1, 2000 are also entitled to a refund of any accumulated employee contributions with interest.

**Termination Benefit**

All members who terminated on or after January 1, 2000 are entitled to a refund of any accumulated employee contributions with interest. A member with at least 10 years of Credited Service is also entitled to his Accrued Benefit based on FAC and Credited Service at termination actuarially adjusted for date of retirement.

*This work product was prepared solely for the City of Ladue for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.*

**The City of Ladue Pension Plan for  
Non-Uniform Employees**

**January 1, 2019 Actuarial Valuation**

**Summary of Plan Provisions**

**Late Retirement Benefit**

Accrued Benefit based on FAC and Credited Service at retirement.

Members who terminated on or after January 1, 2000 are also entitled to a refund of any accumulated employee contributions with interest.

**Pre-Retirement Death Benefit**

The spouse of a member who has completed 10 years of Credited Service or attained age 62 is entitled to the amount the spouse would have received had the member retired any time after attaining age 55 and elected the 100% Joint and Survivor Annuity, based on FAC and Credited Service at the time of death.

**Normal Form of Payment**

Joint & 50% Survivor Annuity for married members, Single Life Annuity for single members.

*This work product was prepared solely for the City of Ladue for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.*

### The City of Ladue Pension Plan for Non-Uniform Employees

#### Actuarial Standard of Practice (ASOP 51)

The purpose of this appendix is to identify, assess, and provide illustrations of risks that are significant to the Plan, and in some cases to the Plan's participants.

The results of the actuarial valuation are based on one set of reasonable assumptions. However, it is almost certain that future experience will not exactly match the assumptions. As an example, investments may perform better or worse than assumed in any single year and over any longer time horizon. It is therefore important to consider the potential impacts of these potential differences when making decisions that may affect the future financial health of the Plan, or of the Plan's participants.

In addition, as plans mature they accumulate larger pools of assets and liabilities. This increases the potential risk to plan funding and the finances of those who are responsible for plan funding. As an example, it is more difficult for a plan sponsor to deal with the effects of a 10% investment loss on a plan with \$1 Billion in assets and liabilities than if the same plan sponsor is responsible for a 10% investment loss on a plan with \$1 Million in assets and liabilities. Since pension plans make long-term promises and rely on long-term funding, it is important to consider how mature the plan is today, and how mature it may become in the future.

Actuarial Standard of Practice No. 51 (ASOP 51) addresses these issues by providing actuaries with guidance for assessing and disclosing the risk associated with measuring pension liabilities and the determination of pension plan contributions. Specifically, it directs the actuary to:

- Identify risks that may be significant to the plan.
- Assess the risks identified as significant to the plan.
- Disclose plan maturity measures and historical information that are significant to understanding the plan's risks.

ASOP 51 states that if in the actuary's professional judgment, a more detailed assessment would be significantly beneficial in helping the individuals responsible for the plan to understand the risks identified by the actuary, then the actuary should recommend that such an assessment be performed.

This appendix uses the framework of ASOP 51 to communicate important information about: significant risks to the Plan, the Plan's maturity, and relevant historical Plan data.

#### **Maturity Risk**

- **Definition:** This is the potential for total plan liabilities to become more heavily weighted toward inactive liabilities over time.

*This work product was prepared solely for the City of Ladue for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.*

**The City of Ladue Pension Plan for  
Non-Uniform Employees**

**Actuarial Standard of Practice (ASOP 51)**

- Identification: The Plan is subject to maturity risk because as Plan assets and liabilities continue to grow, the impact of any gains or losses on the assets or liabilities also becomes larger.
- Assessment:
  - Currently assets are equal to 23 times last year's contributions indicating a one-year asset loss of 10% would be equal to 2.3 times last year's contributions.

**Retirement Risk**

- Definition: This is the potential for participants to retire and receive subsidized benefits more valuable than expected.
- Identification: This plan has valuable early retirement benefits. If participants retire at earlier ages than anticipated by the actuarial assumptions, it is expected that additional funding will be required.

**Investment Risk**

- Definition: The potential that investment returns will be different than expected.
- Identification: To the extent that actual investment returns differ from the assumed investment return, the plan's future assets, funding contributions and funded status may differ significantly from those presented in this valuation.

**Interest Rate Risk**

- Definition: The potential that interest rates will be different than expected.
- Identification: The pension liabilities reported herein have been calculated by computing the present value of expected future benefit payments using the interest rate(s) described in the appendix. If interest rate(s) in future valuations are different from those used in this valuation, future pension liabilities, funding contributions and funded status may differ significantly from those presented in this valuation. As a general rule, using a higher interest rate to compute the present value of future benefit payments will result in a lower pension liability, and vice versa. One aspect that can be used to estimate the impact of different interest rates is the plan's duration.
- Assessment: If the interest rate changes by 1%, the estimated percentage change in pension liability is approximately 13%.

**Demographic Risks**

- Definition: The potential that mortality or other demographic experience will be different than expected.

*This work product was prepared solely for the City of Ladue for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.*

**The City of Ladue Pension Plan for  
Non-Uniform Employees**

**Actuarial Standard of Practice (ASOP 51)**

- Identification: The pension liabilities reported herein have been calculated by assuming that participants will follow patterns of demographic experience (e.g. mortality, withdrawal, disability, retirement, form of payment election, etc.) as described in the appendix. If actual demographic experience or future demographic assumptions are different from what is assumed to occur in this valuation, future pension liabilities, funding contributions and funded status may differ significantly from those presented in this valuation.

*This work product was prepared solely for the City of Ladue for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.*