



City of Ladue Non-Uniform Pension Plan

Actuarial Valuation Report January 1, 2019

Prepared by

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

January 1, 2019 Actuarial Valuation

Contents

	<u>Page</u>
Introduction and Purpose	1
Actuarial Certification	2
Discussion of Valuation Results	5
Summary of Valuation Results	7
Statement of Assets as of January 1, 2019	8
Statement of Income and Disbursements	9
Development of Actuarial Value of Assets	10
Development of Recommended Contribution	11
Determination of Amortization Charges for the Recommended Contribution	12
Determination of (Gain)/Loss for Plan Year Ending December 31, 2018	13
Actuarial Assumptions and Methods	14
Summary of Plan Provisions	17
Summary of Member Data	20
Historical Trends	23
Actuarial Standard of Practice (ASOP 51)	28

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

January 1, 2019 Actuarial Valuation

Introduction and Purpose

In this report, we present the results of the January 1, 2019 actuarial valuation for the City of Ladue Pension Plan for Non-Uniform Employees. The report has been prepared at the request of the City for the sole use of the Retirement Committee of the City of Ladue Pension Plan for Non-Uniform Employees and the City of Ladue as the contributing plan sponsor.

PURPOSES OF THE VALUATION

The actuarial valuation of the Plan is intended to accomplish several purposes:

- The determination of the recommended level of employer contributions for the 2019 calendar year
- Assessment of the relative funded position of the plan on an ongoing basis, i.e., through a comparison of plan assets and projected plan liabilities

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

January 1, 2019 Actuarial Valuation

Actuarial Certification

As requested, we have performed an actuarial valuation of the City of Ladue Pension Plan for Non-Uniform Employees as of January 1, 2019 for determining contributions for the calendar year ending December 31, 2019. Our findings are set forth in this actuary's report. This report reflects the benefit provisions in effect on January 1, 2019.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the City and The Commerce Trust Company. This information includes, but is not limited to, plan provisions, employee data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the Plan have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the Plan and reasonable expectations).

This valuation report is only an estimate of the Plan's financial condition as of a single date. It can neither predict the Plan's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of Plan benefits, only the timing of Plan contributions. While the valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct. Determining results using alternative assumptions is outside the scope of our engagement.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: 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 operation 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 funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements. The City has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in this report.

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Actuarial computations presented in this report are for purposes of determining the recommended funding amounts for the City. The calculations in the enclosed report have been made on a basis consistent with our understanding of the City's funding requirements and goals as well as our understanding of the plan provisions described on pages 17-19 of this report. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman's work is prepared solely for the internal business use of the City of Ladue. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exceptions:

- (a) The City may provide a copy of Milliman's work, in its entirety, to the Plan's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the Plan.
- (b) The City may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law.

No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

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. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

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We respectfully submit the following report, and we look forward to discussing it with you.

Sincerely,



Michael J. Zwiener, FSA
Consulting Actuary
Joint Board Enrollment #17-03686



William D. Wunningham, EA
Actuary
Joint Board Enrollment #17-06367

MJZ/WDW/jcr

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January 1, 2019 Actuarial Valuation

Discussion of Valuation Results

1. Contribution Recommendation

The results of this valuation are used to determine recommended contribution rates to the Plan for the 2019 calendar year. A comparison of recommended contribution rates for the current and immediately preceding valuations is shown below:

	Actuarial Valuation as of	
	<u>January 1, 2018</u>	<u>January 1, 2019</u>
Applies to Calendar Year	01/01/18-12/31/18	01/01/19-12/31/19
Recommended Contribution (with interest)	\$176,577	\$218,921
Actual Contribution	176,577	N/A

The recommended contribution increased from \$176,577 to \$218,921. The primary reason for this increase was a loss on the actuarial value of assets lower than the assumed rate of 7.0%.

2. Plan Assets

The unaudited market value of plan assets decreased from \$5,039,720 at January 1, 2018 to \$4,617,332 at January 1, 2019. A balance sheet and statement of income and disbursements are presented on pages 8 and 9, respectively. The net market rate of return was -6.5% for the period.

The actuarial value of assets increased from \$4,904,796 at January 1, 2018 to \$5,014,047 at January 1, 2019. The development of the January 1, 2019 actuarial value of assets is presented on page 10. The net actuarial rate of return for the period was 4.3% vs. the assumed rate of 7.0%.

Due to the asset smoothing method used, there are \$396,715 of investment losses that have not yet been recognized in the Actuarial Value of Assets (see page 10).

3. Actuarial Assumptions, Methods and Plan Provisions

The mortality assumption was updated to the RP 2014 mortality tables for employees and annuitants projected generationally under the latest improvement scale MP 2018. The previous valuation used improvement scale MP 2017.

All other actuarial assumptions, methods and plan provisions remained the same as the prior year. Descriptions of these can be found on pages 14-19.

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4. **Plan Population**

The number of active members included in the valuation increased from 27 in the previous valuation to 29 in the current valuation. The number of members in pay status remained at 24. The number of deferred vested members remained at 4. A detailed reconciliation can be found on page 22.

5. **GASB Statement Changes**

GASB Statement Nos. 25 and 27 have been replaced with Statement Nos. 67 and 68 effective for the Plan fiscal year ending 12/31/2014 with respect to reporting by the Plan and fiscal year ending 12/31/2015 for reporting by the City. The GASB disclosures are presented in a separate report.

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

January 1, 2019 Actuarial Valuation

Summary of Valuation Results

	<u>Valuation Date</u> <u>January 1, 2018</u>	<u>Valuation Date</u> <u>January 1, 2019</u>
Number of Members:		
Active	27	29
Receiving Payments	24	24
Terminated Vested	<u>4</u>	<u>4</u>
Total	55	57
Annual Payroll of Members under Normal Retirement Age	1,674,588	1,935,507
Market Value of Assets	5,039,720	4,617,332
Actuarial Value of Assets	4,904,796	5,014,047
Entry Age Accrued Liability	5,256,412	5,423,766
Entry Age Unfunded Accrued Liability	351,616	409,719
Normal Cost	116,283	147,999
Assumed Expenses	20,000	20,000
Amortization of Unfunded Actuarial Accrued Liability	39,508	48,310
Recommended Contribution, with Interest	176,577	218,921

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

January 1, 2019 Actuarial Valuation

Statement of Assets as of January 1, 2019

<u>Assets</u>	<u>Market Value</u>
1. Cash and Equivalents	\$47,632
2. Fixed Income Investments	920,559
3. Corporate Stocks - Domestic	1,897,137
4. Corporate Stocks - International	754,301
5. Alternative Investments	980,583
6. Accounts Receivable	17,120
Total Assets	4,617,332
 <u>Liabilities</u>	
None	
 Net Assets	 <u>\$4,617,332</u>

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

January 1, 2019 Actuarial Valuation

Statement of Income and Disbursements

1. Market Value of Assets as of January 1, 2018	\$5,039,720
2. Income:	
a. City Contributions	200,026
b. Investment Income (Including Realized and Unrealized Capital Gains/Losses)	(391,076)
c. Interest and Dividends	83,824
d. Other Income	0
e. Change in Accrued Income	<u>(2,247)</u>
f. Total Income	(109,473)
3. Expenses	
a. Employee Benefit Distributions	297,133
b. Investment Expenses	15,682
c. Administrative Expenses	<u>100</u>
d. Total Expenses	312,915
4. Net Increase (Decrease) = (2f) - (3d)	(422,388)
5. Market Value of Assets as of December 31, 2018 = (1) + (4)	\$4,617,332
6. Rate of Return	-6.5%

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

January 1, 2019 Actuarial Valuation

Development of Actuarial Value of Assets

1. Actuarial Value of Assets as of January 1, 2018	\$4,904,796
2. Contributions	200,026
3. Benefit Payments	(297,133)
4. Expenses	(100)
5. Expected Return at 7.0%	339,933
6. Expected Actuarial Value of Assets as of December 31, 2018 = (1) + (2) + (3) + (4) + (5)	5,147,522
7. Market Value of Assets as of December 31, 2018	4,617,332
8. Adjustments on Market Value (See Schedule of Market Value Adjustments below)	(133,475)
9. Actuarial Value of Assets as of December 31, 2018 = (6) + (8), but not less than 80% x (7), nor more than 120% x (7)	5,014,047

Schedule of Market Value Adjustments

<u>Year</u>	<u>Gain/(Loss) Base</u>	<u>Unrecognized Balance 1/1/2018</u>	<u>Unrecognized 12/31/2018 Adjustment</u>	<u>Unrecognized Balance 1/1/2019</u>
2014	(12,171)	(2,434)	(2,434)	\$0
2015	(322,151)	(128,861)	(64,431)	(64,430)
2016	(2,848)	(1,708)	(569)	(1,139)
2017	334,909	267,927	66,982	200,945
2018	<u>(665,114)</u>	N/A	<u>(133,023)</u>	<u>(532,091)</u>
Total	N/A	\$134,924	(\$133,475)	(\$396,715)

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

January 1, 2019 Actuarial Valuation

Development of Recommended Contribution

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

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

January 1, 2019 Actuarial Valuation

Determination of Amortization Charges for the Recommended Contribution

<u>Date Incurred</u>	<u>Description</u>	<u>Initial Balance</u>	<u>Initial Amortization Period</u>	<u>Unamortized Base January 1, 2018</u>	<u>Contribution To Base</u>	<u>Unamortized Base January 1, 2019</u>	<u>Amortization Payment</u>
1/1/2013	Initial Unfunded Accrued Liability	836,506	20	716,794	123,816	643,153	73,795
1/1/2014	Experience Gain	(178,383)	20	(158,577)	(26,404)	(143,273)	(15,737)
1/1/2015	Experience Gain	(48,410)	20	(44,491)	(7,166)	(40,439)	(4,271)
1/1/2016	Experience Gain	(13,639)	20	(12,959)	(2,018)	(11,848)	(1,203)
1/1/2017	Assumption Change	166,383	20	162,354	24,627	149,092	14,678
1/1/2017	Experience Gain	(128,343)	20	(125,235)	(18,996)	(115,005)	(11,322)
1/1/2018	Assumption Change	(27,198)	20	(27,198)	(4,025)	(25,077)	(2,399)
1/1/2018	Experience Gain	(159,072)	20	(159,072)	(23,545)	(146,662)	(14,033)
1/1/2019	Assumption Change	(12,937)	20	N/A	N/A	(12,937)	(1,141)
1/1/2019	Experience Gain	112,715	20	N/A	N/A	112,715	9,943
	Total	547,622		351,616	66,288	409,719	48,310

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

January 1, 2019 Actuarial Valuation

Determination of (Gain)/Loss for Plan Year Ending December 31, 2018

1. Unfunded Accrued Liability as of January 1, 2018	\$351,616
2. Normal Cost as of January 1, 2018	116,283
3. Assumed Expenses as of January 1, 2018	19,335
4. Interest on (1), (2), and (3) at 7.00%	34,106
5. Employer Contributions for the Prior Plan Year	200,026
6. Interest on (5) at 7.00%	11,373
7. Change in Unfunded Accrued Liability due to Assumption Change	(12,937)
8. Expected Unfunded Actuarial Accrued Liability as of December 31, 2018 = (1) + (2) + (3) + (4) - (5) - (6) + (7)	297,004
9. Entry Age Accrued Liability as of	5,423,766
10. Actuarial Value of Assets as of	5,014,047
11. Unfunded Actuarial Accrued Liability as of December 31, 2018	409,719
12. (Gain)/Loss for Plan Year Ending December 31, 2018 = (11) - (8)	112,715

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EXHIBIT IV

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:

<u>Age</u>	<u>Male Percent Withdrawing</u>	<u>Female Percent 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

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EXHIBIT IV

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

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.

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EXHIBIT IV

January 1, 2019 Actuarial Valuation

Actuarial Assumptions and Methods

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.

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**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.

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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.

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**The City of Ladue Pension Plan for
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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.

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**The City of Ladue Pension Plan for
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January 1, 2019 Actuarial Valuation

Summary of Member Data

	<u>January 1, 2018</u>	<u>January 1, 2019</u>
1. Active Members		
a. Count	27	29
b. Plan Compensation	1,674,588	1,935,507
c. Average Compensation	62,022	66,742
d. Average Age	45.9	47.7
e. Average Service	11.7	11.8
2. Retired Members (Including Beneficiaries and Disableds)		
a. Count	24	24
b. Total Monthly Benefits	\$24,349	\$24,349
c. Average Monthly Benefits	\$1,015	\$1,015
3. Terminated Vested Members		
a. Count	4	4
b. Total Monthly Benefits	\$3,258	\$3,258
c. Average Monthly Benefits	\$815	\$815

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

January 1, 2019 Actuarial Valuation

Distribution of Active Members by Age and by Years of Service
(as of January 1, 2019)

Attained Age	YEARS OF CREDITED SERVICE										Total	
	Under 1 No.	1 to 4 No.	5 to 9 No.	10 to 14 No.	15 to 19 No.	20 to 24 No.	25 to 29 No.	30 to 34 No.	35 to 39 No.	40 and up No.		
Under 25	0	0	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0	0	0
30 to 34	0	2	2	0	0	0	0	0	0	0	0	4
35 to 39	1	1	0	0	0	0	0	0	0	0	0	2
40 to 44	0	2	1	0	1	2	0	0	0	0	0	6
45 to 49	0	3	0	0	2	1	0	0	0	0	0	6
50 to 54	0	0	0	1	0	1	1	0	0	0	0	3
55 to 59	2	2	0	0	0	0	0	0	0	0	0	4
60 to 64	0	1	0	0	0	0	1	0	1	1	1	4
65 to 69	0	0	0	0	0	0	0	0	0	0	0	0
70 and up	0	0	0	0	0	0	0	0	0	0	0	0
Total	3	11	3	1	3	4	2	0	1	1	1	29

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

January 1, 2019 Actuarial Valuation

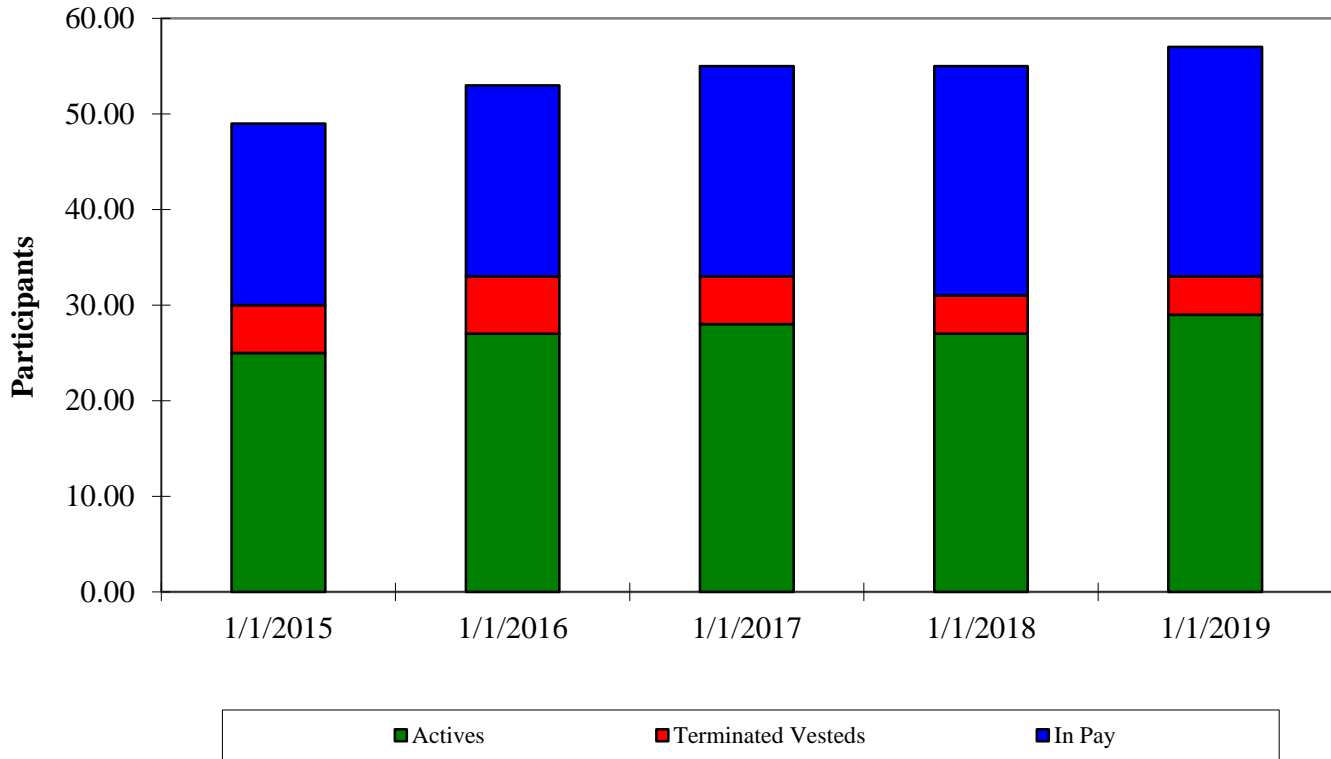
Summary of Changes in Member Data

	<u>Active Members</u>	<u>Members in Pay Status</u>	<u>Terminated Vested Members</u>	<u>Total</u>
Count as of January 1, 2018	27	24	4	55
New Entrants	3	0	0	3
Rehired	0	0	0	0
Retired	0	0	0	0
Became Disabled	0	0	0	0
Lump Sum Payouts	0	0	0	0
Died with Beneficiary	0	0	0	0
New Beneficiaries / Alternate Payees	0	0	0	0
Died without Beneficiary	0	0	0	0
Terminated with Vesting	0	0	0	0
Terminated without Vesting	(1)	0	0	(1)
Data Corrections	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total Changes	<u>2</u>	<u>0</u>	<u>0</u>	<u>2</u>
Count as of January 1, 2019	29	24	4	57

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The City of Ladue Pension Plan for Non-Uniform Employees

Member Data

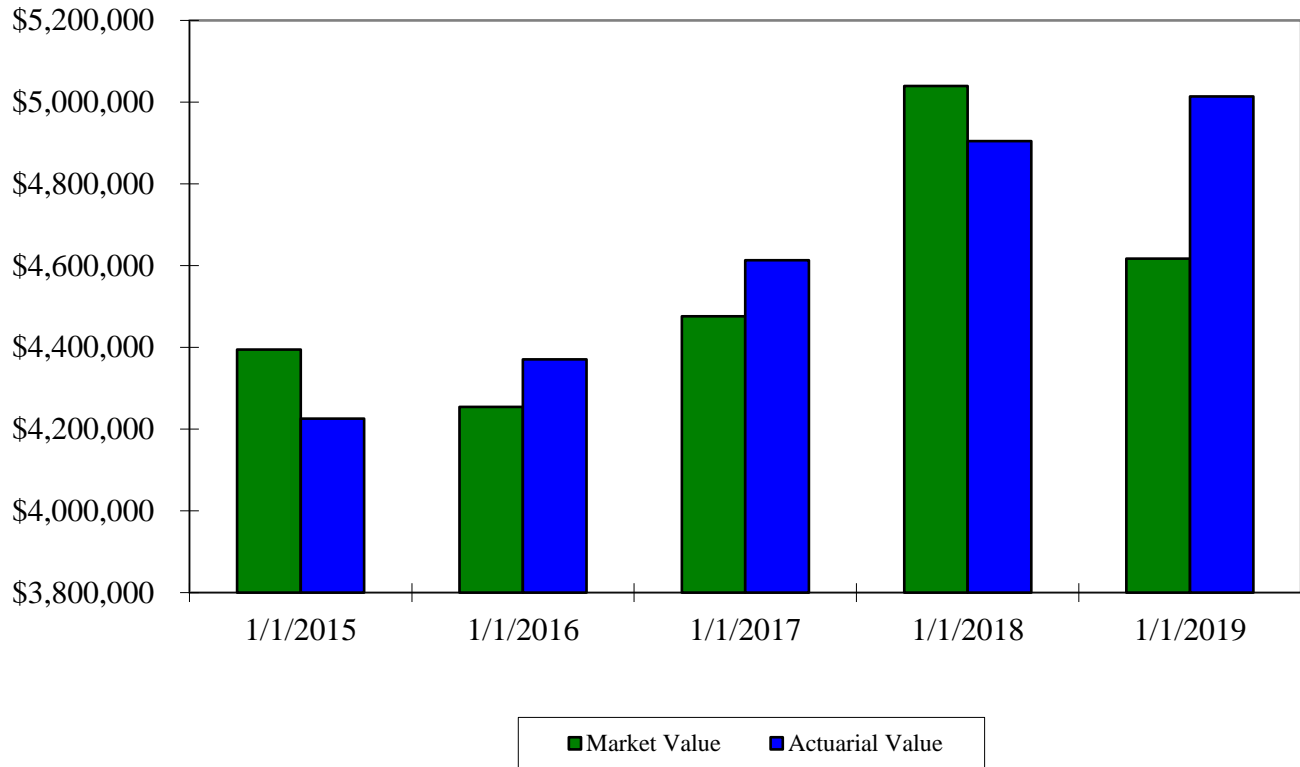


Valuation Date	1/1/2015	1/1/2016	1/1/2017	1/1/2018	1/1/2019
Actives	25	27	28	27	29
Terminated Vesteds	5	6	5	4	4
In Pay	19	20	22	24	24
Total	49	53	55	55	57

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The City of Ladue Pension Plan for Non-Uniform Employees

Total Assets

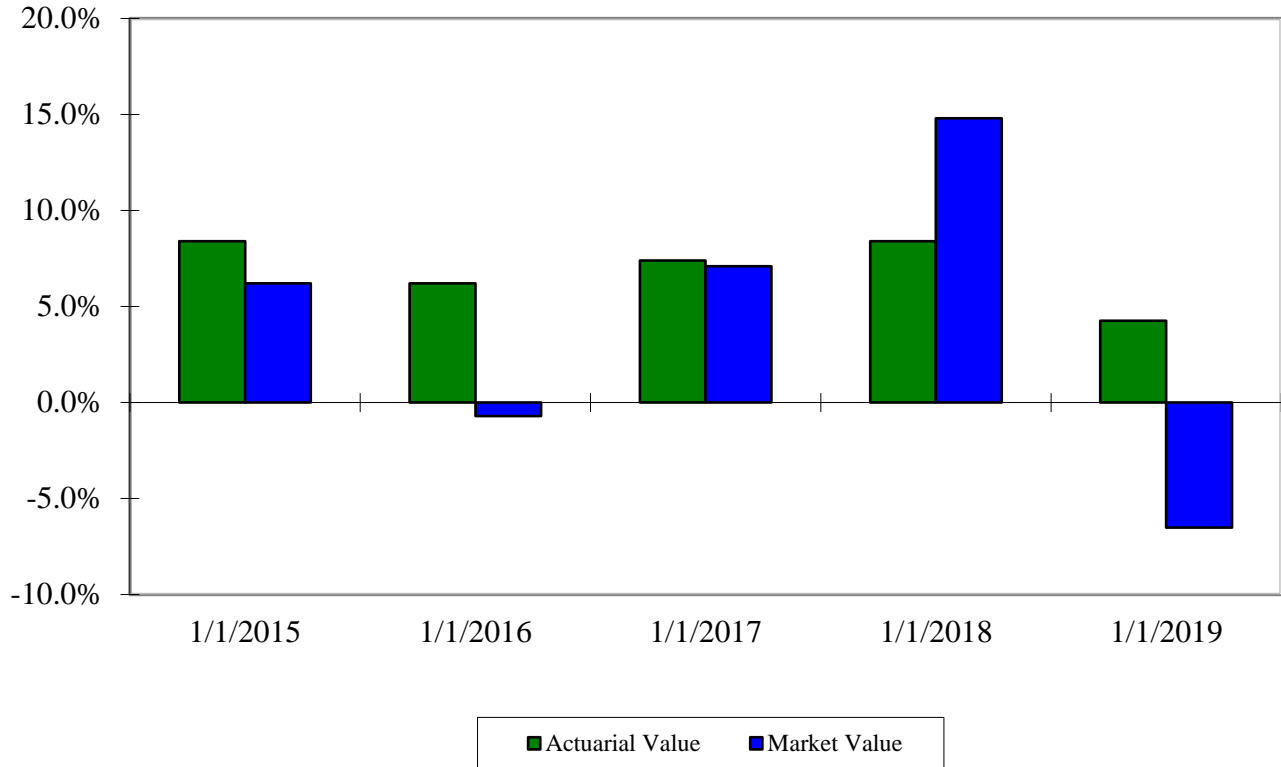


Valuation Date	Market Value	Actuarial Value
1/1/2015	\$4,394,630	\$4,225,532
1/1/2016	\$4,254,102	\$4,370,435
1/1/2017	\$4,476,167	\$4,612,977
1/1/2018	\$5,039,720	\$4,904,796
1/1/2019	\$4,617,332	\$5,014,047

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

Rate of Return (%) on Total Assets

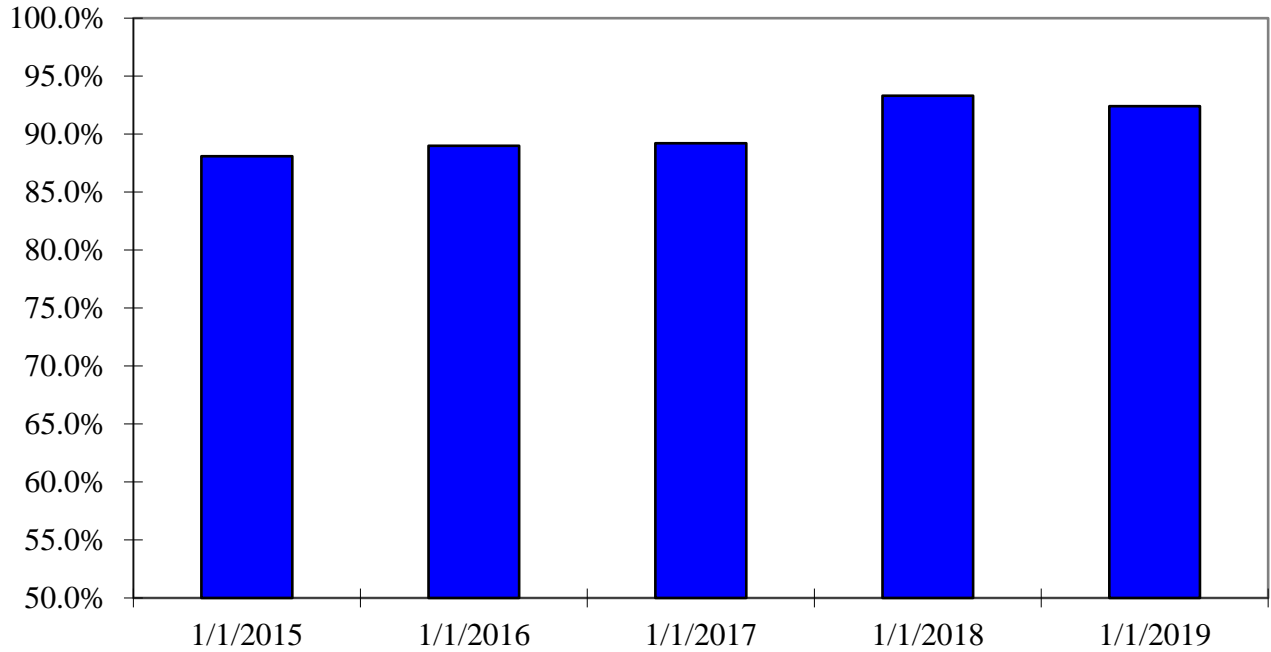


Valuation Date	Actuarial Value	Market Value
1/1/2015	8.4%	6.2%
1/1/2016	6.2%	-0.7%
1/1/2017	7.4%	7.1%
1/1/2018	8.4%	14.8%
1/1/2019	4.3%	-6.5%

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

**Funded Ratio: Actuarial Value of Assets (AVA)
vs. Actuarial Accrued Liability (AAL)**

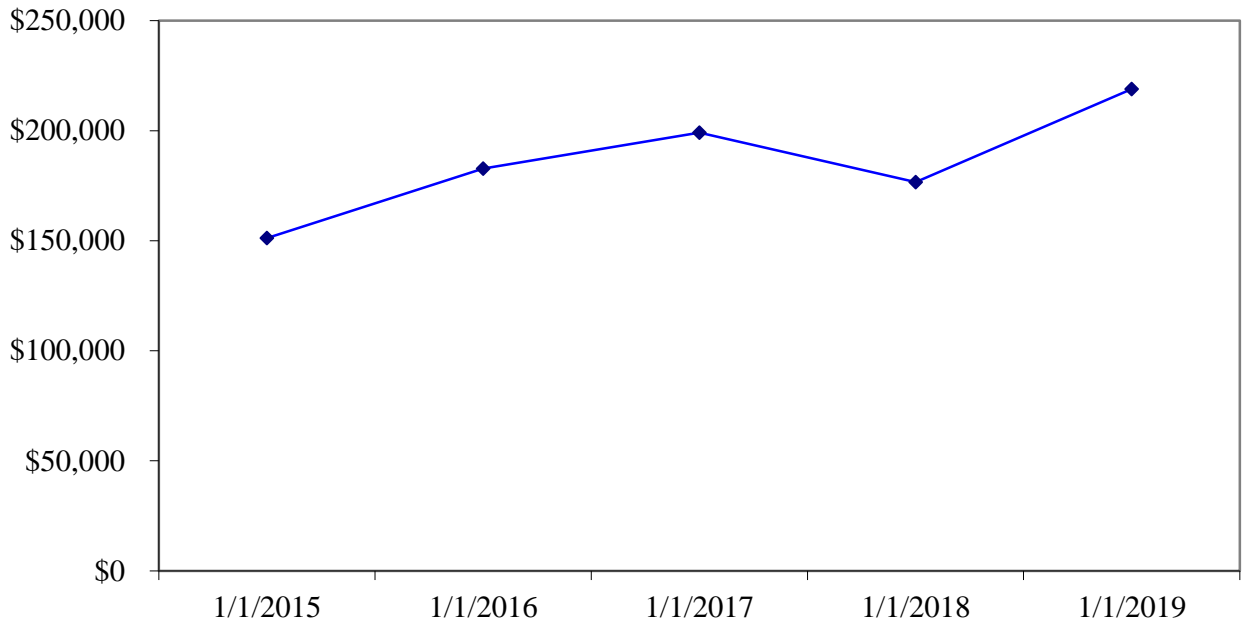


Valuation Date	AVA/AAL
1/1/2015	88.1%
1/1/2016	89.0%
1/1/2017	89.2%
1/1/2018	93.3%
1/1/2019	92.4%

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

Recommended Contribution



Valuation Date	Recommended Contribution
1/1/2015	\$151,198
1/1/2016	\$182,786
1/1/2017	\$199,092
1/1/2018	\$176,577
1/1/2019	\$218,921

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

January 1, 2019 Actuarial Valuation

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.

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**The City of Ladue Pension Plan for
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January 1, 2019 Actuarial Valuation

Actuarial Standard of Practice (ASOP 51)

Maturity Risk

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

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Actuarial Standard of Practice (ASOP 51)

- 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.
- 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.

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