



CITY OF LADUE NON-UNIFORM PENSION PLAN

Actuarial Valuation Report January 1, 2020

Prepared by

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Introduction and Purpose

In this report, we present the results of the January 1, 2020 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 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:

- (a) The determination of the employer contributions under the funding policy for the 2020 calendar year
- (b) 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

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, 2020 for determining contributions for the calendar year ending December 31, 2020. Our findings are set forth in this actuary's report. This report reflects the benefit provisions in effect on January 1, 2020.

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.

Actuarial computations presented in this report are for purposes of determining the funding policy contribution 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 16-19 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.

Actuarial Certification

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 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 has been prepared in accordance with generally recognized 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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Discussion of Valuation Results

Funding Policy Contribution

The results of this valuation are used to determine the contribution rates under the funding policy to the Plan for the 2020 plan year. A comparison of policy contribution rates for the current and immediately preceding valuations is shown below:

	<u>Valuation Date</u> <u>January 1, 2019</u>	<u>Valuation Date</u> <u>January 1, 2020</u>
Applies to Calendar Year	01/01/19-12/31/19	01/01/20-12/31/20
Funding Policy Contribution (with interest)	\$218,921	\$349,374
Actual Employer Contribution	\$218,921	N/A

The funding policy contribution increased from \$218,921 to \$349,374. The funding policy contribution increased due to plan changes including an increase in the accrual rate, addition of an unreduced early retirement age and a COLA adjustment.

Plan Assets

The unaudited market value of plan assets increased from \$4,617,332 at January 1, 2019 to \$5,375,209 at January 1, 2020. A balance sheet and statement of income and disbursements are presented on pages 7 and 8, respectively. The net market rate of return was 19.3% versus the prior year assumed rate of 7% resulting in a gain for the period.

The actuarial value of assets increased from \$5,014,047 at January 1, 2019 to \$5,214,103 at January 1, 2020. The development of the January 1, 2020 actuarial value of assets is presented on page 9. The net actuarial rate of return for the period was 6.5% vs. the assumed rate of 7.0%.

Due to the asset smoothing method used, there are \$161,106 of investment gains that have not yet been recognized in the Actuarial Value of Assets (see page 9).

Actuarial Assumptions, Methods and Plan Provisions

The projection scale used for the mortality assumption was changed from MP-2018 to MP-2019.

The retirement assumption was changed to include rates at ages 60 and 61.

The plan provisions now include an accrual rate of 1.5% instead of 1.25%, an unreduced early retirement age at 60 years and 5 years of credited service. In addition, employees who terminated and who start receiving benefits on or after September 1, 2019 will receive COLA adjustments.

All other actuarial assumptions, methods and plan provisions remained the same as the prior year. Descriptions of these can be found on pages 13-19.

Discussion of Valuation Results

Plan Population

The number of active members included in the valuation remained at 29 from the previous valuation to 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.

GASB 67/68 Disclosures

The GASB disclosures are presented in a separate report.

Summary of Valuation Results

	Valuation Date January 1, 2019	Valuation Date January 1, 2020
Number of Members		
Active	29	29
Receiving Payments	24	24
Terminated Vested	4	4
Total	57	57
Annual Payroll of Members under Normal Retirement Age		
	1,935,507	2,012,165
Market Value of Assets		
	4,617,332	5,375,209
Actuarial Value of Assets		
	5,014,047	5,214,103
Entry Age Accrued Liability		
	5,423,766	6,464,379
Entry Age Unfunded Accrued Liability		
	409,719	1,250,276
Normal Cost		
	147,999	201,976
Assumed Expenses		
	20,000	20,000
Amortization of Unfunded Actuarial Liability		
	48,310	124,491
Funding Policy Contribution, with Interest		
	218,921	349,374

Statement of Assets as of January 1, 2020

Assets	Market Value
Cash and Equivalents	82,051
Fixed Income Investments	969,952
Corporate Stocks - Domestic	2,201,776
Corporate Stocks - International	1,068,098
Real Estate	613,756
Alternate Investments	429,921
Accounts Receivable	9,655
Total Assets	<u>5,375,209</u>
Liabilities	
None	
Net Assets	<u><u>\$5,375,209</u></u>

Statement of Income and Disbursements

Market Value of Assets as of January 1, 2019	\$4,617,332
Income	
City Contributions	218,921
Investment Income (Including Realized and Unrealized Capital Gain/Losses)	805,313
Interest and Dividends	97,839
Other Income	0
Change in Accrued Income	(7,464)
Total Income	<u>1,114,609</u>
Expenses	
Employee Benefit Distributions	329,322
Investment Expenses	15,510
Administrative Expenses	11,900
Total Expenses	<u>356,732</u>
Net Increase (Decrease)	757,877
Market Value of Assets as of December 31, 2019	<u><u>\$5,375,209</u></u>
Rate of Return	19.3%

Development of Actuarial Value of Assets

1. Actuarial Value of Assets as of January 1, 2019	\$5,014,047
2. Contributions	218,921
3. Benefit Payments	(329,322)
4. Expenses	(11,900)
5. Expected Return at 7.00%	346,703
6. Expected Actuarial Value of Assets as of December 31, 2019 = (1) + (2) + (3) + (4) + (5)	5,238,449
7. Market Value of Assets as of December 31, 2019	5,375,209
8. Adjustments on Market Value (See Schedule of Market Value Adjustments below)	(24,346)
9. Actuarial Value of Assets as of December 31, 2019 = (6) + (8), but not less than 80% of (7) nor more than 120% of (7)	\$5,214,103

Schedule of Market Value Adjustments

Plan Year	Gain/(Loss) Base	Unrecognized Balance 1/1/2019	12/31/2019 Adjustment	Unrecognized Balance 1/1/2020
2015	(322,151)	(64,430)	(64,430)	0
2016	(2,848)	(1,139)	(570)	(569)
2017	334,909	200,945	66,982	133,963
2018	(665,114)	(532,091)	(133,023)	(399,068)
2019	533,475	N/A	106,695	426,780
Total	N/A	(396,715)	(24,346)	161,106

Development of Funding Policy Contribution

January 1, 2020

1. Entry Age Accrued Liability

a. Active Members	\$3,338,747
b. Terminated Vested Members	187,794
c. Retired Members	2,793,555
d. Beneficiaries	144,283
e. Disabled Members	0

f. Total	6,464,379
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2. Actuarial Value of Assets 5,214,103

3. Funded Ratio: (2) / (1f) 80.7%

4. Entry Age Unfunded Accrued Liability: (1f) - (2) 1,250,276

5. Entry Age Normal Cost: 201,976

6. Assumed Expenses at Beginning of Year (\$20,000 at mid year) 19,335

7. Normal Cost Including Expenses: (5) + (6) 221,311

8. Covered Payroll 2,012,165

9. Amortization of Unfunded Actuarial Accrued Liability 124,491

10. Funding Policy Contribution at Beginning of Year: (7) + (9) 345,802

11. Funding Policy Contribution, with Interest to Expected Payment Date 349,374

12. Funding Policy Contribution as a Percentage of Payroll 17.4%

Determination of Amortization Charges for the Funding Policy Contribution

Date Incurred	Description	Initial Balance	Initial Amortization Period	Unamortized Base January 1, 2019	Contribution to Base	Unamortized Base January 1, 2020	Amortization Payment
1/1/2013	Initial Unfunded Accrued Liability	836,506	20	643,153	78,961	609,213	73,795
1/1/2014	Experience Gain	(178,383)	20	(143,273)	(16,839)	(136,463)	(15,737)
1/1/2015	Experience Gain	(48,410)	20	(40,439)	(4,570)	(38,700)	(4,271)
1/1/2016	Experience Gain	(13,639)	20	(11,848)	(1,287)	(11,390)	(1,203)
1/1/2017	Assumption Change	166,383	20	149,092	15,706	143,822	14,678
1/1/2017	Experience Gain	(128,343)	20	(115,005)	(12,115)	(110,940)	(11,322)
1/1/2018	Assumption Change	(27,198)	20	(25,077)	(2,567)	(24,265)	(2,399)
1/1/2018	Experience Gain	(159,072)	20	(146,662)	(15,015)	(141,913)	(14,033)
1/1/2019	Assumption Change	(12,937)	20	(12,937)	(1,221)	(12,622)	(1,141)
1/1/2019	Experience Gain	112,715	20	112,715	10,639	109,966	9,943
1/1/2020	Assumption Change	(15,389)	20	N/A	N/A	(15,389)	(1,358)
1/1/2020	Plan Change	877,127	20	N/A	N/A	877,127	77,378
1/1/2020	Experience Gain	1,830	20	N/A	N/A	1,830	161
Total		1,411,190		409,719	51,692	1,250,276	124,491

Determination of (Gain)/Loss for Plan Year Ending December 31, 2019

1. Unfunded Accrued Liability as of January 1, 2019	\$409,719
2. Normal Cost as of January 1, 2019	147,999
3. Assumed Expenses as of January 1, 2019	19,335
4. Interest on (1), (2) and (3) at 7.00%	40,394
5. Employer Contributions for the Prior Plan Year	218,921
6. Interest on (5) at 7.00%	11,818
7. Change in Unfunded Accrued Liability due to Assumption/Plan Change	861,738
8. Expected Unfunded Actuarial Accrued Liability as of December 31, 2019 = (1) + (2) + (3) + (4) - (5) - (6) + (7)	1,248,446
9. Entry Age Accrued Liability as of December 31, 2019	6,464,379
10. Actuarial Value of Assets as of December 31, 2019	5,214,103
11. Unfunded Actuarial Accrued Liability as of December 31, 2019	1,250,276
12. (Gain)/Loss for Plan Year Ending December 31, 2019 = (11) - (8)	1,830

Actuarial Methods and Assumptions

Interest (adopted 01/01/2013)

7.00% per annum, compounded annually

Salary Increases (adopted 01/01/2013)

4.50% per annum, compounded annually

Inflation (adopted 01/01/2013)

2.50% per annum

Mortality (adopted 01/01/2019)

Healthy Lives: RP-2014 Healthy Annuitant Mortality Projected Generationally from 2006 using MP-2019 Projection Scale.

Disabled Lives: RP-2014 Disabled Mortality Projected Generationally from 2006 using MP-2019 Projection Scale.

Withdrawal

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

Age	Male Percent Withdrawing	Female Percent Withdrawing
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%

Actuarial Methods and Assumptions

Retirement (adopted 01/01/2020)

Rates vary by age as follows:

Age	Percent Retiring
60	20%
61	10%
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:

Age	Male Percent Becoming Disabled	Female Percent Becoming Disabled
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

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.

Actuarial Methods and Assumptions

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.

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, as amended.

Effective Date	Originally effective January 1, 1968; most recently restated effective November 19, 2007 and amended August 26, 2019.
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.
Normal Retirement (adopted 01/01/2020)	
Eligibility:	Age 62
Benefit:	1.50% 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.

Summary of Plan Provisions

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 (adopted 01/01/2020)

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.

In addition, employees who terminated on or after September 1, 2019:

Eligibility:	Age 60 with 5 years of Credited Service
Benefit:	Accrued Benefit based on FAC and Credited Service at retirement unreduced for early commencement plus a refund of any accumulated employee contributions with interest.

Summary of Plan Provisions

Termination Benefit (adopted 01/01/2020) All members who terminated on or after January 1, 2000 are entitled to a refund of any accumulated employee contributions with interest.

Employees terminated before September 1, 2019:

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.

Employees terminated on or after September 1, 2019:

A member with at least 5 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.

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.

Summary of Plan Provisions

Cost-of-Living Adjustment (COLA) (adopted 01/01/2020)

Benefits commencing on or after September 1, 2019 are adjusted each January 1 for an annual COLA based on the Consumer Price Index on September 30 prior to the adjustment date. COLAs are limited to a maximum annual increase of 2% and a lifetime maximum of 20%. If the CPI is less than 1% during a year, there shall be no adjustment, and if the CPI is negative, there shall be no adjustment unless the decrease is 2% or more. Retirees first become eligible for the COLA on the second January 1st following retirement.

Summary of Member Data

	<u>January 1, 2019</u>	<u>January 1, 2020</u>
Active Members		
Count	29	29
Plan Compensation	\$1,935,507	\$2,012,165
Average Compensation	\$66,742	\$69,385
Average Age	47.7	47.6
Average Service	11.8	11.3
Retired Members (Including Beneficiaries and Disableds)		
Count	24	24
Total Monthly Benefits	\$24,349	\$25,196
Average Monthly Benefits	\$1,015	\$1,050
Terminated Vested Members		
Count	4	4
Total Monthly Benefits	\$3,258	\$3,258
Average Monthly Benefits	\$815	\$815

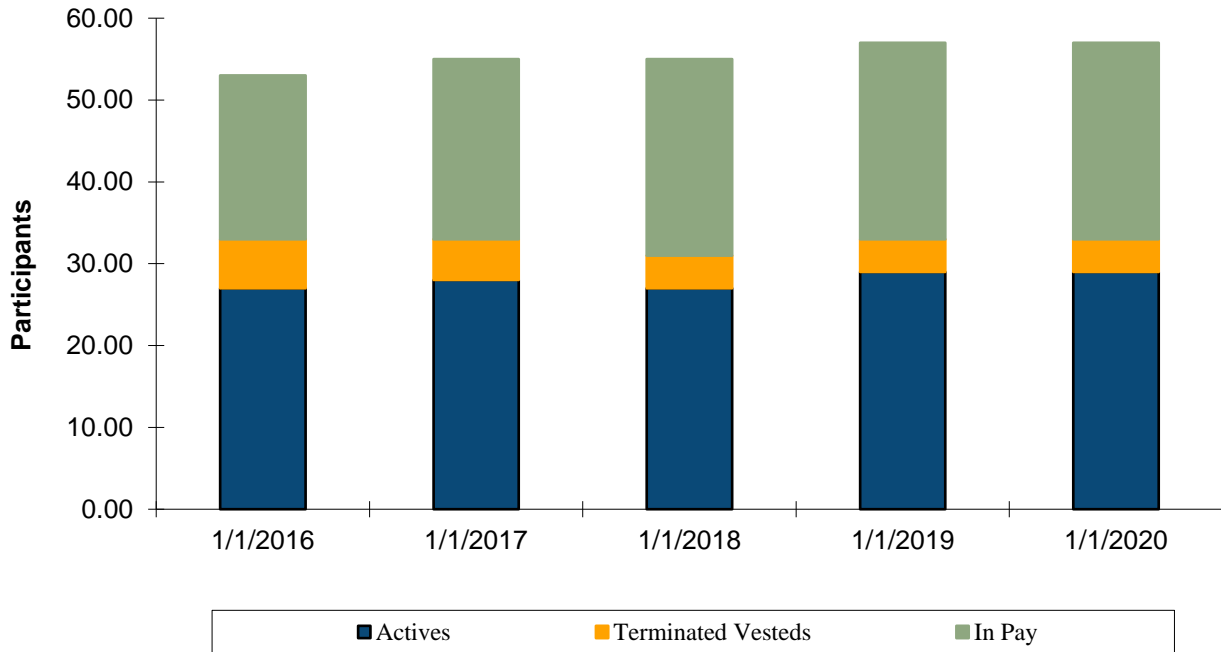
Distribution of Active Members by Age and by Years of Service
(as of January 1, 2020)

Attained Age	Years of Credited Service										Total	
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 and up		
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	1	1	3	0	0	0	0	0	0	0	0	5
35 to 39	0	2	0	0	0	0	0	0	0	0	0	2
40 to 44	0	2	1	0	0	0	0	0	0	0	0	3
45 to 49	0	1	1	0	2	4	0	0	0	0	0	8
50 to 54	0	1	0	1	0	0	2	0	0	0	0	4
55 to 59	0	4	0	0	0	0	0	0	0	0	0	4
60 to 64	0	1	0	0	0	0	1	0	1	0	0	3
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	1	12	5	1	2	4	3	0	1	0	0	29

Summary of Changes in Member Data

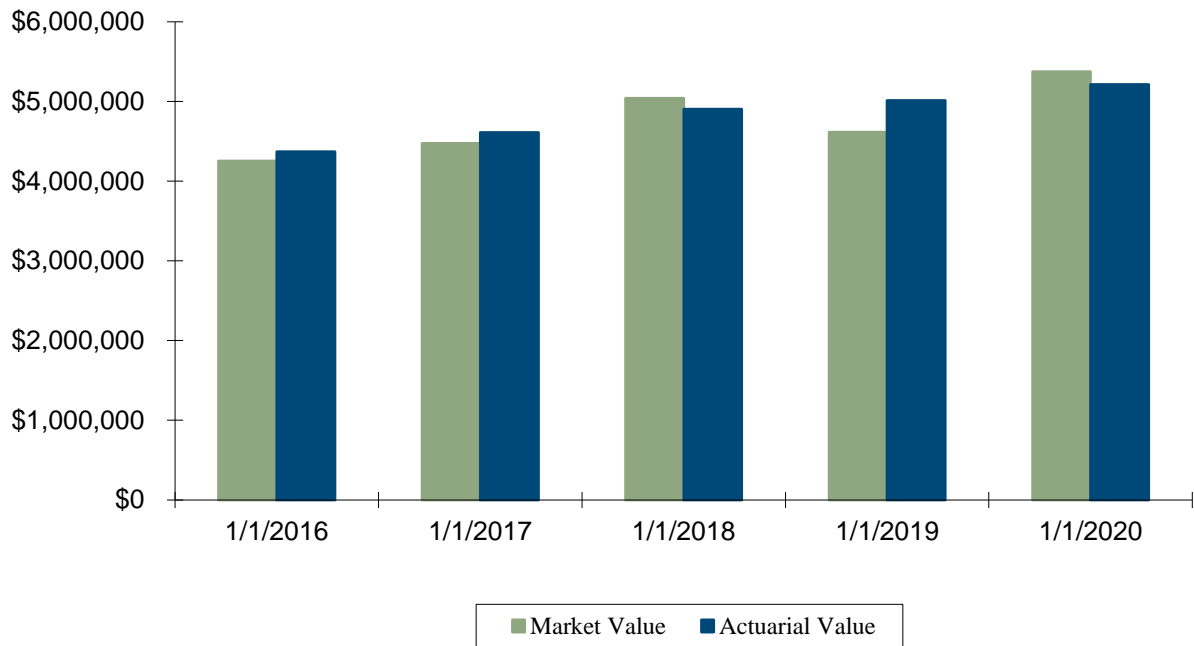
	Active Members	Members in Pay Status	Terminated Vested Members	Total
Count as of January 1, 2019	29	24	4	57
New Entrants	1	0	0	1
Rehired	0	0	0	0
Retired	(1)	1	0	0
Became Disabled	0	0	0	0
Lump Sum Payouts	0	0	0	0
Died with Beneficiary	0	(1)	0	(1)
New Beneficiaries / Alternate Payees	0	1	0	1
Died without Beneficiary	0	(1)	0	(1)
Terminated with Vesting	0	0	0	0
Terminated without Vesting	0	0	0	0
Data Corrections	0	0	0	0
Total Changes	0	0	0	0
Count as of January 1, 2020	29	24	4	57

Member Data



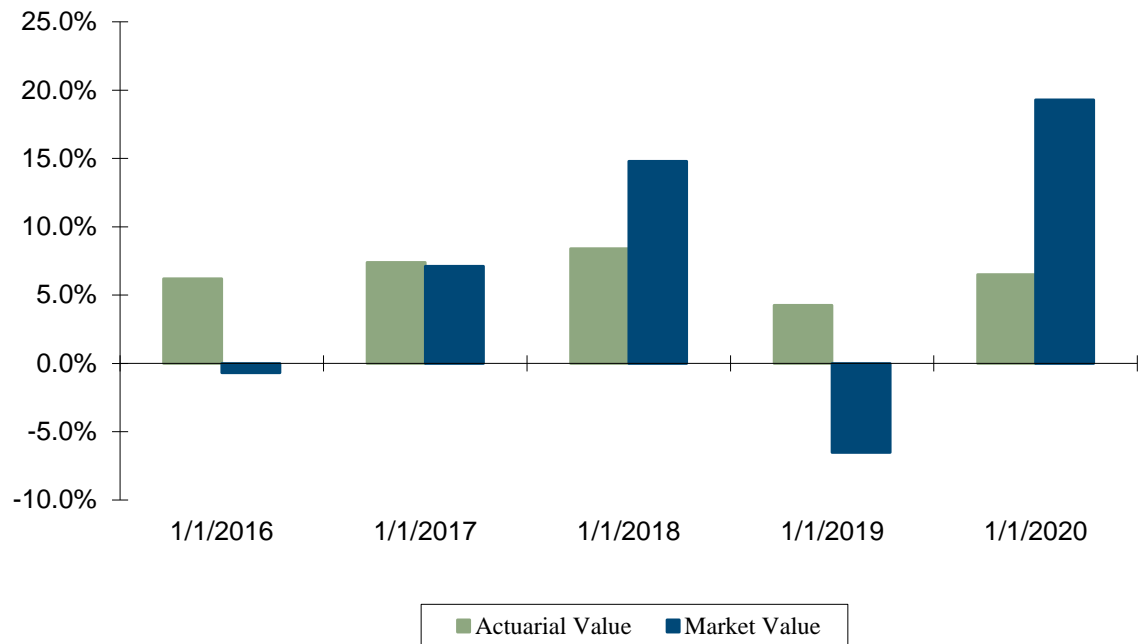
Valuation Date	1/1/2016	1/1/2017	1/1/2018	1/1/2019	1/1/2020
Actives	27	28	27	29	29
Terminated Vesteds	6	5	4	4	4
In Pay	20	22	24	24	24
Total	53	55	55	57	57

Total Assets



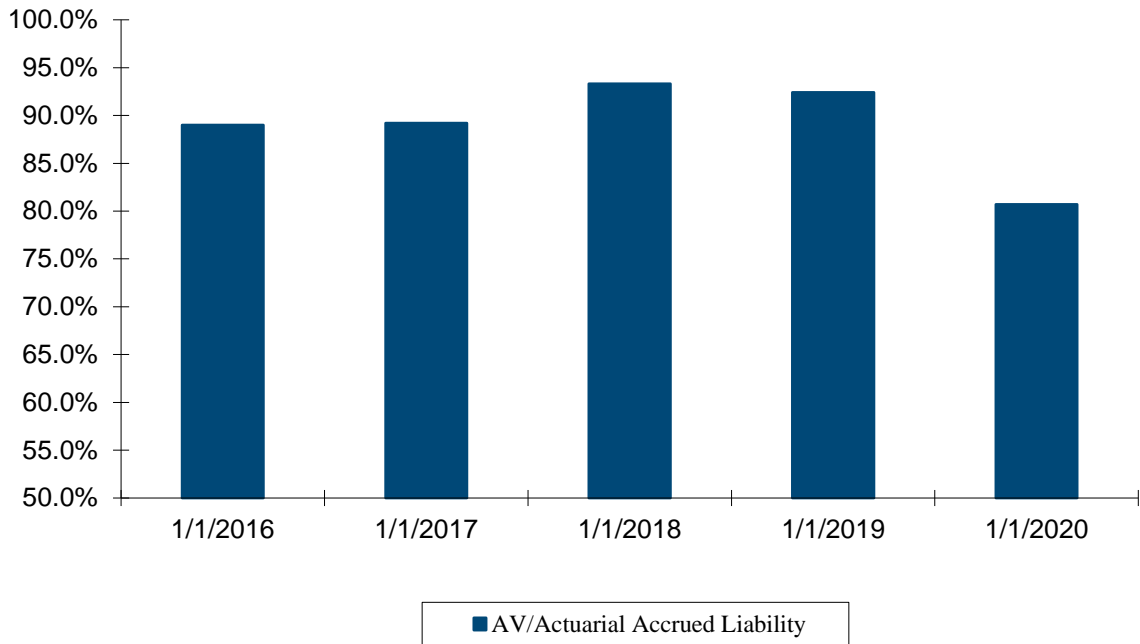
Valuation Date	Market Value	Actuarial Value
1/1/2016	\$4,254,102	\$4,370,435
1/1/2017	\$4,476,167	\$4,612,977
1/1/2018	\$5,039,720	\$4,904,796
1/1/2019	\$4,617,332	\$5,014,047
1/1/2020	\$5,375,209	\$5,214,103

Rate of Return (%) on Total Assets



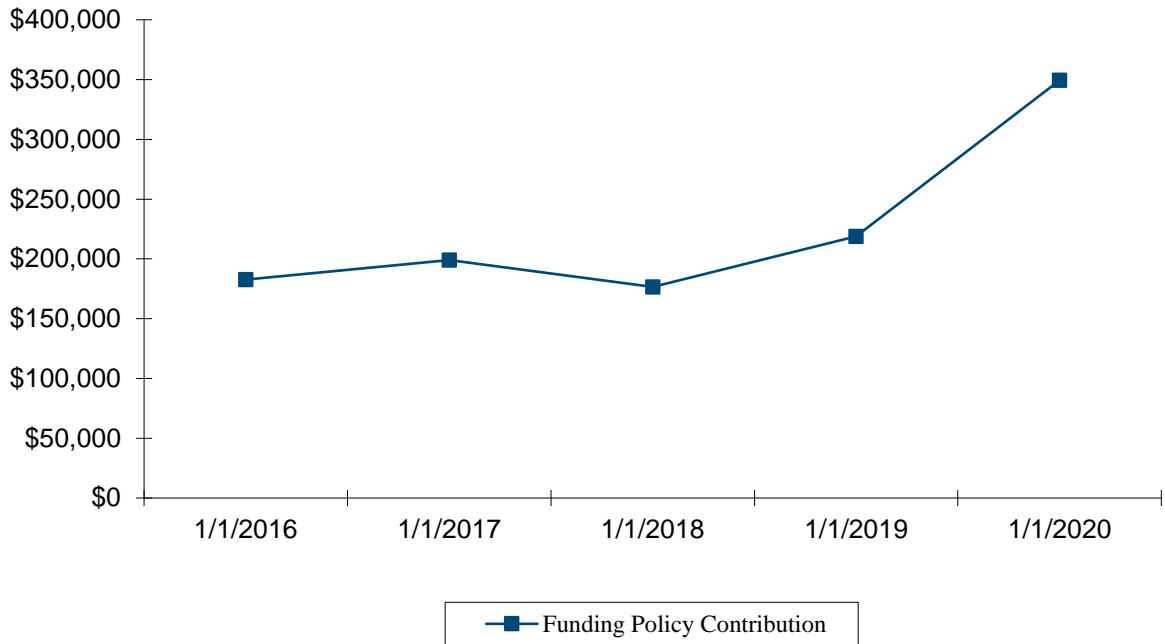
Valuation Date	Actuarial Value	Market Value
1/1/2016	6.2%	-0.7%
1/1/2017	7.4%	7.1%
1/1/2018	8.4%	14.8%
1/1/2019	4.3%	-6.5%
1/1/2020	6.5%	19.3%

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



Valuation Date	AVA/AAL
1/1/2016	89.0%
1/1/2017	89.2%
1/1/2018	93.3%
1/1/2019	92.4%
1/1/2020	80.7%

Funding Policy Contribution



<u>Valuation Date</u>	<u>Funding Policy Contribution</u>
1/1/2016	\$182,786
1/1/2017	\$199,092
1/1/2018	\$176,577
1/1/2019	\$218,921
1/1/2020	\$349,374

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

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.
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 25 times last year's contributions indicating a one-year asset loss of 10% would be equal to 2.5 times last year's contributions.

Actuarial Standard of Practice (ASOP 51)

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
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 14%.
Demographic Risk	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.