



Town of Cumberland, RI Police Retirement Plan

July 1, 2019
Actuarial Valuation Report

Table of Contents

Actuarial Certification	3
Executive Summary	5
Summary Results	6
Changes Since Prior Valuation and Key Notes	7
Five Year Valuation Summary	8
Identification of Risks	9
Plan Maturity Measures	10
Assets and Liabilities	11
Present Value of Future Benefits	12
Actuarial Accrued Liability	13
Reconciliation of Actuarial Accrued Liability	14
Asset Information	15
Summary of Contributions	17
Funding Results	18
Reconciliation of (Gain)/Loss	19
Reconciliation of Unfunded Actuarial Accrued Liability (UAAL)	20
Development of Actuarial Recommended Contribution	21
Data, Assumptions, and Plan Provisions	22
Demographic Information	23
Participant Reconciliation	25
Active Participant Schedule	26
Plan Provisions	27
Actuarial Assumptions	30
Other Measurements	33
Exhibit 1 - Schedule of Amortizations	34

At the request of the plan sponsor, this report summarizes the actuarial results of the Town of Cumberland, RI Police Retirement Plan as of January 1, 2019. The purpose of this report is to communicate the following results of the valuation:

- Funded Status;
- and Determine Recommended Contribution.

This report has been prepared in accordance with the applicable Federal and State laws. Consequently, it may not be appropriate for other purposes. Please contact Nyhart prior to disclosing this report to any other party or relying on its content for any purpose other than that explained above. Failure to do so may result in misrepresentation or misinterpretation of this report.

The results in this report were prepared using information provided to us by other parties. The census and asset information has been provided to us by the employer. We have reviewed the provided data for reasonableness when compared to prior information provided, but have not audited the data. Where relevant data may be missing, we have made assumptions we believe to be reasonable. We are not aware of any significant issues with and have relied on the data provided. Any errors in the data provided may result in a different result than those provided in this report. A summary of the data used in the valuation is included in this report.

Certain assumptions and methods were chosen by the employer and have been disclosed in the "Actuarial Assumptions" section of this report. In our opinion, all actuarial assumptions and methods are individually reasonable and in combination represent our best estimate of anticipated experience of the plan. 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); and
- changes in plan provisions or applicable law.

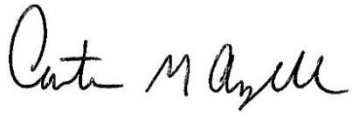
We did not perform an analysis of the potential range of future measurements due to the limited scope of our engagement. This report has been prepared in accordance with generally accepted actuarial principles and practice.

Neither Nyhart nor any of its employees have any relationship with the plan or its sponsor which could impair or appear to impair the objectivity of this report. To the extent that this report or any attachment concerns tax matters, it is not intended to be used and cannot be used by a taxpayer for the purpose of avoiding penalties that may be imposed by law.

Actuarial Certification

The undersigned are compliant with the continuing education requirements of the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States and are available for any questions.

Nyhart



Carter Angell, FSA, EA, MAAA
Enrollment Number: 20-07855



Sally Ray, FSA, EA
Enrollment Number: 20-08553

June 15, 2020

Date

Executive Summary

The actuarial report provides the plan sponsor with several ways to measure the funded status of the pension plan. The following detail is included in the report:

- Actuarial Recommended Contribution
- Asset Performance
- Plan Demographics

This report is filled with actuarial terminology. However, the ultimate objective of the valuation is to provide a rational method of funding the plan. It is necessary to fund the benefit promised by the employer in a manner that is logical and employer friendly, yet safeguards the participants' interest. The actuarially derived contribution, however, is not the true cost of the pension plan. The true cost is illustrated by the following formula:

$$\text{Ultimate Pension Cost} = \text{Benefits Paid} - \text{Investment Income} + \text{Plan Expenses}$$

While the plan's liability and normal cost determine the current contribution recommendations, the true cost is controlled only by the "defined" benefit and investment income generated by the underlying assets. The actuarial process only controls the timing of costs.

We suggest that a plan sponsor treat the actuarial report as you would treat a scorecard. It is simply a measure of progress toward the ultimate goal of paying all pension benefits when participants retire.

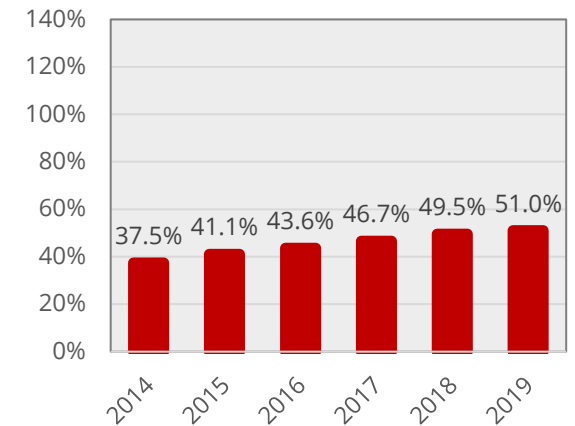
Executive Summary

Summary Results

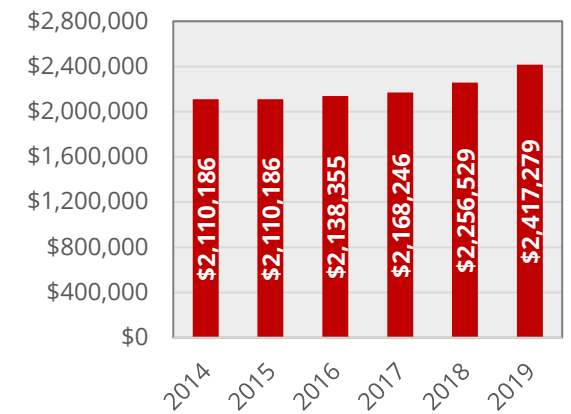
The actuarial valuation's primary purpose is to produce a scorecard measure displaying the funding progress of the plan toward the ultimate goal of paying benefits at retirement. The accrued liability is based on an entry age level percentage of pay.

	July 1, 2018	July 1, 2019	July 1, 2020
Funded Status Measures			
Accrued Liability	\$ 35,958,715	\$ 38,343,033	
Actuarial Value of Assets	\$ 17,808,301	\$ 19,559,591	
Unfunded Actuarial Accrued Liability (UAAL)	\$ 18,150,414	\$ 18,783,442	
Funded Percentage (AVA)	49.5%	51.0%	
Funded Percentage (MVA)	48.7%	51.5%	
Cost Measures			
Actuarial Recommended Contribution	\$ 2,256,529	\$ 2,417,279	\$ 2,503,087
Actuarial Recommended Contribution (as a percentage of payroll)	75.4%	79.2%	
Asset Performance			
Market Value of Assets (MVA)	\$ 17,519,829	\$ 19,750,027	
Actuarial Value of Assets (AVA)	17,808,301	19,559,591	
Actuarial Value/Market Value	101.6%	99.0%	
Market Value Rate of Return	7.0%	9.5%	
Actuarial Value Rate of Return	6.8%	6.7%	
Participant Information			
Active Participants	44	43	
Terminated Vested Participants	1	1	
Retirees, Beneficiaries and Disabled	70	72	
Total	115	116	
Expected Payroll	\$ 2,994,240	\$ 3,053,587	

History of Funded Ratio



History of Recommended Contribution



Executive Summary

Changes since Prior Valuation and Key Notes

The average annual earnings for participants hired after July 1, 2013 has been changed from “average over working career of base salary, holiday pay, and longevity pay” to “average of the final five years of base salary, holiday pay, and longevity pay”. This change results in an increase in liability and normal cost.

The mortality table has been updated from using a fully generational improvement scale based on assumptions developed from the 2017 Social Security Trustees Report to the improvement scale based on assumptions developed from the 2018 Social Security Trustees Report. The mortality table (RP-2014 Blue Collar) and the year in which improvements begin (2006) remain the same. This change results in a decrease in liability and normal cost.

The interest rate used to measure the liability was reduced from 7.50% to 7.25% per the direction of the plan sponsor. This change results in an increase in liability and normal cost.

This report is meant to replace the July 1 , 2019 Valuation Report that was issued on December 19, 2019.

Executive Summary

Five Year Valuation Summary

	07/01/2015	07/01/2016	07/01/2017	07/01/2018	07/01/2019
Funding					
Accrued Liability	\$ 32,119,567	\$ 33,475,557	\$ 34,580,512	\$ 35,958,715	\$ 38,343,033
Actuarial Value of Assets	<u>\$ 13,217,038</u>	<u>\$ 14,594,768</u>	<u>\$ 16,138,523</u>	<u>\$ 17,808,301</u>	<u>\$ 19,559,591</u>
Unfunded Actuarial Accrued Liability	\$ 18,902,529	\$ 18,880,789	\$ 18,441,989	\$ 18,150,414	\$ 18,783,442
Funded Percentage	41.1%	43.6%	46.7%	49.5%	51.0%
Total Normal Cost (NC)	\$ 702,698	\$ 651,363	\$ 654,232	\$ 682,675	\$ 747,928
NC as a Percent of Covered Payroll	23.9%	23.7%	23.2%	22.8%	24.5%
Actual Employer Contribution	\$ 2,112,000	\$ 2,182,000	\$ 2,218,887	\$ 2,263,350	TBD
Recommended Contribution	\$ 2,110,186	\$ 2,138,355	\$ 2,168,246	\$ 2,256,529	\$ 2,417,279
Recommended Contribution (% of Pay)	71.8%	77.7%	77.0%	75.4%	79.2%
Interest Rate	7.50%	7.50%	7.50%	7.50%	7.25%
Expense Load Assumption	N/A	N/A	N/A	N/A	N/A
Rate of Return					
Actuarial Value of Assets	9.2%	6.5%	7.1%	6.8%	6.7%
Market Value of Assets	4.6%	1.4%	9.6%	7.0%	9.5%
Demographic Information					
Active Participants	44	42	42	44	43
Terminated Vested Participants	0	1	1	1	1
Retired Participants	54	54	56	55	57
Beneficiaries	10	9	9	9	9
Disabled Participants	6	6	6	6	6
Total Participants	<u>114</u>	<u>112</u>	<u>114</u>	<u>115</u>	<u>116</u>
Covered Payroll	\$ 2,938,631	\$ 2,750,648	\$ 2,817,547	\$ 2,994,240	\$ 3,053,587
Average Covered Pay	\$ 66,787	\$ 65,492	\$ 67,084	\$ 68,051	\$ 71,014

Executive Summary

Identification of Risks

The results presented in this report are shown as single point values. However, these values are derived using assumptions about future markets and demographic behavior. If actual experience deviates from our assumptions, the actual results for the plan will consequently deviate from those presented in this report. Therefore, it is critical to understand the risks facing this pension plan. The following table shows the risks we believe are most relevant to the Town of Cumberland, RI Police Retirement Plan. The risks are generally ordered with those we believe to have the most significance at the top. Also shown are possible methods by which a more detailed assessment of the risk can be performed.

Type of Risk	Method to Assess Risk
Investment Return	Scenario Testing; Asset Liability Study
Interest Rate Risk	Projections; Scenario Testing
Contribution Risk	Projections and Contribution Strategy; Annual Monitoring
Demographic Risk	Projections; Stress Testing
Regulatory Risk	Scenario Testing

Plan Maturity Measures - January 1, 2019

Each pension plan has a distinct life-cycle. New plans promise future benefits to active employees and then accumulate assets to pre-fund those benefits. As the plan matures, benefits are paid and the pre-funded assets begin to decumulate until ultimately, the plan pays out all benefits. A plan's maturity has a dramatic influence on how risks should be viewed. The following maturity measures illustrate where the Town of Cumberland, RI Police Retirement Plan falls in its life-cycle.

Duration of Liabilities: 13.3

Duration is the most common measure of plan maturity. It is defined as the sensitivity of the liabilities to a change in the interest rate assumption. The metric also approximates the weighted average length of time, in years, until benefits are expected to be paid. A plan with high duration is, by definition, more sensitive to changes in interest rates. A plan with low duration is more susceptible to risk if asset performance deviates from expectations as there would be less time to make up for market losses in adverse market environments while more favorable environments could result in trapped surplus from gains. Conversely, high duration plans can often take on more risk when investing, and low duration plans are less sensitive to interest rate fluctuations.

Demographic Distribution - Ratio of Actively Accruing Participants to All Participants: 37.1%

A plan with a high ratio is more sensitive to fluctuations in salary and statutory changes. A plan with a low ratio is at higher risk from demographic experience. Such a plan should pay close attention to valuation assumptions as there will be less opportunity to realize future offsetting gains or losses when current experience deviates from assumptions. Plans with a low ratio also have limited opportunities to make alterations to plan design to affect future funded status.

Asset Leverage - Ratio of Payroll for Plan Participants to Market Value of Assets: 15.5%

Younger plans typically have a large payroll base from which to draw in order to fund the plan while mature plans often have a large pool of assets dedicated to providing benefits to a population primarily consisting of members no longer on payroll. Plans with low asset leverage will find it more difficult to address underfunding, as the contributions needed to make up the deficit will represent a higher percentage of payroll than for a plan with high asset leverage.

Benefit Payment Percentage - Ratio of Annual Benefit Payments to Market Value of Assets: 10.1%

As a plan enters its decumulation phase, a larger percentage of the pre-funded assets are paid out each year to retirees. A high percentage is not cause for alarm as long as the plan is nearly fully funded. However, such a plan is more sensitive to negative asset performance, especially if cash contributions are not an option to make up for losses.

Assets and Liabilities

The basic building blocks of the actuarial report are contained in this section. These include:

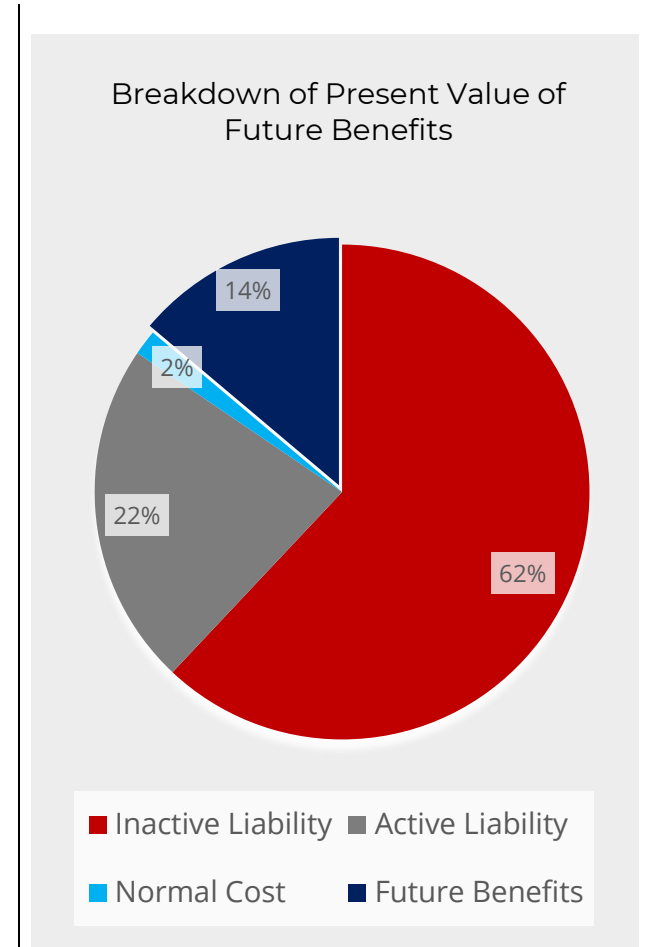
- Actuarial Accrued Liabilities
- Asset Information
- Summary of Contributions

Assets and Liabilities

Present Value of Future Benefits

The Present Value of Future Benefits represents the future benefits payable to the existing participants.

	July 1, 2019
Present Value of Future Benefits	
Active participants	
Retirement	\$ 15,610,432
Disability	\$ 1,499,885
Death	\$ 127,139
Termination	\$ -
Total active	\$ 17,237,456
Inactive participants	
Retired participants	\$ 24,730,202
Beneficiaries	\$ 984,545
Disabled	\$ 2,412,554
Terminated vested participants	\$ 11,950
Total inactive	\$ 28,139,251
Total	\$ 45,376,707
 Present value of future payrolls	 \$ 30,535,362

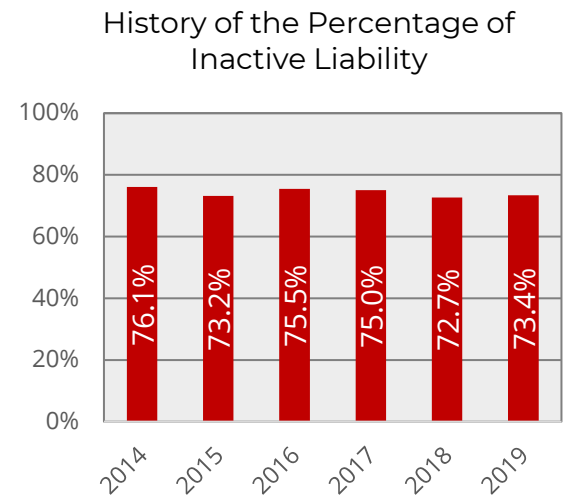
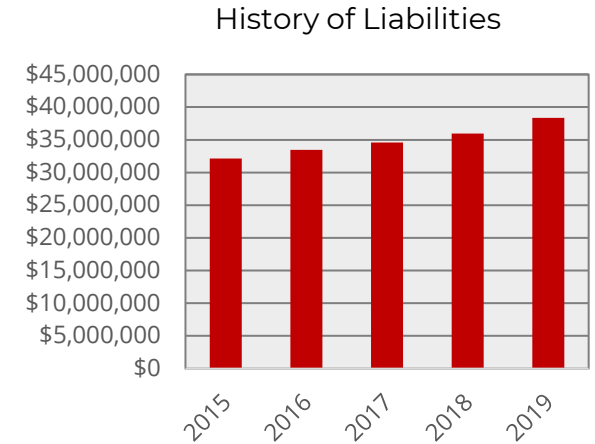


Assets and Liabilities

Actuarial Accrued Liability

The Actuarial Accrued Liability measures the present value of benefits earned as of the valuation date, using a specified set of actuarial assumptions.

	July 1, 2019
Active participants	
Retirement	\$9,592,298
Disability	\$547,426
Death	\$64,058
Termination	\$0
Total Active	\$10,203,782
Inactive participants	
Retired participants	\$24,730,202
Beneficiaries	\$984,545
Disabled	\$2,412,554
Terminated vested participants	\$11,950
Total Inactive	\$28,139,251
Total Actuarial Accrued Liability	\$38,343,033
Normal Cost	\$747,928
Interest Rate	7.25%



Assets and Liabilities

Reconciliation of Actuarial Accrued Liability

A plan's Actuarial Accrued Liability will change from one year to the next. It increases due to benefit accruals (Normal Cost) and interest, and it decreases as benefits are paid. Demographic experience, assumptions changes, and plan changes can cause increases or decreases.

	July 1, 2019
1. Actuarial Accrued Liability prior year	\$35,958,715
2. Increases or decreases due to:	
(a) Normal Cost	\$682,675
(b) Interest Adjustment	\$2,674,590
(c) Benefits Paid	(\$1,996,466)
(d) Demographic Experience	(\$129,682)
(e) Interest Rate Changes	\$1,116,334
(f) Mortality Changes	(\$66,473)
(g) Other Assumption Changes	\$0
(h) Plan Changes	\$103,340
(i) Other Changes	\$0
3. Actuarial Accrued Liability current year	<u>\$38,343,033</u>

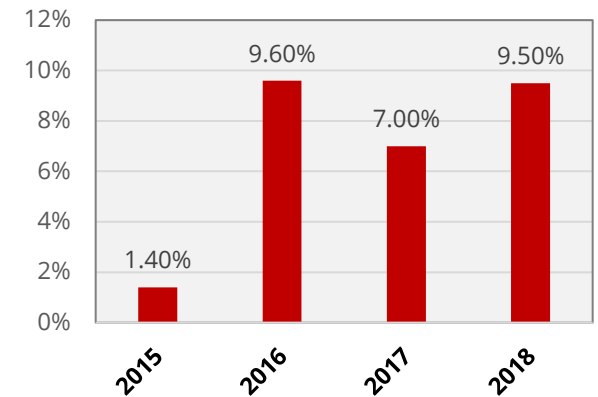
Assets and Liabilities

Asset Information

The amount of assets backing the pension promise is the most significant driver of volatility and future costs within a pension plan. The investment performance of the assets directly offsets the ultimate cost.

	July 1, 2019
Market Value Reconciliation	
Market value of assets, beginning of prior year	\$17,519,829
Contributions	
Employer contributions	\$2,263,350
Employee contributions	\$273,795
Total	\$2,537,145
Investment income	\$1,689,519
Benefit payments	(\$1,996,466)
Market value of assets, beginning of current year	\$19,750,027
Historical Rates of Return	
Rate of return for 2018	9.5%
Rate of return for 2017	7.0%
Rate of return for 2016	9.6%
Rate of return for 2015	1.4%
Actuarial Value of Assets	
Value at beginning of current year	\$19,559,591

Rates of Return



Monitoring the pension plan's investment performance is crucial to eliminating surprises.

Assets and Liabilities

Asset Information (continued) – 20% Phase in

Plan Assets are used to develop funded percentages and contribution requirements.

	July 1, 2019
Investment Gain or (Loss)	
1. Prior year's market value of assets	\$17,519,829
2. Employer contributions for the prior plan year	\$2,263,350
3. Employee contributions for the prior plan year	\$273,795
4. Benefit payments during the prior plan year	(\$1,996,466)
5. Expected earnings at 7.50% to the end of the plan year on	
(a) Market value of assets	\$1,313,987
(b) Contributions	\$93,423
(c) Benefit payments	(\$73,514)
(d) Total expected earnings, (a) + (b) + (c)	<u>\$1,333,896</u>
6. Expected market value of assets, (1) + (2) + (3) + (4) + (5d)	\$19,394,404
7. Actual market value of assets	\$19,750,027
8. Investment Gain or (Loss), (7) – (6)	\$355,623
Actuarial Value of Assets	
9. Market value of assets	\$19,750,027
10. Deferred Investment gains or (losses)	
(a) Current year [(80%) x \$355,623]	284,498
(b) First prior year [(60%) x (\$82,459)]	(49,475)
(c) Second prior year [(40%) x \$298,988]	119,595
(d) Third prior year [(20%) x (\$820,911)]	(164,182)
(e) Total	<u>\$190,436</u>
11. Preliminary actuarial value of assets, (9 – (10e))	\$19,559,591
12. 80% Market value of assets	\$15,800,022
13. 120% Market value of assets	\$23,700,032
14. Final actuarial value of assets	\$19,559,591
15. Return on actuarial value of assets	6.70%

Assets and Liabilities

Summary of Employer Contributions

Below is a summary of historical and recommended contributions.

Recommended Contributions for Current Plan Year*

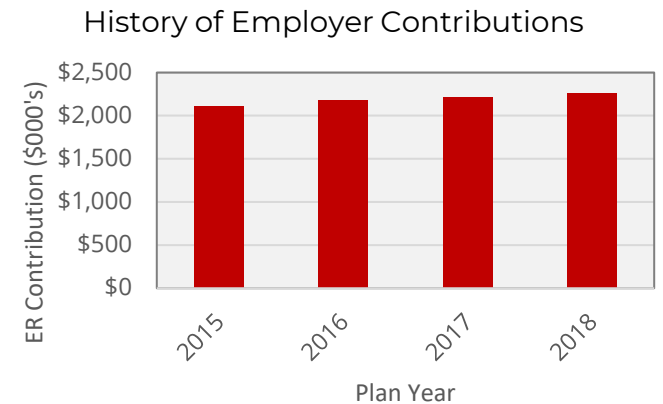
Contribution Date	Amount
July 1, 2020	\$2,417,279
Totals	\$2,612,133

Recommended Contributions for Prior Plan Year*

Contribution Date	Amount
July 1, 2019	\$2,256,529
Totals	\$2,256,529

Actual Employer Contributions for Prior Plan Year*

Contribution Date	Amount
January 1, 2019	\$2,263,350
Totals	\$2,263,350



*Date is an approximation for timing of all contributions made throughout the year.

Funding Results

The basic building blocks of the actuarial report are contained in this section. These include:

- Reconciliation of Gain/Loss
- Reconciliation of Unfunded Actuarial Accrued Liability (UAAL)
- Recommended Contribution

Funding Results

Reconciliation of (Gain)/Loss

July 1, 2019

Liability (Gain)/Loss

1. Actuarial liability, beginning of prior year	\$35,958,715
2. Normal cost for prior year	\$682,675
3. Benefit payments	(\$1,996,466)
4. Expected Interest	\$2,674,590
5. Change in Assumptions	\$1,049,861
6. Change in Plan Provisions	\$103,340
7. Expected actuarial liability, beginning of current year	\$38,472,715
8. Actual actuarial liability	\$38,343,033
9. Liability (Gain)/Loss, (8) – (7)	(\$129,682)

Asset (Gain)/Loss

10. Actuarial value of assets, beginning of prior year	\$17,808,301
11. Contributions	\$2,537,145
12. Benefit payments	(\$1,996,466)
13. Expected Investment return	\$1,355,531
14. Expected actuarial value of assets, beginning of current year	\$19,704,511
15. Actual actuarial value of assets, beginning of current year	\$19,559,591
16. Asset (Gain)/Loss, (14) – (15)	\$144,920

Total (Gain)/Loss, (9) + (16)

\$15,238

Funding Results

Reconciliation of Unfunded Actuarial Accrued Liability (UAAL)

	July 1, 2019
1. UAAL beginning of prior year	\$18,150,414
2. Normal Cost for prior year	\$682,675
3. Employer Contributions	(\$2,263,350)
4. Employee Contributions	(\$273,795)
5. Interest	\$1,319,059
6. Expected UAAL, beginning of current year	\$17,615,003
7. Changes due to:	
(a) Amendments	\$0
(b) Assumptions	
(1) Mortality Update	(\$66,473)
(2) Interest Rate Update from 7.50% to 7.25%	\$1,116,334
(c) Funding Methods	\$0
(d) Plan Provisions	\$103,340
(e) Total	\$1,153,201
8. Gain/(Loss) due to:	
(b) Assets	\$144,920
(c) Liabilities	(\$129,682)
(d) Total	\$15,238
9. UAAL beginning of current year [(6)+(7)+(8)]	\$18,783,442

Funding Results

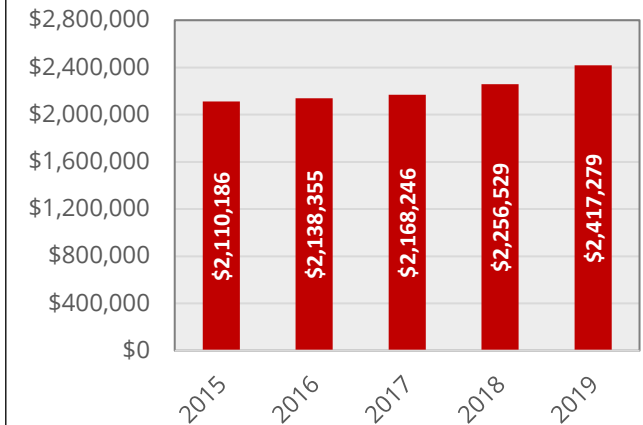
Development of Actuarial Recommended Contribution

The recommended contribution is the annual amount necessary to fund the plan according to funding policies and/or applicable laws.

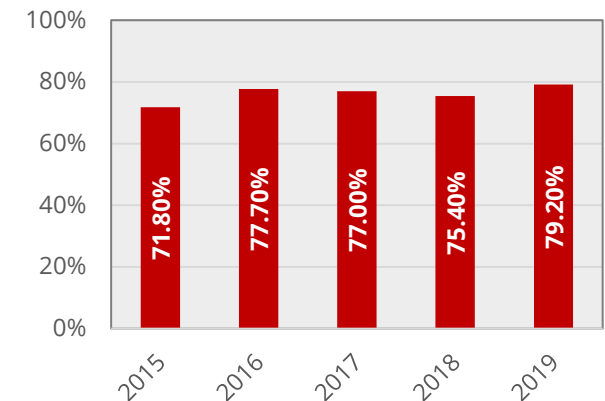
Funded Position	July 1, 2019
1. Entry age accrued Liability	\$38,343,033
2. Actuarial value of assets	\$19,559,591
3. Unfunded accrued liability, (1)-(2)	\$18,783,442
Employer Contributions	
1. Normal Cost	
a. Total normal cost	\$747,928
b. Expected participant contributions	\$247,512
c. Net normal cost	\$500,416
2. Amortization of UAAL	\$1,753,457
3. Interest	\$163,406
4. Calculated contribution at valuation date	\$2,417,279
5. Valuation payroll	\$3,053,587
6. Calculated contribution as a percentage of payroll	79.2%
7. Projected payroll	\$3,160,463
8. Actuarial recommended funding contribution (6) x (7)	\$2,503,087

*Additional details are provided in the back of the report.

History of Recommended Contribution



History of Recommended Contribution (% of Payroll)



Data, Assumptions, and Plan Provisions

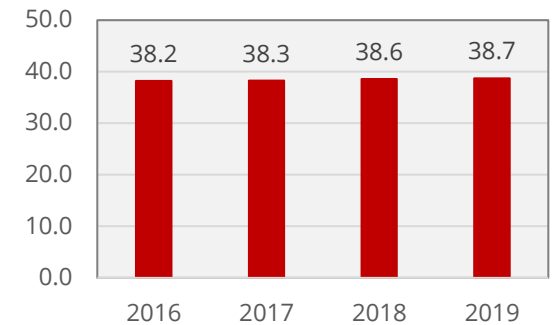
- Demographic Information
- Plan Provisions
- Assumptions and Methods

Demographic Information

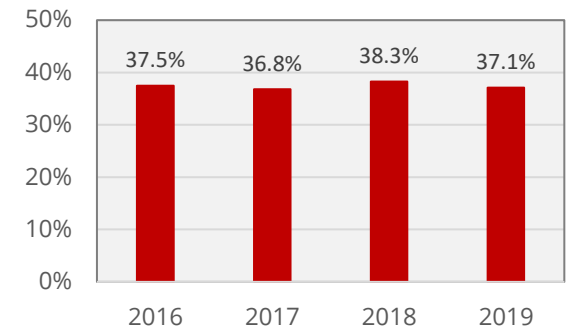
The foundation of a reliable actuarial report is the participant information provided by the plan sponsor. Monitoring trends in demographic information is crucial for long-term pension planning.

	July 1, 2018	July 1, 2019
Participant Counts		
Active Participants	44	43
Retired Participants	55	57
Beneficiaries	9	9
Disabled Participants	6	6
Terminated Vested Participants	1	1
Total Participants	115	116
Active Participant Demographics (Ongoing)		
Average Age	38.6	38.7
Average Service	10.6	10.9
Average Compensation	\$68,051	\$71,014
Total Covered Payroll	\$2,994,240	\$3,053,587

History of Average Active Participant Age



History of Active Participant Ratio



Demographic Information (continued)

	July 1, 2018	July 1, 2019
Retiree Statistics		
Average Age	61.7	62.3
Average Monthly Benefit	\$2,478	\$2,540
Beneficiary Statistics		
Average Age	72.7	73.7
Average Monthly Benefit	\$1,028	\$1,028
Disabled Participant Statistics		
Average Age	62.6	63.6
Average Monthly Benefit	\$2,450	\$2,473
Terminated Participant Statistics		
Average Age	34.4	35.4
Average Employee Contribution Balance Owed	\$11,950	\$11,950

Monitoring the average age of the population is important due to the relationship of actuarial cost to age. Generally speaking, an older population generates a higher actuarial cost.

Changes in the ratio of active to retired participants can be a significant driver of costs in a volatile asset market.

Data, Assumptions, and Plan Provisions

Participant Reconciliation

	Active	Terminated Vested	Disabled	Retired	Beneficiaries	Totals
Prior Year	44	1	6	55	9	115
Active						
To Death	0	0	0	0	0	0
To Terminated Vested	0	0	0	0	0	0
To Lump Sum Cash-Out	0	0	0	0	0	0
To Retired	(2)	0	0	2	0	0
Terminated Vested						
To Retired	0	0	0	0	0	0
To Survivor	0	0	0	0	0	0
To Lump Sum Cash-Out	0	0	0	0	0	0
To Death	0	0	0	0	0	0
Retired						
To Death	0	0	0	0	0	0
Beneficiary						
To Death	0	0	0	0	0	0
Additions	1	0	0	0	0	1
Departures	0	0	0	0	0	0
Current Year	43	1	6	57	9	116

Data, Assumptions, and Plan Provisions

Active Participant Schedule

Active participant information grouped based on age and service.

Age Group	Years of Service									Total
	0 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 & Up	
Under 25	2									2
25 to 29	5	1								6
30 to 34		6	1							7
35 to 39	1	5	5	1						12
40 to 44			1	4						5
45 to 49		2	1	2	1					6
50 to 54			1	2	1					4
55 to 59					1					1
60 to 64										0
65 to 69										0
70 & up										0
Total	8	14	9	9	3	0	0	0	0	43

Data, Assumptions, and Plan Provisions

Plan Effective Date:

The plan was originally effective July 1, 1958. It was amended and restated April 6, 2016.

Eligibility for Participation:

All full-time Police Officers are eligible to participate in this Plan.

Normal Retirement Benefit:

Police (hired on or before July 1, 2013)

Eligibility: Completion of 20 years of service regardless of age

Benefit: For credited service prior to 7/1/2013, 2.75% of average annual earnings for the first 20 years plus 1.00% for the next 5 years. For credited service after 7/1/2013, 2.50% of average annual earnings for the first 20 years plus 1.00% for the next 10 years. The maximum retirement benefit is 60% of average annual earnings.

Police (hired after July 1, 2013)

Eligibility: Attainment of age 55 and completion of 25 years of service

Benefit: 2.00% of average annual earnings for each year of credited service up to 30 total years

Average Annual Earnings:

Police (hired on or before July 1, 2013)

Average of final 36 months of base salary, overtime pay, holiday pay, shift differential pay, longevity pay, and accreditation pay

Police (hired after July 1, 2013)

Average of final 5 years of base salary, holiday pay, and longevity pay

Credited Service:

Full years and completed months from date of participation.

Data, Assumptions, and Plan Provisions

Pre-Retirement Death Benefit:

If an inactive officer dies after 15 years of service and while married, the spouse will receive a monthly pension equal to the amount which would be payable if the Officer had retired with a 67.5% Joint & Survivor Annuity.

For those with less than 15 years of service, the beneficiary will receive a refund of the member's contributions with 5% interest.

Post-Retirement Death Benefit:

A spouse's pension equal to 67.5% of the participant's pension is payable until the earlier of the spouse's death or remarriage, or to surviving dependent children under age 18.

Disability Retirement Benefit:

Duty Related

66.67% of Average Compensation

Non Duty Related

Completed 12 - 18 years of service. Accrued benefit is subject to reduction as follow: At 12 years - 60%, increase by 5% for each year up to 17 years, 100% at 18 years.

Termination Benefit:

If an officer terminates employment after 15 years of service, the officer will receive 35% of base annual pay deferred until the date at which the officer would've reached their 20th year of service.

Vesting:

Police (hired on or before July 1, 2013)

100% on completing 15 years of service

Police (hired after July 1, 2013)

100% on completing 25 years of service

Employee Contributions:

Police (hired on or before July 1, 2013)

8% of annual earnings effective 7/1/2013. No interest is accrued.

Police (hired after July 1, 2013)

11% of annual earnings effective 7/1/2013. No interest is accrued.

Data, Assumptions, and Plan Provisions

Normal form of payment:

The normal form of payment for a married participant is a monthly benefit payable for the participant's lifetime with 67.5% of such benefit continuing to a surviving spouse. The normal form of payment for an unmarried participant is a monthly benefit payable for the participant's lifetime with no further payments after the participant's death.

Cost of Living Increases:

3.00% non-compounded from age 57 for retirement or disability on or after July 1, 1992
No COLA for retirement before July 1, 1992

Actuarial Equivalence

Actuarial Equivalence will be computed using 7.0% interest and the mortality table is the UP-1984 Table.

Plan Provisions Not Included

We are not aware of any plan provisions not included in the report.

Adjustments Made for Subsequent Events

We are not aware of any event following the measurement date and prior to the date of this report that would materially impact the results of this report.

Changes Since Prior Reports

The average annual earnings for participants hired after July 1, 2013 has been changed from "average over working career of base salary, holiday pay, and longevity pay" to "average of the final five years of base salary, holiday pay, and longevity pay". This change results in an increase in liability and normal cost.

Data, Assumptions, and Plan Provisions

Except where otherwise indicated, the following assumptions were selected by the plan sponsor with the concurrence of the actuary. Prescribed assumptions are based on the requirements of the relevant law, the Internal Revenue Code, and applicable regulation. The actuary was not able to evaluate the prescribed assumptions for reasonableness for the purpose of the measurement.

Valuation Date: July 1, 2019

Participant and Asset Information as of: July 1, 2019

Retirement Rates (FE):

Police hired on or before 7/1/2013

- 70% retirement at the completion of 20 years of service
- 10% retirement at the completion of 21 - 24 years of service
- 70% retirement at the completion of 25 years of service
- 10% retirement at the completion of 26 - 29 years of service
- 100% retirement at the completion of 30 years of service

Police hired after 7/1/2013

100% retirement at the completion of 25 years of service and attainment of age 55

Due to the size of the plan and limited experience, in our professional judgement, the use of an assumption more sophisticated than a single point estimate for post July 1, 2013 hires is not merited. The assumption for hires prior to July 1, 2013 is in line with the analysis from the experience study dated March 30, 2018.

Disability Rates (FE):

1985 Pension Disability Table. All Disability is assumed to be duty-related.

As the plan is not large enough to have credible experience, disability rates are set to reflect general population trends.

Mortality (FE):

Healthy

RP-2014 Blue Collar Mortality with 2018 Social Security Generational Improvement Scale from 2006

Disabled

RP-2014 Blue Collar Mortality with 2018 Social Security Generational Improvement Scale from 2006

As the plan is not large enough to have credible experience, mortality assumptions are set to reflect general population trends.

Withdrawal (FE):

None.

Data, Assumptions, and Plan Provisions

Salary Projection Scale (FE):	Age	Increase
	<25	6.0%
	25-29	6.0%
	30-34	5.5%
	35-39	5.0%
	40-44	4.0%
	45-49	3.0%
	50-54	2.0%
	55-59	1.0%
	60+	1.0%

The annual pay increase reflects the employer's average target increase for a career employee.

Interest Rate (CO): 7.25%

This assumption was reviewed as part of the experience study dated March 30, 2018. The plan sponsor, in conjunction with their asset advisors, set the assumption.

Expense and/or Contingency Loading (FE): None

Marital Status and Ages (FE): 100% of Participants assumed to be married with wives assumed to be 4 years younger than husbands.

Funding method Liabilities and contributions in the report are based on application of an Entry Age Normal cost method.

In determining the Actuarially Recommended Contribution, the excess of the entry age actuarial accrued liability over the actuarial value of plan assets is amortized over a closed 20-year period as a level percent of pay.

Asset Valuation Method: Market value of assets with a five year phase in of gains and losses.

Amortization Method: Closed 20-year level percent of pay amortization of Unfunded Actuarial Accrued Liability; for this purpose, pay is assumed to grow at 3.50% annually

Other Procedures: Benefits projected to assumed retirement age for active participants have been limited so as not to exceed maximum benefits imposed by Code Section 415(b) and/or maximum compensation limits of Code Section 401(a)(17).

Data, Assumptions, and Plan Provisions

Changes Since Prior Report:

To better reflect anticipated experience, the mortality improvement assumption has been updated from the Social Security improvement scaled based on assumptions from the 2017 Trustees Report to the Social Security improvement scale based on assumptions from the 2018 Trustees Report. The base mortality table is unchanged. This change results in a decrease in liability and normal cost.

The interest rate used to measure the liability was reduced from 7.50% to 7.25% per the direction of the plan sponsor. This change results in an increase in liability and normal cost.

FE indicates an assumption representing an estimate of future experience

MD indicates an assumption representing observations of estimates inherent in market data

CO indicates an assumption representing a combination of an estimate of future experience and observations of market data

Other Measurements

The actuarial report also shows the necessary items required for plan reporting and any state requirements.

- Exhibit 1 – Schedule of Amortizations

Other Measurements

Exhibit 1 - Schedule of Amortizations

<u>Date Established</u>	<u>Remaining Period (Years)</u>	<u>Outstanding Balance</u>	<u>Annual Payment</u>
07/01/2012	13	\$18,267,887	\$1,724,418
07/01/2013	14	(\$3,323)	(\$296)
07/01/2014	15	(\$126,888)	(\$10,725)
07/01/2015	16	(\$391,650)	(\$31,541)
07/01/2016	17	\$154,878	\$11,929
07/01/2017	18	(\$190,930)	(\$14,113)
07/01/2018	19	\$32,401	\$2,305
07/01/2019	20	\$1,041,067	\$71,480
		<hr/>	<hr/>
		\$18,783,442	\$1,753,457