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Pension Plan of Town of West Warwick

July 1, 2019

Actuarial Valuation Report

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Actuarial Certification

At the request of the plan sponsor, this report summarizes the actuarial results of the Pension Plan of Town of West Warwick as of July 1, 2019. The purpose of this report is to communicate the following results of the valuation:

• Funded Status;
• and Determine Actuarial Recommended Contribution for plan year ending June 30, 2021;

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.

The actuarial assumptions and methods were chosen by the employer. 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

Elizabeth A. Wiley, FSA, EA	Carter Angell, FSA, EA, MAAA
Enrollment Number: 17-08544	Enrollment Number: 17-07855

December 6, 2019
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:

Ultimate Pension Cost = Benefits Paid - Investment Income + Plan Expenses

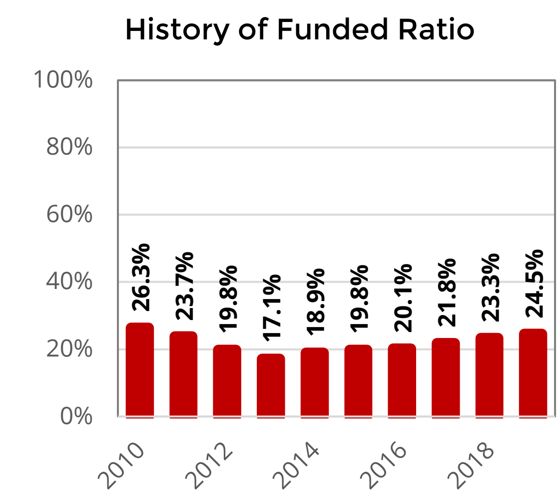
While the plan's liability and normal cost determine the current contribution recommendations, the true cost is controlled only by the "defined" benefit and investment income generated by the underlying assets. The actuarial process only controls the timing of costs.

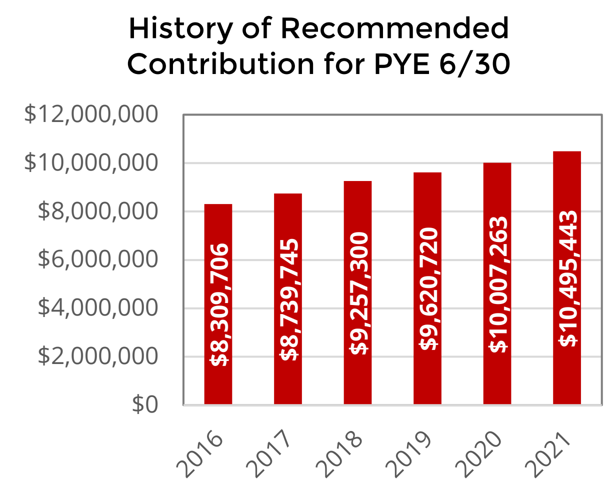
We suggest that a plan sponsor treat the actuarial report as you would treat a scorecard. It is simply a measure of progress toward the ultimate goal of paying all pension benefits when participants retire.

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.

Valuation Date For Plan Year Ending	July 1, 2018 June 30, 2020	July 1, 2019 June 30, 2021
Funded Status Measures		
Accrued Liability	$165,637,204	$172,086,561
Actuarial Value of Assets	38,622,330	42,163,063
Unfunded Actuarial Accrued Liability (UAAL)	$127,014,874	$129,923,498
Funded Percentage (AVA)	23.3%	24.5%
Funded Percentage (MVA)	22.7%	23.7%
Cost Measures		
Actuarial Recommended Contribution	$10,007,263	$10,495,443
Actuarial Recommended Contribution (as a % of payroll) payroll)	59.0%	60.9%
Asset Performance		
Market Value of Assets (MVA)	$37,614,044	$40,836,280
Actuarial Value of Assets (AVA)	$38,622,330	$42,163,063
Actuarial Value/Market Value	102.7%	103.2%
Market Value Rate of Return	6.9%	4.0%
Actuarial Value Rate of Return	5.7%	4.7%
Participant Information		
Active Participants	321	321
Terminated Vested Participants	37	50
Retirees and Beneficiaries	348	356
Total	706	727
Valuation Payroll	$16,387,887	$16,651,108
Expected Payroll	$16,961,463	$17,233,897





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Changes since Prior Valuation and Key Notes

There have been no changes to the plan provisions since the last valuation.

The mortality table has been updated from using a fully generational improvement scale based on assumptions developed from the 2018 Social Security Trustees' Report to the improvement scale based on assumptions developed from the 2019 Social Security Trustees' Report. The base mortality table remains unchanged. This change results in a decrease in liability and normal cost.

Five Year Valuation Summary

	07/01/2015	07/01/2016	07/01/2017	07/01/2018	07/01/2019
Funding					
Accrued Liability	$151,915,835	$157,816,954	$160,691,770	$165,637,204	$172,086,561
Actuarial Value of Assets	$30,064,933	$31,779,265	$35,043,772	$38,622,330	$42,163,063
Unfunded Actuarial Accrued Liability	$121,850,902	$126,037,689	$125,647,998	$127,014,874	$129,923,498
Funded Percentage	19.8%	20.1%	21.8%	23.3%	24.5%
Total Normal Cost (NC)	$2,441,566	$2,549,974	$2,502,614	$2,561,513	$2,612,554
NC as a Percent of Covered Payroll	16.1%	15.9%	15.9%	15.6%	15.7%
Actual Contribution	$8,179,980	$8,739,745	$9,247,549	$9,805,598	TBD
Recommended Contribution	$8,309,706	$8,739,745	$9,257,300	$9,620,720	$10,007,263
Recommended Contribution (% of Pay)	57.1%	56.6%	56.4%	58.9%	59.0%
Interest Rate	7.50%	7.50%	7.50%	7.50%	7.50%
Rate of Return					
Actuarial Value of Asset	8.0%	3.0%	5.6%	5.7%	4.7%
Market Value of Assets	1.4%	-3.6%	12.1%	6.9%	4.0%
Demographic Information					
Active Participants	304	304	307	321	321
Retired Participants	241	236	234	237	247
Beneficiaries	47	52	52	53	50
Disabled Participants	58	58	56	58	59
Terminated Vested Participants	31	34	35	37	50
Total Participants	681	684	684	706	727
Covered Payroll	$15,208,402	$16,091,817	$15,781,633	$16,387,887	$16,651,108
Average Covered Pay	$50,028	$52,934	$51,406	$51,053	$51,873

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 Pension Plan of Town of West Warwick. 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
Contribution Risk	Stress Testing
Participant Longevity	Annual Monitoring
Salary Growth	Experience Study – Recently completed in 2018
Demographic Risk	Experience Study – Recently completed in 2018

Plan Maturity Measures - July 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 Pension Plan of Town of West Warwick falls in its life-cycle.

Duration of Liabilities: 10.9

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: 44.2%

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: 40.8%

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: 24.7%

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.

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Assets and Liabilities

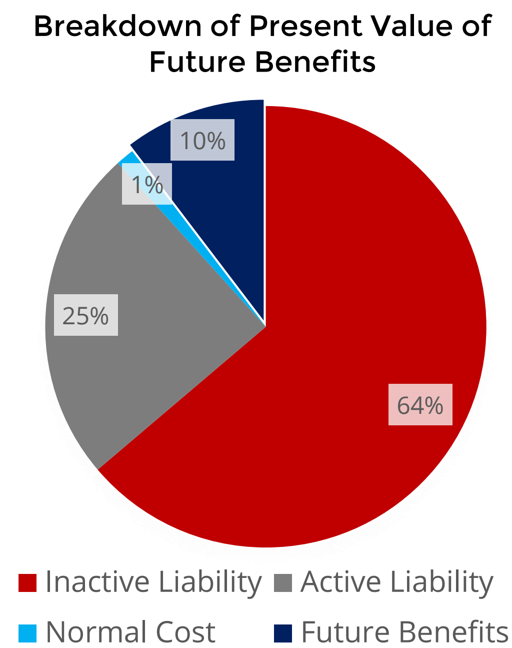
The basic building blocks of the actuarial report are contained in this section. These include:

- Actuarial Accrued Liabilities
- Asset Information
- Summary of Contributions

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	$56,549,576
Disability	12,465,846
Death	634,804
Termination	908,077
Total active	$70,558,303
Inactive participants	
Retired participants	$87,720,233
Disabled	27,474,703
Beneficiaries	6,554,189
Terminated vested participants	2,574,099
Total inactive	$124,323,224
Total	$194,881,527
Present value of future payrolls	$148,991,516

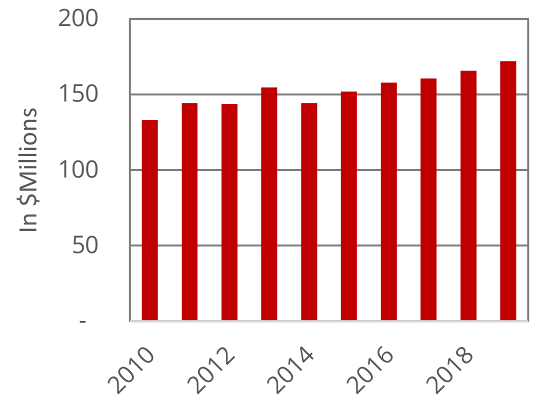


Actuarial Accrued Liability

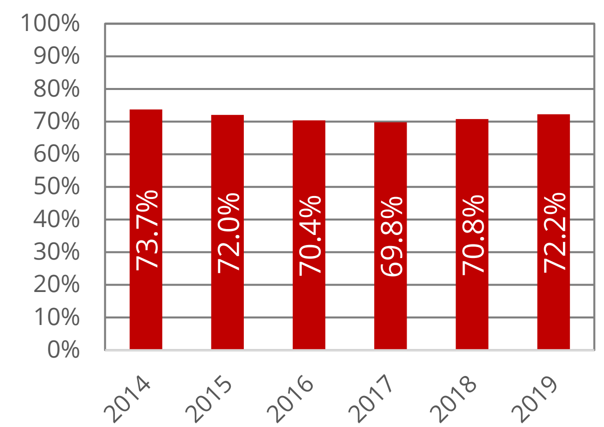
The Actuarial Accrued Liability measures the present value of benefits earned as of the valuation date, using a specified set of actuarial assumptions.

	July 1, 2019
Active participants	
Retirement	$41,213,041
Disability	6,170,232
Death	385,965
Termination	(5,901)
Refund of Contributions	0
Total Active	$47,763,337
Inactive participants	
Retired participants	$87,720,233
Disabled	27,474,703
Beneficiaries	6,554,189
Terminated vested participants	2,574,099
Total Inactive	$124,323,224
Total Actuarial Accrued Liability	$172,086,561
Normal Cost	$2,612,554
Interest Rate	7.50%

History of Liabilities



History of the Percentage of Inactive Liability



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Reconciliation of Actuarial Accrued Liability

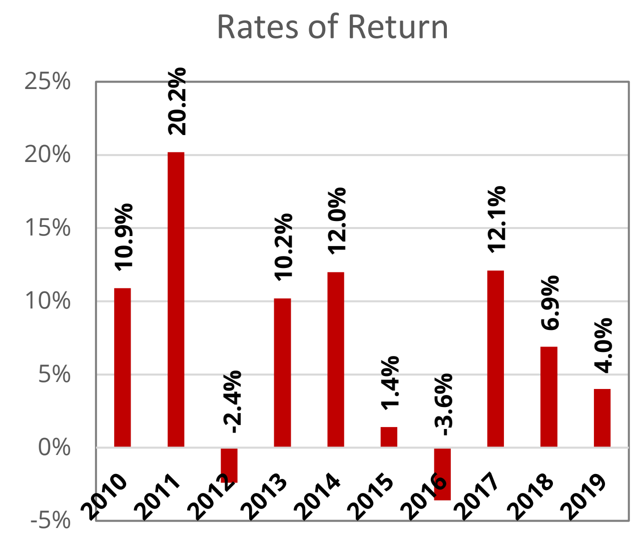
A plan's Actuarial Accrued Liability will change from one year to the next. It increases due to benefit accruals (Normal Cost) and interest, and it decreases as benefits are paid. Demographic experience, assumptions changes, and plan changes can cause increases or decreases.

	July 1, 2019
1. Actuarial Accrued Liability prior year	$165,637,204
2. Increases or decreases due to:	
(a) Normal Cost	2,561,513
(b) Interest Adjustment	12,243,792
(c) Benefits Paid	(10,078,516)
(d) Demographic Experience	2,422,076
(e) Interest Rate Changes	0
(f) Mortality Changes	(699,508)
(g) Other Assumption Changes	0
(h) Plan Changes	0
(i) Other Changes	0
3. Actuarial Accrued Liability current year	$172,086,561

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	$37,614,044
Contributions	
Employer contributions	9,805,598
Employee contributions	1,973,630
Total	$11,779,228
Investment income	1,757,175
Benefit payments	(10,078,516)
Investment Expenses	(152,248)
Administrative expenses	(83,403)
Market value of assets, beginning of current year	$40,836,280
Return on Market Value of Assets, Gross	4.6%
Return on Market Value of Assets, Net of Expenses	4.0%
Actuarial Value of Assets	
Value at beginning of current year	$42,163,063



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

Asset Information (continued) – Development of Actuarial Value of Assets

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

	July 1, 2019
Investment Gain or (Loss)	
1. Expected Market Value of Assets	
(a) Market value of assets, beginning of prior year	$37,614,044
(b) Contributions	$11,779,228
(c) Benefit payments	$ (10,078,516)
(d) Expected Return	$2,879,338
(e) Expected market value of assets, beginning of current year, (a) + (b) + (c) + (d)	$42,194,094
2. Actual market value of assets, beginning of current year	$40,836,280
3. Amount subject to Phase-In, (2) – (1)(e)	$ (1,357,814)
Actuarial Value of Assets	
4. Market value of assets	$40,836,280
5. Deferred Investment gains or (losses)	
(a) Current year (80% x (1,357,814))	(1,086,251)
(b) First prior year (60% x (202,467))	(121,480)
(c) Second prior year (40% x 1,329,359)	531,774
(d) Third prior year (20% x (3,253,978))	(650,796)
(e) Total	$ (1,326,783)
6. Actuarial value of assets, beginning of current year (4) – (5)(e)	$42,163,063
7. Return on actuarial value of assets	4.68%

Funding Results

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

- Reconciliation of Gain/Loss
- Recommended Contribution

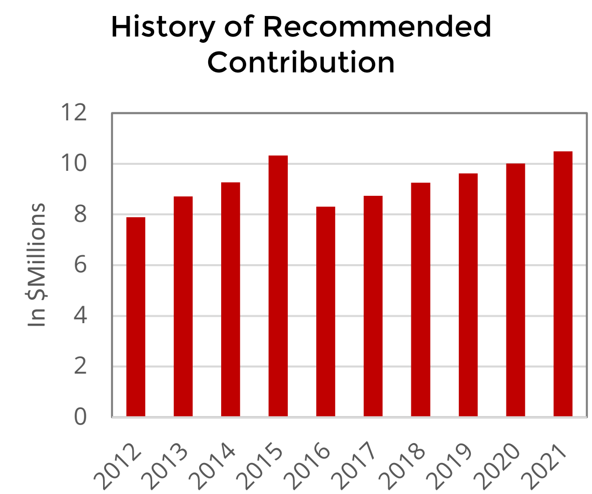
Reconciliation of (Gain)/Loss

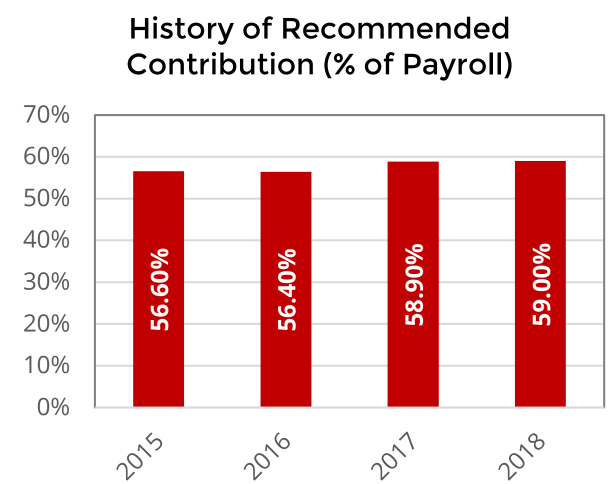
	July 1, 2019
Liability (Gain)/Loss	
1. Actuarial liability, beginning of prior year	$165,637,204
2. Normal cost for prior year	$2,561,513
3. Benefit payments	$ (10,078,516)
4. Expected Interest	$12,243,792
5. Change in Assumptions	$ (699,508)
6. Other Changes	$ 0
7. Expected actuarial liability, beginning of current year	$169,664,485
8. Actual actuarial liability	$172,086,561
9. Liability (Gain)/Loss, (8) – (7)	$2,422,076
Asset (Gain)/Loss	
10. Actuarial value of assets, beginning of prior year	$38,622,330
11. Contributions	$11,779,228
12. Benefit payments	$ (10,078,516)
13. Expected Investment return	$2,111,584
14. Expected actuarial value of assets, beginning of current year	$42,434,626
15. Actual actuarial value of assets, beginning of current year	$42,163,063
16. Asset (Gain)/Loss, (15) – (16)	$271,563
Total (Gain)/Loss, (9) + (17)	$2,693,639

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.

Recommended Contribution	July 1, 2019
1. Accrued Liability	$172,086,561
2. Actuarial value of assets	$42,163,063
3. Unfunded accrued liability, (1)-(2)	$129,923,498
4. Normal Cost	
a. Total normal cost	$2,612,554
b. Expected participant contributions	$1,879,921
c. Net normal cost	$732,633
5. Net Amortization Payment	$9,049,115
6. Applicable Interest	$360,184
7. Calculated contribution at valuation date	$10,141,932
8. Valuation payroll	$16,651,108
9. Calculated contribution as a percentage of payroll	60.9%
10. Projected Payroll	$17,233,897
11. Actuarial Recommended Funding Contribution (9) X (10)	$10,495,443





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

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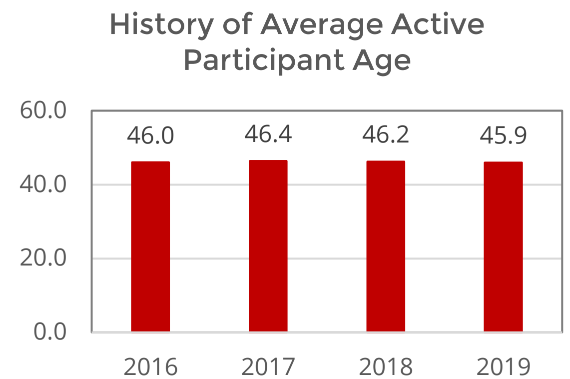
Data, Assumptions, and Plan Provisions

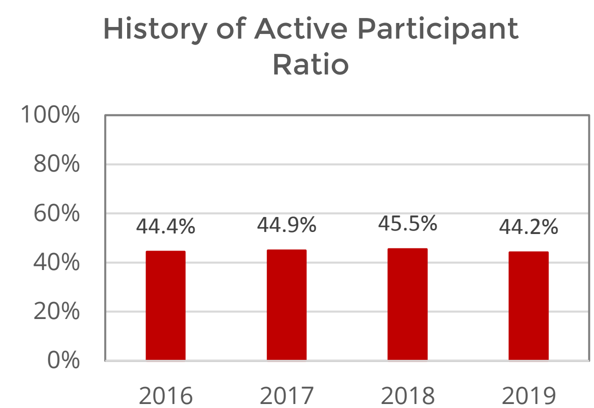
- Demographic Information
- Plan Provisions
- Assumptions and Methods

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	321	321
Retired Participants	237	247
Beneficiaries	53	50
Disabled Participants	58	59
Terminated Vested Participants	37	50
Total Participants	706	727
Active Participant Demographics		
Average Age	46.2	45.9
Average Service	12.0	11.8
Average Compensation	$51,053	$51,873
Total Covered Payroll	$16,387,887	$16,651,108





Demographic Information (continued)

	July 1, 2018	July 1, 2019
Retiree Statistics		
Average Age	66.7	67.2
Average Monthly Benefit	$2,365	$2,435
Beneficiary Statistics		
Average Age	73.9	73.9
Average Monthly Benefit	$1,162	$1,222
Disabled Participant Statistics		
Average Age	57.7	58.7
Average Monthly Benefit	$3,102	$3,147
Terminated Participant Statistics		
Average Age	51.1	54.1
Average Monthly Benefit	$1,303	$1,209
Terminated Participant Statistics – Return of Employee Contributions Only		
Average Age	46.9	42.0
Average Employee Contribution Balance Owed	$10,698	$8,046
Total Employee Contribution Balance Owed (without interest)	$288,837	$273,564

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.

Participant Reconciliation

	Active	Terminated Vested	Disabled	Retired	Beneficiaries	Totals
Prior Year	321	37	58	237	53	**706**
Active						
To Non-Participating	(1)	0	0	0	0	**(1)**
To Terminated Vested	(10)	10	0	0	0	**0**
To Lump Sum Cash-Out	(5)	0	0	0	0	**(5)**
To Retired	(12)	0	0	12	0	**0**
Terminated Vested						
To Active	1	(1)	0	0	0	**0**
To Disabled	0	(1)	1	0	0	**0**
Retired						
To Death	0	0	0	(1)	0	**(1)**
To Survivor	0	0	0	(1)	1	**0**
Beneficiary						
To Death	0	0	0	0	(5)	**(5)**
Lump Sum Cash-Out						
To Active	1	0	0	0	0	**1**
Additions	26	5	0	0	1	**32**
Departures	0	0	0	0	0	**0**
Current Year	**321**	**50**	**59**	**247**	**50**	**727**

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Active Participant Schedule

Active participant information grouped based on age and service.

Age Group	Years of Service									
	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	Total
Under 25	9									9
25 to 29	20	4								24
30 to 34	13	9	4							26
35 to 39	12	8	12	3						35
40 to 44	16	5	6	11	6					44
45 to 49	17	5	7	15	13	4				61
50 to 54	7	9	14	7	9	5	3			54
55 to 59	5	6	5	12	6	3	1			38
60 to 64	2	1	6	5	5	1	1			21
65 to 69			6	1	1		1			9
70 & up										
Total	101	47	60	54	40	13	6			321

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Name of plan

Pension Plan of Town of West Warwick

Effective Date

Police and Fire	April 1, 1957
School	March 1, 1970
Others	July 1, 1969

Eligibility for Participation

Employees are eligible to participate in the Plan upon date of hire.

Benefits

Normal Retirement

Eligibility

Fire hired before 7/1/14	Earlier of age 62 or age 50 with 25 years of service. The mandatory retirement age is 62.5. Four members named in the CBA may retire upon the earlier of age 62.5 or 20 years of Service
Fire hired on or after 7/1/14	Earlier of age 62 or age 55 with 25 years of service. The mandatory retirement age is 62.5.
Civilian Fire	Age 60 with 10 years of service
Police hired before 7/1/14	Earlier of age 62 or 20 years of service
Police hired on or after 7/1/14	Earlier of age 62 or age 50 with 20 years of service
Library	Earlier of age 60 with 10 years of service or 25 years of service
Municipal Non-Union	Age 55 and 10 years of service
Municipal Union, Waste Water, School (Council 94)	
Hired before 7/1/14	Age 62 with 12 years of service or 25 years of service
Hired on or after 7/1/14	Earlier of age 62 and 12 years of service or age 55 and 25 years of service Five members named in Ordinance No. 2018-9 may retire at age 60 with 10 years of service

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Normal Retirement (continued)

Benefit	
Fire	2.2% of Average Annual Compensation multiplied by credited service up to 25 years, plus 3.0% of Average Annual Compensation for up to 5 additional years with a maximum benefit of 70% of Average Annual Compensation
Police with 20 years of service as of 6/30/2014	2.5% of Average Annual Compensation multiplied by credited service up to 28 years.
Other Police	2.5% of Average Annual Compensation multiplied by credited service up to 20 years, plus 1.0% of Average Annual Compensation for the next 5 years of service, plus 2.5% of Average Annual Compensation for the next 6 years of service. The maximum benefit of 70% of Average Annual Compensation is attained at 31 years of service.
Library	2.5% of Average Annual Compensation multiplied by credited service
Municipal Non-Union, Municipal Union, Waste Water, School (Council 94)	2.5% of Average Annual Compensation multiplied by credited service for each year of service prior to 7/1/14, plus 2.4% of Average Annual Compensation for each year of service after 7/1/14

Early Retirement

Eligibility	
Police and Fire	Age 50 with 10 years of service
Others	Department head after age 50 and 10 years of service
Benefit	Actuarially reduced normal retirement benefit

Death before Retirement

Eligibility	Participant of the Plan
Benefit	A lump sum equal to $400 multiplied by years of service, with a minimum of $2,000 and a maximum of $8,000 is payable to the employee's beneficiary. If a survivor's pension is not payable, an additional amount equal to employee contributions with credited interest is payable to the employee's beneficiary. If the employee dies after 10 years of service and while married, his spouse will receive a monthly pension to the amount which would be payable if he had retired with a 50% joint & survivor annuity.

Death after Retirement

Benefit

A lump sum is payable to the participant's beneficiary in an amount equal to the greater of:

A) $400 multiplied by years of service, with a maximum of $8,000, reducing by 25% per year following retirement, to a minimum of $2,000 or
B) The excess of the employee's contributions plus credited interest to the retirement date over any benefits already paid

In addition, a spouse's pension equal to 67.50% 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.

Occupational Disability Retirement

Eligibility	Immediately upon disability
Benefit	2/3 of Average Annual Compensation at disability payable for life
Fire – Occurs Before 25 Years of Service	Payments receive no annual increases. Upon the 25th anniversary since date of hire, benefit is adjusted to 55% of present pay received by active employees in the position held at time of disability retirement. After 7 years of COLA suspension, the 2.25% simple COLA applies for 15 years.
Fire – Occurs After 25 Years of Service	After 7 Years of COLA suspension commencing at date of disability, the 2.25% simple COLA applies for 15 years.
Police	Payments are increased annually by the percentage increase in pay of an active employee in the position held at time of disability retirement. If the member is not fully disabled at normal retirement age, the benefit is adjusted to the member's accrued benefit under the normal retirement benefit formula. The standard retirement COLA will apply to this portion of the benefit, with no 7-year delay.
Others	After 5 years of COLA suspension commencing at date of disability, the 2.00% compounded COLA applies for 15 years.

Non-Occupational Disability

Eligibility	
Police and Fire	7 years of continuous service and prior to early or normal retirement date
Others	Immediately upon disability

Non-Occupational Disability – Continued

Benefit

Fire – Prior to 10 Years of Service	25% of Annual Compensation
Fire – After 10 Years of Service	25% of Annual Compensation, plus 2.2% for each year between 10 and 25, plus 3.0% for each year between 25 and 30 years. Accruals cease at 30 years
Police	Accrued normal retirement benefit with a minimum of 50% Average Annual Compensation
Others	Accrued normal retirement benefit

Partial Disability

Eligibility	Immediately upon disability, Police and Fire employees excluded
Benefit	2% of Annual Compensation times years of service.

Annual Compensation

Police	Basic earnings, longevity pay (excluding overtime and other extra payments), wellness stipend, and 105 hours of holiday pay
Fire	Basic earnings, longevity pay (excluding overtime and other extra payments), all holiday pay, and EMT pay
Others	Gross earnings

Average Annual Compensation

Police, Library	Average of Annual Compensation over the last 12 months of employment
Fire	Average of highest three consecutive Annual Compensation amounts
Municipal Non-Union	Average of final three Annual Compensation amounts
Municipal Union, Waste Water, School (Council 94)	Average of final ten Annual Compensation amounts

Continuous Service

Number of years and completed months of uninterrupted service

Employee Contributions

Police	12% of Annual Compensation
Fire	13% of Annual Compensation
Library	9% of Annual Compensation
Others	11% of Annual Compensation

Cost of living adjustments

Police*	2.00% compounded for 10 years effective July 1, 1991
	2.25% compounded for 15 years effective July 1, 2000
	Suspended 7 years from retirement, followed by 2.25% compounded for 15 years.
Fire*	2.00% compounded for 10 years effective July 1, 1991
	2.25% compounded for 15 years effective July 1, 2002
	Suspended until the earlier of 7 years from retirement or age 62.5 for regular members (age 67 for civilian members), followed by 2.25% simple COLA for 15 years.
Library*	2.00% compounded for 5 years effective July 1, 1999
	2.25% compounded for 15 years effective July 1, 2002
Others*	2.00% compounded for 5 years effective July 1, 1999
	2.25% compounded for 15 years effective July 1, 2002
	Suspended 5 years from retirement, followed by 2.00% compounded for 15 years.

Cost of living adjustments (continued)

*For retirees and deferred vested participants as of July 1, 2014, the COLA has been suspended for 5 years from July 1, 2014 through and including June 30, 2020. After the suspension, the COLA resumes for members who have remaining COLA increases. For example, if the member only received 2 years of COLA increases prior to the suspension, he or she would begin to receive COLA increases for years 3 through 15 when the COLA resumes on July 1, 2020.

Vesting

Upon termination after 10 years of service, Member may choose between a refund of contributions with interest or a monthly pension at normal retirement date.

Upon termination prior to 10 years of service, Member contributions are returned with interest accumulated at 4.0% per year.

Normal form of payment

The normal form of benefit is a monthly benefit payable for the participant's lifetime with 67.5% of such benefit continued to a surviving contingent annuitant following the participant's death with guaranteed return of employee contributions accumulated at 4.0% interest to retirement.

Plan Provisions Not Included

We are not aware of any plan provisions not included in the valuation

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.

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. Unless otherwise specified, assumptions are based on a study of actuarial experience for the plan during 7/1/2010 – 7/1/2017. See experience study dated March 30, 2018.

Valuation Date	July 1, 2019
Participant and Asset Information Collected as of	July 1, 2019
Cost Method *(CO)*	Entry Age Normal Cost Method. The Actuarial Recommended Contribution is determined as a percentage of projected payroll in the following plan year.
Amortization Method *(CO)*	25 year closed level % of pay amortization of the excess of the entry age actuarial accrued liability over the actuarial value of plan assets beginning 7/1/2014. Annual gains, losses, changes in assumptions and plan provisions are set up as new outstanding bases amortized over 25 years. For this purpose, pay is assumed to grow at 3.5% annually.
Asset Valuation Method	The actuarial value of assets is equal to the fair market value of assets on the valuation date adjusted for a 5-year phase in of gains and losses on fair market value of assets.
Interest Rates *(CO)*	7.50%
Expense and/or Contingency Loading *(FE)*	None
Annual Pay Increases *(FE)*	3.5% compounded annually

Mortality Rates *(FE)*

Healthy

Police and Fire	RP-2014 Blue Collar Mortality Table with generational improvements from 2006 based on assumptions from the 2019 Social Security Administration Trustee's Report
Others and Beneficiaries of All Participants	RP-2014 Mortality Table with generational improvements from 2006 based on assumptions from the 2019 Social Security Administration Trustee's Report
Disabled	RP-2014 Disabled Mortality Table with generational improvements from 2006 based on assumptions from the 2019 Social Security Administration Trustees' Report

Retirement Rates *(FE)*

Police – Hired Prior to 7/1/14	25% at 20 years of service; 50% at 25 years of service; 100% at age 62; 5% at all other age/service combinations
Police – Hired On or After 7/1/14	25% at first eligibility for unreduced retirement if less than 25 years of service; 50% at first eligibility for unreduced retirement at 25 years or more years of service; 100% at age 62; 5% at all other age/service combinations
4 Grandfathered Fire Members	25% at 20 years of service; 50% at 25 years of service; 100% at age 62; 5% at all other age/service combinations
Other Fire Members	50% at first eligibility for unreduced retirement; 5% at ages 50-54; 30% at ages 55 and 60 if ineligible for unreduced retirement; 50% at ages 55 and 60 if eligible for unreduced retirement; 100% at age 62; 10% at all other age/service combinations
Civilian Fire Members	5% at all ages <60; 50% at ages 60 and 62; 10% at ages 61, 63, 64; 100% at age 65
Others	If retirement eligible, the following rates:

Age	Rate
0-55	2%
56-59	4%
60	25%
61	10%
62-64	30%
65-66	25%
67-69	50%
70	100%

Disability Rates *(FE)*

Police and Fire* — 3 times the 1985 Pension Disability Table

Others — 1985 Pension Disability Table through age 54

Age	Police and Fire	Others
25	0.28%	0.09%
30	0.44%	0.15%
35	0.66%	0.22%
40	0.99%	0.33%
45	1.53%	0.51%
50	2.51%	0.84%
55	4.49%	0.00%
60	6.32%	0.00%

*50% of Police members who become disabled prior to retirement age are assumed to remain disabled at retirement age

Withdrawal Rates *(FE)*

Police and Fire — None

Others — Crocker-Sarason T-3

Age	T-3
25	5.27%
30	4.83%
35	4.47%
40	3.84%
45	3.21%
50	1.52%
55	0.33%
60	0.00%

Marital Status and Ages *(FE)* — 80% of participants assumed to be married with female spouses 3 years younger than husbands.

COLA – Active Police Disability	90% of assumed active base salary increase rate (0.00% next 1 year; 3.15% compounded thereafter)
Other Procedures	Benefits projected to assumed retirement age for active participants have been limited so as not to exceed maximum benefit limits imposed by Code Section 415(b) and/or maximum compensation limits of Code Section 401(a)(17).
Other Procedures	Benefits projected to assumed retirement age for active participants have been limited so as not to exceed maximum benefit limits imposed by Code Section 415(b) and/or maximum compensation limits of Code Section 401(a)(17).
Changes since Prior Report	The table for generational mortality improvement assumptions for all divisions has been updated from a scale based upon assumptions disclosed in the 2018 Social Security Administration's Trustees' Report to a scale based upon assumptions disclosed in the 2019 Social Security Administration's Trustees' Report.

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
- Exhibit 2 – Actuarial Recommended Contribution by Division – Plan Year Ending 6/30/2021

Exhibit 1 - Schedule of Amortizations

Date Established	Remaining Period (Years)	Outstanding Balance	Annual Payment
7/1/2019	25	2,616,263	158,944
7/1/2018	24	821,331	51,148
7/1/2017	23	(1,218,119)	(77,886)
7/1/2016	22	3,276,877	215,505
7/1/2015	21	3,704,734	251,091
7/1/2014	20	120,722,412	8,450,313
		$129,923,498	$9,049,115

Exhibit 2 – Actuarial Recommended Contribution by Division – Plan Year Ending 06/30/2021

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

	Library	Waste Water	School	Town	Fire	Police	Total
(1) Total Normal Cost	$46,925	$153,660	$583,564	$342,604	$857,872	$627,929	$2,612,554
(2) Expected Employee Contributions	$21,816	$125,934	$450,412	$324,188	$601,462	$356,109	$1,879,921
(3) Employer Normal Cost (1) – (2)	$25,109	$27,726	$133,152	$18,416	$256,410	$271,820	$732,633
(4) Net Amortization Payment	$161,318	$515,549	$1,471,679	$1,906,031	$2,461,442	$2,533,096	$9,049,115
(5) Interest at Valuation Rate on (3)+(4)	$6,865	$20,005	$59,093	$70,862	$100,077	$103,282	$360,184
(6) Calculated Contribution at Valuation Date (3) + (4) + (5)	$193,292	$563,280	$1,663,924	$1,995,309	$2,817,929	$2,908,198	$10,141,932
(7) Valuation Payroll	$262,326	$1,198,419	$4,364,646	$3,064,305	$4,619,758	$3,141,654	$16,651,108
(8) Calculated Contribution at Valuation Date as a percentage of Valuation Payroll (6) / (7)	73.7%	47.0%	38.1%	65.1%	61.0%	92.6%	60.9%
(9) Projected Payroll	$271,507	$1,240,364	$4,517,409	$3,171,556	$4,781,450	$3,251,611	$17,233,897
(10) Preliminary Actuarial Recommended Contribution (8) x (9)	$200,101	$582,971	$1,721,133	$2,064,683	$2,916,685	$3,010,992	$10,496,565
(11) Adjustment Due to Rounding	($18)	($81)	($294)	($206)	($311)	($212)	($1,122)
(12) Actuarial Recommended Contribution (10) + (11)	$200,083	$582,890	$1,720,839	$2,064,477	$2,916,374	$3,010,780	$10,495,443