City of Warwick, Rhode Island Firefighters/ Police I Pension Fund

ACTUARIAL VALUATION AS OF JULY 1, 2023

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SECTION A

DISCUSSION

I. Purpose and Summary

This report presents the results of our July 1, 2023 actuarial valuation of the City of Warwick, Rhode Island Firefighters/Police I Pension Fund. The valuation was performed at the request of the City of Warwick to determine the City's annual contribution for the fiscal year beginning July 1, 2024 under the City's funding ordinance.

The City's contribution level is $18,710,538 for 2024-2025 fiscal year, as shown on Table 3.

The development of the valuation results is shown in Tables 1 through 10 and is described in more detail on the following pages.

II. Membership Data

The City furnished data for active and retired members as of December 31, 2022. The data was projected to July 1, 2023 for valuation purposes reflecting age, salary and benefit increases, with adjustments of data due to data questions response. Although we did not audit this data, we did review it for reasonableness and consistency with the data collected in the previous valuation (prepared as of July 1, 2022). Tables 5A and 5B provide the schedule of retirees & beneficiaries added to/and removed from rolls, the distributions by age and benefits amount for retirees and beneficiaries. Tables 1A, 1B, and 1C provide information about the retirees and inactive members.

III. Plan Provisions

A summary of the principal plan provisions recognized for purposes of the valuation is provided in Table 9. There were no changes to this plan adopted since the last actuarial valuation.

IV. Assets

The City of Warwick furnished asset information for the fiscal years ending June 30, 2023. Tables 2a, 2b, and 2c provide information about the composition of plan assets and the development of valuation assets.

The asset value used in the determination of the annual contribution level is set equal to the market value of assets, adjusted to phase in the difference between actual and expected investment return over five years, at 20% per year. As shown in Table 2c, the market value of assets on July 1, 2023 was $69,958,023 while the valuation assets were $73,034,779, or 104.4% of the market value.

As shown in Table 3b, the dollar-weighted rate of return on the market value of assets for FY 2023 was 11.14%. These returns are net of all investment expenses.

V. Actuarial Methods and Assumptions

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rates and funding periods. We have updated the mortality projection scales to the ultimate rates of the most recently published ones since the prior valuation.

We believe the assumptions are internally consistent and are reasonable, based on the actual experience of the City of Warwick, Rhode Island Firefighters/Police I Pension Fund. Furthermore, the combined effect of the assumptions used in this valuation is expected to have no significant bias.

VI. Funding Policy

Per the funding plan, the contribution for the 2024-2025 fiscal year will be equal to the unfunded portion of the projected benefit payments plus administrative expenses. The funded ratio in this valuation is 24.65%, thus 75.35% of the projected benefit payments is unfunded. A projection of employer contribution amounts is provided in Table 7.

The Actuarial Standards of Practice require the actuary to calculate and disclose a Reasonable Actuarially Determined Contribution. The funding policy considers that the plan is closed to new entrants and is expected to maintain a level of assets sufficient to make benefit payments when due. The contribution requirements determined in this valuation meet all of the requirements in the ASOP and will reduce the UAAL by a reasonable amount. Thus the employer contribution for FY2024-2025 in this valuation is the Reasonable Actuarially Determined Contribution under ASOP No. 4.

VII. Analysis of Changes

The funded ratio increased from 24.03% to 24.65% since the last valuation and the UAAL decreased by $8.3 million. The funded status measure alone is not appropriate for assessing the need for future contributions. Also, the funded status is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.

The fund experienced a $4.6 million gain on liabilities and a $1.5 million loss on the actuarial value of assets.

VIII. Future Expectations

We commend the City for continuing to meet its actuarial contribution requirements as dictated by the approved funding policy. If the City continues to meet those obligations, the contribution requirements should remain relatively stable and eventually begin to decrease, at which time the funded ratio will slowly increase.

IX. Certification

This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

We certify that the information included herein and contained in this Actuarial Valuation Report is accurate and fairly presents the actuarial position of the City of Warwick, Rhode Island Firefighters/Police I Pension Fund as of the valuation date.

All of our work conforms with generally accepted actuarial principles and practices, and to the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board.

The undersigned are independent actuaries and consultants. Joseph P. Newton and Paul T. Wood are Members of the American Academy of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries. Finally, both of the undersigned are experienced in performing valuations for large public retirement systems.

We are available to answer any questions in connection with this valuation of the plan or the information presented in this report.

Joseph P. Newton, FSA, EA, MAAA
Pension Market Leader and Actuary

Paul T. Wood, ASA, FCA, MAAA
Senior Consultant

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SECTION B

TABLES

Table 1A

Valuation Results

Combined Firefighters and Police I

			July 1, 2023	July 1, 2022
A.	**Membership Data**			
1.	Active members			
	a.	Number	2	2
	b.	Expected covered payroll	$ 256,382	$ 253,683
	c.	Average pay	$ 128,191	$ 126,842
	d.	Average attained age	57.4	56.4
	e.	Average past service	32.6	31.6
2.	Retired members and beneficiaries			
	a.	Number	385	394
	b.	Average benefit	$ 64,061	$ 61,777
	c.	Average attained age	74.0	73.3
3.	Inactive members			
	a.	Number	1	1
	b.	Refund	$ 24,378	$ 24,378
B.	**Liabilities**			
1.	Normal cost with interest			
	a.	Dollar amount	$ 88,012	$ 158,626
	b.	% of covered payroll	34.33%	62.53%
2.	Actuarial accrued liability			
	a.	Active members	$ 3,275,405	$ 3,241,210
	b.	Retired members and beneficiaries	292,942,037	301,539,642
	c.	Inactive	24,378	24,378
	d.	Total	$ 296,241,820	$ 304,805,230
3.	Valuation assets		$ 73,034,779	$ 73,255,672
4.	Unfunded actuarial accrued liability [2(d) - (3)]		$ 223,207,041	$ 231,549,558
5.	Funded Ratio		24.65%	24.03%
6.	City Contribution		$ 18,710,538	$ 21,733,480

Table 1B

Valuation Results

Police I Only

			July 1, 2023	July 1, 2022
A.	**Membership Data**			
1.	Active members			
	a.	Number	-	-
	b.	Expected covered payroll	$ -	$ -
	c.	Average pay	$ -	$ -
	d.	Average attained age	-	-
	e.	Average past service	-	-
2.	Retired members and beneficiaries			
	a.	Number	81	81
	b.	Average benefit	$ 53,270	$ 50,725
	c.	Average attained age	81.8	80.8
3.	Inactive members			
	a.	Number	-	-
	b.	Refund	$ -	$ -
B.	**Liabilities**			
1.	Normal cost with interest			
	a.	Dollar amount	$ -	$ -
	b.	% of covered payroll	0.00%	0.00%
2.	Actuarial accrued liability			
	a.	Active members	$ -	$ -
	b.	Retired members and beneficiaries	34,828,274	35,478,536
	c.	Total	$ 34,828,274	$ 35,478,536
3.	City Contribution		$ 3,273,387	$ 2,512,125

Table 1C

Valuation Results

Firefighters Only

			July 1, 2023	July 1, 2022
A.	**Membership Data**			
1.	Active members			
	a.	Number	2	2
	b.	Expected covered payroll	$ 256,382	$ 253,683
	c.	Average pay	$ 128,191	$ 126,842
	d.	Average attained age	57.4	56.4
	e.	Average past service	32.6	31.6
2.	Retired members and beneficiaries			
	a.	Number	304	313
	b.	Average benefit	$ 66,936	$ 64,637
	c.	Average attained age	71.9	71.4
3.	Inactive members (Non-Vesting)			
	a.	Number	1	1
	b.	Refund	$ 24,378	$ 24,378
B.	**Liabilities**			
1.	Normal cost with interest			
	a.	Dollar amount	$ 53,555	$ 53,082
	b.	% of covered payroll	20.89%	20.92%
2.	Actuarial accrued liability			
	a.	Active members	$ 3,275,405	$ 3,241,210
	b.	Retired members and beneficiaries	258,113,763	266,061,106
	c.	Inactive	24,378	24,378
	d.	Total	$ 261,413,546	$ 269,326,694
3.	City Contribution		$ 15,437,151	$ 19,221,355

Table 2A

Assets Information

Composition of Fund as of June 30, 2023

		Market Value	Percentage of Total
1.	Cash and equivalents	$ -	0.0%
2.	Equities, including index funds	49,040,574	70.1%
3.	Fixed income investments	20,917,449	29.9%
4.	Receivables less payables	-	0.0%
5.	Total	$ 69,958,023	100.0%

Table 2B

Assets Information

Asset Reconciliation and Expected Returns

		FY 2020	FY 2021	FY 2022	FY 2023
1.	Beginning of year market value	71,553,786	67,284,644	82,149,124	66,418,366
2.	Contributions				
a.	City	18,935,407	19,455,048	19,990,062	20,595,957
b.	Member	39,822	30,470	17,680	27,642
c.	Other	-	(7,136)	-	424
d.	Total	18,975,229	19,478,382	20,007,742	20,624,023
3.	Benefits and admin expenses paid	(23,777,642)	(24,123,422)	(24,017,627)	(24,278,232)
4.	Net return	533,271	19,509,520	(11,720,873)	7,193,866
5.	End of year market value	67,284,644	82,149,124	66,418,366	69,958,023
6.	Net market return	0.77%	30.03%	-14.62%	11.14%
7.	Expected market value				
a.	Beginning of year	71,553,786	67,284,644	82,149,124	66,418,366
b.	Net cash flow	(4,802,413)	(4,645,040)	(4,009,885)	(3,654,209)
c.	Earnings assumption	6.90%	6.90%	6.90%	6.90%
d.	Expected earnings	4,774,291	4,485,059	5,532,256	4,458,900
e.	Excess/(shortfall)	(4,241,020)	15,024,461	(17,253,129)	2,734,966

Table 2C

Assets Information

Development of Actuarial Value of Assets

	Year Ending June 30, 2023
1. Market value of assets at beginning of year	$ 66,418,366
2. Net new investments	
a. Contributions	$ 20,624,023
b. Benefits and admin expenses paid	(24,278,232)
c. Subtotal	(3,654,209)
3. Market value of assets at end of year	$ 69,958,023
4. Net earnings (3-1-2) (includes misc revenues)	$ 7,193,866
5. Assumed investment return rate for fiscal year	6.90%
6. Expected return	$ 4,458,900
7. Excess return (4-6)	$ 2,734,966

8. Development of amounts to be recognized as of June 30, 2023:

Fiscal Year End	Remaining Deferrals of Excess (Shortfall) of Investment Income* (1)	Offsetting of Gains/(Losses) (2)	Net Deferrals Remaining* (3) = (1) + (2)	Years Remaining (4)	Recognized for this valuation (5) = (3) / (4)	Remaining after this valuation (6) = (3) - (5)
2019	$ 0	$ 0	$ 0	1	$ 0	$ 0
2020	0	0	0	2	0	0
2021	0	0	0	3	0	0
2022	(6,837,306)	2,734,966	(4,102,341)	4	(1,025,585)	(3,076,756)
2023	2,734,966	(2,734,966)	0	5	0	0
Total	$ (4,102,341)	$ 0	$ (4,102,341)		$ (1,025,585)	$ (3,076,756)

9. Transfer Payable	$ -
10. Actuarial value of assets as of June 30, 2023 (Item 3 - Item 8)	73,034,779
11. Ratio of actuarial value to market value	104.4%

Table 3

Development of Contribution Levels

Combined Fire Fighters and Police I

			Statutory Contribution for 2024 - 2025
A.	**Estimated Pay-as-you-go costs**		
1.	Benefit Payments and Administrative Expenses from Previous Fiscal Year	$	24,278,232
2.	Expected Benefit Payments and Administrative Expenses from Current Projections	$	24,832,747
3.	Greated of 1. and 2.	$	24,832,747
B.	**City Contribution Requirements**		
1.	Funded Ratio		24.65%
2.	Unfunded Ratio (1-Funded Ratio)		75.35%
3.	City Contribution: Unfunded Portion of Pay-as-you-go costs [A3 * B2]	$	18,710,538
4.	Portion Attributable to Police 1	$	3,273,387
5.	Portion Attributable to Fire 1	$	15,437,151

Table 4A

Schedule of Retirees & Beneficiaries

Added to/and Removed from Rolls

	Added to Rolls		Removed from Rolls		Rolls - End of Year			
Year Ending June 30,	Number	Annual Allowances*	Number	Annual Allowances	Number	Annual Allowances	% Increase/ Decrease in Annual Allowances	Average Annual Benefit
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2019	3	530,184	2	62,810	423	23,747,566	2.0%	56,141
2020	10	1,253,925	30	1,329,357	403	23,204,760	-0.3%	57,580
2021	9	1,573,169	13	717,823	399	24,060,106	3.4%	60,301
2022	12	1,201,876	17	922,011	394	24,339,971	4.6%	61,777
2023	3	908,610	12	585,203	385	24,663,378	5.9%	64,061

* The Annual Allowances added to the rolls in each year include the COLA granted to all retirees for the year. As a result, the Annual Allowances added to the rolls do not necessarily correspond to the number of retirees and beneficiaries added to the rolls in the same year.

Table 4B

Retiree Benefits by Valuation Age

Age as of Valuation Date	July 1, 2023 Count	Total Annual Benefit	Average Annual Benefit
50-54	2	$ 88,020	$ 44,010
55-59	37	2,626,025	70,974
60-64	48	3,326,856	69,310
65-69	45	3,348,194	74,404
70-74	41	2,847,992	69,463
75-79	81	4,841,049	59,766
80-84	74	4,255,580	57,508
85-89	42	2,461,623	58,610
90-94	11	627,551	57,050
95-99	4	240,487	60,122
Grand Total	385	24,663,378	64,061

Table 5

History of Investment Return Rates

Year Ending June 30 of	Market	Actuarial
(1)	(2)	(3)
2001	(18.81%)	
2002	-6.79%	
2003	3.40%	
2004	16.63%	
2005	9.25%	
2006	8.24%	6.05%
2007	14.79%	10.63%
2008	-4.12%	9.01%
2009	-16.88%	1.88%
2010	14.27%	0.85%
2011	22.30%	3.61%
2012	-0.07%	2.06%
2013	11.91%	12.94%
2014	15.30%	12.68%
2015	1.93%	9.79%
2016	-1.40%	5.83%
2017	14.21%	6.40%
2018	8.47%	7.24%
2019*	3.86%	2.06%
2020	0.77%	5.53%
2021	30.03%	9.64%
2022	-14.62%	5.35%
2023	11.14%	4.81%
Average Returns:		
Last 5 Years	5.25%	5.45%
Last 10 Years	6.37%	6.89%

* The rate of return on the market value of assets FY2019 has been revised based on the restated information.

Table 6

Near Term Outlook

Valuation as of July 1,	Unfunded Actuarial Accrued Liability (UAAL)	Funded Ratio	Actuarial Value of Assets	For Fiscal Year Ending June 30,	Covered Compensation	Employer Contributions	Employee Contributions	Benefit Payments and Refunds	Net External Cash Flow
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2023	$ 223,207,042	24.7%	$ 73,034,779	2024	$ 256,382	$ 19,072,468	$ 11,627	$ 24,604,804	$ (5,520,710)
2024	218,944,105	24.8%	72,366,180	2025	168,951	18,710,538	3,925	24,832,747	(6,118,283)
2025	214,759,320	24.9%	71,033,603	2026	57,040	18,745,358	2,587	24,941,140	(6,193,196)
2026	210,244,997	24.9%	69,531,625	2027	37,587	18,778,666	1,704	24,989,880	(6,209,511)
2027	205,381,562	24.8%	67,909,141	2028	24,764	18,779,335	-	24,989,983	(6,210,648)
2028	200,175,549	24.8%	66,173,530	2029	-	18,780,224	-	24,912,509	(6,132,285)

These projections are based on the current funding policy and assumes that all current assumptions are met each year in the future, including 6.9% annual return on smoothed assets.

Table 7

Schedule of Funding Progress

Date	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Accrued Liability (UAAL) (3) - (2)	Funded Ratio (2)/(3)	Annual Benefits*	UAAL as % of Benefits (4)/(6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
July 1, 2009	$ 76,142,283	$ 286,514,010	$ 210,371,727	26.6%	$ 17,787,184	1182.7%
July 1, 2011	69,580,218	311,707,868	242,127,650	22.3%	18,532,731	1306.5%
July 1, 2013	62,796,555	309,774,579	246,978,024	20.3%	19,675,904	1255.2%
July 1, 2014	66,348,673	277,179,395	210,830,722	23.9%	19,753,740	1071.5%
July 1, 2015	69,244,289	277,320,653	208,076,364	25.0%	19,753,740	1053.4%
July 1, 2016	70,662,214	294,678,763	224,016,549	24.0%	20,192,173	1109.4%
July 1, 2017	71,696,888	298,373,349	226,676,461	24.0%	21,106,700	1074.0%
July 1, 2018	72,818,893	301,090,607	228,271,714	24.2%	22,050,369	1035.2%
July 1, 2019	72,362,525	300,138,801	227,776,276	24.1%	23,475,659	970.3%
July 1, 2020	71,425,985	303,108,874	231,682,889	23.6%	23,777,642	974.4%
July 1, 2021	73,442,628	305,808,068	232,365,440	24.0%	24,123,422	963.2%
July 1, 2022	73,255,672	304,805,230	231,549,558	24.0%	24,017,627	964.1%
July 1, 2023	73,034,779	296,241,820	223,207,041	24.7%	24,278,232	919.4%

** Due to closed plan, exhibit was modified to compare the UAAL to the Annual Benefits*

TABLE 8

Actuarial Methods and Assumptions

Actuarial Cost Method:	*Entry Age Normal actuarial cost method:* Under this method, the normal cost is the amount calculated as the level percentage of pay necessary to fully fund each active member's prospective benefit from entry age to retirement age. The total actuarial accrued liability, which is re determined for each individual member as of each valuation date, represents the theoretical accumulation of all prior years' normal costs for the active members as if the present plan had always been in effect, plus the liability for any retirees, beneficiaries, or inactive members. The unfunded actuarial accrued liability represents the excess of the total actuarial accrued liability over the valuation assets.
Funding Policy:	Per the funding plan, the contribution for the upcoming fiscal year will be equal to the unfunded portion of the projected benefit payments plus administrative expenses.
Asset Valuation Method:	The actuarial value of assets is based on the market value of assets with a five-year phase-in of actual investment return in excess of (less than) expected investment income. Offsetting unrecognized gains and losses are immediately recognized, with the shortest remaining bases recognized first and the net remaining bases continue to be recognized on their original timeframe. Expected investment income is determined using the assumed investment return rate and the market value of assets (adjusted for receipts and disbursements during the year). The returns are computed net of investment expenses.

Actuarial Methods and Assumptions (Continued)

Actuarial Assumptions:

1. Interest 6.90% per year, net of investment expenses.

2 . Salary Increases The sum of (i) a 3.50% wage inflation assumption (composed of a 2.50% price inflation assumption and a 1.00% additional general increase), and (ii) a service-related component as shown below:

Police/Fire Employees		
Years of Service	Service-Related Component	Total Increase
1	10.00%	13.50%
2	9.00	12.50
3	7.00	10.50
4	4.00	7.50
5	2.50	6.00
6	3.00	6.50
7	0.50	4.00
8	0.50	4.00
9 or more	0.00	3.50

Salary increases are assumed to occur once a year, on January 1. Therefore, the pay used for the period year following the valuation date is equal to the reported pay for the prior year, increased by the salary increase assumption. For employees with less than one year of service, the reported rate of pay is used rather than the fiscal year salary paid.

Actuarial Methods and Assumptions (Continued)

3. Mortality

A. Post-retirement mortality:

a. Male employees: PUB(10) Median Table for Retired Males by Occupation, loaded by 115%, projected with Scale MP2021 with immediate convergence.

b. Female employees: PUB(10) Median Table for Retired Females by Occupation, loaded by 111%, projected with Scale MP2021 with immediate convergence.

c. Disabled males – PUB(10) Tables for Disabled Males by Occupation for males, loaded by 115%, projected with Scale MP2021 with immediate convergence.

d. Disabled females – PUB(10) Tables for Disabled Females by Occupation for females, loaded by 111%, projected with Scale MP2021 with immediate convergence.

B. Pre-retirement mortality (combined ordinary and duty):

a. Male employees: PUB(10) Tables for Employees by Occupation for males, projected with Scale MP2021 with immediate convergence.

b. Female employees: PUB(10) Tables for Employees by Occupation for females, projected with Scale MP2021 with immediate convergence.

Actuarial Methods and Assumptions (Continued)

4. Disability

Sample rates per 1,000 active members are shown below. Ordinary disability rates are not applied to members eligible for retirement.

Age	Number of Disabilities per 1,000	
	Ordinary, Males and Females	Accidental, Males and Females
25	0.26	1.36
30	0.33	1.76
35	0.44	2.32
40	0.66	3.52
45	1.08	5.76
50	1.82	9.68
55	1.82	9.68
60	1.82	9.68
65	1.82	9.68

5. Termination:

Termination rates (for causes other than death, disability, or retirement) are a function of the member's service. Termination rates are not applied to members eligible for retirement. Rates are shown below:

Service	Termination Rate	Service	Termination Rate
1	0.100000	11	0.016586
2	0.055650	12	0.014969
3	0.043890	13	0.013493
4	0.037012	14	0.012135
5	0.032131	15	0.010878
6	0.028346	16	0.009708
7	0.025253	17	0.008613
8	0.022637	18	0.007584
9	0.020372	19	0.006615
10	0.018374	20+	0.000000

Actuarial Methods and Assumptions (Continued)

6. *Retirement Age*

Rates of retirement are based on an employee's length of service, as follows:

Firefighters/Police I Members	
Service	Retirement Election
20	12%
21	10%
22	10%
23	10%
24	12%
25	14%
26	16%
27	18%
28	20%
29	20%
30+	35%

7. *Benefit and Compensation Limits*

Benefit limits under Section 415 and compensation limits under Section 401(a)(17) of the Internal Revenue Code are assumed to have no impact on benefits earned under this plan.

8. *Marriage / Dependents*

80% of active employees are assumed to be married at retirement or death, with two children ages 11 and 13. Wives are assumed to be three years younger than their husbands. No remarriage is assumed.

9. *Service Purchase*

None assumed.

10. *Election of Fire II Program by Retiring Firefighters*

We assume members who retire with 27 or more years of service will elect the Fire II plan.

11. *Administrative Expenses*

It was assumed administrative expenses will be equal to the actual administrative expenses for the previous fiscal year.

TABLE 9

Outline of Principal Plan Provisions

A. FIREFIGHTERS

1. Effective Dates

a. Original Plan	May 7, 1953.
b. Most Recent Amendment	July 23, 1996.

2. Eligibility

All permanent members of the fire department hired prior to May 29, 1992.

3. Retirement

a. Eligibility	Members who have completed 20 years of service may retire.
b. Benefit Formula	The annual benefit at retirement is equal to 50% of highest annual salary, plus 1% of salary for each year of service in excess of 20 (maximum 10). For pension purposes, annual salary includes regular, holiday, and longevity pay. Members may also select the benefit formula for the Firefighters II Pension Fund. The Firefighter II benefit formula is 50% of the final year's compensation, plus 2% for each year of service from 20 to 25 years, plus 3% for each year of service from 25 to 30 years with a fixed 3% compound cost of living adjustment.
c. Commencement Date	Retirement benefits commence as of the first payroll period after retirement.
d. Form of Payment	The annual benefit calculated in accordance with the formula in (b) above is payable semi-monthly for the remainder of the retired member's life, with 67.5% of the member's benefit payable for the lifetime of his surviving spouse.

Outline of Principal Plan Provisions (Continued)

4. Vested Termination

a. Eligibility	Upon termination of employment after 10 years of service, a member is eligible for a benefit deferred to retirement age.
b. Benefit Formula	2.5% of highest annual salary multiplied by full years of service at termination.
c. Commencement Date	20th anniversary of employment.
d. Form of Payment	Same as retirement.

5. Disability Retirement

a. Eligibility	A member who is unable to perform active duty as a result of disability which the Board of Public Safety finds to be permanently incapacitating is eligible to receive disability retirement benefits.
b. Benefit Formula	Service-Related (and involving heart, lung, cancer or other Social Security disabilities). $66^{2}/_{3}$% of highest annual salary, reduced for each dollar of earned income in excess of the salary the member would earn as an active employee, to a minimum of 50% of salary. Other Service Related and Non-Service Related. 50% of highest annual salary.
c. Commencement Date	Benefits commence as of the first payroll period after disability.
d. Form of Payment	Same as retirement.

6. Non-vested Termination of Employment

A member who leaves employment prior to completing 10 years of service will receive a lump sum payment of his accumulated contributions without interest.

Outline of Principal Plan Provisions (Continued)

7. Death Before Retirement -- Survivor Annuity Benefits

a.	Eligibility	Death while actively employed.
b.	Benefit Formula	
(1)	Surviving Spouse	Service Related. The annual benefit is 50% of the deceased member's highest annual salary, payable to the surviving spouse until death or earlier remarriage. Non-Service Related. 30% of the deceased member's highest annual salary, payable to the surviving spouse until death or earlier remarriage.
(2)	Surviving Children	10% of the deceased member's highest annual salary, payable to each surviving child until his 18th birthday (or for life if such child is permanently disabled prior to the member's death).
(3)	Maximum Family Death Benefit	Service-Related. 75% of deceased's highest annual salary. Non-Service Related. 50% of deceased's highest annual salary.
c.	Commencement Date	Benefits commence as of the first payroll period after death.
d.	Form of Payment	Surviving spouse's and children's benefits are payable semi-monthly.

8. Death Before Retirement -- Lump Sum Refund of Contributions

A lump sum payment equal to the member's accumulated contributions without interest shall be paid to the estate of any active member who dies with no surviving spouse or children.

Outline of Principal Plan Provisions (Continued)

9.	***Retiree Cost-of-Living Increases***	All benefits in pay status are indexed in accordance with the base salary increases provided to active employees. We have assumed 3.0% per annum in this valuation.
10.	***Service Purchase***	An active employee eligible to retire who has served in the U.S. armed forces may "purchase" additional years of service up to his number of years of military service, but no more than four years. A member may also purchase up to four years of prior civilian employment time with the City of Warwick. Either purchase would require the employee to contribute to the fund, at retirement, an amount which represents the actuarial equivalent value of the benefit increase purchased.
11.	***Employee Contributions***	Active members contribute 7% of their covered earnings (regular, holiday, and longevity).
12.	***Optional Retirement Under Fire II Program***	Any firefighter retiring after July 23, 1996 may irrevocably elect to have his or her pension calculated under the City's Fire II program, including final year's compensation, a benefit multiplier increasing from 50% of pay after 20 years of service to 75% of pay after 30 years of service, and a fixed 3.0% annual cost-of-living increase.

B. POLICE I

1.	***Eligibility***	Active and retired Police hired before February 1, 1971 are covered under this program.
2.	***Benefits***	Benefits provided to remaining active police are in accordance with the proposed City's Code of Ordinances. Retirement, death, and disability benefits payable to retired members and beneficiaries are indexed in accordance with the base salary increases provided to active members of the police force.
3.	***Employee Contributions***	Active members contribute 7% of their covered earnings (regular, holiday, and longevity).

Risks Associated with Measuring the Accrued Liability and Actuarially Determined Contribution

The determination of the accrued liability and the actuarially determined contribution requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability and the actuarially determined contribution that result from the differences between actual experience and the actuarial assumptions.

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 due to changing conditions; 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. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

1. Investment risk – actual investment returns may differ from the expected returns;
2. Contribution risk – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;
3. Salary and Payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
4. Longevity risk – members may live longer or shorter than expected and receive pensions for a period of time other than assumed;
5. Other demographic risks – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

The effects of certain trends in experience can generally be anticipated. For example if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

The computed contribution may be considered as a minimum contribution rate that complies with the funding policy. The timely receipt of the actuarially determined contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made at the actuarially determined rate do not necessarily guarantee benefit security.

Risks Associated with Measuring the Accrued Liability and Actuarially Determined Contribution (Continued)

PLAN MATURITY MEASURES

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following:

	June 30, 2023	June 30, 2022	June 30, 2021	June 30, 2020	June 30, 2019*
Ratio of the market value of assets to total payroll	272.9	261.8	335.1	150.8	134.9
Ratio of actuarial accrued laibility to payroll	1,155.5	1,201.5	1,247.4	679.2	565.8
Ratio of actives to retirees and beneficiaries	0.0	0.0	0.0	0.0	0.0
Ratio of net cash flows to market value of assets	-5.2%	-6.0%	-5.7%	-7.1%	-6.9%
Duration of the actuarial accrued liability	9.3	9.4	9.6	9.8	9.5

*Risk measures on June 30, 2019 have bene revised based on the restated information.

RATIO OF MARKET VALUE OF ASSETS TO PAYROLL

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 4.0 times the payroll, a return on assets 5% different than assumed would equal 20% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

RATIO OF ACTUARIAL ACCRUED LIABILITY TO PAYROLL

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time.

The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 5.5 times the payroll, a change in liability 2% other than assumed would equal 11% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

RATIO OF ACTIVES TO RETIREES AND BENEFICIARIES

A young plan with many active members and few retirees will have a high ratio of active to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

RATIO OF NET CASH FLOW TO MARKET VALUE OF ASSETS

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

DURATION OF PRESENT VALUE OF BENEFITS

The duration of the present value of benefits (PVB) may be used to approximate the sensitivity to a 1% change in the assumed rate of return. For example, duration of 10 indicates that the PVB would increase approximately 10% if the assumed rate of return were lowered 1%.

ADDITIONAL RISK ASSESSMENT

Additional risk assessment is outside the scope of the annual actuarial valuation. Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests, and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability. These types of other assessments are provided to the Board in the annual presentation.

Low-Default-Risk Obligation Measure

Actuarial Standards of Practice No. 4 (ASOP No. 4) was revised and reissued in December 2021 by the Actuarial Standards Board (ASB). It includes a new calculation called a low-default-risk obligation measure (LDROM) to be prepared and issued annually for defined benefit pension plans. The transmittal memorandum for ASOP No. 4 includes the following explanation:

> *"The ASB believes that the calculation and disclosure of this measure provides appropriate, useful information for the intended user regarding the funded status of a pension plan. The calculation and disclosure of this additional measure is not intended to suggest that this is the "right" liability measure for a pension plan. However, the ASB does believe that this additional disclosure provides a more complete assessment of a plan's funded status and provides additional information regarding the security of benefits that members have earned as of the measurement date."*

The LDROM estimates the amount of money the plan would need to invest in low risk securities to provide the benefits with greater certainty. The current model expects lower costs but with higher risk, which creates less certainty and a possibility of higher costs. The LDROM model creates higher expected costs but more predictability when compared to the current model. Thus, the difference between the two measures (Valuation and LDROM) is one illustration of the possible costs the sponsor could incur if there was a reduction in the investment risk in comparison to the current diversified portfolio. However, the downside risk would be limited in

the scenarios where the current portfolio would fail to achieve returns in excess of the low-default-risk discount, in this case 4.90%.

The following information has been prepared in compliance with this new requirement. Unless otherwise noted, the measurement date, actuarial cost methods, and assumptions used are the same as for the funding valuation covered in this actuarial valuation report.

LDROM measure of benefits earned as of the measurement date:	$358 million
Valuation liability (IEAN) at 6.9% on measurement date:	296 million
Cost to mitigate investment risk in the System's portfolio:	$ 62 million

ASOP 4 requires commentary to help the intended user understand the significance of the LDROM with respect to the funded status of the plan, plan contributions, and the security of participant benefits. Specifically, if plan assets were changed to be invested exclusively in low-default-risk securities, the funded status would be lower and the contributions would have to immediately be higher. While investing in a portfolio with low-default-risk securities may be more likely to reduce the standard deviation of investment volatility, the higher necessary contributions would produce a larger ratio of assets to payroll, and thus it is not self-evident that the volatility of the employer contributions would be any lower. In addition, the portfolio would be expected to generate less investment earnings over time, thus it also would be more likely to result in higher employer contributions and/or lower benefits.

Disclosures: Discount rate used to calculate LDROM: 4.90% Intermediate FTSE Pension Discount Curve as of June 30, 2023. This measure is not appropriate for assessing the need for or amount of future contributions as the current portfolio is expected to generate significantly more investment earnings than the low-default-risk portfolio. This measure is also not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligation as this measure includes projections of salary increases and the ability for current members to continue to accrue eligibility and vesting service.