



**Cavanaugh Macdonald**  
CONSULTING, LLC

*The experience and dedication you deserve*



**CONNECTICUT POLICEMEN AND  
FIREMEN SURVIVORS' BENEFIT FUND**

**ACTUARIAL VALUATION REPORT  
PREPARED AS OF JUNE 30, 2021**





# Cavanaugh Macdonald

CONSULTING, LLC

*The experience and dedication you deserve*

February 8, 2022

State of Connecticut  
State Employees Retirement Commission  
55 Elm Street  
Hartford, CT 06106

Members of the Commission:

Connecticut General Statutes Section 7-113 governs the operation of the Connecticut Policemen and Firemen Survivors' Benefit Fund (SBF). At the direction of the Commission, the actuary makes periodic valuations of the contingent assets and liabilities of the Benefit Fund. This report provides the results of the actuarial valuation of the SBF prepared as of June 30, 2021. In preparing the valuation, the actuary relied on data provided by the Comptroller's Office. While not verifying data at the source, the actuary performed tests for consistency and reasonableness.

This valuation results in an decrease to the required employer normal contribution rate for the 2023 fiscal year from 1.43% to 1.34% of annual compensation. In addition, each participating employer is also assessed a \$60 per covered employee administrative expense. Please note that the resulting total contribution requirement for New Britain Police is determined by applying the 1.34% of annual compensation plus the \$60 per covered employee expense less \$4,852 due to the annual recognition of the remaining surplus allocated to that employer as of June 30, 2021 with 14-years remaining until settled.

The actuarial assumptions recommended by the actuary and adopted by the Commission are reasonably related to the experience under the System and to reasonable expectations of anticipated experience under the System. The valuation method used is the Entry Age Normal Frozen Initial Liability cost method. Gains and losses under this method will impact the employer normal contribution.

There were no changes in the actuarial assumptions or methods from the previous valuation.

This is to certify that the valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the retirement system and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of the System.



Members of the Commission  
February 8, 2022  
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In order to prepare the results in this report, we have utilized appropriate actuarial models that were developed for this purpose. These models use assumptions about future contingent events along with recognized actuarial approaches to develop the needed results.

Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

We note that as we are preparing this report, the world remains in the midst of a pandemic. We have considered available information, but do not believe that there is yet sufficient data to warrant additional modification of any of our assumptions.

The actuarial computations presented in this report are for purposes of determining the recommended funding amounts for the System. Use of these computations for purposes other than meeting these requirements may not be appropriate.

The undersigned meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Sincerely yours,

A handwritten signature in blue ink that reads 'John J. Garrett'.

John J. Garrett, ASA, FCA, MAAA  
Principal and Consulting Actuary

A handwritten signature in blue ink that reads 'Edward J. Koebel'.

Edward J. Koebel, EA, FCA, MAAA  
Chief Executive Officer



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## Section I – Summary of Principal Results

### CONNECTICUT POLICEMEN AND FIREMEN SURVIVORS' BENEFIT FUND

PREPARED AS OF JUNE 30, 2021

1. For convenience of reference, the principal results of the 2020 and the 2021 annual valuations are summarized below. Recommended contributions for each participating employer are provided in Section III.

Valuation Date	June 30, 2021	June 30, 2020
Number of Active Members	671	668
Annual Compensation	\$67,819,459	\$64,998,525
Retired Members:		
Number	384	370
Deferred Vested Members:		
Number	149	128
Annuitant Members:		
Number	108	106
Annual Allowances	\$1,532,033	\$1,524,995
Assets:		
Market Value	\$ 47,781,579	\$ 37,942,543
Actuarial Value	\$ 43,183,937	\$ 39,950,969
Funded Ratio	71.8%	70.3%
<b>For Fiscal Year Ending</b>	<b>June 30, 2023</b>	<b>June 30, 2022</b>
Employer Normal Contribution Rate:	1.34%	1.43%





## Section I – Summary of Principal Results

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2. Schedule A of this report presents the development of the actuarial value of assets.
  
3. Schedule C of the report presents the development of the actuarial assumptions and methods employed. There have been no changes since the previous valuation.
  
4. Schedule D gives a summary of the benefit and contribution provisions of the plan. There have been no changes since the previous valuation.





## Section II – Assets

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1. As of June 30, 2021, the total market value of assets amounted to \$47,781,579 as reported by the Comptroller's Office. This represents an investment return of 28.00% for the fiscal year ending June 30, 2021. Schedule B shows receipts and disbursements of the System for the two years preceding the valuation date and a reconciliation of the fund balances at market value.
2. Schedule A shows the development of the actuarial value of assets as of June 30, 2021. The actuarial value of assets developed in this valuation is \$43,183,937 reflecting a rate of return on the actuarial value of 9.90% for fiscal year ending June 30, 2021.





## Section III – Contributions Payable By Employer

The following table shows the comparison of the employer normal contribution rate payable by the employer as calculated in the June 30, 2020 and the June 30, 2021 annual valuations. The 2021 valuation results apply to the fiscal year ending June 30, 2023. These amounts include only the employer normal contribution rate. The recommended dollar amount for each entity is determined by applying the normal contribution rate to annual compensation at the beginning of the applicable fiscal year, plus the additional administrative expense of \$60 per covered employee. In addition, New Britain Police will subtract \$4,852 from the amount determined above due to the annual recognition of their surplus balance as of June 30, 2021. The asset surplus for all other towns has been fully recognized and is \$0 in the June 30, 2021 valuation.

### CALCULATION OF ANNUAL NORMAL COST

	June 30, 2021	June 30, 2020
(1) Actuarial Liabilities		
Present Value of Future Benefits Payable to:		
(a) Present Annuitants	\$ 12,907,820	\$ 12,598,964
(b) Present Retired Members	18,613,043	17,340,145
(c) Present Active Members	25,588,758	24,525,707
(d) Inactive Members	<u>3,015,934</u>	<u>2,353,011</u>
(e) Total Actuarial Liabilities	\$ 60,125,555	\$ 56,817,827
(2) Actuarial Value of Assets	43,183,937	39,950,969
(3) Present Value of Future Contributions by Members	7,251,962	6,969,419
(4) Asset Surplus for all towns except New Britain	0	0
(5) Unfunded Accrued Liability (Surplus) for New Britain	(45,403)	(47,285)
(6) Present Value of Future Employer Normal Costs		
(1e) – (2) – (3) – (4) – (5)	\$ 9,735,059	\$ 9,944,724
(7) Present Value of Future Salary	\$ 725,196,202	\$ 696,941,921
(8) Employer Normal Contribution Rate		
(6) / (7), not less than zero	1.34%	1.43%







## Section III – Contributions Payable By Employer

### CALCULATION OF ESTIMATED CONTRIBUTIONS BY EMPLOYER\*

Municipality	Active Members	Estimated Contributions for fiscal year ending June 30, 2023
Derby Police	34	\$59,234
Manchester Fire	79	128,628
Middlefield Police	0	0
Milford Fire	108	173,002
Milford Police	117	158,459
New Britain Police	155	224,656
New London Fire	65	94,153
New London Police	74	110,982
Seymour Police	39	59,803
Total	671	\$1,008,917

\* Estimated contribution amounts shown above include the \$60 administrative fee per active member and the offset for the New Britain Police municipality.





## Schedule A – Development of Actuarial Value of Assets

	June 30, 2021
(1) Actuarial Value Beginning of Year*	\$39,950,969
(2) Market Value End of Year	\$47,781,579
(3) Market Value Beginning of Year	\$37,942,543
(4) Cash Flow	
(a) Contributions	\$ 1,661,281
(b) Disbursements	<u>(2,350,179)</u>
(c) Net: (4)(a) + (4)(b)	\$ (688,898)
(5) Investment Income	
(a) Market Total: (2) – (3) – (4)(c)	\$10,527,933
(b) Assumed Rate	7.00%
(c) Amount for Immediate Recognition: [(1) x (5)(b)] + [{"(4)(a) + (4)(b)} x (5)(b) x 0.5]	2,772,456
(6) Expected Actuarial Value End of Year: (1) + (4)(c) + (5)(c)	\$42,034,527
(7) Phased-In Recognition of Investment Income	
(a) Difference Between Market & Expected Actuarial Value: (2) – (6)	5,747,052
(b) 20% of Difference: 0.2 x (7)(a)	1,149,410
(8) Preliminary Actuarial Value End of Year: (6) + (7)(b)	\$43,183,937
(9) Final Actuarial Value End of Year Using 20% Corridor: Greater of [(8) and .8 x (2)], but no more than 1.2 x (2)	\$43,183,937
(10) Difference Between Market & Actuarial Values: (2) – (9)	4,597,642
(11) Rate of Return on Preliminary Actuarial Value	9.90%

\* Prior to Corridor Constraints, if applicable





## Schedule B – Summary of Receipts and Disbursements

(Market Value)

	YEAR ENDING	
	June 30, 2021	June 30, 2020
<u>Receipts for the Year</u>		
Contributions:		
Members	\$ 687,048	\$ 644,855
Employer/Transfers	<u>974,233</u>	<u>982,221</u>
Subtotal	\$ 1,661,281	\$ 1,627,076
Investment Earnings (net of expenses)	10,527,933	867,628
Other	<u>0</u>	<u>0</u>
TOTAL	\$ 12,189,214	\$ 2,494,704
<u>Disbursements for the Year</u>		
Benefit Payments and Refunds	\$(1,322,745)	\$(1,236,320)
Other	<u>(1,027,434)</u>	<u>(17,315)</u>
TOTAL	\$(2,350,179)	\$(1,253,635)
<u>Excess of Receipts over Disbursements</u>	\$ 1,241,069	\$ 1,241,069
<u>Reconciliation of Asset Balances</u>		
Asset Balance as of the Beginning of Year	\$37,942,544	\$36,701,474
Excess of Receipts over Disbursements	<u>9,839,035</u>	<u>1,241,069</u>
Asset Balance as of the End of Year	\$47,781,579	\$37,942,543
Rate of Return	28.00%	2.30%





## Schedule C – Outline of Actuarial Assumptions and Methods

Adopted or reaffirmed by the Commission for the June 30, 2018 and later valuations based on the experience investigation report for the five-year period ending June 30, 2017 which can be found at on the Office of the State Comptroller - Retirement Services Division website.

**VALUATION INTEREST RATE:** 7.00% per annum, compounded annually, net of expenses.

**SALARY INCREASES:** Representative values of assumed annual rates of salary increase are as follows:

Service	Annual Rates of		
	Merit & Seniority	Base (Economy)	Increase Next Year
0	7.00%	3.00%	10.00%
5	3.50%	3.00%	6.50%
10	1.90%	3.00%	4.90%
15	1.50%	3.00%	4.50%
20	1.38%	3.00%	4.38%
25	1.12%	3.00%	4.12%
30	0.70%	3.00%	3.70%
35	0.50%	3.00%	3.50%
40	0.50%	3.00%	3.50%

**SEPARATIONS FROM ACTIVE SERVICE:** Representative values of the assumed annual rates of separation before service retirement are as follows:

Age	Withdrawal and Vesting		Service Related Disability*	Death		Service Retirement
	0 – 4 years	5 – 24 years		Male	Female	
20	6.50%	5.00%	0.10%	0.06%	0.02%	
25	6.50	5.00	0.10	0.08	0.03	
30	5.75	4.00	0.10	0.08	0.03	
35	3.50	2.50	0.14	0.09	0.04	
40	3.50	2.00	0.22	0.10	0.06	
45	3.50	1.50	0.30	0.15	0.09	25.00%
50	3.50	0.00	0.64	0.25	0.14	15.00
55	3.50	0.00	2.40	0.41	0.24	13.00
60	3.50	0.00	4.80	0.67	0.34	15.00
65	0.00	0.00				100.00

\*Non-Service related disability rates for Policemen and Firemen are assumed to be zero at all ages.





## Schedule C – Outline of Actuarial Assumptions and Methods

**DEATHS AFTER RETIREMENT:** The RP-2014 Blue Collar Mortality Table adjusted to 2006 and projected to 2015 with Scale MP-2017 and projected to 2022 with Scale BB is used by Police and Fire for the period after retirement and for dependent beneficiaries. Representative values of the assumed annual rates of mortality are as follows:

Age	Male	Female	Age	Male	Female
40	0.101%	0.060%	65	1.370%	0.908%
45	0.148	0.092	70	1.996	1.405
50	0.568	0.406	75	3.149	2.316
55	0.845	0.505	80	5.174	3.862
60	0.987	0.657	85	8.632	6.650

For disabled retirees, the RP-2014 Disabled Retiree Mortality Table projected to 2020 by Scale BB is used.

**ASSET METHOD:** Actuarial Value, as developed in Schedule A. The actuarial value of assets recognizes 20% of any difference between actual and expected investment income (gain/loss) in the valuation year. In addition, the actuarial value of assets cannot be less than 80% or more than 120% of the market value of assets.

**VALUATION METHOD:** Entry Age Normal Frozen Initial Liability Cost method. Under this method, actuarial gains and losses will directly impact the normal contribution calculations of the employers. Initial liabilities for employer joining the Fund are determined upon entry and amortized over a 30-year period as a level dollar amount. This amortization amount is required in addition to the normal contribution and administrative expenses of the Fund.

**SPOUSES:** For members who have elected spouse coverage, husbands are assumed to be two years older than their wives.

**PERCENT MARRIED:** 90% of active members are assumed to be married.

**LOADING:** Since some retiree membership data has historically been reported without spousal information, a load has been added to more accurately reflect the potential retiree liability. The load factor is based on the assumed discount rate, post-retirement mortality tables and marital assumptions.





## **Schedule D – Summary of Main Benefit and Contribution Provisions**

The Connecticut Policemen and Firemen Survivors' Benefit Fund became effective July 1, 1966. The following summary describes the main membership, benefits and contribution provisions of the Fund as interpreted for the valuation.

### **MEMBERSHIP**

Any municipality may elect or vote to include any of its policemen and/or firemen as of the next following July 1<sup>st</sup>. Only full-time employees are eligible for membership.

### **BENEFITS**

Survivor benefits are provided upon the death of an active or retired member of the Fund. Benefits are based on the annual rate of full-time pay on the date of death. For retired members, the rate of pay immediately prior to retirement is used.

The annual benefit payable from the date of death is equal to one of the following:

1. To a surviving spouse, an amount equal to 30% of pay.
2. To a surviving spouse with one dependent child under the age of 18, an amount equal to 45% of pay.
3. To a surviving spouse with two or more dependent children under the age of 18, an amount equal to 60% of pay.
4. To one dependent child under the age of 18 in the case where there is no benefit payable to a surviving spouse, an amount equal to 30% of pay.
5. To two or more dependent children under the age of 18 in the case where there is no benefit payable to a surviving spouse, an amount equal to 45% of pay.
6. To a depended parent in the case where there is no benefit payable to a surviving spouse or dependent child, an amount equal to 30% of pay.

Benefits to surviving spouses cease upon death or remarriage. Benefits to dependent children cease at age 18. Benefits to dependent parents cease upon death.

If there are no survivors eligible for a benefit on the date of the member's death, accumulated member contributions without interest are paid to a designated beneficiary of the member's estate.





## Schedule D – Summary of Main Benefit and Contribution Provisions

### CONTRIBUTIONS TO THE FUND

Active members contribute at the rate of 1.00% of salary. Participating municipalities contribute an amount as determined by the actuarial valuation that is necessary to adequately fund all benefits. An annual administration fee of \$60 per active member is also paid by the employer.





## Schedule E – Detailed Distributions of the Data

Total Active Members as of June 30, 2021  
Distributed by Age Group and Years of Service

Age Group	Derby Police	Manchester Fire	Middlefield Police	Milford Fire	Milford Police	New Britain Police	New London Fire	New London Police	Seymour Police	Total	
										No.	Compensation
Under 25	0	2	0	0	3	14	2	3	0	24	1,246,643
25 to 29	5	8	0	10	14	27	6	9	7	86	7,107,425
30 to 34	3	15	0	21	23	40	12	11	8	133	12,959,066
35 to 39	11	10	0	21	32	25	11	14	1	125	12,766,097
40 to 44	3	10	0	17	11	21	4	7	4	77	8,337,034
45 to 49	5	10	0	14	19	14	7	7	9	85	9,418,162
50 to 54	2	12	0	14	7	11	8	10	7	71	8,084,390
55 to 59	4	12	0	6	4	2	10	7	2	47	5,355,189
60 & Up	1	0	0	5	4	1	5	6	1	23	2,545,453
<b>Total</b>	<b>34</b>	<b>79</b>	<b>0</b>	<b>108</b>	<b>117</b>	<b>155</b>	<b>65</b>	<b>74</b>	<b>39</b>	<b>671</b>	<b>67,819,459</b>

Average Age: 39.9

Average Service: 12.17

Average Pay: \$101,072







## Schedule E – Detailed Distributions of the Data

Eligible Retirees and Deferred Vested Members as of June 30, 2021  
Distributed by Age Group

Age Group	Derby Police	Manchester Fire	Middlefield Police	Milford Fire	Milford Police	New Britain Police	New London Fire	New London Police	Seymour Police	Total Count
Under 30	0	0	0	0	1	3	0	3	0	7
30 to 34	1	1	0	2	3	9	1	3	4	24
35 to 39	1	2	0	4	2	11	2	8	0	30
40 to 44	0	1	0	4	7	12	3	2	0	29
45 to 49	0	1	0	2	7	8	1	1	0	20
50 to 54	2	10	1	9	15	5	6	11	6	65
55 to 59	3	11	1	23	28	4	7	14	3	94
60 to 64	3	15	0	18	18	0	3	12	2	71
65 to 69	4	7	0	16	18	0	12	9	3	69
70 to 74	3	9	0	12	2	0	7	7	8	48
75 to 79	2	22	0	6	6	0	6	5	5	52
80 to 84	1	6	0	2	2	0	1	0	3	15
85 to 89	0	1	0	0	0	0	4	1	2	8
90 & Up	0	1	0	0	0	0	0	0	0	1
<b>Total</b>	<b>20</b>	<b>87</b>	<b>2</b>	<b>98</b>	<b>109</b>	<b>52</b>	<b>53</b>	<b>76</b>	<b>36</b>	<b>533</b>

Average Age: 59.0





## Schedule E – Detailed Distributions of the Data

### Total Annuitants as of June 30, 2021 Distributed by Age Group

Age Group	Derby Police	Manchester Fire	Middlefield Police	Milford Fire	Milford Police	New Britain Police	New London Fire	New London Police	Seymour Police	Total	
										No.	Annual Benefit
Under 30	0	0	0	0	1	0	0	2	0	3	35,826
30 to 34	0	0	0	0	0	0	0	0	0	0	0
35 to 39	0	0	0	0	0	0	0	0	0	0	0
40 to 44	0	0	0	0	1	0	0	0	0	1	20,793
45 to 49	0	0	0	0	0	1	0	0	0	1	21,790
50 to 54	1	0	0	1	0	0	0	0	0	2	42,171
55 to 59	1	0	0	0	1	0	0	0	0	2	64,823
60 to 64	1	1	0	1	2	0	0	0	3	8	156,088
65 to 69	1	2	0	1	1	0	2	4	2	13	220,900
70 to 74	1	0	0	4	7	0	4	2	1	19	260,035
75 to 79	0	3	0	7	4	1	1	1	1	18	235,660
80 to 84	2	3	0	6	0	0	5	0	1	17	203,568
85 to 89	1	5	0	3	4	0	2	2	0	17	222,907
90 & Up	0	1	0	2	2	0	1	1	0	7	47,472
<b>Total</b>	<b>8</b>	<b>15</b>	<b>0</b>	<b>25</b>	<b>23</b>	<b>2</b>	<b>15</b>	<b>12</b>	<b>8</b>	<b>108</b>	<b>1,532,033</b>

Average Age: 74.3

Average Benefit: \$14,185

