



June 30, 2022 Actuarial Valuation Report

for the

New York City Police Pension Fund

prepared by the

**New York City
Office of the Actuary**

CONTRIBUTIONS REQUIRED FOR FISCAL YEAR 2024



OFFICE OF THE ACTUARY

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MAREK TYSZKIEWICZ
CHIEF ACTUARY

December 10, 2024

Board of Trustees
New York City Police Pension Fund
233 Broadway, Room 2501
New York, NY 10279

Re: June 30, 2022 Actuarial Valuation Report (Report)

Dear Trustees:

This is the June 30, 2022 actuarial valuation report of the New York City Police Pension Fund (POLICE) and the Group Life Insurance Plan (collectively, the Plan).

Purpose

The purpose of this actuarial valuation report is to:

- Determine the actuarially required contribution for Fiscal Year 2024 - the period from July 1, 2023 to June 30, 2024;
- Measure the Plan's funding progress; and
- Disclose the census data, financial information, assumptions, and methods used.

Required Contribution

The actuarially required contribution for Fiscal Year 2024 is \$2,359,791,841.

Data Used

Results shown for current and prior valuation dates are based on data as of June 30th of the valuation year, including:

- Census data submitted by the Plan's administrative staff and the employers' payroll facilities; and
- Financial information was provided by POLICE and the Office of the Comptroller.

The Office of the Actuary has reviewed this data for reasonableness, consistent with Actuarial Standards of Practice, but has not audited it. The accuracy of these results depends on the accuracy of this data. If the data provided is materially inaccurate, these results require revision.

Benefit Changes

A summary of the Plan's benefits is shown in SECTION VIII – SUMMARY OF PLAN PROVISIONS.

This valuation reflects:

- The enactment of Chapter 55 of the Laws of 2023 which permits Tier 3, Tier 3 Revised, and Tier 3 Enhanced members of POLICE to borrow from their accumulated total member contributions.

All other benefits under the Plan are unchanged from the prior valuation.

Actuarial Assumptions and Methods

A summary of the actuarial assumptions and methods used in the valuation of the Plan is shown in SECTION XI – ACTUARIAL ASSUMPTIONS AND METHODS. The actuarial assumptions and methods are unchanged from the prior valuation.

Items Excluded or Not Valued

Not included in this Report are:

- Governmental Accounting Standards Board (GASB) results. The Office of the Actuary publishes the Fiscal Year 2024 GASB67 and GASB68 results in a separate Report which can be found on the Office of the Actuary website www.nyc.gov/actuary.
- This Employer Contribution does not include the cost of any pension payments that exceed the Internal Revenue Code (IRC) Section 415 Limit which are expected to be made from the Excess Benefit Plan (EBP), other than a one-time adjustment to the liabilities to account for EBP payments expected to be made in Calendar Year 2023/Fiscal Year 2024 from the Qualified Pension Plan (QPP) while the trust for the EBP is established.
- Unless specifically noted, Variable Supplements Funds results.

Risks and Uncertainty

These results may be different in future reports for many reasons, including:

- Economic or demographic experience being different than what was assumed;
- Changes in actuarial assumption and methods; and
- Changes in statute and plan provisions.

Likewise, results for purposes other than those described earlier may be quite different.

See SECTION VII – RISK AND UNCERTAINTY for more information about these risks.

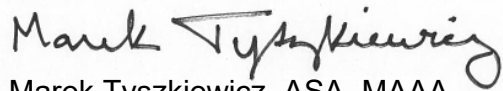
Actuarial Qualifications

Marek Tyszkiewicz is an Associate of the Society of Actuaries and a Member of the American Academy of Actuaries. Anderson Huynh is a Fellow of the Society of Actuaries, an Enrolled Actuary under the Employee Retirement Income Security Act of 1974, a Member of the American Academy of Actuaries, and a Fellow of the Conference of Consulting Actuaries.

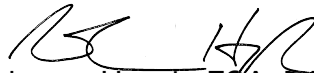
Actuaries' Statement of Opinion

To the best of our knowledge, these results have been prepared in accordance with generally accepted actuarial principles, procedures, and under the Actuarial Standards of Practice issued by the Actuarial Standards Board. We meet the Qualification Standards of the American Academy of Actuaries to render this actuarial opinion.

Best Regards,



Marek Tyszkiewicz, ASA, MAAA
Chief Actuary



Anderson Huynh, FSA, EA, MAAA, FCA
Assistant Deputy Chief Actuary

MT/eh

cc: Kevin Holloran - New York City Police Pension Fund
Keith Snow, Esq. – New York City Office of the Actuary
Stanley Thomas - New York City Police Pension Fund

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SECTION I – SUMMARY OF VALUATION RESULTS

Funded Status

The funded status is the ratio of Plan assets to liabilities. The Plan's funded status based on the Market Value of Assets decreased from 93.9% in the prior valuation to 82.6% as of June 30, 2022. The Plan's investment return for this period, based on the Market Value of Assets, was negative 7.8%.

Required Contribution Amount

The actuarially required contribution for Fiscal Year 2024 is \$2,359,791,841 and is derived as the sum of the:

- Normal Cost: The actuarial cost for the additional one year of service credit expected to be earned by current active members for the upcoming year; and
- Amortization of Unfunded Accrued Liabilities: The amortization of the unfunded actuarial accrued liabilities for past service earned prior to the valuation date; and
- Administrative Expense: The reimbursement to the Plan with interest for administrative expenses paid from Plan assets during the valuation year; and
- Interest on Late Payments: Interest at 7% for any late employer contributions.

The derivation of the funded status and required contribution amounts are shown on the next page.

Table I-1
Valuation Results

Presented in **Table I-1** are the principal results of the June 30, 2022 actuarial valuation and, for comparative purposes, the June 30, 2021 actuarial valuation.

NEW YORK CITY POLICE PENSION FUND		
SUMMARY OF VALUATION RESULTS		
Valuation Date	June 30, 2022	June 30, 2021
Fiscal Year	2024	2023
Funded Status		
1. Accrued Liability ¹	\$ 56,956,439,609	\$ 54,611,093,758
2. Actuarial Value of Assets (AVA)	48,457,398,000	45,531,133,000
3. Unfunded Accrued Liability (AVA Basis) (1. - 2.)	\$ 8,499,041,609	\$ 9,079,960,758
4. Market Value of Assets (MVA)	47,043,387,000	51,293,938,000
5. Unfunded Accrued Liability (MVA Basis) (1. - 4.)	\$ 9,913,052,609	\$ 3,317,155,758
6. Funded Ratio (MVA Basis) (4. / 1.)	82.6%	93.9%
Contribution²		
1. Normal Cost	\$ 1,445,026,063	\$ 1,458,845,775
2. Amortization of Unfunded Accrued Liability	886,943,563	846,324,700
3. Administrative Expenses	27,822,215	28,536,633
4. Interest on Late Employer Contributions	0	0
5. Actuarial Required Contribution (1. + 2. + 3. + 4.)	\$ 2,359,791,841	\$ 2,333,707,108
Participant Data		
1. Active Members		
a. Number	34,655	35,006
b. Annual Salary ³	\$ 4,332,225,523	\$ 4,262,625,521
c. Average Salary	\$ 125,010	\$ 121,768
2. Terminated Nonvested Members	2,125	1,713
3. Deferred Vested Members	1,214	851
4. Retirees and Beneficiaries		
a. Number	53,608	52,837
b. Total Annual Benefits	\$ 3,196,498,320	\$ 3,065,108,282
c. Average Annual Benefit	\$ 59,627	\$ 58,011

¹ Includes unfunded Accrued Liability for VSFs, if any.

² Includes results for VSFs.

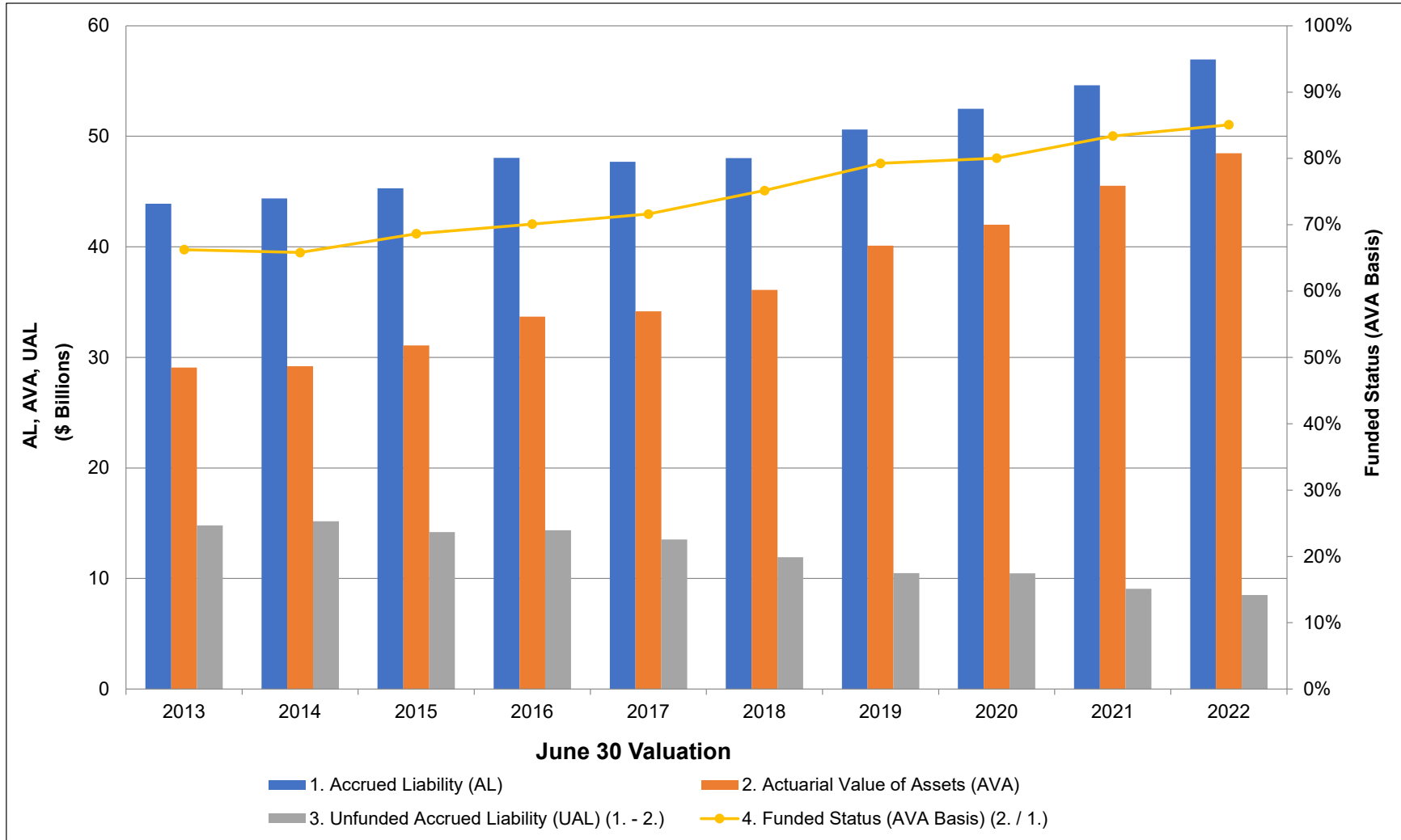
³ Salaries shown are the base salary plus assumed overtime paid and reflect certain salary increases with retroactive effective dates, if any, that are not yet reflected in census data.

**Table I-2
Actuarial Liabilities**

NEW YORK CITY POLICE PENSION FUND		
ACTUARIAL LIABILITIES BY STATUS		
Valuation Date	June 30, 2022	June 30, 2021
Fiscal Year	2024	2023
Accrued Liability		
1. Active Members	\$ 16,824,099,795	\$ 16,640,724,011
2. Terminated Nonvested Members	8,085,372	6,598,882
3. Deferred Vested Members	263,460,519	185,548,819
4. Retirees and Beneficiaries	39,009,136,259	37,092,677,517
5. Unfunded VSF Accrued Liability ¹	851,657,664	685,544,529
6. Plan Accrued Liability	<u>\$ 56,956,439,609</u>	<u>\$ 54,611,093,758</u>
Present Value of Benefits (PVB)		
1. Active Members	\$ 29,771,663,387	\$ 29,547,724,257
2. Terminated Nonvested Members	8,085,372	6,598,882
3. Deferred Vested Members	263,460,519	185,548,819
4. Retirees and Beneficiaries	39,009,136,258	37,092,677,517
5. Unfunded VSF PVB	1,789,311,399	1,578,005,882
6. Total Present Value of Benefits	<u>\$ 70,841,656,935</u>	<u>\$ 68,410,555,357</u>

¹ For funding purposes, unfunded VSF benefits are an obligation of the Plan. Therefore, the Accrued Liability of the Plan includes any VSF unfunded accrued liabilities, not less than zero as VSF assets cannot be used to pay QPP benefits. See Table VI-1 for more information.

Graph I-3
Historical Funded Status



SECTION II – MARKET AND ACTUARIAL VALUES OF ASSETS

Information on the Market Value of Assets (MVA) of the Plan is provided by the Office of the Comptroller. An asset smoothing method is used to determine the Actuarial Value of Assets (AVA) of the Plan.

The Actuary reset the AVA to the MVA as of June 30, 2011 and as of June 30, 2019. Beginning with the June 30, 2020 actuarial valuation, the asset smoothing method recognizes investment returns greater or less than expected over a period of five years, phasing these gains and losses into the AVA at a rate of 20% per year.

The expected investment return is derived using the Actuarial Interest Rate of 7%, beginning-of-fiscal-year MVA, and net cash flows which are assumed to occur midyear.

The AVA is further constrained to be within a corridor of 80% to 120% of the MVA.

Table II-1
Statement of Plan Net Assets

(\$ Thousands)		
	June 30, 2022	June 30, 2021
ASSETS		
Cash	\$ 35,684	\$ 74,186
Receivables		
Investment Securities Sold	\$ 731,877	\$ 1,049,404
Member Loans	162,050	174,712
Transferrable Earnings due from VSFs to QPP	0	0
Accrued Interest and Dividends	134,866	122,171
Other receivables	<u>0</u>	<u>143,177</u>
Total Receivables	\$ 1,028,793	\$ 1,489,464
INVESTMENTS AT FAIR VALUE		
Short-Term Investments		
Commercial Paper	\$ 280,668	\$ 463,293
Short-term Investment Fund	517,680	699,856
U.S. Treasury Bills	369,797	505,372
Debt Securities	12,447,591	14,092,545
Equity Securities	19,061,483	23,701,640
Alternative Investments	13,347,237	11,135,443
Collective Trust Funds		
Fixed Income	148,230	161,524
Bank Loans	868	1,859
Corporate and Other	0	9
Domestic Equity	47,141	149,857
International Equity	856,180	1,066,994
Mortgage Debt Security	191,695	211,531
Collateral From Securities Lending	<u>4,697,443</u>	<u>5,461,797</u>
Total Investments	\$ 51,966,013	\$ 57,651,720
OTHER ASSETS	<u>9,918</u>	<u>9,062</u>
TOTAL ASSETS	\$ 53,040,408	\$ 59,224,432
LIABILITIES		
Accounts Payable	\$ 54,850	\$ 61,582
Payables for Investment Securities Purchased	1,117,344	2,086,106
Accrued Benefits Payable	127,384	105,275
Accrued Transfers to VSFs	0	215,734
Security Lending	<u>4,697,443</u>	<u>5,461,797</u>
TOTAL LIABILITIES	\$ 5,997,021	\$ 7,930,494
PLAN ASSETS HELD IN TRUST FOR PENSION BENEFITS	\$ 47,043,387	\$ 51,293,938

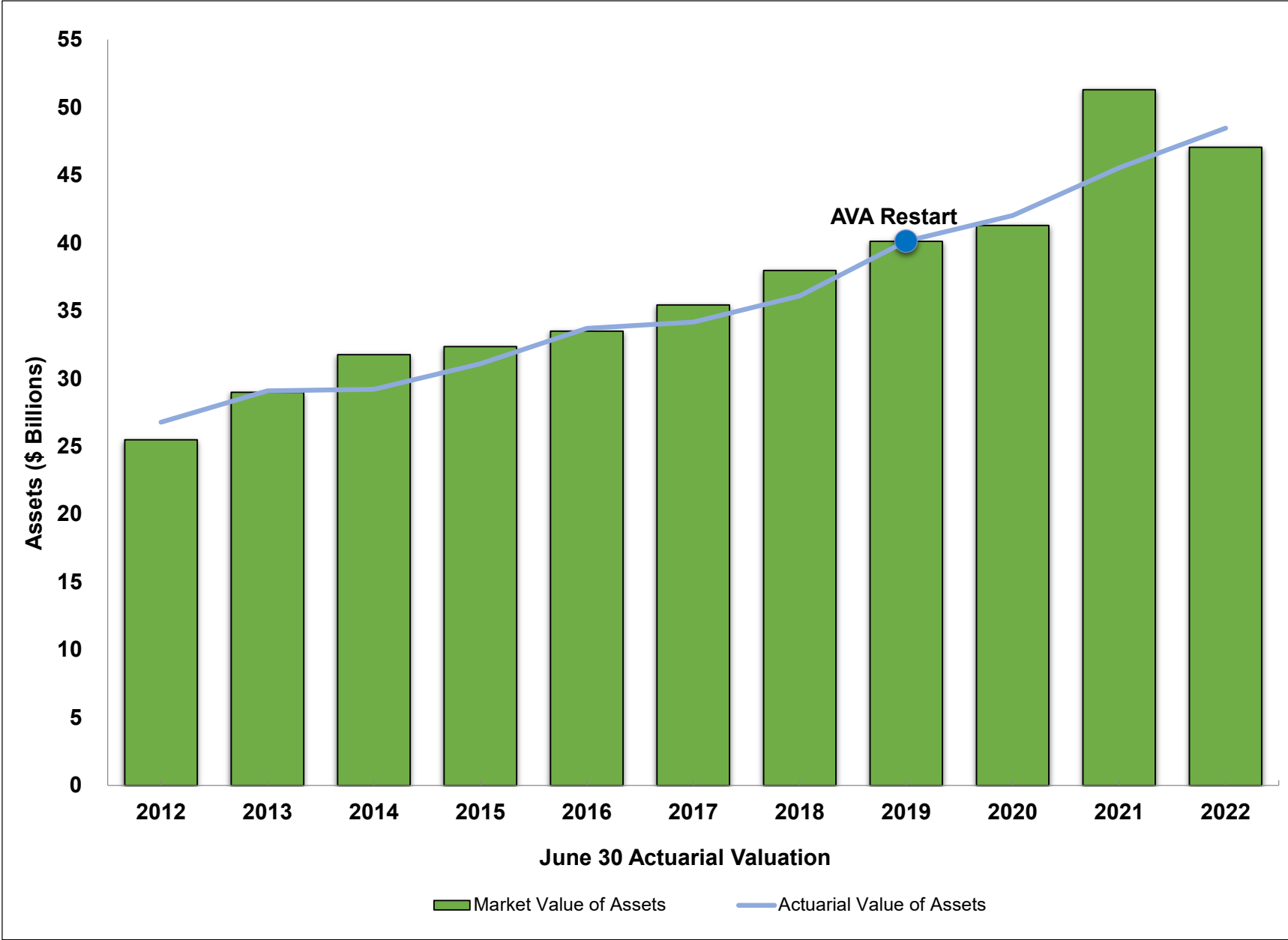
Table II-2
Statement of Changes in Plan Net Assets

(\$ Thousands)		
	June 30, 2022	June 30, 2021
ADDITIONS		
Contributions		
Member Contributions	\$ 281,185	\$ 255,789
Employer Contributions	<u>2,490,134</u>	<u>2,437,728</u>
Total Contributions	\$ 2,771,319	\$ 2,693,517
Investment Income (Loss)		
Interest Income	\$ 693,679	\$ 537,652
Dividend Income	740,464	498,589
Net Appreciation (Depreciation) in Fair Value	<u>(4,711,781)</u>	<u>9,991,705</u>
Total Investment Income (Loss)	\$ (3,277,638)	\$ 11,027,946
Less Investment Expenses	393,193	290,750
Net Income (Loss)	\$ (3,670,831)	\$ 10,737,196
Securities Lending Transactions		
Securities Lending Income	\$ 16,111	\$ 11,940
Securities Lending Fees	<u>(1,575)</u>	<u>(1,175)</u>
Net Securities Lending Income (Loss)	\$ 14,536	\$ 10,765
Other		
Net Receipts from Other Retirement Systems	\$ 1,810	\$ 1,988
Transferrable Earnings due from VSFs to QPP	185	0
Litigation Income	<u>3,385</u>	<u>2,401</u>
TOTAL ADDITIONS	\$ (879,596)	\$ 13,445,867
DEDUCTIONS		
Benefit Payments and Withdrawals	\$ 3,344,982	\$ 3,313,298
Accrued Transfers to VSFs	1,672	106,720
Administrative Expenses	<u>24,301</u>	<u>24,925</u>
TOTAL DEDUCTIONS	\$ 3,370,955	\$ 3,444,943
NET INCREASE (DECREASE) IN PLAN NET ASSETS	\$ (4,250,551)	\$ 10,000,924
PLAN NET ASSETS HELD IN TRUST FOR PENSION BENEFITS		
Beginning of Year	\$ 51,293,938	\$ 41,293,014
End of Year	\$ 47,043,387	\$ 51,293,938

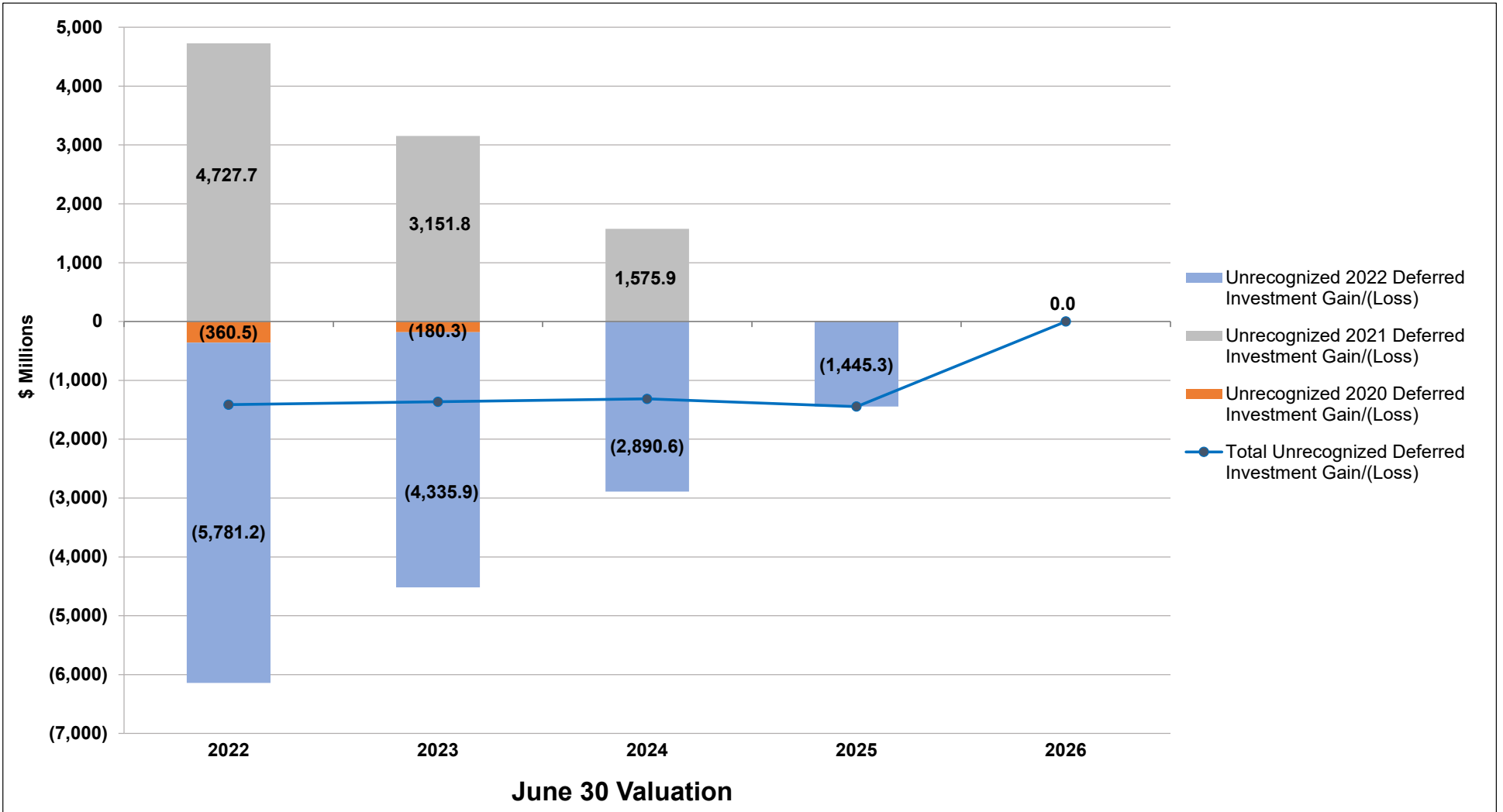
Table II-3
Development of Actuarial Value of Assets

(\$ Thousands)		
Valuation Date	June 30, 2022	June 30, 2021
1. Market Value of Assets (MVA)		
a. Beginning of Year (BOY)	\$ 51,293,938	\$ 41,293,014
b. End of Year (EOY)	\$ 47,043,387	\$ 51,293,938
2. Contributions		
a. Employee	\$ 281,185	\$ 255,789
b. Employer	2,490,134	2,437,728
c. Total Contributions	\$ 2,771,319	\$ 2,693,517
3. Net Investment Income		
a. Investment Income	\$ (3,263,102)	\$ 11,038,711
b. Investment Expenses	(393,193)	(290,750)
c. Total Net Investment Income	\$ (3,656,295)	\$ 10,747,961
4. Benefit Payments and Other Cash Flow	\$ (3,364,088)	\$ (3,333,834)
5. Preliminary Transferable Earnings from POLICE to VSFs - EOY	\$ (1,487)	\$ (106,720)
6. Net Cash Flow (2.c. + 4. + 5.)	\$ (594,256)	\$ (747,037)
7. Expected Investment Return (EIR)	\$ 3,570,180	\$ 2,868,479
8. Unexpected Investment Return (UIR) (3.c. - 7.)	\$ (7,226,475)	\$ 7,879,482
9. Preliminary AVA @ EOY		
a. AVA @ BOY (prior to corridor limit)	\$ 45,531,133	\$ 42,014,055
b. Net Cash Flow (6.)	\$ (594,256)	\$ (747,037)
c. Expected Investment Return (7.)	\$ 3,570,180	\$ 2,868,479
d. Phase in of UIR		
20% of UIR for prior year	\$ (1,445,295)	\$ 1,575,896
20% of UIR for second prior year	1,575,896	(180,260)
20% of UIR for third prior year	\$ (180,260)	N/A
20% of UIR for fourth prior year	N/A	N/A
20% of UIR for fifth prior year	N/A	N/A
Total	\$ (49,659)	\$ 1,395,636
e. Preliminary AVA (9.a. + 9.b. + 9.c. + 9.d.)	\$ 48,457,398	\$ 45,531,133
10. Corridor		
a. Lower Corridor Bound (80% of 1.b.)	\$ 37,634,710	\$ 41,035,150
b. Upper Corridor Bound (120% of 1.b.)	\$ 56,452,064	\$ 61,552,726
11. AVA @EOY (9.e. bounded by 10.a. and 10.b.)	\$ 48,457,398	\$ 45,531,133

Graph II-4
Historical Market and Actuarial Value of Assets



Graph II-5
Future Recognition of Unexpected Investment Return



SECTION III – CONTRIBUTION DEVELOPMENT AND HISTORY

Table III-1
Actuarial Required Contributions

Table III-1 shows the components of the Fiscal Year 2024 and the Fiscal Year 2023 Actuarial Required Contributions.

COMPONENTS OF CURRENT AND PRIOR FISCAL YEAR ACTUARIAL REQUIRED CONTRIBUTIONS		
Valuation Date	June 30, 2022	June 30, 2021
Fiscal Year	2024	2023
Normal Cost	\$ 1,445,026,063	\$ 1,458,845,775
Unfunded Accrued Liability Amortization ¹	\$ 886,943,563	\$ 846,324,700
Administrative Expenses	\$ 27,822,215	\$ 28,536,633
Total Contribution to the New York City Police Pension Fund	\$ 2,359,791,841	\$ 2,333,707,108

¹ See Tables III-2 for additional details.

Table III-2
Schedule of Unfunded Accrued Liability Bases

The Initial Unfunded Accrued Liability (UAL) established with the June 30, 2010 valuation is being amortized as a level percent of pay (with payments increasing by 3% per year) over a 22-year period.

Increments to the UAL established after June 30, 2010 are amortized as level dollars over the following periods:

- Benefit Changes: Over the remaining working lifetimes of those impacted unless the amortization period is determined by statute.
- Assumption and Method Changes: Over a 20-year period.
- Actuarial Gains and Losses: Over a 15-year period.

Under the One-Year Lag methodology (OYLM), the number of payments is one fewer than the number of years in the amortization period (e.g., 14 payments over a 15-year amortization period).

Table III-2
Schedule of Unfunded Accrued Liability Bases (cont'd)

Table III-2 shows the Schedule of UAL Bases as of June 30, 2022.

NEW YORK CITY POLICE PENSION FUND SCHEDULE OF UNFUNDED ACCRUED LIABILITY BASES				
Amortization Base	Date Established	Original \$ Amount	Amortization Years	Amortization \$ Payment
Initial UAL	6/30/10	13,211,374,581	22	1,415,207,297
(Gain)/Loss	6/30/11	276,060,031	15	32,652,194
(Gain)/Loss	6/30/12	(497,039,100)	15	(58,789,449)
(Gain)/Loss	6/30/13	(234,946,852)	15	(27,789,355)
(Gain)/Loss	6/30/14	(219,675,273)	15	(25,983,043)
Assumption Change ¹	6/30/14	706,645,098	20	70,722,523
(Gain)/Loss	6/30/15	(881,721,022)	15	(104,289,367)
(Gain)/Loss	6/30/16	21,224,294	15	2,510,395
SADB	6/30/16	395,717,583	15	46,805,208
Enhanced ADR	6/30/16	13,611,142	18	1,442,093
(Gain)/Loss	6/30/17	41,491,543	15	4,907,592
No VSF Escalation Offset	6/30/17	14,308,348	18	1,515,961
Non-Uniformed Service	6/30/17	55,368,731	20	5,541,419
Assumption Change ²	6/30/17	(392,660,331)	20	(39,298,270)
Method Change ²	6/30/17	(433,751,763)	20	(43,410,786)
(Gain)/Loss	6/30/18	(1,479,324,567)	15	(174,973,511)
(Gain)/Loss	6/30/19	(333,111,349)	15	(39,400,185)
Assumption Change ³	6/30/19	96,750,593	20	9,683,002
Method Change ³	6/30/19	(849,647,000)	20	(85,034,453)
(Gain)/Loss	6/30/20	275,639,445	15	32,602,448
(Gain)/Loss	6/30/21	(1,129,238,268)	15	(133,565,539)
SADB for Parents	6/30/21	42,593,036	15	5,037,875
(Gain)/Loss	6/30/22	(87,720,463)	15	(10,375,517)
Tier 3 Loans	6/30/22	11,562,407	18	1,225,031
TOTAL				886,943,563

¹ Change in post-retirement mortality assumptions including the change to the mortality improvement scale MP-2015.

² 2019 A&M.

³ Revised 2021 A&M.

Graph III-3
Remaining UAL Amortizations as of June 30, 2022

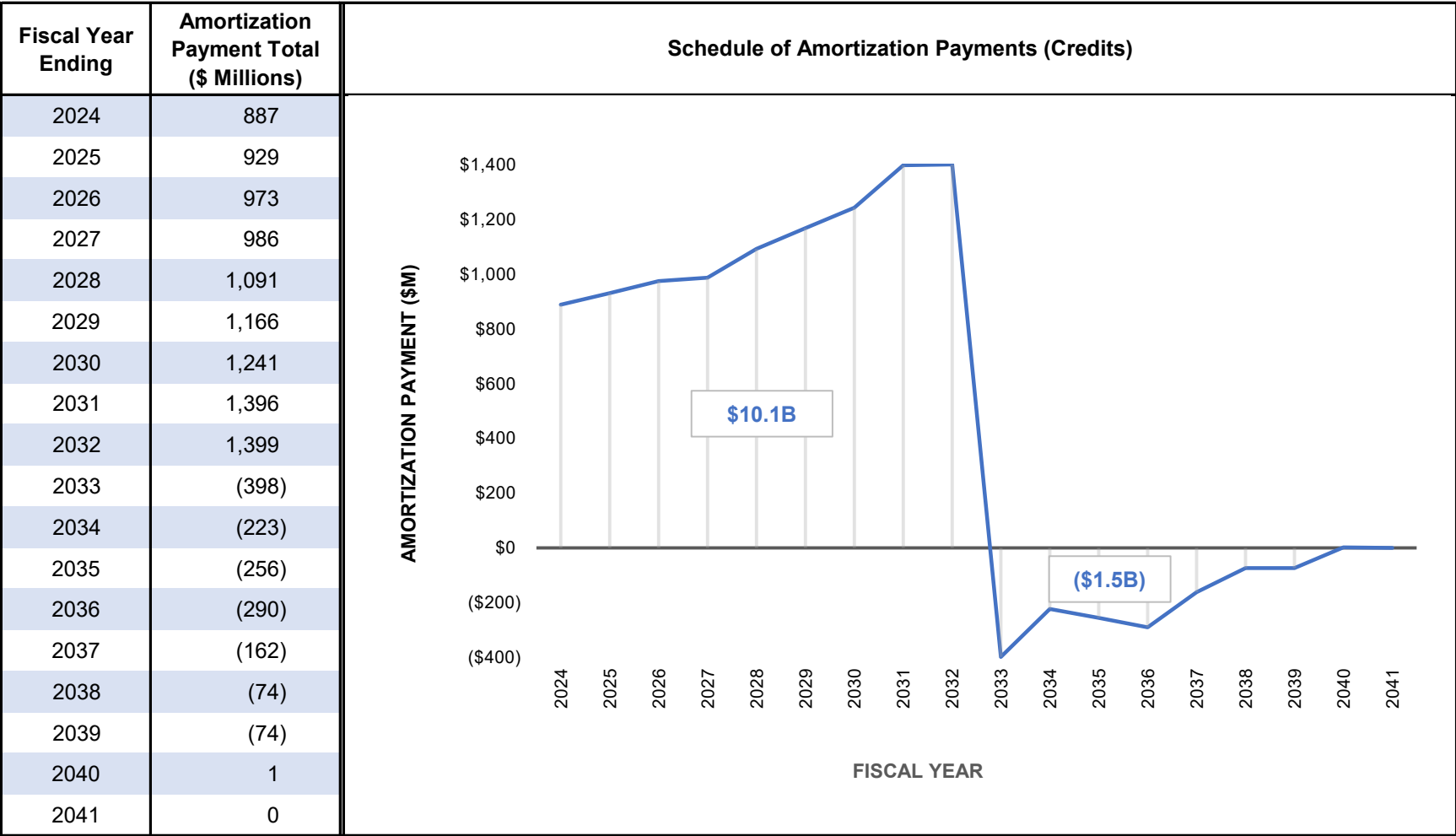


Table III-4
Reconciliation of Outstanding UAL Bases

Cost Component	Date Established	Original Amount	Amort Years	Outstanding Balance 6/30/2022	FY 2023 Payment on 12/31/2022	Outstanding Balance 6/30/2023	FY 2024 Payment on 12/31/2023	Additional Payments
Initial UAL	6/30/10	\$13,211,374,581	22	\$11,257,158,331	\$1,373,987,667	\$10,623,895,520	\$1,415,207,297	8
(Gain)/Loss	6/30/11	276,060,031	15	114,405,402	32,652,194	88,638,088	32,652,194	2
(Gain)/Loss	6/30/12	(497,039,100)	15	(249,342,348)	(58,789,449)	(205,984,033)	(58,789,449)	3
(Gain)/Loss	6/30/13	(234,946,852)	15	(137,016,719)	(27,789,355)	(117,862,357)	(27,789,355)	4
(Gain)/Loss	6/30/14	(219,675,273)	15	(144,848,298)	(25,983,043)	(128,110,610)	(25,983,043)	5
Assumption Change ¹	6/30/14	706,645,098	20	581,054,736	70,722,523	548,572,621	70,722,523	10
(Gain)/Loss	6/30/15	(881,721,022)	15	(644,170,304)	(104,289,367)	(581,384,465)	(104,289,367)	6
(Gain)/Loss	6/30/16	21,224,294	15	16,918,581	2,510,395	15,506,109	2,510,395	7
SADB	6/30/16	395,717,583	15	315,439,428	46,805,208	289,104,504	46,805,208	7
Enhanced ADR	6/30/16	13,611,142	18	11,848,204	1,442,093	11,185,866	1,442,093	10
(Gain)/Loss	6/30/17	41,491,543	15	35,654,875	4,907,592	33,074,264	4,907,592	8
No VSF Escalation Offset	6/30/17	14,308,348	18	13,105,825	1,515,961	12,455,110	1,515,961	11
Non-Uniformed Service	6/30/17	55,368,731	20	52,207,364	5,541,419	50,129,791	5,541,419	13
Assumption Change ²	6/30/17	(392,660,331)	20	(370,240,761)	(39,298,270)	(355,507,168)	(39,298,270)	13
Method Change ²	6/30/17	(433,751,763)	20	(408,986,016)	(43,410,786)	(392,710,571)	(43,410,786)	13
(Gain)/Loss	6/30/18	(1,479,324,567)	15	(1,357,215,107)	(174,973,511)	(1,271,226,157)	(174,973,511)	9
(Gain)/Loss	6/30/19	(333,111,349)	15	(323,711,079)	(39,400,185)	(305,614,986)	(39,400,185)	10
Assumption Change ³	6/30/19	96,750,593	20	97,790,154	9,683,002	94,619,290	9,683,002	15
Method Change ³	6/30/19	(849,647,000)	20	(858,776,243)	(85,034,453)	(830,930,258)	(85,034,453)	15
(Gain)/Loss	6/30/20	275,639,445	15	281,855,366	32,602,448	267,861,007	32,602,448	11
(Gain)/Loss	6/30/21	(1,129,238,268)	15	(1,208,284,947)	(133,565,539)	(1,154,703,625)	(133,565,539)	12
415 Limit	6/30/21	(7,724,603)	2	(8,265,325)	(8,549,719)	0	0	0
SADB for Parents	6/30/21	42,593,036	15	45,574,549	5,037,875	43,553,549	5,037,875	12
Admin Expenses	6/30/21	25,782,621	2	27,587,404	28,536,633	0	0	0
Normal Cost	7/1/21	1,318,055,554	2	1,410,319,443	1,458,845,775	0	0	0
(Gain)/Loss	6/30/22	(87,720,463)	15	(87,720,463)	0	(93,860,895)	(10,375,517)	13
Tier 3 Loans	6/30/22	11,562,407	18	11,562,407	0	12,371,775	1,225,031	16
Admin Expenses	6/30/22	25,137,150	2	25,137,150	0	26,896,751	27,822,215	0
Normal Cost	7/1/22	1,305,569,554	2	0	0	1,396,959,423	1,445,026,063	0
TOTAL				\$8,499,041,609	\$2,333,707,108	\$8,076,928,543	\$2,359,791,841	

Payment for amortization bases, normal costs and administrative expenses are deferred 1.5 years to the middle of the fiscal year under the One-Year Lag Methodology. The number of amortization payments is one less than the number of years amortized. Required contributions are the sum of all cost components after interest adjustments due to the lag.

**Table III-4
Reconciliation of Outstanding UAL Bases (cont'd)**

Cost Component	Outstanding Balance 6/30/2022	FY 2023 Payment on 12/31/2022	Outstanding Balance 6/30/2023	FY 2024 Payment on 12/31/2023
Initial UAL	\$11,257,158,331	\$1,373,987,667	\$10,623,895,520	\$1,415,207,297
Method Change	(1,267,762,259)	(128,445,239)	(1,223,640,829)	(128,445,239)
Assumption Change	308,604,129	41,107,255	287,684,743	41,107,255
Plan Change	449,737,777	60,342,556	418,800,595	61,567,587
415 Limit	(8,265,325)	(8,549,719)	0	0
(Gain)/Loss	(3,703,475,041)	(492,117,820)	(3,453,667,660)	(502,493,337)
Normal Cost	1,410,319,443	1,458,845,775	1,396,959,423	1,445,026,063
Admin Expenses	52,724,554	28,536,633	26,896,751	27,822,215
TOTAL	\$ 8,499,041,609	\$2,333,707,108	\$8,076,928,543	\$ 2,359,791,841

	6/30/2022
(A) Actuarial Accrued Liability	\$ 56,956,439,609
(B) Actuarial Value of Assets	48,457,398,000
(C) Unfunded Accrued Liabilities (A) - (B)	\$ 8,499,041,609

	FY 2024
Normal Cost	\$ 1,445,026,063
UAL Payment	886,943,563
Admin Expenses	27,822,215
Total	\$ 2,359,791,841

**Table III-5
Contribution History**

Table III-5 compares actual contributions to the Actuarial Required Contributions for Fiscal Years 2015 through 2024.

(\$ Thousands)			
Fiscal Year Ended June 30	Actuarial Required Contribution	Amount Contributed	Percentage of Required Contributed
2015	\$ 2,309,619	\$ 2,309,619	100.0%
2016	2,393,940	2,393,940	100.0%
2017	2,293,840	2,293,840	100.0%
2018	2,415,153	2,415,153	100.0%
2019	2,558,256	2,558,256	100.0%
2020	2,458,907	2,458,907	100.0%
2021	2,437,728	2,437,728	100.0%
2022	2,490,134	2,490,134	100.0%
2023	2,333,707	2,333,707	100.0%
2024	2,359,792	2,359,792	100.0%

Table III-6
City Rates: Contributions as a Percentage of Salary

Table III-6 shows the City Rates defined to be the contributions as a percentage of salary for the Fiscal Years 2015 through 2024.

CITY RATES (\$ Thousands)			
Fiscal Year Ended June 30	Actuarial Required Contribution	Salary¹ at Beginning of Fiscal Year	City Rate
2015	\$ 2,309,619	\$ 3,512,778	65.7%
2016	2,393,940	3,540,326	67.6%
2017	2,293,840	3,509,985	65.4%
2018	2,415,153	3,673,054	65.8%
2019	2,558,256	3,994,618	64.0%
2020	2,458,907	4,084,569	60.2%
2021	2,437,728	4,288,264	56.8%
2022	2,490,134	4,349,379	57.3%
2023	2,333,707	4,324,289	54.0%
2024	2,359,792	4,365,101	54.1%

¹ Includes assumed overtime paid, the impact of recent labor contract settlements and certain non-union salary increases with retroactive effective dates, if any.

**Table III-7
Normal Cost Rates by Tier**

Table III-7 shows the Normal Cost Rates as a percentage of salary by Tier.

NORMAL COST RATES AS OF JUNE 30, 2022					
	Tier 2	Tier 3	Tier 3 Revised	Tier 3 Enhanced	Total
Total	38.8%	25.3%	23.5%	25.8%	32.9%
Employee	<u>(1.8%)</u>	<u>(2.9%)</u>	<u>(2.8%)</u>	<u>(3.8%)</u>	<u>(2.7%)</u>
Employer	37.0%	22.4%	20.7%	22.0%	30.2%

SECTION IV - (GAIN)/LOSS ANALYSIS

**Table IV-1
Development of Experience (Gain)/Loss**

NEW YORK CITY POLICE PENSION FUND				
DEVELOPMENT OF EXPERIENCE (GAIN) / LOSS				
JUNE 30, 2022				
(\$ Thousands)				
1. Expected Accrued Liability (AL)	QPP	VSF	Total	
a. AL at June 30, 2021	\$ 53,925,549	\$ 6,021,376	\$	59,946,925
b. Normal Cost and Administrative Expenses at June 30, 2021	1,511,827	101,552		1,613,379
c. Interest on 1.a. and 1.b. to June 30, 2022	3,880,616	428,605		4,309,221
d. Fiscal Year 2022 Benefit Payments	(3,344,982)	(476,391)		(3,821,373)
e. Interest on 1.d. to June 30, 2022	(115,094)	(16,392)		(131,486)
f. Plan Changes	<u>11,562</u>	<u>0</u>		<u>11,562</u>
g. Expected AL at June 30, 2022	\$ 55,869,478	\$ 6,058,750	\$	61,928,228
2. Actual AL at June 30, 2022	\$ 56,104,782	\$ 6,085,339	\$	62,190,121
3. Expected Actuarial Value of Assets (AVA)				
a. AVA at June 30, 2021	\$ 45,531,133	\$ 5,394,764	\$	50,925,897
b. Interest on 3.a. to June 30, 2022	3,187,179	377,633		3,564,812
c. Total Contributions Paid in Fiscal Year 2022 ¹	2,769,832	1,487		2,771,319
d. Interest on 3.c. to June 30, 2022	95,304	51		95,355
e. Fiscal Year 2022 Benefit Payments	(3,344,982)	(476,391)		(3,821,373)
f. Interest on 3.e. to June 30, 2022	(115,094)	(16,392)		(131,486)
g. Change in VSF Assets in Excess of Liabilities at June 30, 2022	<u>0</u>	<u>\$ (63,058)</u>	<u>\$</u>	<u>(63,058)</u>
h. Expected AVA at June 30, 2022	\$ 48,123,372	\$ 5,218,094	\$	53,341,466
4. Actual AVA at June 30, 2022	\$ 48,457,398	\$ 5,233,681	\$	53,691,079
5. Liability (Gain) / Loss (2. - 1.g.)	\$ 235,304	\$ 26,589	\$	261,893
6. Actuarial Asset (Gain) / Loss (3.h. - 4.)	\$ (334,026)	\$ (15,587)	\$	(349,613)
7. Total Actuarial (Gain) / Loss (5. + 6.)	\$ (98,722)	\$ 11,002	\$	(87,720)

¹ Contributions include SKIM amounts transferred from QPP to VSF.

SECTION V – SCHEDULE OF FUNDING PROGRESS

A schedule of funding progress is provided below. This schedule of funding progress was previously required by GASB25, which has been superseded by GASB67, and is provided for historical context. These liability and asset measures are used to develop the Actuarial Contribution and are not suitable for other purposes including, but not limited to, settlement of plan obligations. For more information, see SECTION II – MARKET AND ACTUARIAL VALUES OF ASSETS.

Table V-1
Schedule of Funding Progress

NEW YORK CITY POLICE PENSION FUND (\$ Thousands)						
June 30 Valuation Date	(1) Actuarial Value of Assets (AVA)	(2) Accrued Liability (AL)	(3) Unfunded AL (UAL) (2) - (1)	(4) Funded Ratio (1) / (2)	(5) Covered Payroll¹	(6) UAL as a % of Covered Payroll (3) / (5)
2013	29,087,154	43,900,094	14,812,940	66.3%	3,607,607	410.6%
2014	29,212,981	44,384,022	15,171,041	65.8%	3,618,095	419.3%
2015	31,092,977	45,297,561	14,204,584	68.6%	3,564,030	398.6%
2016	33,692,647	48,059,916	14,367,269	70.1%	3,717,425	386.5%
2017	34,162,505	47,696,250	13,533,745	71.6%	3,968,885	341.0%
2018	36,098,314	48,024,798	11,926,484	75.2%	4,053,205	294.2%
2019	40,119,424	50,614,796	10,495,372	79.3%	4,244,805	247.3%
2020	42,014,055	52,485,567	10,471,512	80.0%	4,299,649	243.5%
2021	45,531,133	54,611,094	9,079,961	83.4%	4,262,626	213.0%
2022	48,457,398	56,956,440	8,499,042	85.1%	4,332,226	196.2%

¹ Salaries shown are base salary plus assumed overtime paid and reflect certain salary increases with retroactive effective dates, if any, that are not yet reflected in the census data.

SECTION VI – Variable Supplements Fund (VSF)

POLICE administers both the Police Officer's Variable Supplements Fund (POVSF) and the Police Superior Officers' Variable Supplements Fund (PSOVSF). The POVSF and PSOVSF (the Funds) operate pursuant to the provisions of Title 13, Chapter 2 of the Administrative Code of the City of New York (ACCNY) and provide supplemental benefits to retirees who were Police Officers and Police Superior Officers, respectively, of the New York City Police Department (NYPD), Subchapter One Pension Fund or NYPD, Subchapter Two Pension Fund and who retired for service with 20 or more years of service on or after October 1, 1968.

Table VI-1
Summary of VSF Valuation Results

POVSF		
Valuation Date	June 30, 2022¹	June 30, 2021²
Fiscal Year	2024	2023
Funded Status		
1. Accrued Liability	\$ 2,113,685,797	\$ 2,092,606,506
2. Actuarial Value of Assets (AVA)	2,081,484,000	2,151,539,000
3. Unfunded Accrued Liability (AVA Basis), not less than zero (1. - 2.)	\$ 32,201,797	\$ 0
4. Market Value of Assets (MVA) ³	1,860,558,000	2,323,129,000
5. Unfunded Accrued Liability (MVA Basis), not less than zero (1. - 4.)	\$ 253,127,797	\$ 0
6. Funded Ratio (MVA Basis) (4. / 1.)	88.0%	111.0%
Participant Data		
1. Active Members		
a. Number	22,523	23,132
b. Average Age	34.7	35.0
2. Retirees and Beneficiaries		
a. Number	13,693	13,378
b. Average Age	62.8	62.7

PSOVSF		
Valuation Date	June 30, 2022¹	June 30, 2021²
Fiscal Year	2024	2023
Funded Status		
1. Accrued Liability	\$ 3,971,652,867	\$ 3,928,769,529
2. Actuarial Value of Assets (AVA)	3,152,197,000	3,243,225,000
3. Unfunded Accrued Liability (AVA Basis), not less than zero (1. - 2.)	\$ 819,455,867	\$ 685,544,529
4. Market Value of Assets (MVA) ⁴	2,894,727,000	3,648,903,000
5. Unfunded Accrued Liability (MVA Basis), not less than zero (1. - 4.)	\$ 1,076,925,867	\$ 279,866,529
6. Funded Ratio (MVA Basis) (4. / 1.)	72.9%	92.9%
Participant Data		
1. Active Members		
a. Number	12,132	11,874
b. Average Age	42.4	42.5
2. Retirees and Beneficiaries		
a. Number	21,618	21,101
b. Average Age	62.6	62.3

¹ Includes preliminary Transferable Earnings as determined by the Actuary in a letter dated September 9, 2022 to the Comptroller's Office.

² Includes preliminary Transferable Earnings as determined by the Actuary in a letter dated September 9, 2021 to the Comptroller's Office.

³ Includes Accrued Benefits Payable for POVSF of \$84,236,000 for 6/30/2022 and \$81,336,000 for 6/30/2021.

⁴ Includes Accrued Benefits Payable for PSOVSF of \$133,069,000 for 6/30/2022 and \$128,309,000 for 6/30/2021.

Table VI-2
Development of VSF Actuarial Value of Assets

(\$ Thousands)				
	June 30, 2022		June 30, 2021	
	POVSF	PSOVSF	POVSF	PSOVSF
1. Market Value of Assets (MVA)				
a. Beginning of Year (BOY) ¹	\$ 2,323,129	\$ 3,648,903	\$ 1,952,107	\$ 3,217,735
b. End of Year (EOY) ²	\$ 1,860,558	\$ 2,894,727	\$ 2,323,129	\$ 3,648,903
2. Contributions				
a. Employee	\$ 0	\$ 0	\$ 0	\$ 0
b. Employer	0	0	0	0
c. Total Contributions	\$ 0	\$ 0	\$ 0	\$ 0
3. Net Investment Income				
a. Investment Income	\$ (287,617)	\$ (458,603)	\$ 448,815	\$ 768,197
b. Investment Expenses	(1,311)	(2,078)	(1,196)	(2,074)
c. Total Net Investment Income	\$ (288,928)	\$ (460,681)	\$ 447,619	\$ 766,123
4. Benefit Payments and Other Cash Flow	\$ (173,458)	\$ (295,167)	\$ (179,833)	\$ (338,439)
5. Preliminary Transferable Earnings from POLICE to VSFs - EOY ³	\$ (185)	\$ 1,672	\$ 103,236	\$ 3,484
6. Net Cash Flow (2.c. + 4. + 5.)	\$ (173,643)	\$ (293,495)	\$ (76,597)	\$ (334,955)
7. Expected Investment Return (EIR)	\$ 156,651	\$ 245,267	\$ 130,459	\$ 213,596
8. Unexpected Investment Return (UIR) (3.c. - 7.)	\$ (445,579)	\$ (705,948)	\$ 317,160	\$ 552,527
9. AVA @ EOY				
a. AVA @ BOY	\$ 2,151,539	\$ 3,243,225	\$ 2,061,624	\$ 3,266,194
b. Net Cash Flow (6.)	\$ (173,643)	\$ (293,495)	\$ (76,597)	\$ (334,955)
c. Expected Investment Return (7.)	\$ 156,651	\$ 245,267	\$ 130,459	\$ 213,596
d. Phase in of UIR				
20% * UIR for prior year	\$ (89,116)	\$ (141,190)	\$ 63,432	\$ 110,505
20% * UIR for second prior year	\$ 63,432	\$ 110,505	\$ (27,379)	\$ (12,115)
20% * UIR for third prior year	\$ (27,379)	\$ (12,115)	N/A	N/A
20% * UIR for fourth prior year	N/A	N/A	N/A	N/A
20% * UIR for fifth prior year	N/A	N/A	N/A	N/A
Total	\$ (53,063)	\$ (42,800)	\$ 36,053	\$ 98,390
e. AVA @ EOY (9.a. + 9.b. + 9.c. + 9.d.)	\$ 2,081,484	\$ 3,152,197	\$ 2,151,539	\$ 3,243,225

¹ Includes Accrued Benefits Payable for 6/30/2021 of \$81,336,000 for POVSF and \$128,309,000 for PSOVSF and Accrued Benefits Payable for 6/30/2020 of \$78,659,000 for POVSF and \$121,306,000 for PSOVSF.

² Includes Accrued Benefits Payable for 6/30/2022 of \$84,236,000 for POVSF and \$133,069,000 for PSOVSF and Accrued Benefits Payable for 6/30/2021 of \$81,336,000 for POVSF and \$128,309,000 for PSOVSF.

³ Reflects preliminary Transferable Earnings as determined by the Actuary in a letter dated September 9, 2022 for 6/30/2022 and a letter dated September 9, 2021 for 6/30/2021 to the Comptroller's Office.

Table VI-3
Transferable Earnings Calculation as of June 30, 2022

For details, see Summary of VSF Actuarial Assumptions and Methods.

(\$ Thousands)		
Total POLICE Pension Fund		
1. FY2022 Equity Earnings	\$	(2,057,626)
2. FY2022 Hypothetical Earnings		781,608
3. FY2022 Excess Earnings (1. - 2.)		(2,839,234)
4. Deficit at June 30, 2021		0
5. Hypothetical Interest Rate (HIR)		2.223%
6. Deficit with interest (4. x (1+HIR))		0
7. Potential Transferable Earnings (3. - 6.), not less than zero	\$	0
	POVSF	PSOVSF
Allocations to VSF		
8. Allocation Percentage	50.449%	49.551%
9. Potential Transferable Earnings (7. x 8.)	\$ (1,432,365)	\$ (1,406,869)
10. APV of Accumulated Plan Benefits	2,038,712	3,833,645
11. MVA Prior to Transferable Earnings	1,860,558	2,894,727
12. Unfunded APV of Accumulated Plan Benefits (10. - 11.), not less than zero	178,154	938,918
13. Transferable Earnings Payable (Lesser of 9. and 12., not less than zero)	0	0
14. Rounded Estimate, for FY22 Financial Statements	\$ 0	\$ 0

Summary of VSF Plan Provisions

A. Eligibility

Service Retirement with at least 20 years of allowable service on or after October 1, 1968. This benefit is not payable to disability retirees, vested retirees, or beneficiaries of members who die while eligible for service retirement.

B. Benefits

The benefit is currently \$12,000 per year, prorated in the first year and in the year of death based on the number of full months of retirement. The month of retirement and the month of death are not included in these two prorations.

C. Cost-of-Living Adjustment (COLA) Benefits

Any AutoCOLA payable to a retiree reduces VSF benefits by an amount equal to such AutoCOLA until the attainment of age 62.

D. Form of Payment

Life annuity payable annually on or about December 15 for the current calendar year.

E. VSF DROP

Members who retire on and after January 1, 2002 with 20 or more years of service are entitled to an additional one-time special lump sum payment (VSF DROP) payable on or about December 15 succeeding the date of retirement equal to the cumulative Fund benefits that would have been paid after January 1, 2002 had the member retired at the completion of the 20th year of service.

Summary of VSF Actuarial Assumptions and Methods

Assumptions not detailed below are as described in SECTION XI – ACTUARIAL ASSUMPTIONS AND METHODS.

1. **POVSF vs. PSOVSF Membership:** Amongst current active members, 40% of members who become eligible for VSF benefits are assumed to retire as Police Officers, while the remaining 60% are assumed to retire as Police Superior Officers.
2. **COLA:** 1.5% per year for AutoCOLA, used to estimate future COLA on the first \$18,000 of POLICE benefits which, in general, reduces benefits payable by the Fund until age 62.
3. **Asset Smoothing Method:** Information on the MVA of the VSF is provided by the Office of the Comptroller. The same Asset Smoothing Method is used to determine the AVA of the POVSF and the PSOVSF as is used to determine the AVA of the Plan, except there is no corridor of 80% to 120% of the MVA for the VSFs. For more information, see SECTION II – MARKET AND ACTUARIAL VALUES OF ASSETS.
4. **Liability Method:** The obligations of POLICE to the POVSF and the PSOVSF are recognized through a methodology where the POVSF and PSOVSF UALs are included directly as part of the accrued liability of POLICE. Under Entry Age Normal (EAN) cost method, POVSF and PSOVSF normal costs and UALs are financed as part of the Employer Contribution.
5. **Transferable Earnings Calculation:** The ACCNY provides that POLICE transfer to the Funds a portion of the amount by which earnings on equity investments of POLICE exceed what the earnings would have been had such funds been invested at the Hypothetical Interest Rate, less any negative Cumulative Earnings Differentials and other limitations, determined as follows:
 - a. *Hypothetical Interest Rate:* 115% of the 12-month average of monthly 10-year U.S. Treasury Note yields
 - b. *Hypothetical Fixed Income Securities Earnings:* Investment earnings had equities been invested in fixed income securities earning the Hypothetical Interest Rate
 - c. *Earnings Differential:* Difference between actual equity investment earnings and Hypothetical Fixed Income Securities Earnings
 - d. *Cumulative Earnings Differential:* The current year's Earnings Differential, offset by any negative Earnings Differentials from prior years, accumulated with interest at the corresponding year's Hypothetical Interest Rate

- e. *Proportionate Transferable Earnings*: The portion of the Cumulative Earnings Differential allocable to the VSFs based on the ratio of total contributions between Police Officers and Police Superior Officers, limited to not allow assets to exceed the actuarial PV of accumulated plan benefits of the VSFs

SECTION VII – RISK AND UNCERTAINTY

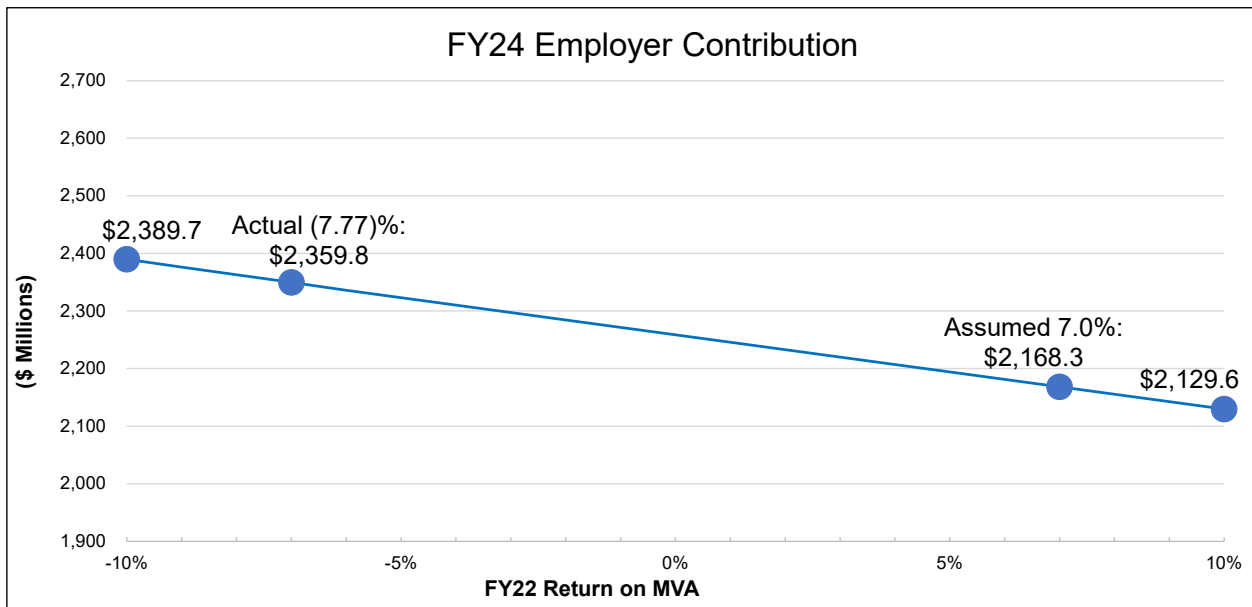
The funded status of POLICE depends highly on the realization of the actuarial assumptions used, certain demographic characteristics of the Plan, and other factors. Risks faced by the Plan are described in this Section and have been separated into high, medium, and other risk categories.

High Risk Types

Investment Risk: The Risk of Not Realizing Expected Returns

The most substantial risk for most pension systems, POLICE included, is the risk of investment returns being less than assumed. For POLICE this assumed investment return is 7%.

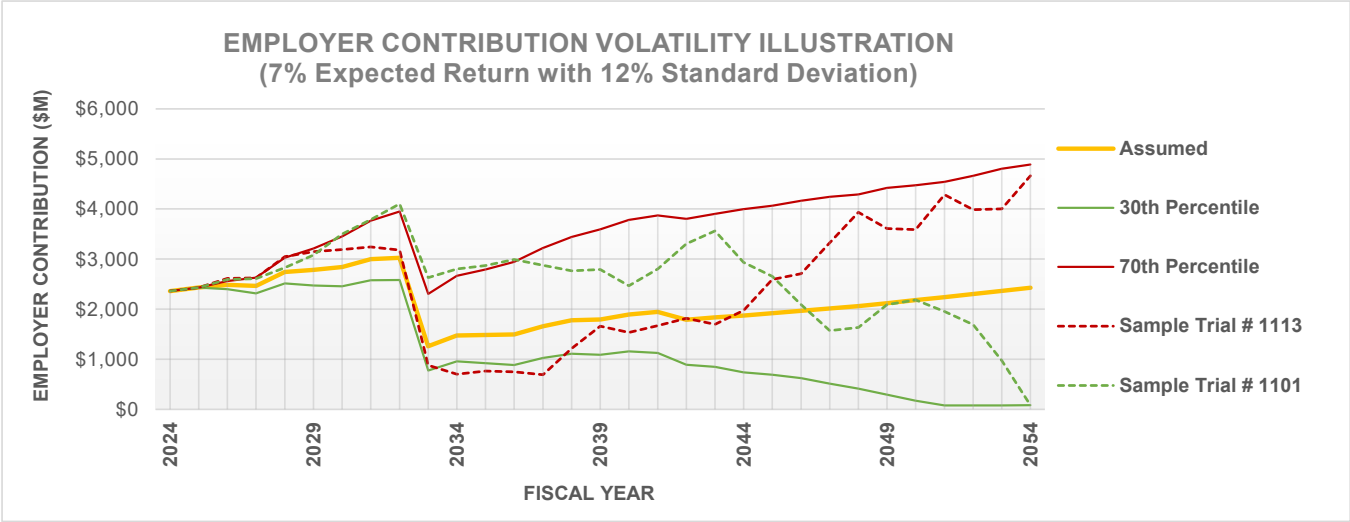
The graph below illustrates the potential FY24 employer contributions for a range of investment return outcomes if returns had differed from the assumed rate of return (i.e., from -10% to 10%). In addition, the actual investment return and employer contribution are shown.



Investment Risk: The Risk of Volatile Realized Returns

Even when long-term investment returns meet actuarial assumptions, investment volatility can contribute substantially to contribution and funded status volatility. The following charts illustrate the impact of investment return volatility on employer contributions and funded ratios based on 5,000 30-year investment return trials. Each stochastic investment return within each 30-year trial was generated from a normal distribution with an expected return of 7% and a standard deviation of 12%. Note that individual asset classes within the portfolio were NOT separately modeled and no attempt was made to rebalance the asset classes during the 30-year trials. The actual investment return for the next valuation year was known prior to the publication of this report and was incorporated into this projection.

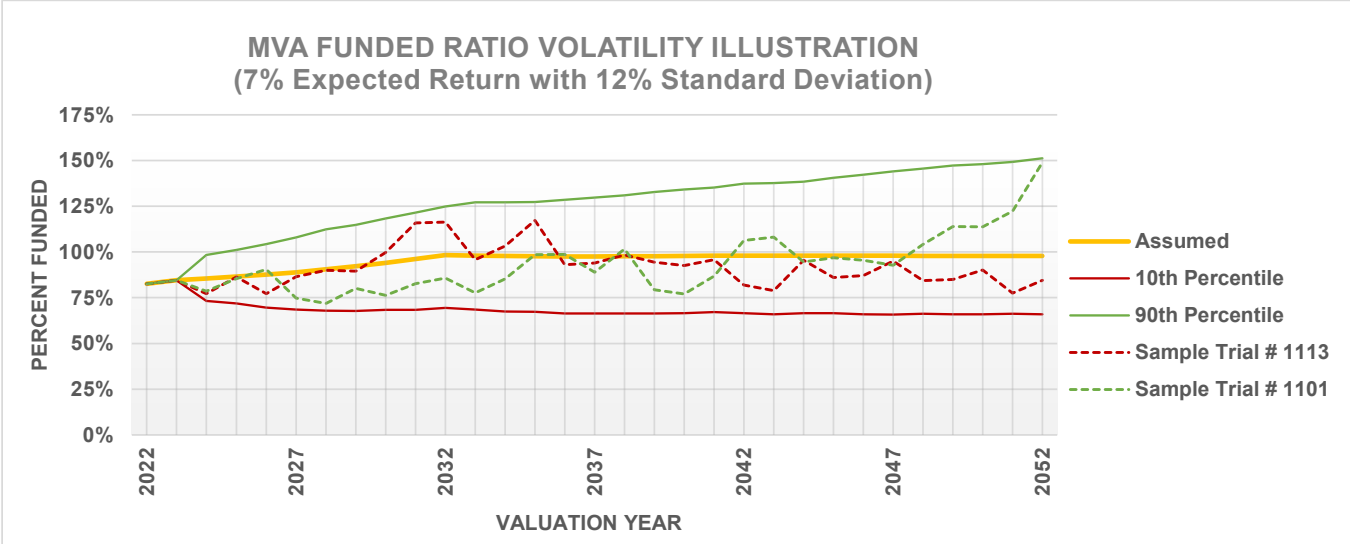
The yellow line in the charts show the results if investment returns were exactly 7% as expected. The two solid lines show results for the indicated percentile range and together frame a range of results based on all 5,000 trials. The two dashed lines illustrate sample results from among the 5,000 trials.



Please note how in the two sample trials above (the dotted lines), the actual employer contribution fluctuates above and below the assumed contribution rate due to investment return volatility.

The impact on the funded status for these two trials can also be seen below, where for example, the green dotted line approaches 150% funding at the end of the 30-year period (below) with a corresponding employer contribution approaching \$0 (above). The converse is shown in the red dotted line where at the end of the 30-year period, the employer contribution rate approaches \$4.7B (above) with a corresponding funded ratio of 85% (below).

On average, the 5,000 trials result in the yellow assumed line with a funded status approaching 100% achieved around the fiscal year ending in 2032.

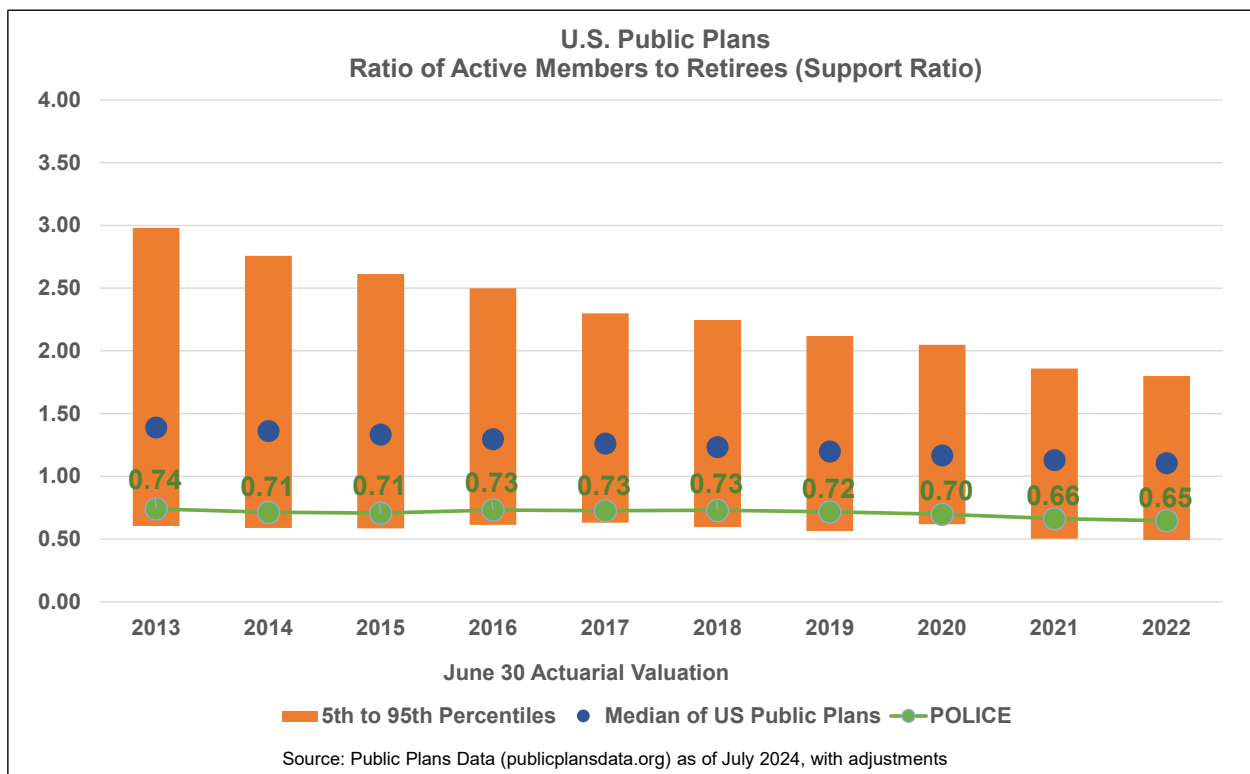


Maturity Risk: The Risk of Demographic Imbalance

As plans mature, contribution volatility can increase as retiree liabilities and total assets grow faster than active liabilities and payroll. In this subsection, the maturity of the Plan is examined with several metrics.

Ratio of Active Members to Retirees (Support Ratio)

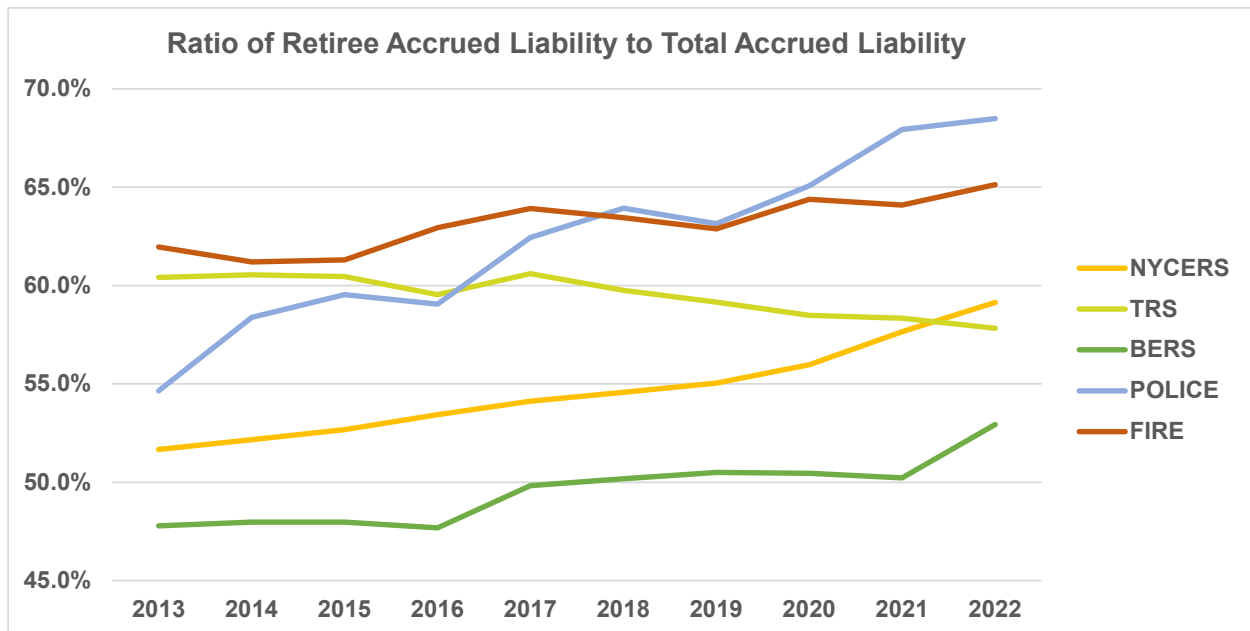
A plan's Support Ratio (i.e., the ratio of active members to retirees) is an indicator of the Plan's maturity level. Lower Support Ratios have higher contribution volatility. In a plan's early years, the ratio is very high as the plan contains mostly active members. As it matures, more active members transition to retirement, leading to a decrease in the Support Ratio over time that can result in a ratio near or below one. For POLICE, as expected, this ratio has been declining over time as the Plan continues to mature.



The chart above shows U.S. public pension plan Support Ratios in comparison to the Plan's. The median Support Ratio amongst US public pensions has declined from 1.39 in the 2013 valuation year to 1.10 in the 2022 valuation year. Likewise, over that same period, the Plan's Support Ratio declined from 0.74 to 0.65.

Ratio of Retiree Accrued Liability to Total Accrued Liability

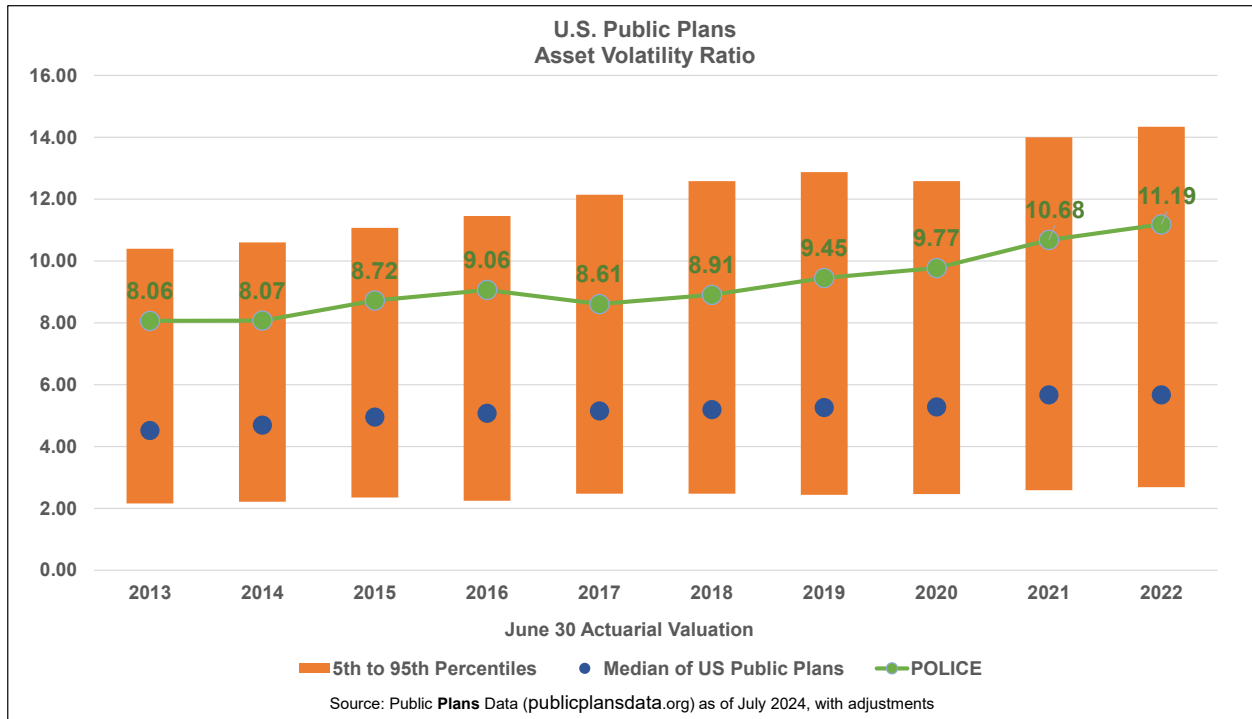
A plan's ratio of retiree liabilities to its total liabilities is also a measure of its maturity. A new pension plan begins with this ratio at zero; as the plan matures, the ratio increases. This ratio is shown in the graph below for POLICE; the other New York City Retirement Systems¹ (NYCRS) are included for comparison. The ratio for POLICE has been trending upward over time as expected as the Plan matures.



¹ New York City Employees' Retirement System (NYCERS); Teachers' Retirement System (TRS); Board of Education Retirement System (BERS); Fire Pension Fund (FIRE)

Asset Volatility Ratio

Another way to look at plan maturity is the Asset Volatility Ratio (AVR), or ratio of assets to payroll. This ratio tends to rise as plans mature because assets generally need to accumulate to provide for benefit payments. The chart below compares the AVR (on an AVA basis) for POLICE to the population of public pension systems.



As a plan matures, AVRs tend to increase, and the plan's actuarially determined contribution becomes more sensitive to investment losses. For example, the same percentage of investment losses in more mature plans with a larger asset base can increase contributions as a percentage of payroll more than in less mature plans. Likewise, large investment gains in more mature plans decrease contributions as a percentage of payroll more than comparable gains would in less mature plans. This leads to additional volatility.

Based on these metrics, the Plan is maturing as expected and contribution volatility will likely increase over time. If contribution volatility is of concern, asset allocation adjustments can be considered as a means of reducing this volatility.

Medium Risk Types

Interest Rate Risk: The Risk of Reduction in the Long-Term Rate of Return

The Accrued Liability for the Plan depends heavily on the actuarial assumption used for future investment returns. While the returns themselves can produce substantial volatility, as detailed in the Investment Risk subsection above, the long-term rate of return assumption of 7.0% is highly dependent on the allocation of Plan assets.

If market conditions and/or the allocation of Plan assets no longer support a long-term rate of return assumption of 7.0%, the Actuarial Interest Rate (AIR) may have to be reduced, which can significantly increase the Accrued Liability, Unfunded Accrued Liability, Normal Cost, and resulting contribution of the Plan. The sensitivity of the Accrued Liability, Unfunded Accrued Liability, and Normal Cost of the Plan are shown below:

NEW YORK CITY POLICE PENSION FUND	
SENSITIVITY ANALYSIS AS OF JUNE 30, 2022	
Valuation Date	June 30, 2022
Results at 7.0%	
1. Accrued Liability (AL)	\$ 56,956,439,609
2. Actuarial Value of Assets (AVA)	48,457,398,000
3. Unfunded Accrued Liability (1. - 2.)	\$ 8,499,041,609
4. Normal Cost	\$ 1,445,026,063
Results at 6.0%	
1. Accrued Liability (AL)	\$ 64,120,440,003
2. Actuarial Value of Assets (AVA)	48,457,398,000
3. Unfunded Accrued Liability (1. - 2.)	\$ 15,663,042,003
4. Normal Cost	\$ 1,788,136,811
Sensitivity Analysis for 1.0% Reduction in Interest Rate	
1. Increase in Accrued Liability	12.6%
2. Increase in Unfunded Accrued Liability	84.3%
3. Increase in Normal Cost	23.7%

Longevity Risk: The Risk of Higher than Assumed Mortality Improvement

POLICE faces risk in its assumption of future mortality rates. Actuarial experience studies were used to develop the base mortality rates assumed in the valuation; Society of Actuaries mortality improvement scale MP-2020 was subsequently applied to these base rates.¹

This scale MP-2020 is an assumption regarding the *improvement* of future mortality rates as compared to mortality when the experience studies were completed. The scale was developed using large amounts of historical data from the Social Security Administration. Risk therefore exists such that the mortality improvement inherent in the Plan population is higher than the improvement seen in the population provided by the Social Security Administration. When mortality improvement is higher than assumed, plan participants will live longer than expected, and the plan will pay more pension benefits than had been previously funded.

Furthermore, while the scale uses recent experience to develop short-term mortality improvement rates, an actuarial assumption is applied to long-term mortality improvement rates based on expert opinion. A rate of 1.0% is assumed, which the Society of Actuaries characterizes as “neither overly optimistic nor too pessimistic with respect to future longevity improvements.”² Risk to the Plan exists, however, if Plan mortality experience shows higher levels of long-term mortality improvement; expert opinion can in some cases be flawed, particularly when past experience is not indicative or predictive of future experience.

In a letter dated June 28, 2019, Buck analyzed historical Plan experience and noted “it appears that historical mortality improvement in NYC pensioners has kept pace with, and in some cases may have exceeded slightly, the mortality improvement trends in historical Social Security Administration graduated rates that are based on a broad US population” and that “continued use of MP-20xx mortality improvement scales seems reasonable.” It may be prudent in future years, after longer trends can be observed, to quantify the effect of changing the ultimate mortality improvement rate to be higher than 1.0%.

Litigation Risk: The Risk of Legal Claims and Lawsuits

It is not uncommon for New York City to be a defendant in legal claims and lawsuits.³ In its most recent claims report, the Comptroller reports that in FY2023, NYC settled 13,227 claims and lawsuits for \$1.45 billion. On occasion, these settlements involve NYCERS. The 1996 case *Gulino v. Board of Education* awards damages to plaintiffs that in some cases include counterfactual service and salary in NYCERS. It remains a continuing risk that litigation may expand the scope of pension benefits beyond what is intended or codified in statute.

¹ Retirement Plans Experience Committee. “Mortality Improvement Scale MP-2020 Report,” “Mortality Improvement Scale MP-2018 Report,” and “Mortality Improvement Scale MP-2014 Report.” *Society of Actuaries*.

² Retirement Plans Experience Committee. “Mortality Improvement Scale BB Report” 5.5 Selection of 1.0% Long-Term Rate of Mortality Improvement. *Society of Actuaries*.

³ <https://comptroller.nyc.gov/reports/annual-claims-report>

Credit/Solvency Risk: The Risk of Potential Insolvency of Contributing Entities

All public pension systems face credit risk in the event their sponsoring entities become unable to pay their debts and obligations. Credit rating agencies currently consider New York City bonds to be of high quality, and the Actuary believes the City faces low credit risk as the main contributing entity to POLICE.

Other Risk Types

Inflation Risk: The Risk of Higher than Assumed Inflation

POLICE faces risk if inflation is higher than expected. Inflation is a key driver of the salary increase assumptions (affecting active members) and COLA assumptions (affecting both active members and pensioners/beneficiaries). A quantitative analysis is not available at this time. Notably, however, the pensioner COLA is limited to half of Consumer Price Index (CPI) on the first \$18,000 of annual benefits, which limits the risk exposure to inflation.

Contribution Risk: The Risk that Future Contributions Are Less Than the Actuarially Determined Contributions

Public pension systems can suffer from contribution risk when sponsoring governmental entities fail to make contributions as determined by the actuary under their funding policies.

The NYCERS and Pension Funds face low contribution risk. Participating employers have historically contributed the actuarial contribution as certified by the Actuary. The Actuary believes the City will continue to do so in future years. See Table III-5 ACTUARIAL AND STATUTORY CONTRIBUTION HISTORY.

Contribution risk may also increase in future years if the actuarial contribution determined for the Plan grows to be a larger part of the City budget. The five NYCERS and Pension Funds currently require contributions of approximately 10% of the City's annual budget, and contribution risk may increase if this contribution rate becomes untenable.

Agency/Political Risk: The Risk of Stakeholder Influences

With assumed long-term asset returns and gradual amortization of unfunded liabilities, the funded status of the Plan is expected to improve over time. Many public pension systems suffer from agency risk, wherein different stakeholders or agents want to influence the cost calculations in directions favorable to their interests. Agents may also downplay other risks (e.g., investment risk) to advance specific agendas. These situations create cases where promises for future funding can be disregarded for political expediency or other priorities. In other cases, certain plan provisions or administrative practices intended to provide occasional clarity or relief become commonplace or intentionally sought for the benefit of members at the expense of taxpayers.

Intergenerational Equity Risk: The Risk of Inequity in the Actuarially Determined Contributions

Intergenerational inequity could exist for certain stakeholders (e.g., public taxpayers). If, for example, liabilities are valued using overly conservative assumptions, aggressive funding patterns may occur, thus causing current taxpayers to shoulder a disproportionately high share of the funding burden, as compared to past and future taxpayers. The reverse can also be true if aggressive or unrealistic assumptions are used. As the Plan is ongoing, taxpayers across all generations should be expected to offer similar funding contributions over the lifetime of the Plan.

Additionally, in future years of higher or lower funded status, changes in the statute may take place that can improve or diminish plan provisions. If so, intergenerational equity risk

could increase as taxpayers and plan members at that time may receive preferential or less preferential treatment over the taxpayers and plan members prior to and subsequent to them.

SECTION VIII – SUMMARY OF PLAN PROVISIONS

A. Effective Date

March 29, 1940

B. Eligibility Requirements

Tier 1: Prior to July 1, 1973.

Tier 2: July 1, 1973 to June 30, 2009.

Tier 3: July 1, 2009 to March 31, 2012 and did not elect to join Tier 3 Enhanced.

Tier 3 Revised: April 1, 2012 to March 31, 2017 and did not elect to join Tier 3 Enhanced.

Tier 3 Enhanced: On or after April 1, 2017 and those in Tier 3 and Tier 3 Revised who elected to join.

Eligible service includes City service in positions in the competitive class of the civil service for probationary periods or permanent appointments in the Police force; or City service in a position of Police Surgeon classified in the non-competitive class of civil service.

C. Member Contributions

Tier 1 and Tier 2: Required Member Contributions – Based upon age at entry and elected retirement age, credited with interest at 8.25%. Contributions are required for the first 20 years.

Voluntary Member Contributions – Additional contributions to the Annuity Savings Fund credited with interest at 8.25%.

Tier 3, Tier 3 Revised, and Tier 3 Enhanced: Basic Member Contributions – Members contribute 3.0% of salary for a maximum of 25 years. The Tier 3 interest rate is 5.0%.

Additional Member Contributions (AMC) – Effective April 10, 2017, Tier 3 Enhanced Plan Members are required to contribute an additional 1.0% of salary for a maximum of 25 years. Chapter 59/17 states that the AMC rate for Tier 3 Enhanced Plan members is required to be reviewed by the Actuary every 3 years.

D. Increased-Take-Home-Pay (ITHP) Contributions

Tier 1 and Tier 2: The City of New York pays a portion of member contributions. Effective October 1, 2000, the rate of ITHP contributions is 5.0% of salary, accumulated with regular and additional interest. The member may elect to waive the ITHP reduction from the full member rate and contribute at the full member rate, which results in additional benefits attributable to the ITHP contributions.

Tier 3, Tier 3 Revised, and Tier 3 Enhanced: The City of New York does not pay any portion of member contributions.

E. Credited Service

Credited service is classified as Allowable Police Service or certain other Credited Service:

- Members are credited with one year of service for two hundred fifty or more days of service and not more than one year for all service in any calendar year.
- **Tier 1 and Tier 2:** Allowable Police Service includes service in Uniformed Transit Police Force, Uniformed Housing Police Force, Uniformed Correction Force, Uniformed Sanitation Force, and the New York City Fire Department, provided all such service immediately precedes the Uniformed Police Force service.
- **Tier 3, Tier 3 Revised, and Tier 3 Enhanced:** Police Service includes service in the uniformed force of the New York City Fire Department and the New York State and Local Police and Fire Retirement System.
- Members may purchase, subject to limitations in the law, years of certain wartime military service, combined military service, and service as police officers in a foreign country for the United States Government, and authorized Child Care Leave.

F. Salary Base

Tier 1: Final Salary (FS): The contract rate of base pay and holiday pay on the last day paid, plus any overtime, night differential, and worked vacation earned in the previous 12 months, plus applicable longevity pay.

For members appointed on or after June 17, 1971, the pensionable compensation for the final year of service is limited by the Kingston Law to 120% of the pensionable compensation for the year immediately preceding the final year.

Tier 2: Final Average Salary (FAS): Total pensionable compensation (i.e., wages, overtime, night differential, worked vacation, etc.) a member earned during the 12 months preceding the date of retirement, not in excess of 120% of the immediate previous 12 months' pensionable compensation.

For members hired prior to July 1, 2000 (original Tier 2 members), if greater, FAS will equal the greatest average three consecutive years' pensionable compensation, where each year's salary cannot exceed 120% of the average of the two previous years.

Tier 3: FAS: The average total pensionable compensation earned by a member during any three consecutive year period based on the month and day of retirement that provides the highest average wages. If the wages earned during any year included in the period exceed the average of the prior two years by more than 10%, the amount in excess of 10% shall be excluded. Additionally, if the member was on a leave of absence without pay (e.g., suspension) at any time during the three-year period, that time, not in excess of 12 months, will be excluded from the calculation and the same period of time immediately preceding the three-year period will be included for the FAS.

Tier 3 Revised and Tier 3 Enhanced: FAS: The average total pensionable compensation earned by a member during any five consecutive years based on the month and day of retirement that provides the highest average wages. If the wages earned during any year included in the period exceed the average of the prior four years by more than 10%, the amount in excess of 10% shall be excluded. Additionally, if the member was on a leave of absence without pay (e.g., suspension) at any time during the five-year period, that time, not in excess of 12 months, will be excluded from the calculation and the same period of time immediately preceding the five-year period will be included for the FAS.

G. Service Retirement

1. Eligibility

The eligibility requirements for normal service retirement and early service retirement are summarized in the table below:

Tier	Minimum Service for Normal Retirement	Minimum Service for Early Retirement
1	20	NA
2	20	NA
3	22	20
3 Revised	22	20
3 Enhanced	22	20

2. Benefits

a. Tier 1 and Tier 2

- i. 50% of [FS (Tier 1) or FAS (Tier 2)] plus 1/60th of the sum of all salary after 20 or 25 years, as applicable, of Credited Service.

- ii. The benefit is adjusted by the annuitized value of the net excess or deficit of accumulated member contributions and ITHP over or under the required amounts.

- b. Tier 3, Tier 3 Revised, and Tier 3 Enhanced

- i. 2.1% of FAS times number of years of Credited Service for first 20 years plus 4.0% of FAS times number of years of Credited Service in excess of 20 years (total benefit limited to 50% of FAS), less 50% of the Primary Social Security Retirement benefit at age 62.

H. Disability Retirement

1. Accidental Disability Retirement (ADR)

- a. Eligibility for all Tiers: Immediate. Must be found by the Medical Board and the Board of Trustees to be physically or mentally unable to perform regular job duties as a result of an injury received in the performance of duty and such disability was not the result of willful negligence on the part of the member.

- b. Benefits

- i. Tier 1 and Tier 2

75% of [FS (Tier 1) or FAS (Tier 2)] plus 1/60th of the sum of all salary after 20 or 25 years in accordance with the Member's selection of the minimum period of Credited Service, plus annuitized value of actual member accumulated contributions and ITHP.

- ii. Tier 3 and Tier 3 Revised

50% of FAS less 50% of the Primary Social Security Disability Benefits.

- iii. Tier 3 Enhanced Plan

75% of FAS.

2. Ordinary Disability Retirement (ODR)

- a. Eligibility

- i. Tier 1 and Tier 2

Immediate. Must be found by the Medical Board and the Board of Trustees to be physically or mentally unable to perform regular job duties as a result of an injury not received in the performance of duty.

ii. Tier 3, Tier 3 Revised, and Tier 3 Enhanced:

Five years of Credited Service and eligibility for Social Security disability benefit.

b. Benefits

i. Tier 1 and Tier 2

(a) For members choosing 20 years as their minimum period of Membership service: 2.5% times [FS (Tier 1) or FAS (Tier 2)] times Credited Service.

(b) For members choosing 25 years as their minimum period of Membership service: 2.0% times [FS (Tier 1) or FAS (Tier 2)] times Credited Service.

Minimum Benefit:

Less than 10 years of service: $\frac{1}{3}$ of [FS (Tier 1) or FAS (Tier 2)]

10 or more years of service: $\frac{1}{2}$ of [FS (Tier 1) or FAS (Tier 2)],

plus (regardless of service) the annuitized value of the net excess or deficit of member accumulated contributions and ITHP over or under the required amounts.

ii. Tier 3, Tier 3 Revised, and Tier 3 Enhanced

The greater of:

(a) 33-1/3% of FAS

(b) 2.0% of FAS times number of years of Credited Service (not in excess of 22 years),

less 50% of the Primary Social Security Disability Benefit (non-Enhanced Plan only).

I. Death Benefits

1. Accidental Death Benefits (New York City-paid)

a. Eligibility: No age or service requirement. Death due to the performance of duties while an active member.

b. Benefits

i. Tier 1 and Tier 2

50% of the average of the FS as defined as the last 12 months of earnings, payable annually to surviving spouse or other eligible dependents for life.

In addition, a lump sum of accumulated member contributions and ITHP.

ii. Tier 3, Tier 3 Revised, and Tier 3 Enhanced

50% of FAS, payable annually to surviving spouse or other eligible dependents for life.

2. Special Accidental Death Benefits (New York State-paid)

a. Eligibility: No age or service requirement. Death due to the performance of duties while an active member. Payable only to the surviving spouse, eligible parent, or children until age 18 (or age 23, if a full-time student), if there is no surviving spouse.

b. Benefits: A monthly pension is payable to the beneficiary in an amount that when added to the New York City-paid Accidental Death Benefit (outlined in 1.) and any payable Social Security benefit is equal to the decedent's last year's wages including overtime and any other type of pensionable earnings.

3. Ordinary Death Benefit

a. Eligibility

i. Tier 1: Immediate

ii. Tier 2, Tier 3, Tier 3 Revised, and Tier 3 Enhanced: 90 days of service

b. Benefits

i. Tier 1

Less than 10 years of Credited Service: 50% of FS plus accumulated member contributions and ITHP with interest.

At least 10 years of Credited Service: 100% of FS plus accumulated member contributions and ITHP with interest.

However, if a member would have been eligible for a service retirement benefit at the date of death, the beneficiary may elect to receive the pension reserve had the member retired on the day before his or her death plus the accumulated member contributions. The beneficiary can also elect to receive the death benefit in the form of an annuity.

ii. Tier 2

Three times final year's salary raised to the next highest multiple of \$1,000 plus accumulated member contributions.

However, if a member would have been eligible for a service retirement benefit at the date of death, the beneficiary may elect to receive the pension reserve had the member retired on the day before his or her death plus the accumulated member contributions. The beneficiary can also elect to receive any death benefit and ITHP, if applicable, in the form of an annuity. The accumulated member contributions would still be paid as a lump sum.

iii. Tier 3, Tier 3 Revised, and Tier 3 Enhanced

Three times final year's salary raised to the next highest multiple of \$1,000 plus accumulated member contributions.

c. Form of Payment: Lump sum. The first \$50,000 of benefit on account of death in active service will be paid from the Group Life Insurance Plan.

J. Vested Retirement After Termination

1. Eligibility: Five years of Credited Service for all Tiers
2. Benefits: A vestee may elect a refund of accumulated member contributions, but would then lose entitlement to a vested benefit. The Benefit at Service Retirement Date:

a. Tier 1 and Tier 2

2.5% for members choosing 20 years as their minimum period of Membership service, or 2.0% for members choosing 25 years as their minimum period of Membership service, times [FS (Tier 1) or FAS (Tier 2)] times number of years of Credited Service plus annuitized value of the net excess or deficit of accumulated member contributions and ITHP over or under the required amounts with interest to normal retirement date.

b. Tier 3, Tier 3 Revised, and Tier 3 Enhanced

2.1% of FAS times number of years of Credited Service payable at the Early Retirement Age (i.e., the earlier of the date when 20 years of Credited Service would have been completed or age 62) or at age 55. If the benefit commences before the Early Retirement Age, there are reductions.

In addition, the benefit is reduced by 50% of the Primary Social Security Retirement benefit at age 62 (non-Enhanced Plan only).

K. Forms of Payment

1. Normal Form of Payment: Single Life Annuity.
2. Optional Forms of Payment: Joint and Survivor Annuities, Certain and Life Annuities.

L. Loans

1. Tier 1 and Tier 2

- a. Eligibility: After three years of membership and up to the day of retirement.
- b. Amount: Up to 90% of accumulated member contributions with a limit of \$50,000 for tax-free treatment under IRC Section 72(p).

2. Tier 3, Tier 3 Revised, and Tier 3 Enhanced

- a. For members with a date of membership before January 1, 2018, the members may take out a loan up to 75% of their total contributions plus accumulated interest.
- b. For members with a date of membership on and after January 1, 2018, the loan is limited to 50% of their total member contributions plus accumulated interest or \$50,000, whichever is less.

M. COLA

Annuity payments are increased annually on September 1st, but only after a pensioner has attained the applicable eligibility threshold. Some beneficiaries are not eligible for COLA increases. The COLA increase is equal to a base benefit times a COLA percentage. The COLA increase for a spouse receiving a joint & survivor annuity is one half of the COLA increase that would have been applicable to the member had he or she survived.

1. Eligibility Thresholds:
 - a. Service Retirement and Vested Retirement: The earlier of (i) and (ii):
 - i. Attainment of age 62 and 5 years since commencement
 - ii. Attainment of age 55 and 10 years since commencement
 - b. Disability Retirement: 5 years since commencement
 - c. Beneficiaries of an Accidental Death benefit: 5 years since commencement
2. Eligible beneficiaries: Spouses receiving a joint & survivor annuity or beneficiaries of an Accidental Death benefit. All others are non-eligible.
3. Base Benefit: The lesser of \$18,000 and the maximum retirement allowance plus the sum of prior years' COLA increases.
4. COLA percentage: 50% of the Consumer Price Index (CPI-U) based upon the 12 months ending March 31 prior to each September 1 effective date, rounded to the next higher 0.1%. Such percentage shall not be less than 1.0% nor greater than 3.0%.

N. Escalation

1. Eligibility:
 - a. Tier 3 and Tier 3 Revised members receiving service, vesting, disability retirement, and survivor benefits.
 - b. Tier 3 Enhanced Plan members receiving vested or service retirement benefits.
 - c. All members above receive COLA, if greater.

2. Full Escalation Date

- a. Vested and Service Pensions: The first day of the month following the day which a member completes or would have completed 25 years of service.
- b. Disability Pensions: The first day of the month following the day which a non-Enhanced Plan disability retiree first becomes eligible for ODR/ADR.
- c. Death Benefits: The first day of the month following the day which a beneficiary first becomes eligible for a death benefit paid other than in a lump sum.

3. Amount

If a member first begins receiving benefits on the same date as the Full Escalation Date, the member will receive Full Escalation which is the lesser of 3.0% or the Cost-of-Living Index increase, as computed on the December 31 of each prior year for benefits being escalated the following April.

In the event of a decrease in the Cost-of-Living Index, the current benefit will be decreased by the lesser of 3% or the Cost-of-Living Index. However, the benefit will not be reduced below the benefit payable at the initial commencement date.

In addition, Cost-of-Living Index changes are computed on a cumulative basis so that any increases or decreases not affected in an adjustment are carried forward and applied in subsequent years.

4. Partial Escalation

Partial Escalation is calculated on benefits that commence prior to the member's Full Escalation Date. For each month that the benefit commencement date succeeds the date when a member completes or would have completed 22 years of service, a member will receive 1/36th of the Full Escalation, to a maximum of Full Escalation at 25 years of service.

O. World Trade Center (WTC) Disability Benefits

Certain active, vested, and retired members of the Plan, who participated in the Rescue, Recovery, or Cleanup Operations at the WTC site, and who become disabled due to certain diseases (e.g., diseases in the respiratory tract, gastroesophageal tract, psychological axis, and skin), are presumed to have become disabled in the performance of duty and therefore may be entitled to be reclassified with an ADR.

P. WTC Death Benefits

Certain active, vested, and retired members of the Plan, who participated in the Rescue, Recovery, or Cleanup Operations at the WTC site, and who die due to certain

diseases (e.g., diseases in the respiratory tract, gastroesophageal tract, psychological axis, and skin) are presumed to have died in the performance of duty potentially entitling eligible beneficiaries to receive Accidental Death Benefits.

Q. Others

None.

SECTION IX – CHAPTER AMENDMENTS

The June 30, 2022 actuarial valuation results reflect the following Chapter amendments from the prior five years.

- **Chapter 55 of the Laws of 2023** (Chapter 55/23), Part JJ, permits Tier 3, Tier 3 Revised, and Tier 3 Enhanced members of POLICE to borrow from their accumulated total member contributions.
- **Chapter 782 of the Laws of 2022** (Chapter 782/22) extends eligibility of Special Accidental Death Benefits to parents of certain deceased members who died in the line-of-duty.
- **Chapter 528 of the Laws of 2022** (Chapter 528/22) grants a 3% COLA increase to beneficiaries receiving Special Accidental Death Benefits pursuant to Section 208(f) of the General Municipal Law. (Similar legislation was enacted in each of the previous years.)
- **Chapter 424 of the Laws of 2021** (Chapter 424/21) expands eligibility of certain public service employees for participation in the WTC Rescue, Recovery, or Clean-up Operations.
- **Chapter 89 of the Laws of 2020** (Chapter 89/20) provides death benefits to statutory beneficiaries of members whose death was a result of or was attributed to COVID-19. **Chapter 783 of the Laws of 2022** (Chapter 783/22) amends prior amendments by extending the eligibility window of these death benefits through December 31, 2024.
- **Chapter 431 of the Laws of 2019** (Chapter 431/19) allows New York City Police Pension Fund (POLICE) members subject to Article 14 of the RSSL (Tier 3, Tier 3 Revised, and Tier 3 Enhanced) to purchase prior service as a cadet in the NYPD and use the appointment date as a cadet to determine the initial date of POLICE membership for plan or tier eligibility provided such purchase of service is made within five years of the effective date.
- **Chapter 266 of the Laws of 2018** (Chapter 266/18) extends the deadline to file a Notice of Participation in the WTC Rescue, Recovery, and Cleanup Operations to September 11, 2022.

SECTION X – SUBSEQUENT EVENTS

The following legislation was adopted after the June 30, 2022 valuation date and could have an impact on future years' valuations:

- **Chapter 56 of the Laws of 2024** (Chapter 56/24) reduces the number of years used to calculate the Final Average Salary from 5 years to 3 years for certain Tier 3 and Tier 6 members of NYCERS.
- **Chapter 213 of the Laws of 2023** (Chapter 213/23) and **Chapter 162 of the Laws of 2024** (Chapter 162/24) extend the 3% COLA increase to beneficiaries receiving Special Accidental Death Benefits. Note that the June 30, 2022 valuation assumes that future legislation on this 3% COLA increase will continue to pass in subsequent years. For more information on this COLA assumption, see page 65.

SECTION XI – ACTUARIAL ASSUMPTIONS AND METHODS

The results in this valuation report are based upon standard actuarial models (including but not limited to EAN and related parameters) that are widely used in actuarial practice. The models are intended to calculate the liabilities associated with these plan provisions using data and assumptions as of the measurement date, and using actuarial assumptions and methods further described below.

Most of this liability and cashflow modeling is currently implemented using ProVal, an actuarial valuation and projection software program developed by Winklevoss Technologies. These results are reviewed for accuracy, reasonability, and consistency with prior results, consistent with the requirements of Actuarial Standard of Practice 56. The model is also reviewed extensively when significant changes are made to the software and additionally typically biennially by outside actuarial auditors hired by the New York City Comptroller.

Pension payments that exceed the International Revenue Code Section 415 Limit which have been or are expected to be made from the Excess Benefit Plan are excluded from this valuation, other than a one-time adjustment to the liabilities to account for EBP payments expected to be made in Calendar Year 2023/Fiscal Year 2024 from the Qualified Pension Plan while the trust for the EBP is being established. There were no other changes in actuarial assumptions and methods compared to the June 30, 2021 valuation.

Table XI-1a
Service Retirement, Unreduced with Full COLA/Escalation

NEW YORK CITY POLICE PENSION FUND		
PROBABILITIES OF SERVICE RETIREMENT RETIREMENT WITH FULL COLA/ESCALATION FOR THOSE ELIGIBLE FOR UNREDUCED		
Age	Years of Service Since First Eligible	
	Year 1	Ultimate
19	0.00%	0.00%
20	0.00%	0.00%
21	0.00%	0.00%
22	0.00%	0.00%
23	0.00%	0.00%
24	0.00%	0.00%
25	0.00%	0.00%
26	0.00%	0.00%
27	0.00%	0.00%
28	0.00%	0.00%
29	0.00%	0.00%
30	0.00%	0.00%
31	0.00%	0.00%
32	0.00%	0.00%
33	0.00%	0.00%
34	0.00%	0.00%
35	0.00%	0.00%
36	45.00%	0.00%
37	45.00%	10.00%
38	45.00%	10.00%
39	45.00%	10.00%
40	45.00%	10.00%
41	45.00%	10.00%
42	45.00%	10.00%
43	45.00%	10.00%
44	45.00%	10.00%
45	45.00%	10.00%
46	45.00%	11.00%
47	45.00%	12.00%
48	45.00%	13.00%
49	45.00%	14.00%
50	45.00%	15.00%
51	45.00%	15.00%
52	45.00%	15.00%
53	45.00%	15.00%
54	45.00%	15.00%
55	45.00%	15.00%
56	45.00%	15.00%
57	45.00%	15.00%
58	45.00%	15.00%
59	45.00%	15.00%
60	45.00%	20.00%
61	45.00%	30.00%
62	45.00% ¹	50.00% ¹
63	100.00%	100.00%

¹100% for Tier 3, Tier 3 Revised, and Tier 3 Enhanced members.

Table XI-1b
Early Service Retirement

NEW YORK CITY POLICE PENSION FUND PROBABILITIES OF EARLY SERVICE RETIREMENT FOR TIER 3, TIER 3 REVISED, AND TIER 3 ENHANCED MEMBERS		
Years of Service	Reduced Service Retirement	Unreduced Before Full Escalation
20	5.00%	N/A
21	2.00%	N/A
22	N/A	5.00%
23	N/A	2.00%
24	N/A	2.00%

**Table XI-2
Active Termination Rates**

NEW YORK CITY POLICE PENSION FUND	
PROBABILITIES OF TERMINATION	
Years Of Service	Probability of Termination
0	3.000%
1	2.250%
2	1.500%
3	1.500%
4	1.500%
5	1.500%
6	1.350%
7	1.200%
8	1.050%
9	0.900%
10	0.750%
11	0.600%
12	0.450%
13	0.380%
14	0.300%
15	0.230%
16	0.150%
17	0.150%
18	0.150%
19	0.150%
20	N/A

**Table XI-3
Active Disability Rates**

NEW YORK CITY POLICE PENSION FUND				
PROBABILITIES OF DISABILITY RETIREMENT				
		Accidental Disability		
Age	Ordinary Disability	Tier 1 & Tier 2 Eligible for WTC Benefits	Tier 1 & Tier 2 Not Eligible for WTC AND Tier 3 Enhanced Plan	Tier 3 & Tier 3 Revised Non-Enhanced Plan
15	0.0360%	0.168%	0.098%	0.098%
16	0.0360%	0.168%	0.098%	0.098%
17	0.0360%	0.168%	0.098%	0.098%
18	0.0360%	0.168%	0.098%	0.098%
19	0.0360%	0.168%	0.098%	0.098%
20	0.0400%	0.180%	0.105%	0.105%
21	0.0440%	0.192%	0.112%	0.112%
22	0.0480%	0.204%	0.119%	0.119%
23	0.0520%	0.216%	0.126%	0.126%
24	0.0560%	0.228%	0.133%	0.133%
25	0.0600%	0.240%	0.140%	0.140%
26	0.0640%	0.312%	0.182%	0.182%
27	0.0680%	0.384%	0.224%	0.224%
28	0.0720%	0.456%	0.266%	0.266%
29	0.0760%	0.528%	0.308%	0.308%
30	0.0800%	0.600%	0.350%	0.350%
31	0.0840%	0.720%	0.420%	0.420%
32	0.0880%	0.840%	0.490%	0.490%
33	0.0920%	0.960%	0.560%	0.560%
34	0.0960%	1.080%	0.630%	0.630%
35	0.1000%	1.200%	0.700%	0.700%
36	0.1040%	1.260%	0.735%	0.728%
37	0.1080%	1.320%	0.770%	0.756%
38	0.1120%	1.380%	0.805%	0.784%
39	0.1160%	1.440%	0.840%	0.812%
40	0.1200%	1.500%	0.875%	0.840%
41	0.1240%	1.560%	0.910%	0.854%
42	0.1280%	1.620%	0.945%	0.868%
43	0.1320%	1.680%	0.980%	0.882%
44	0.1360%	1.740%	1.015%	0.896%
45	0.1400%	1.800%	1.050%	0.910%
46	0.1440%	1.920%	1.120%	0.938%
47	0.1480%	2.040%	1.190%	0.966%
48	0.1520%	2.160%	1.260%	0.994%
49	0.1560%	2.280%	1.330%	1.022%
50	0.1600%	2.400%	1.400%	1.050%
51	0.2000%	2.640%	1.540%	1.120%
52	0.2400%	2.880%	1.680%	1.190%
53	0.3200%	3.120%	1.820%	1.260%
54	0.4800%	3.360%	1.960%	1.330%
55	0.6400%	3.600%	2.100%	1.400%
56	0.8000%	4.080%	2.380%	1.540%
57	1.6000%	4.560%	2.660%	1.680%
58	2.4000%	5.040%	2.940%	1.820%
59	3.2000%	5.520%	3.220%	1.960%
60	4.8000%	6.000%	3.500%	2.100%
61	6.4000%	7.200%	4.200%	2.240%
62	8.0000% ¹	8.4000% ¹	4.900% ¹	2.450% ¹
63	N/A	N/A	N/A	N/A

¹N/A for Tier 3, Tier 3 Revised, and Tier 3 Enhanced members.

**Table XI-4
Active Mortality Rates**

NEW YORK CITY POLICE PENSION FUND			
PROBABILITIES OF MORTALITY FOR ACTIVE MEMBERS BASE RATES			
	Ordinary Death		Accidental Death
Age	Males	Females	All
15	0.040%	0.030%	0.010%
16	0.040%	0.030%	0.010%
17	0.040%	0.030%	0.010%
18	0.040%	0.030%	0.010%
19	0.040%	0.030%	0.010%
20	0.040%	0.030%	0.010%
21	0.040%	0.030%	0.010%
22	0.040%	0.030%	0.010%
23	0.040%	0.030%	0.010%
24	0.040%	0.030%	0.010%
25	0.040%	0.030%	0.010%
26	0.040%	0.030%	0.010%
27	0.040%	0.030%	0.010%
28	0.040%	0.030%	0.010%
29	0.040%	0.030%	0.010%
30	0.040%	0.030%	0.010%
31	0.040%	0.030%	0.011%
32	0.040%	0.030%	0.012%
33	0.040%	0.030%	0.013%
34	0.040%	0.030%	0.014%
35	0.040%	0.030%	0.015%
36	0.042%	0.032%	0.016%
37	0.044%	0.034%	0.017%
38	0.046%	0.036%	0.018%
39	0.048%	0.038%	0.019%
40	0.050%	0.040%	0.020%
41	0.060%	0.046%	0.021%
42	0.070%	0.052%	0.022%
43	0.080%	0.058%	0.023%
44	0.090%	0.064%	0.024%
45	0.100%	0.070%	0.025%
46	0.110%	0.076%	0.026%
47	0.120%	0.082%	0.027%
48	0.130%	0.088%	0.028%
49	0.140%	0.094%	0.029%
50	0.150%	0.100%	0.030%
51	0.160%	0.110%	0.031%
52	0.170%	0.120%	0.032%
53	0.180%	0.130%	0.033%
54	0.190%	0.140%	0.034%
55	0.200%	0.150%	0.035%
56	0.220%	0.160%	0.036%
57	0.240%	0.170%	0.037%
58	0.260%	0.180%	0.038%
59	0.280%	0.190%	0.039%
60	0.300%	0.200%	0.040%
61	0.320%	0.220%	0.041%
62	0.340% ¹	0.240% ¹	0.0420% ¹
63	N/A	N/A	N/A

¹ Probabilities are N/A for Tier 3, Tier 3 Revised, and Tier 3 Enhanced members.

**Table XI-5
Service Retiree Mortality Rates**

NEW YORK CITY POLICE PENSION FUND					
PROBABILITIES OF MORTALITY FOR SERVICE RETIREES BASE RATES					
Age	Males	Females	Age	Males	Females
15	0.0100%	0.0084%	68	1.4988%	1.0632%
16	0.0135%	0.0103%	69	1.6917%	1.1644%
17	0.0181%	0.0112%	70	1.8929%	1.2629%
18	0.0217%	0.0131%	71	2.1028%	1.4563%
19	0.0240%	0.0140%	72	2.3212%	1.6586%
20	0.0251%	0.0142%	73	2.5833%	1.8689%
21	0.0268%	0.0150%	74	2.8558%	2.0889%
22	0.0284%	0.0158%	75	3.1397%	2.3314%
23	0.0301%	0.0168%	76	3.4343%	2.6045%
24	0.0315%	0.0179%	77	3.7415%	2.8700%
25	0.0327%	0.0191%	78	4.2304%	3.1787%
26	0.0342%	0.0204%	79	4.7399%	3.4795%
27	0.0354%	0.0217%	80	5.2682%	3.8105%
28	0.0371%	0.0231%	81	5.7202%	4.3289%
29	0.0394%	0.0247%	82	6.1782%	4.8678%
30	0.0427%	0.0265%	83	7.0179%	5.4288%
31	0.0492%	0.0316%	84	7.8631%	5.9122%
32	0.0556%	0.0360%	85	8.7167%	6.3661%
33	0.0616%	0.0398%	86	9.5810%	7.1650%
34	0.0669%	0.0427%	87	10.4516%	8.0050%
35	0.0724%	0.0455%	88	11.8437%	8.8541%
36	0.0755%	0.0474%	89	13.2486%	9.6498%
37	0.0779%	0.0497%	90	14.6752%	10.5687%
38	0.0808%	0.0521%	91	16.3354%	12.0267%
39	0.0845%	0.0551%	92	18.0374%	13.4340%
40	0.0901%	0.0588%	93	19.7642%	14.8636%
41	0.1003%	0.0633%	94	21.5622%	16.4543%
42	0.1106%	0.0702%	95	23.4692%	17.7952%
43	0.1212%	0.0792%	96	25.3619%	19.0707%
44	0.1323%	0.0907%	97	27.1816%	20.2419%
45	0.1439%	0.1052%	98	29.0095%	21.1759%
46	0.1563%	0.1228%	99	30.6920%	21.8544%
47	0.1693%	0.1427%	100	32.1584%	22.1859%
48	0.1827%	0.1652%	101	33.7521%	23.0680%
49	0.1964%	0.1865%	102	35.1259%	24.0803%
50	0.2104%	0.1992%	103	36.3671%	25.2770%
51	0.2802%	0.2104%	104	37.3834%	26.6309%
52	0.3506%	0.2186%	105	38.1051%	28.0912%
53	0.4209%	0.2250%	106	38.4698%	29.6244%
54	0.4903%	0.2863%	107	38.6325%	31.1943%
55	0.5297%	0.3409%	108	38.8076%	32.7579%
56	0.5857%	0.3910%	109	38.9794%	34.2712%
57	0.6387%	0.4376%	110	50.0000%	50.0000%
58	0.6875%	0.4613%	111	50.0000%	50.0000%
59	0.7316%	0.5005%	112	50.0000%	50.0000%
60	0.7720%	0.5393%	113	50.0000%	50.0000%
61	0.8439%	0.5785%	114	50.0000%	50.0000%
62	0.9155%	0.6152%	115	50.0000%	50.0000%
63	0.9888%	0.6536%	116	50.0000%	50.0000%
64	1.0644%	0.7279%	117	50.0000%	50.0000%
65	1.1433%	0.8032%	118	50.0000%	50.0000%
66	1.2263%	0.8884%	119	50.0000%	50.0000%
67	1.3135%	0.9736%	120	100.0000%	100.0000%

**Table XI-6
Disabled Retiree Mortality Rates**

NEW YORK CITY POLICE PENSION FUND					
PROBABILITIES OF MORTALITY FOR DISABLED RETIREES BASE RATES					
Age	Males	Females	Age	Males	Females
15	0.0138%	0.0095%	68	1.8368%	1.2141%
16	0.0187%	0.0117%	69	2.0342%	1.3912%
17	0.0252%	0.0127%	70	2.2544%	1.5837%
18	0.0301%	0.0148%	71	2.5045%	1.7848%
19	0.0334%	0.0159%	72	2.7644%	1.9944%
20	0.0347%	0.0168%	73	3.0535%	2.2258%
21	0.0371%	0.0185%	74	3.3359%	2.4880%
22	0.0402%	0.0205%	75	3.6300%	2.7766%
23	0.0431%	0.0227%	76	4.1253%	3.0785%
24	0.0467%	0.0251%	77	4.6178%	3.3525%
25	0.0503%	0.0274%	78	5.1289%	3.6752%
26	0.0544%	0.0298%	79	5.5682%	4.1794%
27	0.0586%	0.0322%	80	6.0116%	4.7030%
28	0.0633%	0.0348%	81	6.7832%	5.2484%
29	0.0681%	0.0374%	82	7.6009%	5.7185%
30	0.0730%	0.0400%	83	8.4279%	6.1948%
31	0.0781%	0.0425%	84	9.2040%	7.0110%
32	0.0830%	0.0450%	85	10.1002%	7.8321%
33	0.0898%	0.0476%	86	11.5115%	8.6046%
34	0.0933%	0.0491%	87	12.7944%	9.3702%
35	0.0972%	0.0512%	88	14.1662%	10.2595%
36	0.1019%	0.0534%	89	15.7578%	11.5941%
37	0.1080%	0.0563%	90	17.3856%	12.9378%
38	0.1153%	0.0590%	91	19.0388%	14.3081%
39	0.1286%	0.0629%	92	20.6360%	15.3704%
40	0.1417%	0.0688%	93	22.5718%	16.4875%
41	0.1550%	0.0766%	94	24.4562%	17.6613%
42	0.1690%	0.0865%	95	26.1404%	18.7606%
43	0.1838%	0.0992%	96	28.0695%	19.7397%
44	0.1997%	0.1148%	97	29.6855%	20.6328%
45	0.2170%	0.1330%	98	30.9177%	21.2676%
46	0.2279%	0.1538%	99	32.6552%	21.8544%
47	0.2387%	0.1769%	100	33.9880%	22.1859%
48	0.2492%	0.2017%	101	34.9681%	23.0680%
49	0.3237%	0.2316%	102	35.9346%	24.0803%
50	0.3948%	0.2637%	103	36.6434%	25.2770%
51	0.4620%	0.2870%	104	37.3834%	26.6309%
52	0.5249%	0.3323%	105	38.1051%	28.0912%
53	0.5528%	0.3677%	106	38.4698%	29.6244%
54	0.5891%	0.4196%	107	38.6325%	31.1943%
55	0.6260%	0.4722%	108	38.8076%	32.7579%
56	0.6814%	0.5135%	109	38.9794%	34.2712%
57	0.7288%	0.5258%	110	50.0000%	50.0000%
58	0.7710%	0.5452%	111	50.0000%	50.0000%
59	0.8525%	0.5823%	112	50.0000%	50.0000%
60	0.9273%	0.6153%	113	50.0000%	50.0000%
61	1.0007%	0.6486%	114	50.0000%	50.0000%
62	1.0735%	0.7169%	115	50.0000%	50.0000%
63	1.1411%	0.7851%	116	50.0000%	50.0000%
64	1.2250%	0.8630%	117	50.0000%	50.0000%
65	1.3055%	0.9419%	118	50.0000%	50.0000%
66	1.4653%	1.0252%	119	50.0000%	50.0000%
67	1.6473%	1.1204%	120	100.0000%	100.0000%

**Table XI-7
Beneficiary Mortality Rates**

NEW YORK CITY POLICE PENSION FUND					
PROBABILITIES OF BENEFICIARY MORTALITY BASE RATES					
Age	Males	Females	Age	Males	Females
15	0.0105%	0.0092%	68	1.8256%	1.3605%
16	0.0142%	0.0112%	69	1.9386%	1.4332%
17	0.0191%	0.0122%	70	2.0542%	1.5007%
18	0.0222%	0.0133%	71	2.2359%	1.6745%
19	0.0240%	0.0143%	72	2.4230%	1.8463%
20	0.0251%	0.0145%	73	2.6165%	2.0157%
21	0.0268%	0.0153%	74	2.8157%	2.1838%
22	0.0284%	0.0161%	75	3.0220%	2.3492%
23	0.0301%	0.0171%	76	3.4928%	2.6652%
24	0.0315%	0.0183%	77	3.9787%	2.9831%
25	0.0327%	0.0195%	78	4.4792%	3.3011%
26	0.0342%	0.0208%	79	4.9963%	3.6207%
27	0.0354%	0.0221%	80	5.5282%	3.9391%
28	0.0371%	0.0236%	81	6.1051%	4.4386%
29	0.0394%	0.0252%	82	6.6894%	4.9473%
30	0.0427%	0.0270%	83	7.2805%	5.4665%
31	0.0495%	0.0330%	84	7.8749%	5.9942%
32	0.0562%	0.0384%	85	8.4753%	6.5354%
33	0.0625%	0.0431%	86	9.6136%	7.4659%
34	0.0682%	0.0471%	87	10.8005%	8.3995%
35	0.0743%	0.0511%	88	12.0443%	9.3428%
36	0.0780%	0.0542%	89	13.3397%	10.2918%
37	0.0818%	0.0579%	90	14.6958%	11.2477%
38	0.0861%	0.0618%	91	16.4185%	12.8868%
39	0.0917%	0.0666%	92	18.1416%	14.4887%
40	0.0997%	0.0719%	93	19.8574%	16.0801%
41	0.1394%	0.0775%	94	21.6187%	17.5854%
42	0.1774%	0.0859%	95	23.5884%	19.0626%
43	0.2143%	0.0968%	96	25.4266%	20.2474%
44	0.2507%	0.1111%	97	27.2119%	21.2937%
45	0.2875%	0.1287%	98	29.0202%	22.0663%
46	0.3207%	0.1501%	99	30.6654%	22.5443%
47	0.3534%	0.1748%	100	32.1584%	22.6473%
48	0.3849%	0.2022%	101	33.7521%	23.5294%
49	0.4150%	0.2319%	102	35.1259%	24.5619%
50	0.4431%	0.2633%	103	36.3671%	25.7825%
51	0.5156%	0.2999%	104	37.3834%	27.1635%
52	0.5928%	0.3376%	105	38.1051%	28.6530%
53	0.6740%	0.3762%	106	38.4698%	30.2169%
54	0.7583%	0.4151%	107	38.6325%	31.8182%
55	0.8440%	0.4540%	108	38.8076%	33.4131%
56	0.9048%	0.5132%	109	38.9794%	34.9566%
57	0.9604%	0.5735%	110	50.0000%	50.0000%
58	1.0101%	0.6353%	111	50.0000%	50.0000%
59	1.0536%	0.6981%	112	50.0000%	50.0000%
60	1.0919%	0.7631%	113	50.0000%	50.0000%
61	1.1835%	0.8329%	114	50.0000%	50.0000%
62	1.2676%	0.8908%	115	50.0000%	50.0000%
63	1.3473%	0.9493%	116	50.0000%	50.0000%
64	1.4238%	1.0146%	117	50.0000%	50.0000%
65	1.4985%	1.0876%	118	50.0000%	50.0000%
66	1.6059%	1.1681%	119	50.0000%	50.0000%
67	1.7146%	1.2609%	120	100.0000%	100.0000%

**Table XI-8
Salary Scale**

NEW YORK CITY POLICE PENSION FUND		
ANNUAL RATES OF MERIT AND SALARY INCREASE		
Years of Service	Merit Increase	Salary Increase ¹
0	0.00%	3.00%
1	5.00%	8.00%
2	11.00%	14.00%
3	14.00%	17.00%
4	20.00%	23.00%
5	38.00%	41.00%
6	1.60%	4.60%
7	1.80%	4.80%
8	2.00%	5.00%
9	3.60%	6.60%
10	2.30%	5.30%
11	2.20%	5.20%
12	2.10%	5.10%
13	2.00%	5.00%
14	3.30%	6.30%
15	1.70%	4.70%
16	1.60%	4.60%
17	1.50%	4.50%
18	1.40%	4.40%
19	2.70%	5.70%
20	1.20%	4.20%
21	1.00%	4.00%
22	0.90%	3.90%
23	0.80%	3.80%
24	0.70%	3.70%
25	0.60%	3.60%
26	0.50%	3.50%
27	0.50%	3.50%
28	0.50%	3.50%
29	0.50%	3.50%
30+	0.50%	3.50%

¹Salary Increase is the General Wage Increase of 3.00% plus the Merit Increase.

**Table XI-9
Overtime Assumptions**

NEW YORK CITY POLICE PENSION FUND					
OVERTIME ASSUMPTION					
Years of Service	All Tiers Baseline	Tier 1 & Tier 2 Dual Service	Tier 1 & Tier 2 Dual Disability	Tier 3, Tier 3 Revised, & Tier 3 Enhanced Dual Service	Tier 3, Tier 3 Revised, & Tier 3 Enhanced Dual Disability
0-15	17.00%	21.00%	8.00%	20.00%	12.00%
16	17.00%	21.00%	9.00%	20.00%	12.00%
17	17.00%	21.00%	10.00%	20.00%	13.00%
18	17.00%	21.00%	11.00%	20.00%	13.00%
19	17.00%	21.00%	12.00%	20.00%	14.00%
20	17.00%	21.00%	12.00%	20.00%	14.00%
21	17.00%	21.00%	12.00%	20.00%	14.00%
22	17.00%	21.00%	12.00%	20.00%	14.00%
23	16.00%	20.00%	11.00%	18.00%	13.00%
24	15.00%	18.00%	10.00%	17.00%	12.00%
25	14.00%	17.00%	9.00%	16.00%	11.00%
26	13.00%	16.00%	8.00%	15.00%	10.00%
27	12.00%	15.00%	7.00%	14.00%	9.00%
28	10.00%	14.00%	6.00%	13.00%	8.00%
29	9.00%	13.00%	6.00%	12.00%	7.00%
30	8.00%	12.00%	6.00%	10.00%	6.00%
31	7.00%	10.00%	6.00%	9.00%	6.00%
32	7.00%	9.00%	6.00%	9.00%	6.00%
33	7.00%	9.00%	6.00%	9.00%	6.00%
34+	7.00%	9.00%	6.00%	9.00%	6.00%

Additional Assumptions and Methods

1. **Actuarial Interest Rate (AIR):** 7.0% per annum, net of investment expenses.
2. **Mortality Assumption:** The mortality base tables are projected from 2012 using mortality improvement table MP-2020. The post-commencement base tables are also multiplied by adjustment factors to convert them from lives-weighted to amounts-weighted tables to account for socioeconomic effects on mortality. The adjustment factors used are as follows:

	Adjustment Factor	
	Male	Female
Service Retiree	0.910	0.910
Disabled Retiree	0.876	0.876
Beneficiary	0.890	0.951

3. **Marital Assumption:** All active members are assumed to be married and females are assumed to be two years younger than their male spouses.
4. **Credited Service:** Calculated in whole year increments for valuation purposes.
5. **Loans:** Except for Death Benefits, it is assumed that members take a loan at retirement equal to 25% of their member contribution balances.
6. **Inflation:** The long-term CPI inflation rate is assumed to be 2.5% per year. AutoCOLA is assumed to be 1.5% per year, and Escalation is assumed at 2.5% per year. Beneficiaries receiving Special Accidental Death Benefits, if any, are assumed to receive increases at 3.0% per year.
7. **Form of Payment:** Retiring members are assumed to elect the Maximum Retirement Allowance (i.e., single life annuity) form of payment.
8. **Actuarial Asset Valuation Method (AAVM):**

The Actuary reset the AVA to the Market Value as of June 30, 2019.

Beginning with the June 30, 2020 actuarial valuation, the AAVM recognizes investment returns greater or less than expected over a period of five years.

In accordance with this AAVM, any investment return over or under the expected 7% return on the MVA is phased into the AVA over a five-year period at 20% per year.

The AVA is further constrained to be within a corridor of 80% to 120% of the MVA.

For more information, see SECTION II – MARKET AND ACTUARIAL VALUES OF ASSETS.

9. **Actuarial Cost Method:** The EAN cost method of funding is used by the Actuary to calculate the Employer Contribution.

Under this method, the Present Value of Future Benefits (PVFB) of each individual included in the actuarial valuation is allocated on a level basis over the expected earnings (or service) of the individual between entry age and the assumed exit age(s). The employer portion of this PVFB allocated to a valuation year is the Normal Cost. The portion of this PVFB not provided for at a valuation date by the PVFNC or future member contributions is the Accrued Liability.

The excess, if any, of the AL over the AVA is the UAL.

Under this method, actuarial gains and losses, as they occur, reduce and increase the UAL, respectively, and are explicitly identified and amortized. Increases or decreases in obligations due to benefit changes, actuarial assumption changes, and actuarial method changes are also explicitly identified and amortized.

The explicit UALs that are developed under EAN each year are financed over fixed periods. For more information see Page 12.

Under EAN, the Normal Cost as a percentage of pay remains constant by individual and changes gradually over time for the entire plan as the characteristics of the group changes (e.g., more Tier 3 Enhanced active members decrease the average Normal Cost as a percentage of pay).

10. **Allowances for Administrative Expenses:** The Employer Contribution for a fiscal year is increased by the interest-adjusted amount of administrative expenses paid from POLICE during the second prior fiscal year.
11. **WTC Disability and Death Benefits:** Obligations attributable to the WTC Disability Benefits Law and to the WTC Death Benefits Law are determined through estimation techniques for post-retirement reclassifications.
12. **One-year Lag Methodology (OYLM):** The One-Year Lag Methodology uses a June 30, XX valuation date to determine the Fiscal Year XX+2 employer contributions as follows:

a. Normal Cost

The normal cost as of July 1, XX (calculated in the June 30, XX valuation) is rolled forward with the assumed AIR of 7.0% to the mid-point of Fiscal Year XX+2 (i.e., December 31, XX+1).

b. Administrative Expenses

A reimbursement for administrative expenses deducted from plan assets during the year ending June 30, XX is rolled forward with the assumed AIR of 7.0% to the mid-point of Fiscal Year XX+2.

c. UAL Payments

New amortization bases for gains and losses, method and assumption changes, and any benefit improvements are established each year XX such that the UAL as of June 30, XX is equal to the sum of the:

- 1) Outstanding prior amortization bases;
- 2) Unpaid prior year normal cost with interest;
- 3) Unreimbursed administrative expenses with interest, and
- 4) New amortization bases.

The UAL payment is the sum of the payments on the amortization bases scheduled for Fiscal Year XX+2.

13. **Excess Benefit Plan:** Pension payments that exceed the Internal Revenue Code Section 415 limit which have been or are expected to be made from the Excess Benefit Plan are excluded from this valuation, other than a one-time adjustment to the liabilities to account for EBP payments expected to be made in Calendar Year 2023/Fiscal Year 2024 from the Qualified Pension Plan while the trust for the EBP is being established.

14. **Group Life Insurance Plan:** The Employer Contribution includes an amount to fund the Group Life Insurance Plan. The Group Life Insurance amounts used in the POLICE valuation is \$50,000.

SECTION XII – SUMMARY OF DEMOGRAPHIC DATA

The June 30, 2022 and June 30, 2021 actuarial valuations are based upon census data as of those dates submitted by the Plan's administrative staff and the employer's payroll facilities. Financial information was provided by the Office of the Comptroller as of June 30, 2022 and June 30, 2021.

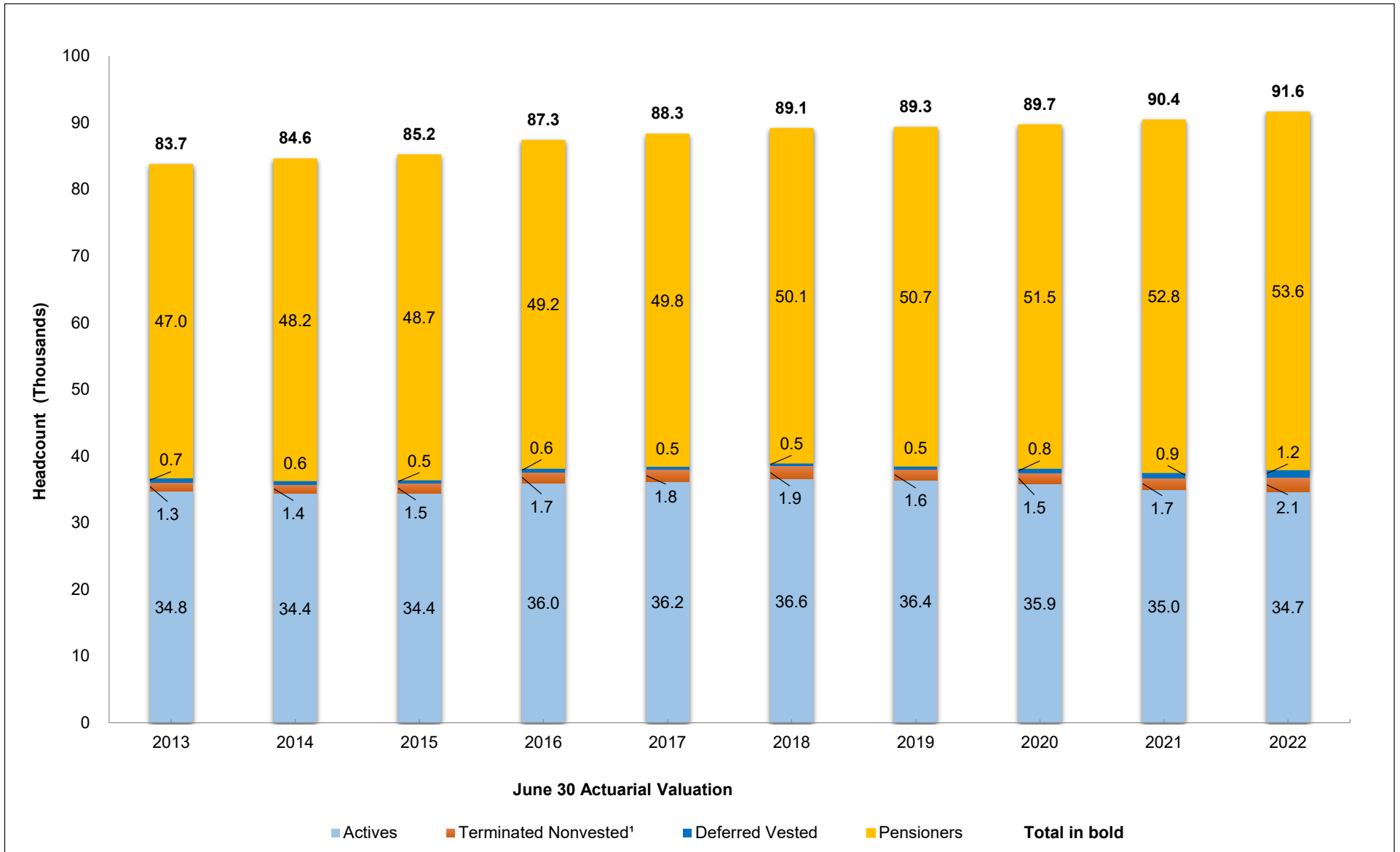
Beginning on June 30, 2020, POLICE members who are no longer on payroll but not otherwise classified have been classified as Active, Terminated Nonvested, or Deferred Vested members, using actuarial judgment and consideration of available data, including leave of absence data when available.

Consistent with Actuarial Standards of Practice, the Office of the Actuary has reviewed census data and financial information for consistency and reasonability but has not audited it. The accuracy of the results and calculations contained in this Report are dependent on the accuracy of this census data and financial information. To the extent any such data or information provided is materially inaccurate or incomplete, the results contained herein will require revision

Table XII-1
Status Reconciliation

CHANGES IN THE NUMBER OF ACTIVES AND PENSIONERS DURING THE FISCAL YEAR CLASSIFIED BY STATUS										
Status	(1) Active Members	(2) Terminated Nonvested	(3) Terminated Vested	(4) Service Pension	(5) Ordinary Disability	(6) Accidental Disability	(7) Accidental Death	(8) Other Beneficiary	(9) Pensioners Subtotal (4) to (8)	(10) Grand Total (1) + (2) + (3) + (9)
Number at June 30, 2021	35,006	1,713	851	36,245	2,513	12,663	530	886	52,837	90,407
New Entrants	2,649	205	0	3	0	0	31	10	44	2,898
Rehires	34	(28)	(2)	(4)	0	0	0	0	(4)	0
Terminated Nonvested	(454)	454	0	0	0	0	0	0	0	0
Vested Termination	(513)	(2)	515	0	0	0	0	0	0	0
Withdrawal / Cashout	(383)	(217)	(83)	0	0	0	0	0	0	(683)
Accidental Death	(9)	0	0	0	0	0	9	0	9	0
Ordinary Death	(19)	0	(1)	0	0	0	0	0	0	(20)
Service Retirement	(1,475)	0	(64)	1,539	0	0	0	0	1,539	0
Ordinary Disability Retirement	(23)	0	(2)	0	25	0	0	0	25	0
Accidental Disability Retirement	(158)	0	0	0	0	158	0	0	158	0
Reclassifications	0	0	0	(66)	(5)	65	9	(3)	0	0
Pensioner Death with Beneficiary	0	0	0	(54)	(7)	(17)	0	78	0	0
Pensioner Death without Beneficiary	0	0	0	(565)	(92)	(277)	(8)	(42)	(984)	(984)
Pension Payroll Adjustments	0	0	0	(6)	(1)	(3)	(2)	(4)	(16)	(16)
Net Change	(351)	412	363	847	(80)	(74)	39	39	771	1,195
Number at June 30, 2022	34,655	2,125	1,214	37,092	2,433	12,589	569	925	53,608	91,602

Graph XII-2
Headcount Summary by Status



¹ Active Off Payroll prior to June 30, 2020.

Table XII-3
Summary of Active Membership

NEW YORK CITY POLICE PENSION FUND		
ACTIVE MEMBERS INCLUDED IN THE		
JUNE 30, 2022 AND THE JUNE 30, 2021 ACTUARIAL VALUATIONS		
	June 30, 2022	June 30, 2021
Number		
Males	27,901	28,351
Females	6,754	6,655
Total	34,655	35,006
Annual Salary¹		
Males	\$ 3,543,365,381	\$ 3,500,848,588
Females	788,860,142	761,776,933
Total	\$ 4,332,225,523	\$ 4,262,625,521
Average Salary¹		
Males	\$ 126,998	\$ 123,482
Females	116,799	114,467
Total Average	\$ 125,010	\$ 121,768
Average Age		
Males	37.6	37.6
Females	36.8	37.0
Total Average	37.4	37.5
Average Past Service		
Males	11.6	11.7
Females	10.0	10.3
Total Average	11.3	11.4

¹ Salaries shown are base salaries plus assumed overtime paid and reflect the impact of recent labor contract settlements and certain non-union salary increases with retroactive effective dates, if any.

Graph XII-4
Active Membership by Tier

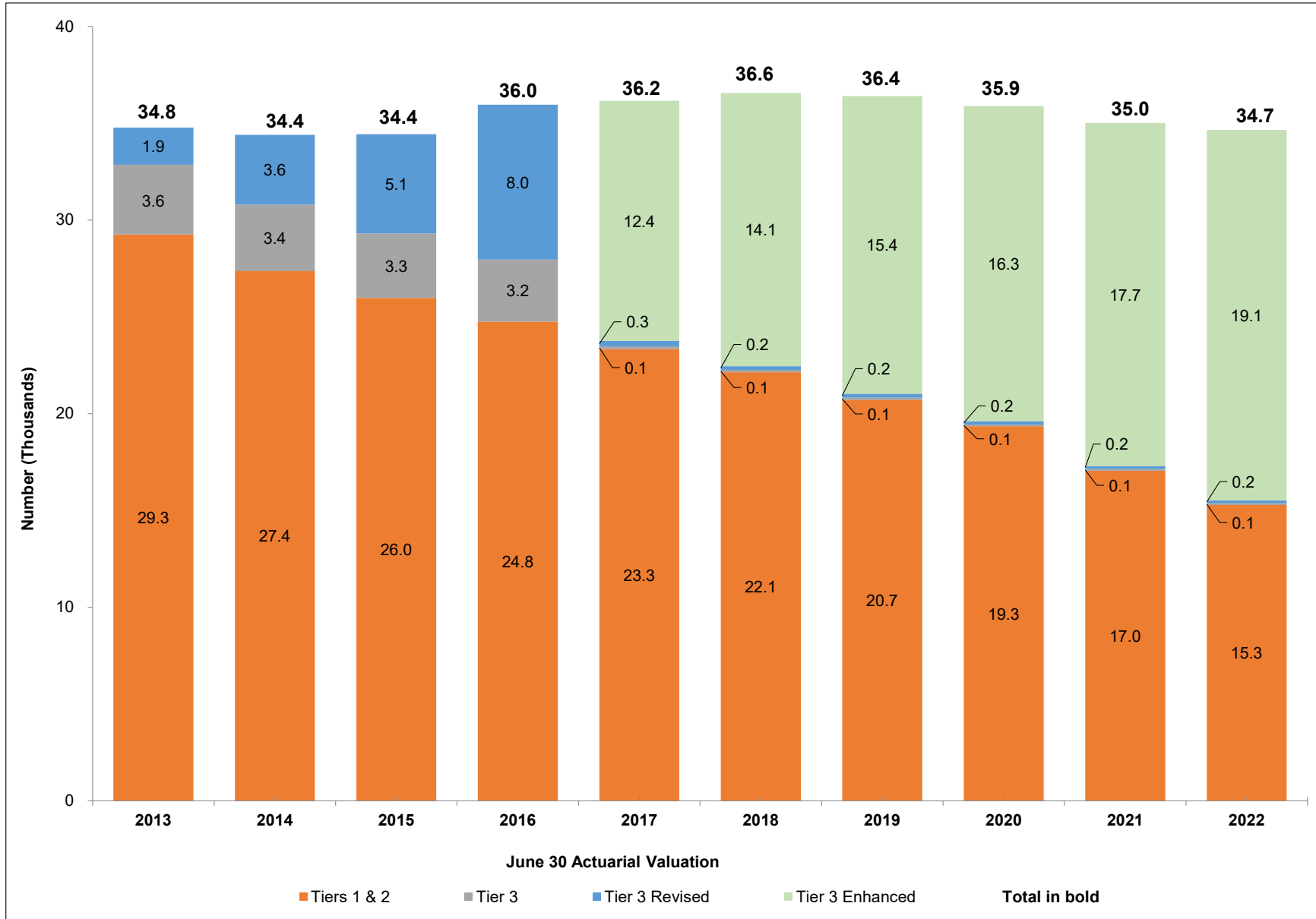


Table XII-5
Schedule of Active Member Salary Data

June 30 Actuarial Valuation	Number	Annual Salary	Average Annual Salary	Percentage Increase/ (Decrease) In Avg. Salary
2013	34,775	3,607,606,894	103,741	2.1%
2014	34,402	3,618,095,284	105,171	1.4%
2015	34,435	3,564,029,659	103,500	(1.6%)
2016	35,961	3,717,425,239	103,374	(0.1%)
2017	36,165	3,968,885,246	109,744	6.2%
2018	36,562	4,053,204,563	110,858	1.0%
2019	36,401	4,244,805,002	116,612	5.2%
2020	35,895	4,299,648,848	119,784	2.7%
2021	35,006	4,262,625,521	121,768	1.7%
2022	34,655	4,332,225,523	125,010	2.7%

Salaries shown are base salaries plus assumed overtime paid and reflect the impact of recent labor contract settlements and certain non-union salary increases with retroactive effective dates, if any.

Table XII-6
Detailed Active Membership and Salaries as of June 30, 2022

MALE TOTAL										
AGE \ SVC	UNDER 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & UP	ALL YEARS
<i>NUMBER:</i>										
UNDER 20	0	0	0	0	0	0	0	0	0	0
20 TO 24	1,094	0	0	0	0	0	0	0	0	1,094
25 TO 29	2,967	1,064	0	0	0	0	0	0	0	4,031
30 TO 34	1,366	3,115	903	3	0	0	0	0	0	5,387
35 TO 39	552	1,450	2,679	1,647	5	0	0	0	0	6,333
40 TO 44	61	565	956	3,227	700	3	0	0	0	5,512
45 TO 49	4	109	328	1,280	1,076	276	0	0	0	3,073
50 TO 54	4	2	45	507	486	478	164	0	0	1,686
55 TO 59	0	2	1	48	125	182	164	108	0	630
60 TO 64	2	1	1	1	7	27	23	61	18	141
65 TO 69	0	1	0	3	1	1	0	0	0	6
70 & UP	0	0	2	1	4	0	0	1	0	8
TOTAL	6,050	6,309	4,915	6,717	2,404	967	351	170	18	27,901

<i>SALARIES (IN THOUSANDS):</i>										
UNDER 20	0	0	0	0	0	0	0	0	0	0
20 TO 24	61,162	0	0	0	0	0	0	0	0	61,162
25 TO 29	184,610	117,557	0	0	0	0	0	0	0	302,166
30 TO 34	89,193	400,642	127,624	417	0	0	0	0	0	617,876
35 TO 39	36,699	189,060	385,597	252,212	719	0	0	0	0	864,287
40 TO 44	4,315	73,374	134,702	494,674	112,385	435	0	0	0	819,883
45 TO 49	384	14,580	45,963	191,051	174,648	47,654	0	0	0	474,280
50 TO 54	579	261	6,271	76,055	75,784	80,992	29,990	0	0	269,933
55 TO 59	0	345	140	7,091	19,655	29,604	29,518	20,173	0	106,526
60 TO 64	279	173	173	168	1,192	4,412	3,652	10,800	3,948	24,798
65 TO 69	0	167	0	518	169	170	0	0	0	1,024
70 & UP	0	0	338	168	668	0	0	256	0	1,429
TOTAL¹	377,221	796,157	700,807	1,022,355	385,219	163,268	63,161	31,229	3,948	3,543,365

<i>AVERAGE SALARIES:²</i>										
UNDER 20	0	0	0	0	0	0	0	0	0	0
20 TO 24	55,907	0	0	0	0	0	0	0	0	55,907
25 TO 29	62,221	110,485	0	0	0	0	0	0	0	74,961
30 TO 34	65,295	128,617	141,333	138,952	0	0	0	0	0	114,698
35 TO 39	66,484	130,386	143,933	153,134	143,710	0	0	0	0	136,474
40 TO 44	70,732	129,865	140,901	153,292	160,550	144,938	0	0	0	148,745
45 TO 49	95,959	133,758	140,131	149,259	162,312	172,661	0	0	0	154,338
50 TO 54	144,838	130,264	139,362	150,010	155,935	169,439	182,867	0	0	160,102
55 TO 59	0	172,313	140,233	147,735	157,237	162,661	179,989	186,787	0	169,089
60 TO 64	139,465	172,855	172,942	167,628	170,324	163,408	158,800	177,055	219,347	175,869
65 TO 69	0	166,582	0	172,749	169,268	170,224	0	0	0	170,720
70 & UP	0	0	168,792	168,228	166,946	0	0	255,800	0	178,674
TOTAL	62,351	126,194	142,585	152,204	160,241	168,840	179,945	183,701	219,347	126,998

Note: Age is nearest birthday. Service is nearest year.

¹ Total may not add up due to rounding.

² Average based on unrounded salary.

Table XII-6
Detailed Active Membership and Salaries as of June 30, 2022 (cont'd)

AGE \ SVC	FEMALE TOTAL									ALL YEARS	
	UNDER 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & UP		
<i>NUMBER:</i>											
UNDER 20	0	0	0	0	0	0	0	0	0	0	0
20 TO 24	263	0	0	0	0	0	0	0	0	0	263
25 TO 29	848	225	0	0	0	0	0	0	0	0	1,073
30 TO 34	552	778	149	0	0	0	0	0	0	0	1,479
35 TO 39	218	479	488	302	1	0	0	0	0	0	1,488
40 TO 44	25	180	201	740	125	0	0	0	0	0	1,271
45 TO 49	2	38	82	367	217	27	0	0	0	0	733
50 TO 54	0	0	12	134	147	54	9	0	0	0	356
55 TO 59	1	0	0	7	25	18	16	5	0	0	72
60 TO 64	0	1	1	0	1	5	2	6	3	0	19
65 TO 69	0	0	0	0	0	0	0	0	0	0	0
70 & UP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1,909	1,701	933	1,550	516	104	27	11	3	0	6,754

SALARIES (IN THOUSANDS):

UNDER 20	0	0	0	0	0	0	0	0	0	0	0
20 TO 24	14,721	0	0	0	0	0	0	0	0	0	14,721
25 TO 29	52,315	23,278	0	0	0	0	0	0	0	0	75,593
30 TO 34	35,135	96,282	20,746	0	0	0	0	0	0	0	152,164
35 TO 39	13,932	59,659	68,912	44,244	135	0	0	0	0	0	186,882
40 TO 44	1,702	23,261	27,681	109,982	19,405	0	0	0	0	0	182,031
45 TO 49	200	4,975	11,341	53,532	34,400	4,658	0	0	0	0	109,107
50 TO 54	0	0	1,667	19,322	22,303	8,857	1,636	0	0	0	53,785
55 TO 59	148	0	0	1,023	3,682	2,873	2,778	842	0	0	11,345
60 TO 64	0	163	167	0	197	803	290	1,050	562	0	3,232
65 TO 69	0	0	0	0	0	0	0	0	0	0	0
70 & UP	0	0	0	0	0	0	0	0	0	0	0
TOTAL¹	118,153	207,620	130,514	228,102	80,123	17,192	4,704	1,891	562	0	788,860

AVERAGE SALARIES:²

UNDER 20	0	0	0	0	0	0	0	0	0	0	0
20 TO 24	55,974	0	0	0	0	0	0	0	0	0	55,974
25 TO 29	61,692	103,458	0	0	0	0	0	0	0	0	70,450
30 TO 34	63,651	123,756	139,237	0	0	0	0	0	0	0	102,883
35 TO 39	63,909	124,549	141,213	146,502	135,100	0	0	0	0	0	125,592
40 TO 44	68,078	129,230	137,716	148,624	155,243	0	0	0	0	0	143,219
45 TO 49	99,929	130,934	138,305	145,864	158,527	172,532	0	0	0	0	148,850
50 TO 54	0	0	138,956	144,191	151,721	164,028	181,759	0	0	0	151,083
55 TO 59	147,698	0	0	146,081	147,281	159,630	173,598	168,363	0	0	157,569
60 TO 64	0	163,309	166,582	0	197,007	160,528	145,096	174,925	187,457	0	170,087
65 TO 69	0	0	0	0	0	0	0	0	0	0	0
70 & UP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	61,893	122,057	139,886	147,162	155,277	165,306	174,207	171,942	187,457	0	116,799

Note: Age is nearest birthday. Service is nearest year.

¹ Total may not add up due to rounding.

² Average based on unrounded salary.

Table XII-6
Detailed Active Membership and Salaries as of June 30, 2022 (cont'd)

AGE \ SVC	TOTAL (ALL TIERS, ALL MEMBERS)									
	UNDER 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & UP	ALL YEARS
<i>NUMBER:</i>										
UNDER 20	0	0	0	0	0	0	0	0	0	0
20 TO 24	1,357	0	0	0	0	0	0	0	0	1,357
25 TO 29	3,815	1,289	0	0	0	0	0	0	0	5,104
30 TO 34	1,918	3,893	1,052	3	0	0	0	0	0	6,866
35 TO 39	770	1,929	3,167	1,949	6	0	0	0	0	7,821
40 TO 44	86	745	1,157	3,967	825	3	0	0	0	6,783
45 TO 49	6	147	410	1,647	1,293	303	0	0	0	3,806
50 TO 54	4	2	57	641	633	532	173	0	0	2,042
55 TO 59	1	2	1	55	150	200	180	113	0	702
60 TO 64	2	2	2	1	8	32	25	67	21	160
65 TO 69	0	1	0	3	1	1	0	0	0	6
70 & UP	0	0	2	1	4	0	0	1	0	8
TOTAL	7,959	8,010	5,848	8,267	2,920	1,071	378	181	21	34,655

SALARIES (IN THOUSANDS):

UNDER 20	0	0	0	0	0	0	0	0	0	0
20 TO 24	75,884	0	0	0	0	0	0	0	0	75,884
25 TO 29	236,925	140,835	0	0	0	0	0	0	0	377,759
30 TO 34	124,328	496,925	148,370	417	0	0	0	0	0	770,040
35 TO 39	50,631	248,719	454,508	296,456	854	0	0	0	0	1,051,169
40 TO 44	6,017	96,635	162,383	604,655	131,790	435	0	0	0	1,001,915
45 TO 49	584	19,555	57,304	244,583	209,048	52,313	0	0	0	583,387
50 TO 54	579	261	7,939	95,377	98,087	89,850	31,626	0	0	323,718
55 TO 59	148	345	140	8,114	23,337	32,478	32,296	21,015	0	117,871
60 TO 64	279	336	340	168	1,389	5,215	3,943	11,850	4,511	28,029
65 TO 69	0	167	0	518	169	170	0	0	0	1,024
70 & UP	0	0	338	168	668	0	0	256	0	1,429
TOTAL¹	495,374	1,003,777	831,321	1,250,456	465,342	180,460	67,864	33,120	4,511	4,332,226

AVERAGE SALARIES:²

UNDER 20	0	0	0	0	0	0	0	0	0	0
20 TO 24	55,920	0	0	0	0	0	0	0	0	55,920
25 TO 29	62,103	109,259	0	0	0	0	0	0	0	74,012
30 TO 34	64,822	127,646	141,036	138,952	0	0	0	0	0	112,153
35 TO 39	65,755	128,937	143,514	152,107	142,275	0	0	0	0	134,403
40 TO 44	69,961	129,712	140,348	152,421	159,746	144,938	0	0	0	147,710
45 TO 49	97,282	133,028	139,766	148,502	161,677	172,650	0	0	0	153,281
50 TO 54	144,838	130,264	139,276	148,794	154,956	168,890	182,809	0	0	158,530
55 TO 59	147,698	172,313	140,233	147,525	155,578	162,388	179,421	185,972	0	167,908
60 TO 64	139,465	168,082	169,762	167,628	173,659	162,958	157,703	176,864	214,791	175,183
65 TO 69	0	166,582	0	172,749	169,268	170,224	0	0	0	170,720
70 & UP	0	0	168,792	168,228	166,946	0	0	255,800	0	178,674
TOTAL	62,241	125,315	142,155	151,259	159,364	168,497	179,535	182,986	214,791	125,010

Note: Age is nearest birthday. Service is nearest year.

¹ Total may not add up due to rounding.

² Average based on unrounded salary.

Table XII-7 Detailed Reconciliation of Active Membership

TOTAL ACTIVE MEMBERS AS OF JUNE 30, 2022							TOTAL ACTIVE MEMBERS AS OF JUNE 30, 2021				
TIER	GENDER	NUMBER	SALARY	AVG SAL	AVG AGE	AVG SVC	NUMBER	SALARY	AVG SAL	AVG AGE	AVG SVC
1	M	0	0	0	0.0	0.0	1	242,592	242,592	70.0	29.0
1	F	0	0	0	0.0	0.0	0	0	0	0.0	0.0
		0	0	0	0.0	0.0	1	242,592	242,592	70.0	29.0
2	M	12,569	1,951,713,606	155,280	44.2	18.6	13,992	2,076,391,062	148,398	43.7	18.1
2	F	2,711	403,235,780	148,741	43.8	17.5	3,050	432,490,071	141,800	43.2	16.9
		15,280	2,354,949,386	154,120	44.1	18.4	17,042	2,508,881,133	147,218	43.6	17.9
3	M	76	11,087,102	145,883	37.8	11.5	81	11,205,691	138,342	36.6	10.4
3	F	11	1,536,340	139,667	40.4	11.0	11	1,464,851	133,168	39.4	10.0
		87	12,623,442	145,097	38.1	11.4	92	12,670,542	137,723	36.9	10.4
3 Revised	M	135	18,317,137	135,682	34.8	7.6	141	17,070,792	121,069	33.7	6.6
3 Revised	F	22	2,887,603	131,255	35.0	7.8	22	2,498,476	113,567	34.0	6.8
		157	21,204,740	135,062	34.8	7.7	163	19,569,268	120,057	33.7	6.6
3 Enhanced	M	15,121	1,562,247,536	103,316	32.1	5.8	14,136	1,395,938,451	98,751	31.7	5.4
3 Enhanced	F	4,010	381,200,419	95,062	32.1	5.0	3,572	325,323,535	91,076	31.8	4.7
		19,131	1,943,447,955	101,586	32.1	5.6	17,708	1,721,261,986	97,203	31.7	5.3
ALL TIERS		34,655	4,332,225,523	125,010	37.4	11.3	35,006	4,262,625,521	121,768	37.5	11.4

JUNE 30, 2022 MEMBERS ALSO PRESENT AS OF JUNE 30, 2021							JUNE 30, 2021 MEMBERS ALSO PRESENT AS OF JUNE 30, 2021				
TIER	GENDER	NUMBER	SALARY	AVG SAL	AVG AGE	AVG SVC	NUMBER	SALARY	AVG SAL	AVG AGE	AVG SVC
1	M	0	0	0	0.0	0.0	0	0	0	0.0	0.0
1	F	0	0	0	0.0	0.0	0	0	0	0.0	0.0
		0	0	0	0.0	0.0	0	0	0	0.0	0.0
2	M	12,558	1,949,969,166	155,277	44.2	18.6	12,558	1,861,993,119	148,271	43.2	17.6
2	F	2,711	403,235,780	148,741	43.8	17.5	2,711	384,038,818	141,659	42.8	16.4
		15,269	2,353,204,946	154,117	44.1	18.4	15,269	2,246,031,937	147,098	43.1	17.4
3	M	76	11,087,102	145,883	37.8	11.5	76	10,513,652	138,338	36.8	10.5
3	F	11	1,536,340	139,667	40.4	11.0	11	1,464,851	133,168	39.4	10.0
		87	12,623,442	145,097	38.1	11.4	87	11,978,503	137,684	37.1	10.4
3 Revised	M	135	18,317,137	135,682	34.8	7.6	135	16,466,427	121,974	33.8	6.6
3 Revised	F	22	2,887,603	131,255	35.0	7.8	22	2,498,476	113,567	34.0	6.8
		157	21,204,740	135,062	34.8	7.7	157	18,964,903	120,796	33.8	6.7
3 Enhanced	M	13,207	1,456,315,247	110,268	32.8	6.5	13,207	1,316,844,559	99,708	31.8	5.5
3 Enhanced	F	3,393	347,249,731	102,343	32.9	5.8	3,393	310,869,833	91,621	31.9	4.8
		16,600	1,803,564,978	108,648	32.8	6.4	16,600	1,627,714,392	98,055	31.8	5.4
ALL TIERS		32,113	4,190,598,106	130,495	38.2	12.1	32,113	3,904,689,735	121,592	37.2	11.1

ADDITIONS DURING THE YEAR ¹							SEPARATIONS FROM MEMBERSHIP DURING THE YEAR ¹				
TIER	GENDER	NUMBER	SALARY	AVG SAL	AVG AGE	AVG SVC	NUMBER	SALARY	AVG SAL	AVG AGE	AVG SVC
1	M	0	0	0	0.0	0.0	1	242,592	242,592	70.0	29.0
1	F	0	0	0	0.0	0.0	0	0	0	0.0	0.0
		0	0	0	0.0	0.0	1	242,592	242,592	70.0	29.0
2	M	11	1,744,440	158,585	42.6	16.1	1,434	214,397,943	149,510	48.0	22.1
2	F	0	0	0	0.0	0.0	339	48,451,253	142,924	46.9	20.3
		11	1,744,440	158,585	42.6	16.1	1,773	262,849,196	148,251	47.8	21.8
3	M	0	0	0	0.0	0.0	5	692,039	138,408	34.0	10.0
3	F	0	0	0	0.0	0.0	0	0	0	0.0	0.0
		0	0	0	0.0	0.0	5	692,039	138,408	34.0	10.0
3 Revised	M	0	0	0	0.0	0.0	6	604,365	100,728	30.5	5.5
3 Revised	F	0	0	0	0.0	0.0	0	0	0	0.0	0.0
		0	0	0	0.0	0.0	6	604,365	100,728	30.5	5.5
3 Enhanced	M	1,914	105,932,289	55,346	27.2	0.7	929	79,093,892	85,139	29.8	4.2
3 Enhanced	F	617	33,950,688	55,025	27.9	0.7	179	14,453,702	80,747	30.4	3.7
		2,531	139,882,977	55,268	27.4	0.7	1,108	93,547,594	84,429	29.9	4.1
ALL TIERS		2,542	141,627,417	55,715	27.4	0.8	2,893	357,935,786	123,725	40.9	15.0

Note: Age is nearest birthday. Service is nearest year. The member is considered also present if active with the same tier and gender as of both valuation dates.

¹ Separations and additions do not include members who joined after June 30, 2021 and are no longer members on June 30, 2022. Members are included as separations and additions if the tier or gender has changed.

Table XII-8
Distribution of Pension Benefits as of June 30, 2022

AGE	MALE			FEMALE			TOTAL		
	NUMBER	BENEFITS	AVERAGE	NUMBER	BENEFITS	AVERAGE	NUMBER	BENEFITS	AVERAGE
<i>SERVICE RETIREMENT:</i>									
UNDER 30	0	0	0	0	0	0	0	0	0
30 TO 34	0	0	0	0	0	0	0	0	0
35 TO 39	1	62,760	62,760	0	0	0	1	62,760	62,760
40 TO 44	330	21,926,457	66,444	75	4,703,217	62,710	405	26,629,674	65,752
45 TO 49	1,849	132,274,266	71,538	476	30,636,929	64,363	2,325	162,911,195	70,069
50 TO 54	5,063	385,706,717	76,181	1,071	69,324,877	64,729	6,134	455,031,594	74,182
55 TO 59	6,829	465,197,324	68,121	1,476	87,427,932	59,233	8,305	552,625,256	66,541
60 TO 64	6,040	347,264,798	57,494	1,242	63,282,036	50,952	7,282	410,546,834	56,378
65 TO 69	3,019	160,706,868	53,232	608	28,069,899	46,168	3,627	188,776,767	52,048
70 TO 74	2,129	98,319,813	46,181	160	6,935,943	43,350	2,289	105,255,756	45,983
75 TO 79	2,740	112,851,574	41,187	75	2,802,604	37,368	2,815	115,654,178	41,085
80 TO 84	2,378	86,603,174	36,418	48	1,802,086	37,543	2,426	88,405,260	36,441
85 TO 89	929	29,462,514	31,714	21	789,951	37,617	950	30,252,465	31,845
90 & UP	518	15,868,721	30,635	15	374,925	24,995	533	16,243,646	30,476
TOTAL	31,825	1,856,244,986	58,327	5,267	296,150,399	56,228	37,092	2,152,395,385	58,029
<i>ORDINARY DISABILITY:</i>									
UNDER 30	0	0	0	0	0	0	0	0	0
30 TO 34	1	46,080	46,080	0	0	0	1	46,080	46,080
35 TO 39	31	1,479,774	47,735	14	586,019	41,859	45	2,065,793	45,907
40 TO 44	79	3,522,276	44,586	37	1,601,254	43,277	116	5,123,530	44,168
45 TO 49	86	3,660,898	42,569	51	2,128,133	41,728	137	5,789,031	42,256
50 TO 54	216	8,264,696	38,262	109	3,905,114	35,827	325	12,169,810	37,446
55 TO 59	198	6,506,535	32,861	129	3,788,860	29,371	327	10,295,395	31,484
60 TO 64	145	4,227,509	29,155	88	2,457,723	27,929	233	6,685,232	28,692
65 TO 69	79	2,149,598	27,210	49	1,284,458	26,213	128	3,434,056	26,829
70 TO 74	169	5,450,856	32,254	21	496,730	23,654	190	5,947,586	31,303
75 TO 79	341	9,164,774	26,876	12	277,308	23,109	353	9,442,082	26,748
80 TO 84	277	8,364,113	30,195	6	137,964	22,994	283	8,502,077	30,043
85 TO 89	126	6,198,825	49,197	6	171,940	28,657	132	6,370,765	48,263
90 & UP	161	7,585,949	47,118	2	77,679	38,840	163	7,663,628	47,016
TOTAL	1,909	66,621,883	34,899	524	16,913,182	32,277	2,433	83,535,065	34,334
<i>ACCIDENTAL DISABILITY:</i>									
UNDER 30	0	0	0	0	0	0	0	0	0
30 TO 34	17	873,319	51,372	6	291,054	48,509	23	1,164,373	50,625
35 TO 39	181	14,185,607	78,374	32	2,367,841	73,995	213	16,553,448	77,716
40 TO 44	397	32,528,748	81,936	95	7,398,133	77,875	492	39,926,881	81,152
45 TO 49	653	58,845,121	90,115	125	9,950,977	79,608	778	68,796,098	88,427
50 TO 54	1,624	142,215,469	87,571	247	19,181,686	77,659	1,871	161,397,155	86,263
55 TO 59	2,055	169,112,514	82,293	371	26,459,705	71,320	2,426	195,572,219	80,615
60 TO 64	1,737	119,873,518	69,012	288	18,460,932	64,100	2,025	138,334,450	68,313
65 TO 69	819	54,648,724	66,726	119	6,441,820	54,133	938	61,090,544	65,129
70 TO 74	964	48,391,635	50,199	41	2,049,027	49,976	1,005	50,440,662	50,190
75 TO 79	1,383	62,463,652	45,165	33	1,298,659	39,353	1,416	63,762,311	45,030
80 TO 84	929	42,808,346	46,080	19	850,419	44,759	948	43,658,765	46,054
85 TO 89	333	15,731,004	47,240	7	276,426	39,489	340	16,007,430	47,081
90 & UP	112	5,479,930	48,928	2	55,934	27,967	114	5,535,864	48,560
TOTAL	11,204	767,157,587	68,472	1,385	95,082,613	68,652	12,589	862,240,200	68,492

Table XII-8
Distribution of Pension Benefits as of June 30, 2022 (cont'd)

AGE	MALE			FEMALE			TOTAL		
	NUMBER	BENEFITS	AVERAGE	NUMBER	BENEFITS	AVERAGE	NUMBER	BENEFITS	AVERAGE
<i>ACCIDENTAL DEATH:</i>									
UNDER 30	5	649,736	129,947	16	2,170,385	135,649	21	2,820,121	134,291
30 TO 34	0	0	0	2	210,746	105,373	2	210,746	105,373
35 TO 39	0	0	0	3	435,325	145,108	3	435,325	145,108
40 TO 44	1	134,763	134,763	10	1,229,384	122,938	11	1,364,147	124,013
45 TO 49	1	118,305	118,305	37	4,942,157	133,572	38	5,060,462	133,170
50 TO 54	4	512,199	128,050	49	6,379,356	130,191	53	6,891,555	130,029
55 TO 59	10	1,134,826	113,483	98	12,790,983	130,520	108	13,925,809	128,943
60 TO 64	6	792,603	132,101	79	10,328,644	130,742	85	11,121,247	130,838
65 TO 69	6	552,606	92,101	47	6,109,955	129,999	53	6,662,561	125,709
70 TO 74	2	213,943	106,972	51	5,492,562	107,697	53	5,706,505	107,670
75 TO 79	3	355,683	118,561	59	6,563,030	111,238	62	6,918,713	111,592
80 TO 84	1	133,002	133,002	45	4,608,537	102,412	46	4,741,539	103,077
85 TO 89	4	450,364	112,591	15	1,645,459	109,697	19	2,095,823	110,306
90 & UP	3	275,878	91,959	12	1,043,826	86,986	15	1,319,704	87,980
TOTAL	46	5,323,908	115,737	523	63,950,349	122,276	569	69,274,257	121,747
<i>OTHER BENEFICIARIES:</i>									
UNDER 30	9	451,305	50,145	10	516,959	51,696	19	968,264	50,961
30 TO 34	5	140,275	28,055	7	234,856	33,551	12	375,131	31,261
35 TO 39	4	124,245	31,061	4	190,463	47,616	8	314,708	39,339
40 TO 44	1	13,585	13,585	12	592,001	49,333	13	605,586	46,584
45 TO 49	3	144,484	48,161	21	1,170,043	55,716	24	1,314,527	54,772
50 TO 54	6	271,739	45,290	36	1,572,386	43,677	42	1,844,125	43,908
55 TO 59	6	214,742	35,790	62	2,580,326	41,618	68	2,795,068	41,104
60 TO 64	6	256,707	42,785	72	2,774,164	38,530	78	3,030,871	38,857
65 TO 69	3	97,380	32,460	79	2,520,167	31,901	82	2,617,547	31,921
70 TO 74	1	34,721	34,721	102	2,888,361	28,317	103	2,923,082	28,379
75 TO 79	3	60,116	20,039	144	3,951,465	27,441	147	4,011,581	27,290
80 TO 84	0	0	0	139	3,922,428	28,219	139	3,922,428	28,219
85 TO 89	0	0	0	103	2,256,788	21,911	103	2,256,788	21,911
90 & UP	0	0	0	87	2,073,707	23,836	87	2,073,707	23,836
TOTAL	47	1,809,299	38,496	878	27,244,114	31,030	925	29,053,413	31,409
<i>ALL PENSIONERS AND BENEFICIARIES:</i>									
UNDER 30	14	1,101,041	78,646	26	2,687,344	103,359	40	3,788,385	94,710
30 TO 34	23	1,059,674	46,073	15	736,656	49,110	38	1,796,330	47,272
35 TO 39	217	15,852,386	73,052	53	3,579,648	67,541	270	19,432,034	71,970
40 TO 44	808	58,125,829	71,938	229	15,523,989	67,790	1,037	73,649,818	71,022
45 TO 49	2,592	195,043,074	75,248	710	48,828,239	68,772	3,302	243,871,313	73,856
50 TO 54	6,913	536,970,820	77,676	1,512	100,363,419	66,378	8,425	637,334,239	75,648
55 TO 59	9,098	642,165,941	70,583	2,136	133,047,806	62,288	11,234	775,213,747	69,006
60 TO 64	7,934	472,415,135	59,543	1,769	97,303,499	55,005	9,703	569,718,634	58,716
65 TO 69	3,926	218,155,176	55,567	902	44,426,299	49,253	4,828	262,581,475	54,387
70 TO 74	3,265	152,410,968	46,680	375	17,862,623	47,634	3,640	170,273,591	46,778
75 TO 79	4,470	184,895,799	41,364	323	14,893,066	46,109	4,793	199,788,865	41,683
80 TO 84	3,585	137,908,635	38,468	257	11,321,434	44,052	3,842	149,230,069	38,842
85 TO 89	1,392	51,842,707	37,243	152	5,140,564	33,820	1,544	56,983,271	36,906
90 & UP	794	29,210,478	36,789	118	3,626,071	30,729	912	32,836,549	36,005
TOTAL	45,031	2,697,157,663	59,896	8,577	499,340,657	58,219	53,608	3,196,498,320	59,627

**Graph XII-9
Pensioner Average Benefits**

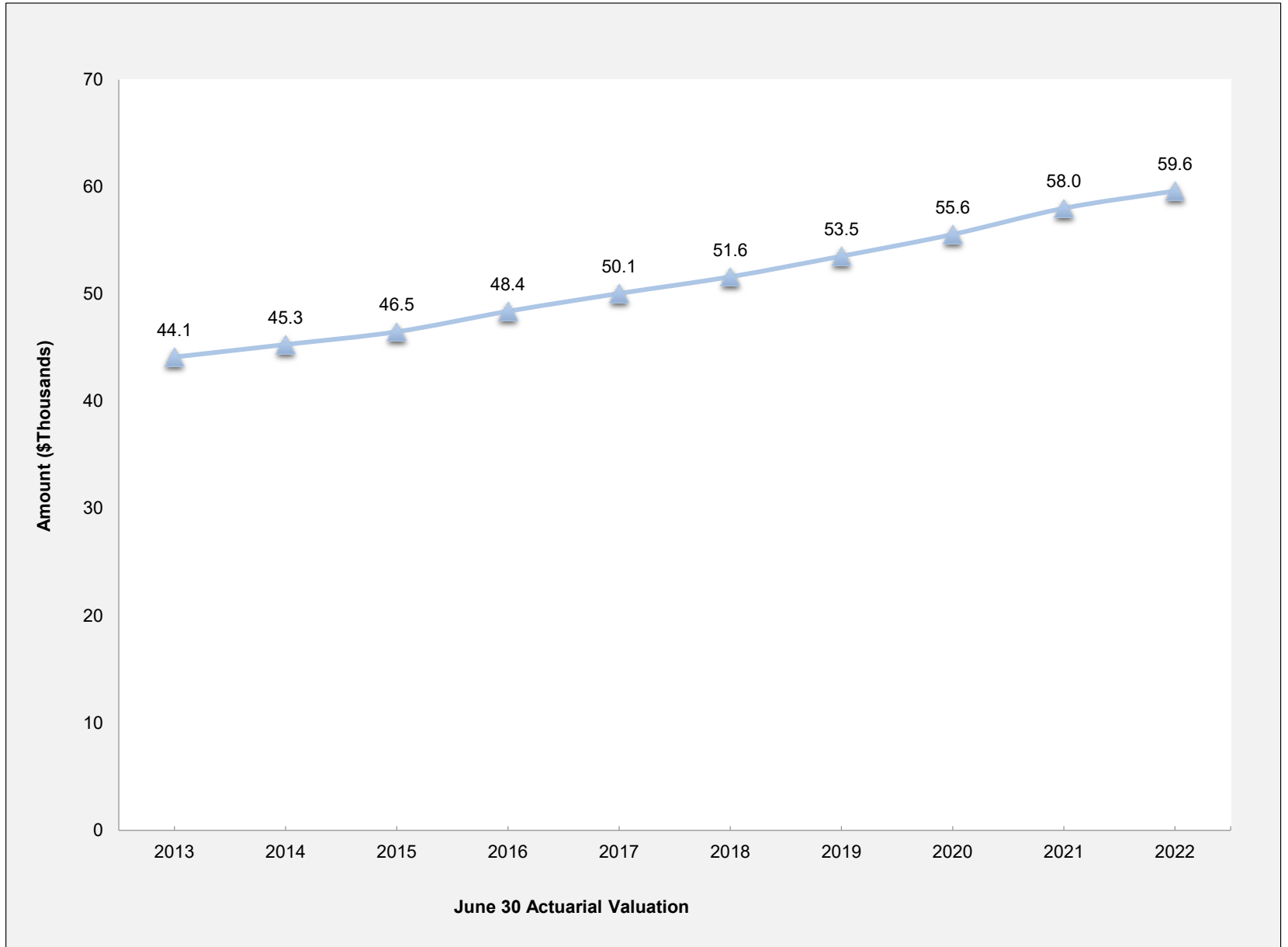


Table XII-10
Reconciliation of Pensioner and Beneficiary Data

SCHEDULE OF PENSIONERS AND BENEFICIARIES ADDED TO AND REMOVED FROM THE ROLLS								
June 30 Actuarial Valuation	Added to Rolls		Removed from Rolls		End of Year Rolls		% Increase in Annual Allowances	Average Annual Allowances
	Number	Annual Allowances ¹	Number	Annual Allowances	Number	Annual Allowances ¹		
2013	1,346	99,488,158	1,034	33,621,831	46,950	2,072,064,366	3.3%	44,133
2014	2,220	144,660,995	958	32,759,640	48,212	2,183,965,721	5.4%	45,299
2015	1,574	117,371,844	1,083	37,069,856	48,703	2,264,267,709	3.7%	46,491
2016	1,458	151,061,292	1,010	36,517,652	49,151	2,378,811,349	5.1%	48,398
2017	1,681	153,211,878	1,033	38,982,214	49,799	2,493,041,013	4.8%	50,062
2018	1,401	137,291,868	1,076	42,965,087	50,124	2,587,367,794	3.8%	51,619
2019	1,729	170,887,518	1,126	42,117,897	50,727	2,716,137,415	5.0%	53,544
2020	1,905	190,247,384	1,167	46,219,834	51,465	2,860,164,965	5.3%	55,575
2021	2,523	251,377,662	1,151	46,434,345	52,837	3,065,108,282	7.2%	58,011
2022	1,937	181,486,638	1,166	50,096,600	53,608	3,196,498,320	4.3%	59,627

¹ Allowances shown are those presented in census data. Beginning 2016, SADB payments to beneficiaries are included.

APPENDIX: ACRONYMS AND ABBREVIATIONS

Revised 2021 A&M	Actuarial Assumptions and Methods proposed by the Actuary and adopted by the Board of Trustees during Fiscal Year 2021
2019 A&M	Actuarial Assumptions and Methods proposed by the Actuary and adopted by the Board of Trustees during Fiscal Year 2019
AAVM	Actuarial Asset Valuation Method
ACCNY	Administrative Code of the City of New York
ADR	Accidental Disability Retirement
AIR	Actuarial Interest Rate
AMC	Additional Member Contributions
AVR	Asset Volatility Ratio
AVA	Actuarial Value of Assets
BERS	Board of Education Retirement System
COLA	Cost-of-Living Adjustment
CPI	Consumer Price Index
EAN	Entry Age Normal cost method
EBP	Excess Benefit Plan
FAS	Final Average Salary
FIRE	Fire Pension Fund
FS	Final Salary
GASB	Governmental Accounting Standards Board
IRC	Internal Revenue Code
ITHP	Increased-Take-Home-Pay
MVA	Market Value of Assets
NYCERS	New York City Employees' Retirement System
NYCRS	New York City Retirement Systems
NYPD	New York City Police Department
ODR	Ordinary Disability Retirement
OYLM	One-Year Lag Methodology
POLICE	Police Pension Fund
POVSF	Police Officer's Variable Supplements Fund
PSOVSF	Police Superior Officers' Variable Supplements Fund
PV	Present Value
PVFB	Present Value of Future Benefits
PVFNC	Present Value of Future Normal Costs
QPP	Qualified Pension Plan
TRS	Teachers' Retirement System
UAL	Unfunded Accrued Liability
VSF	Variable Supplements Fund
WTC	World Trade Center