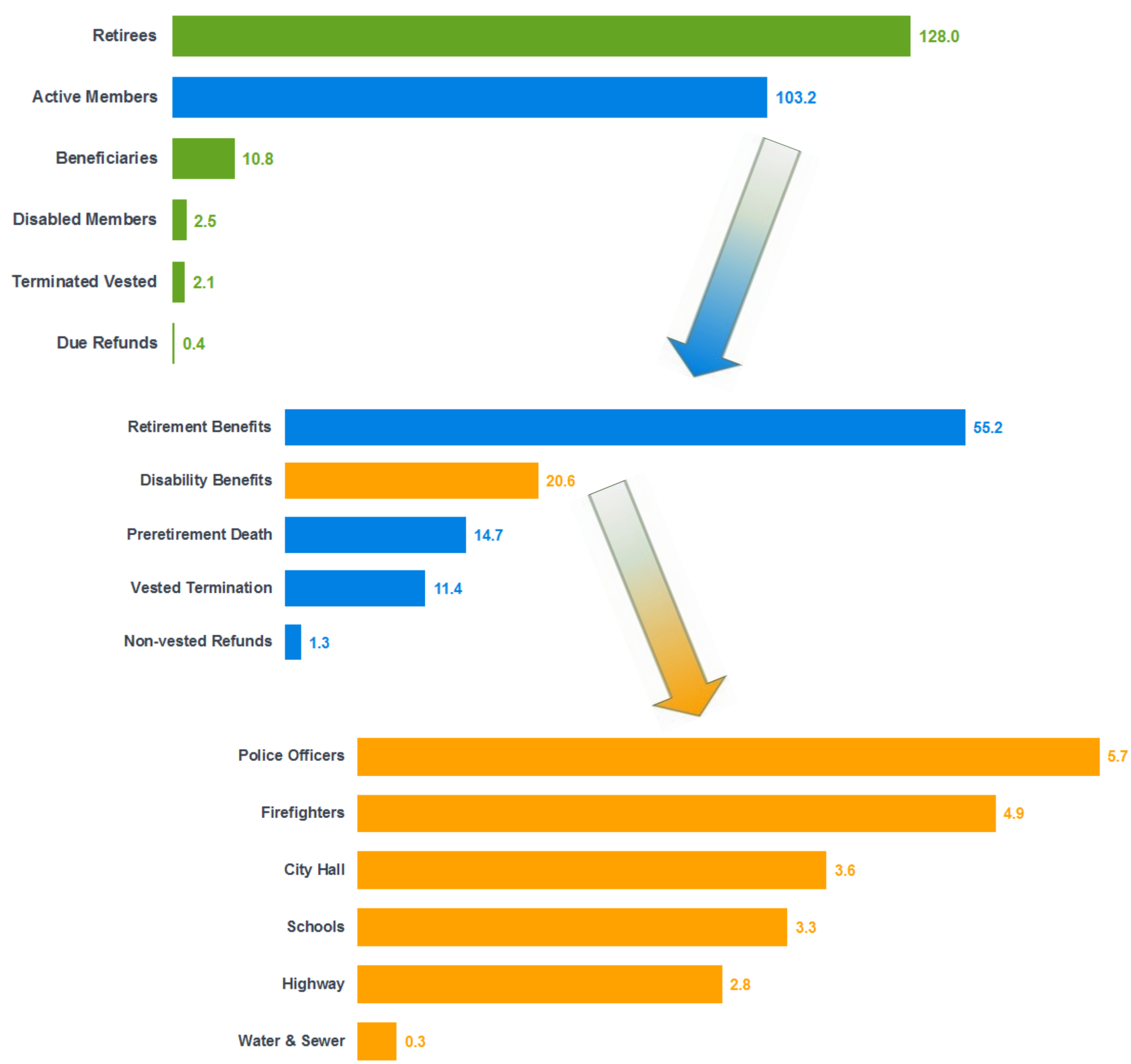
Milliman

200 Great Pond Road, Suite 110
Windsor, CT 06095
(860) 687-0125

RFP #2023.0088: Consulting for Actuarial Services

June 26, 2023

City of Stamford



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Milliman

June 26, 2023

Erik J. Larson, Purchasing Agent
Attn: Actuarial Services
City of Stamford Purchasing Department
888 Washington Boulevard
Stamford, CT 06901

Re: **Actuarial Services for the City of Stamford - RFP # 2023.0088**

Dear Erik:

We are pleased to present Milliman's proposal to continue providing top-notch actuarial services for the City of Stamford. We believe that Milliman is the best possible choice for the City:

- **We already have in-depth knowledge of Stamford's pension and OPEB plans** through the actuarial and administrative services we have been providing for the past five years.
- **We are serious about the public sector.** We are the actuary for nearly 1,000 public pension and OPEB plans across the country, including more than 75 municipalities sponsoring more than 100 plans located in Connecticut alone. We understand the unique administrative and budgetary concerns facing governmental plan sponsors.
- **No actuarial techno-jargon.** We are experienced problem solvers who are able to effectively communicate complex subjects to our clients in straightforward, easy to understand terms. We have failed if we just give our clients numbers.
- **No cookie-cutter approaches.** We serve your specific needs, with sophisticated tools to help you understand and manage your retirement programs.
- **Demonstrated reliability.** You know us – we get the job done!

To the best of my knowledge and belief, the prices in this proposal have been arrived at independently without collusion, consultation, communication, or agreement with any other proposer or with a competitor for the purpose of restricting competition. Unless otherwise required by law, the prices, which have been quoted in this proposal, have not been knowingly disclosed by the proposer and will not knowingly be disclosed by the proposer prior to opening, directly or indirectly, to any other proposer or competitor. No attempt has been made or will be made by the proposer to induce any other person, partnership or corporation to submit or not submit a proposal for the purpose of restricting competition.

Please let me know if you have any questions or need any further information. We look forward to continuing our relationship with the City!

Sincerely,

Rebecca A. Sielman, FSA
Principal and Consulting Actuary

As a Principal of Milliman, Inc. the above-signed individual is authorized to bind Milliman.

Section I – Executive Summary

What sets Milliman apart from the competition?

ACKNOWLEDGED PUBLIC SECTOR EXPERTS

Milliman provides actuarial services to nearly 1,000 governmental pension and OPEB plans across the country, from small fire districts to state-wide pension plans covering hundreds of thousands of members. We publish an annual study, with monthly updates, of the funded status of the 100 largest U.S. public pension plans.

A DEEP BENCH

Milliman has over 30 senior consultants, supported by dozens of staff actuaries, who specialize in providing actuarial consulting services to a wide range of public sector pension and OPEB clients. We have best-in-class actuarial systems, research resources, and publications all geared towards the work we do with public plans. And Milliman employs more health actuaries than any firm in the world, making our OPEB capabilities unmatched anywhere. When you hire one of us, you tap into a wealth of collective knowledge and experience. **You know us – we get the job done.**

CUSTOMIZED SOLUTIONS

Milliman does not provide cookie-cutter, pre-packaged answers. We deliver customized, thoughtful and flexible solutions tailored to each client and each project. Our mission is to serve our clients to protect the health and financial well-being of people everywhere.

FORWARD THINKING INSIGHT

Our valuation reports start with an executive summary that puts the valuation results in a historical context and discusses the factors that contributed to the current state of affairs. We also include long range forecasts in our valuation reports so that you can anticipate what may happen down the road, as well as in-depth analysis of the risks the plans face. In addition, we monitor legislation / regulations and provide ideas for you to consider.

OUTSTANDING COMMUNICATION ABILITY

Many actuaries just provide numbers to their clients. Milliman's approach is different. We believe it is our job to take the technical aspects of our actuarial work and translate them into straightforward terms. We educate you about the financial complexities of your retirement program so that you are in a position to make informed decisions without needing an advanced degree in actuarial science. **We provide explanations that everyone in the room can understand.**

MILLIMAN'S INDEPENDENCE AND INDEPENDENT VIEW

Milliman is owned by our employees. There is no parent organization, no outside shareholders, no hidden agendas, no investments, no hidden ways to earn additional fees, and no financial stake in your decisions. We also tell you what we feel is important, even if different from what you are currently thinking, so you can make informed decisions. We work only in the interests of our clients.

Section II – Profile of Milliman

1. **Affirm that the proposer is a firm properly licensed or otherwise permitted to provide independent actuarial consulting services in Connecticut.**

   Yes, Milliman Inc. is permitted to provide independent actuarial consulting services in Connecticut.

2. **Indicate whether your firm is local, regional, national or international in the scope of its practice.**

   Milliman Inc. is **international** in scope. We are a highly respected, privately owned actuarial consulting firm providing employee benefits, actuarial, communication, compensation, risk management and economic services. We provide services strictly on a fee-for-service basis to thousands of public and private sector clients worldwide. We are known for our client-centered approach and technical expertise. Milliman was founded in 1947 as a firm of actuarial consultants by Wendell Milliman and Stuart Robertson, who made independence, leading edge professional expertise, and quality control the firm's guiding principles. Today Milliman employs more than 4,500 people in more than 60 major cities globally, including a professional staff of over 1,600 qualified actuaries and consultants.

   Milliman is wholly owned and managed by approximately 475 Principals, who have been elected in recognition of their technical, professional and business achievements. Our sole business is providing independent consulting services. We are not affiliated with any public accounting or brokerage firms.

   Milliman is a corporation, with its chief executive officer, chief operating officer, chief financial officer, and most corporate staff located in Seattle. Milliman's board of directors includes the chairman, CEO, practice directors from the four primary service areas, and five at-large members who are also principals of the firm.

3. **Indicate the address of your home office.**

   The corporate staff of Milliman Inc. is located at 1301 Fifth Avenue, Suite 3800, Seattle, WA 98101-2605

4. **Indicate the major national and regional organizations of which your firm or its principals are members.**

   Locally, we are members of the **Connecticut Government Finance Officers Association** and founding members of the **Connecticut Public Pension Forum**. Your lead actuary, Becky Sielman, serves on the **Connecticut Municipal Finance Advisory Commission** and on the board of the Connecticut Public Pension Forum.

   Milliman expects active participation from its consultants in the appropriate professional organizations servicing each consultant's area of expertise. For actuaries, this means membership in the American Academy of Actuaries and active participation in either the Society of Actuaries or the Casualty Actuarial Society. Pension actuaries are also enrolled to perform services under ERISA.

   Milliman consultants have served in leading roles in the actuarial profession, including as presidents and board members of the following organizations:

American Academy of Actuaries	The Actuarial Foundation	Society of Actuaries in Ireland
Society of Actuaries	Institute of Actuaries (UK)	Institute of Actuaries of India
Casualty Actuarial Society	Brazilian Institute of Actuaries	Italian Nat'l Council of Actuaries
Actuarial Standards Board	Royal Dutch Actuarial Association	Staple Inn Actuarial Society

5. Indicate whether your firm has been the subject of any professionals' disciplinary action by federal, state government or by a professional association. If yes, describe that disciplinary action.

No, there is no litigation or other legal proceeding involving the principals, practices or offices of Milliman that will be providing the services under this proposal. With over 60 offices throughout the world, Milliman is subject to litigation from time to time in the normal course of its business activities. Such suits can arise in a variety of contexts. No litigation currently pending against Milliman will interfere with or jeopardize Milliman's ability to provide any of the services included in this proposal.

6. Identify any municipal governments and public employees' retirement systems that are comparable in size to the City of Stamford for which your firm currently provides independent consulting actuarial services of a type similar to that outlined in this request for proposals.

See below for information on several larger CT municipalities to whom we provide similar services:

City of Stamford, CT	client since 2018	Elda Sinani
	4,200 members	Director of OPM, (203) 977-5908

Actuarial and administrative services for 4 pension plans and 2 OPEB plans. Assisted with union negotiations, conducted experience studies, and presented to Board of Reps / Board of Finance.

City of Bristol, CT	client since 2007	Diane Waldron
	1,900 members	Comptroller, (860) 584-6128

Actuarial services for pension and OPEB plans. Performed ad hoc cost-of-living studies, assisted with union negotiations, prepared stochastic analysis of combining 3 pension plans into one.

Town of Manchester, CT	client since 1996	Kim Lord
	2,300 members	Director of Finance, (860) 647-3101

Actuarial and administrative services for pension and OPEB plans. Assisted in evaluating and communicating a DC plan as an alternative to the DB plan; evaluated potential DROP plan.

Town of West Hartford, CT	client since 1990	Peter Privitera
	2,400 members	Finance Director, (860) 561-7461

Actuarial and administrative services for pension and OPEB plans. Assisted with union negotiations; designed a robust funding policy in conjunction with the issuance of Pension Obligation Bonds.

Town of Stratford, CT	client since 2001	Dawn Savo
	2,200 members	Finance Director, (203) 385-4040

Actuarial services for pension and OPEB plans. Assisted with union negotiations and provided stochastic projections in connection with a Pension Obligation Bond.

Town of Westport, CT	client since 2012	Gary Conrad
	1,400 members	Finance Director, (203) 341-1081

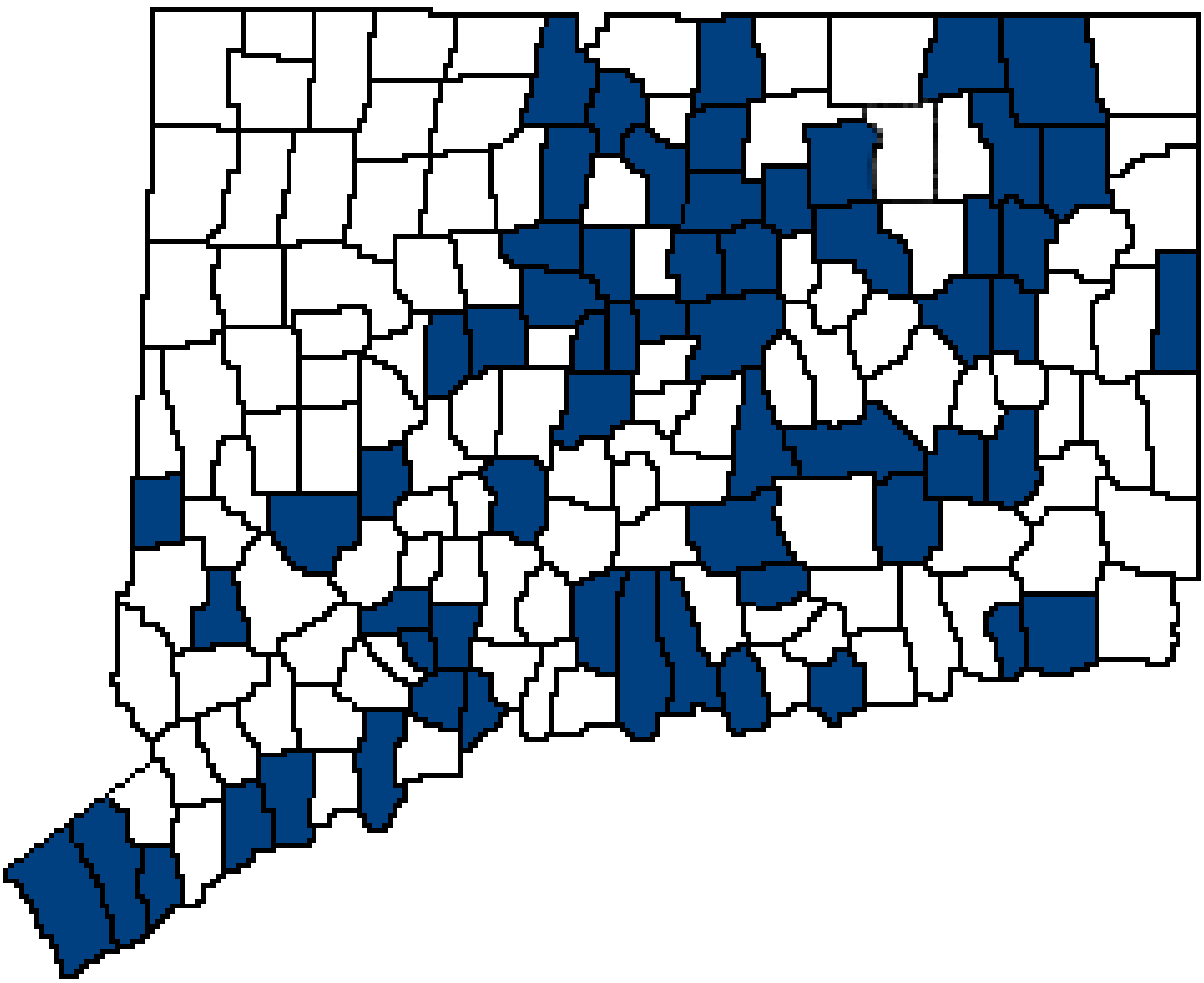
Actuarial and administrative services for 5 pension plans and 1 OPEB plan. Assisted with union negotiations, testified in arbitration hearings.

City of Norwich, CT	client since 2019	Josh Pothier
	1,400 members	Finance Director, (860) 823-3720

Actuarial services for 2 pension plans and 1 OPEB plan. Designed a robust funding policy in conjunction with the issuance of Pension Obligation Bonds.

Both nationally and locally we have **significant market penetration in the public sector**. Some firms are known for their work with Fortune 50 companies, others for Taft-Hartley consulting; Milliman has made its name and built its reputation in the public sector. Your lead actuary, Becky Sielman, is a member of Milliman's firm-wide strategic working group devoted to public sector consulting issues and authors our Public Pension Funding Study (**www.milliman.com/ppfs**).

The backbone of our Connecticut pension practice relates to municipal pension and OPEB plans. We provide valuation, administration, communications, benefit calculation, plan design, collective bargaining assistance, and other services to well more than 100 municipalities throughout New England. The map shown below identifies our Connecticut municipal clients; the table on the following page lists our municipal clients located in New England:



Pension and OPEB

Allingtown Fire District CT
Avon CT
Bristol CT
Bristol RI
Cheshire CT
Clinton BOE CT
Coventry RI
Darien CT
East Hampton CT
East Windsor CT
Fairfield CT
Farmington CT
First Fire District CT
Glastonbury CT
Granby CT
Guilford CT
Madison CT
Manchester CT
Metropolitan Dist. Comm. CT
Middlebury CT
New Britain CT
New Fairfield CT
Newington CT
North Branford CT
Norwich CT
Old Saybrook CT
Orange CT
Plymouth CT
Simsbury CT
South Windsor CT
Stamford CT
Stratford CT
West Hartford CT
West Haven CT
West Shore Fire District CT
Westport CT
Wethersfield CT
Windsor CT

Pension Only

Bethel CT
Chester CT
Haddam CT
Southbury CT
Thompsonville Fire District CT
Windham BOE CT

OPEB Only

Area Coop Educational Svcs
Acushnet MA
Ansonia CT
Berlin CT
Charlestown RI
Colchester CT
Coventry CT
East Granby CT
East Hartford CT
EASTCONN CT
Groton CT
New London CT
North Attleboro MA
Regional School Dist. 7 CT
Regional School Dist. 14 CT
Regional School Dist. 17 CT
Regional School Dist. 18 CT
Seymour CT
Vernon CT
Willington BOE CT

GASB75 Alt Meas Meth

Bozrah BOE CT
Brattleboro VT
Chaplin BOE CT
Eastern Highland Health CT
Eastford BOE CT
First Taxing District CT
Greater Hartford Transit CT
Hampton BOE CT
Hancock County ME
Middletown Housing Auth CT
Middletown South Fire CT
Parish Hill High School CT
Pomfret CT
Poquonnock Bridge Fire CT
Salem BOE CT
Scotland BOE CT
Sterling CT
Union School District CT
Warren RI
Willington BOE CT
Woodstock BOE CT
17 entities in MA
18 entities in NH

Pension Administration

Greenwich CT
Fairfield CT
Manchester CT
Metropolitan Dist. Comm. CT
Stamford CT
West Hartford CT

7. Describe your firm's professional development programs and any continuing professional education requirements imposed by your firm on professional actuarial services personnel. Identify specialized programs offered within your firm in the area of governmental actuarial services.

We continually provide training to our existing staff to keep them up-to-date on all compliance issues, actuarial topics, fiduciary issues, internal processes and procedures, and client service skills (e.g., problem resolution, active listening, and effective communication). Our Employee Benefits Research Group conducts frequent (at least monthly) webinars to keep consultants informed of new legislation and regulatory changes in the employee benefits arena.

Milliman also hosts an annual Consultants' Forum where Milliman consultants and other professionals speak on a multitude of topics. All employee benefits consultants are required to attend on a rotating basis. This three-day meeting provides many breakout sessions covering a broad range of technical topics. Because Milliman provides more actuarial consulting services to public sector clients than any other firm, there are several programs in the area of governmental actuarial services.

Milliman encourages participation in industry meetings and organizations. As a result, Milliman consultants often speak at national or regional meetings of Enrolled Actuaries, Society of Actuaries, International Foundation of Employee Benefits, National Council on Teacher Retirement, Government Finance Officers Association, National Conference on Public Employee Retirement Systems, and the like. Milliman has more consultants who have served as president of professional actuarial organizations than any other firm.

8. Describe any periodical or occasional publications produced by your firm in the actuarial service area.

Milliman provides a number of publications for our clients. Of particular interest to public sector clients are:

- **Dear Actuary** - A new publication that came on-line in 2020, Dear Actuary is intended to provide straightforward answers to the questions that are on the minds of public pension and OPEB boards, elected officials, and taxpayers. See milliman.com/en/periodicals/dear-actuary for many interesting issues.
- **The Milliman Public Pension Funding Study** - Annual and monthly updates of the funded status of the 100 largest US public pension plans. See milliman.com/ppfs for the annual studies and milliman.com/ppfi for the monthly updates.
- **PERiScope** - A periodic publication devoted exclusively to the needs of public sector plan sponsors. See milliman.com/en/periodicals/PERiScope for issues on mortality projection, ASOP 6, and GASB 74/75.
- **Client Action Bulletins** - The Milliman Employee Benefits Research Group prepares Client Action Bulletins (CABs) that explain current legislation and how it impacts our clients and their plans. CABs consist of urgent topics that often require client action. They are distributed directly to client contacts via email.

Our publications are transmitted via email or at your option can be mailed. You can also find them on Milliman's website at www.milliman.com.

9. Identify the local office that would handle the City of Stamford engagement, including address and phone number. Identify the partner or other individual in charge of that office. Indicate the total number of professional staff personnel currently assigned to that office. If that office is not in Stamford, describe how your firm's personnel assigned to the City of Stamford engagement would be available throughout the year for consultation or meetings as well as for the annual actuarial valuation.

All services provided to the City will be from Milliman's Connecticut office:

Milliman, Inc.
200 Great Pond Road, Suite 110
Windsor, CT 06095

The Principal in charge of the office and of our relationship with Stamford is:

Rebecca A. Sielman, FSA
Principal and Consulting Actuary
Tel (860) 687-0125
Becky.Sielman@Milliman.com

Milliman employs about 950 credentialed actuaries in just the United States. The unit of Milliman that will be providing services to the City of Stamford has 25 credentialed pension actuaries.

As our local office is less than two hours away from Stamford, our personnel have not experienced any difficulty in attending both regularly scheduled annual meetings and any spontaneous meetings you have required throughout the year.

10. Identify the larger actuarial services clients handled by that local office, including any municipal or governmental clients, commercial and industrial companies, and any non-profit organizations (current or within the past five years). For municipal or governmental clients, please indicate how many years your firm has been their independent consulting actuaries.

The table below contains a partial list of our larger clients serviced from our Connecticut office:

Governmental Clients	Number of Years
Town of West Hartford	29
City of West Haven	29
Town of Manchester	27
City of New Britain	24
Town of Stratford	22
City of Bristol	16
Town of Cheshire	12
Town of Westport	11
City of Stamford	5
City of Norwich	5

Commercial and Industrial Companies	Location
XL America, Inc.	**Stamford, CT**
Waters Corporation	Milford, MA
Babcock Power	Danvers, MA
Metropolitan District Commission	Hartford, CT

Hospitals and Health Care Providers	
Blythedale Children’s Hospital	Valhalla, NY
Elliot Health System	Manchester, NH
Saint Joseph Hospital	Nashua, NH
Southern New Hampshire Medical System	Manchester, NH
York Hospital	York, ME

Other Non-Profit Organizations	
American Lung Association	Nationwide
University of New Haven	New Haven, CT
Suffolk University	Boston, MA

11. Identify the partners, managers, specialists or other professional staff persons from that local office and from any other offices of your firm who would be assigned to the City of Stamford actuarial services engagement. Describe their roles and provide a brief description of their professional experience, including their experience designations, licenses, and memberships that these individuals hold. Indicate the extent to which their governmental actuarial experience has been within the State of Connecticut. Indicate their participation in professional development programs in the governmental or nongovernmental actuarial services area. If more convenient, resumes may be included in an appendix appropriately cross-referenced here.

We believe that our clients are best served when they deal directly with their actuaries. Each of our clients is assigned a team consisting of a Lead Actuary, Supporting Consultants, and analyst support. The team also includes a Healthcare Actuary to provide the heath-related analysis needed for the OPEB valuation. The Lead Actuary typically has the most direct contact with the client, and is available to answer questions and provide information as needed. The Supporting Consultants are also conversant with the client's plans and are available to provide responses to inquiries in the absence of the Lead Actuary. Additional staff is assigned to the team depending on the nature and scope of the services being provided.

The team that currently provides services to the City includes a core group of consultants who specialize in the public sector and have many years of experience working with municipal pension and OPEB plans.

Becky Sielman (FSA, MAAA, EA) is the **Lead Actuary**. She is the main point of contact for the City and leads and organize our team. Becky is the person the City looks to for all major projects and consulting needs. She sees that the actuarial consulting services are provided by the staff that best suits the City's needs. She meets with the City to present the valuation results. Becky has been with Milliman for 37 years. She serves on the Connecticut Municipal Finance Advisory Commission and the Connecticut Public Pension Forum, and is the lead author of Milliman's Public Pension Funding Study. Please see the following page for Becky's resume.

Yelena Pelletier (ASA, MAAA, EA) and **Sharad Arora** are the **Supporting Consultants,** performing project work and data checking for the pension and OPEB plans, respectively. Each has more than 15 years of actuarial experience. They possess strong hands-on skills and are responsible for detailed checking of the valuations and financial reporting calculations, analysis of gains and losses, supervision of benefit calculations, and identification of opportunities to improve plan operations. They are available as needed for discussions and meetings with the City.

Robert Schmidt (FSA, MAAA, EA) is the **Healthcare Actuary**. The Actuarial Standards of Practice set forth by the Actuarial Standards Board mandate that **actuaries should not practice in areas outside their core technical area**. The analysis of claims costs and setting of medical inflation assumptions require the services of health actuaries with professional training in this area. Robert provides health support for all of the OPEB valuations we provide to municipalities in New England.

Lead Actuary

Name	Rebecca A. Sielman
Title	Principal and Consulting Actuary
Credentials / designations	FSA, MAAA, EA
Telephone number	(860) 687-0125
E-mail address	Becky.Sielman@Milliman.com

Becky Sielman has been with Milliman's pension consulting practice since 1986 and is a Principal of the firm. She oversees Milliman's public sector work in New England and the upper Midwest. She has done extensive technical and consulting work in all aspects of pension and OPEB plans, including actuarial valuations, experience studies, financial reporting calculations, plan design, employee communications, and complex modeling. Becky is the lead actuary for numerous municipalities and currently serves on the Connecticut Municipal Finance Advisory Commission and on the board of the Connecticut Public Pension Forum. She is a member of Milliman's firm-wide strategic working group devoted to public sector consulting issues and authors our Public Pension Funding Study (**www.milliman.com/ppfs**).

Speaking Engagements

- June 2023 Morgan Stanley Municipal Market Client Webinar: Actuarial Topics
- November 2022 UConn Municipal Finance Class: Public Pension Plan Basics
- May 2022 Milliman Conference: Pension Obligation Bonds
- April 2022 Connecticut Public Pension Forum: Managing Contribution Volatility
- September 2021 National Institute of Retirement Security: Pension Obligation Bonds
- May 2021 Connecticut Society of CPAs: The Importance of Sound Actuarial Assumptions
- March 2021 Connecticut Public Pension Forum: Pension Obligation Bonds
- May 2020 Michigan Association of Public Employee Retirement Systems: The Actuarial Perspective on the Market Downturn
- June 2019 Connecticut Society of CPAs: Examination of Actuarial Work
- May 2019 Connecticut Public Pension Forum: What Are Your Actuaries Up To These Days?
- November 2018 Connecticut Government Finance Officers Association: OPEB Trusts
- May 2016 Connecticut Public Pension Forum: Sustainable Income Plans
- January 2016 Rhode Island League: GASB 74/75
- March 2015 Society of Actuaries Symposium: Public / Private Risk Management
- May 2014 Connecticut Public Pension Forum: GASB 67/68
- May 2013 Connecticut Public Pension Forum: Lowering Interest Rate Assumptions and Updating Mortality Assumptions
- June 2012 FIA Conference: Lowering Interest Rate Assumptions

12. Please provide any additional information about your firm that you believe will assist the City in making its selection.

Milliman has a long history of using **interactive modeling tools** that allow sponsors of public pension and OPEB plans to study the complex long-term financial dynamics of their retirement programs, particularly with respect to funding problems, funding methods, benefit provisions, emerging rules and regulations, and administrative considerations. We have reproduced below and on the following pages several examples of this work.

In addition, we are currently investing in the following **new tools** for our public sector market:

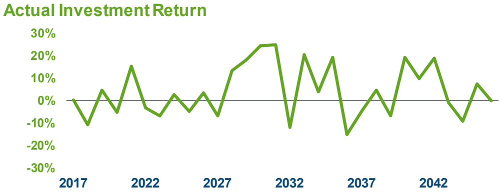
- An interactive web-based tool to enable plan sponsors to access **comparative statistics** drawn from publicly available data. Plan sponsors in a particular state will be able to compare their funded status, investment returns, discount rates, and other metrics against other public plans within the same county or across the state.
- Leveraging our actuarial data and assumptions to create **workforce projection tools** that will enable employers to anticipate and plan for turnover and retirements on a granular basis.

We built the model below to help a City explore the potential long-term consequences of a proposed combination of their separate pension plans. The model ran 10,000 stochastic scenarios so that we could **quantify the range of future potential outcomes**. The output shown below illustrates one particular (unfavorable) scenario.

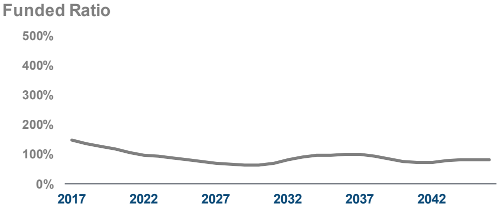
All Plans Combined — **Scenario 32**

Valuation Year	for FYE	Market Rate of Return in Valuation Year	Accrued Liability	Market Value of Assets	Actuarial Value of Assets	Unfunded/ (Surplus) Accrued Liability	Funded Ratio	Actuarially Determined Contribution
2017	2019	0.4%	$420,994,000	$608,365,000	$627,928,000	($206,934,000)	149%	$0
2018	2020	-10.7%	456,479,000	592,031,000	623,036,000	(166,557,000)	136%	0
2019	2021	4.6%	471,480,000	510,869,000	602,052,000	(130,572,000)	128%	0
2020	2022	-5.3%	486,334,000	510,173,000	580,658,000	(94,324,000)	119%	0
2021	2023	15.1%	500,722,000	458,752,000	536,129,000	(35,407,000)	107%	5,486,000
2022	2024	-3.5%	515,028,000	499,809,000	506,031,000	8,997,000	98%	10,106,000
2023	2025	-7.0%	528,797,000	460,439,000	495,948,000	32,849,000	94%	12,683,000
2024	2026	2.7%	542,606,000	410,094,000	473,842,000	68,764,000	87%	16,478,000
2025	2027	-4.7%	556,488,000	403,311,000	460,581,000	95,907,000	83%	19,406,000
2026	2028	3.3%	570,310,000	369,676,000	428,968,000	141,342,000	75%	24,185,000
2027	2029	-7.0%	584,121,000	368,682,000	406,318,000	177,803,000	70%	28,122,000
2028	2030	13.3%	597,960,000	333,840,000	390,462,000	207,498,000	65%	31,374,000
2029	2031	17.8%	612,186,000	371,613,000	384,817,000	227,369,000	63%	33,672,000
2030	2032	24.3%	626,424,000	433,523,000	405,789,000	220,635,000	65%	33,249,000
2031	2033	24.7%	640,603,000	535,600,000	454,332,000	186,271,000	71%	30,049,000
2032	2034	-12.0%	655,141,000	663,038,000	544,929,000	110,212,000	83%	22,659,000
2033	2035	20.2%	670,053,000	575,807,000	603,713,000	66,340,000	90%	18,573,000
2034	2036	3.6%	685,331,000	673,843,000	656,542,000	28,789,000	96%	15,028,000
2035	2037	19.3%	701,304,000	676,436,000	686,952,000	14,352,000	98%	13,907,000
2036	2038	-15.0%	718,130,000	778,652,000	710,051,000	8,079,000	99%	13,732,000
2037	2039	-4.6%	736,038,000	636,767,000	727,750,000	8,288,000	99%	14,191,000
2038	2040	4.6%	754,642,000	580,019,000	697,941,000	56,701,000	92%	19,524,000
2039	2041	-6.9%	774,062,000	577,896,000	666,079,000	107,983,000	86%	25,053,000
2040	2042	19.1%	794,007,000	514,985,000	598,667,000	195,340,000	75%	34,253,000
2041	2043	9.7%	814,601,000	592,008,000	588,904,000	225,697,000	72%	37,643,000
2042	2044	18.8%	836,418,000	638,074,000	615,303,000	221,115,000	74%	37,554,000
2043	2045	-0.9%	859,391,000	749,034,000	669,769,000	189,622,000	78%	34,866,000
2044	2046	-9.4%	883,278,000	733,055,000	735,775,000	147,503,000	83%	31,078,000
2045	2047	7.4%	908,088,000	652,335,000	752,167,000	155,921,000	83%	32,397,000
2046	2048	-0.3%	933,715,000	682,158,000	754,489,000	179,226,000	81%	35,232,000

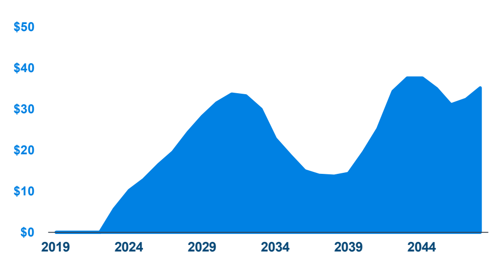
Actual Investment Return



Funded Ratio

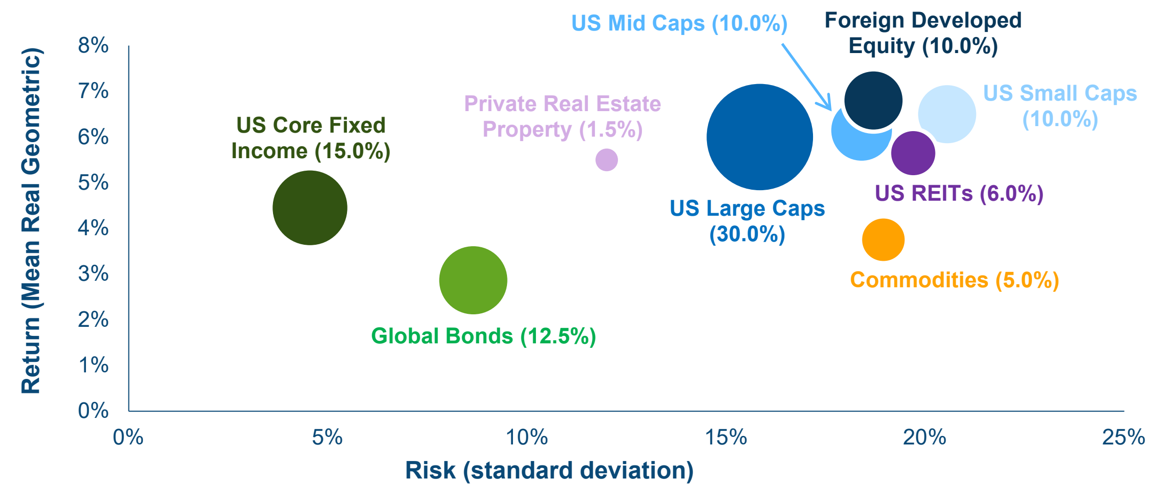


Actuarially Determined Contribution ($ millions)

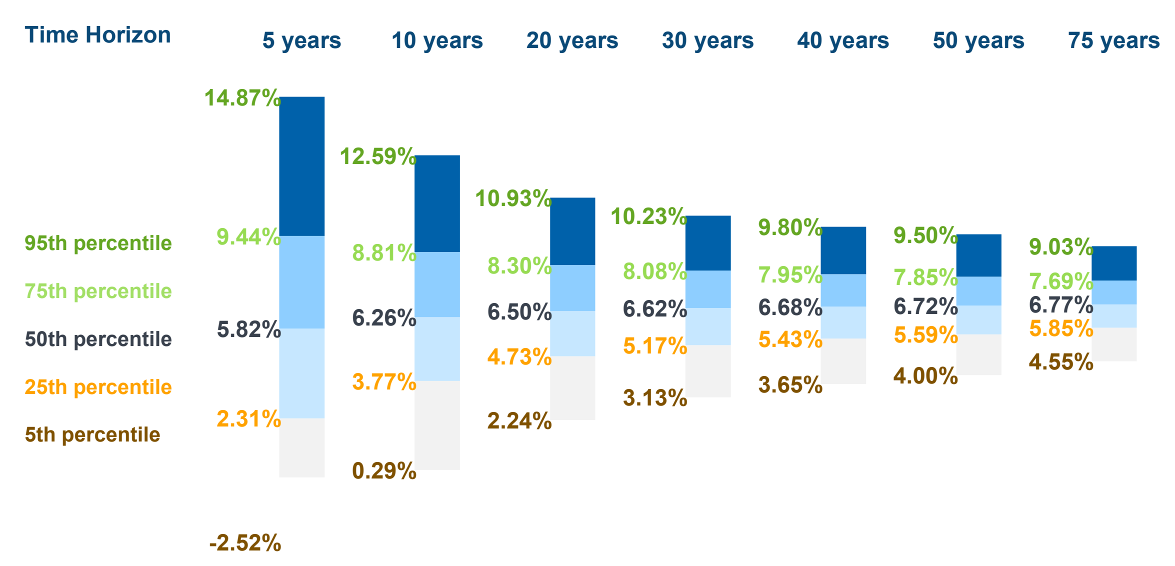


A frequent topic of conversation over the past decade has been about the **appropriate interest rate** assumption. A rate that is too high understates the true financial picture, whereas a rate that is too low places an undue burden on the current generation of taxpayers. Our tools enable plan sponsors to understand the risk and return characteristics of their asset allocation and how variable the returns will be over the long term.

Risk / Return Characteristics of Asset Allocation



Distribution of Expected Returns Over Time

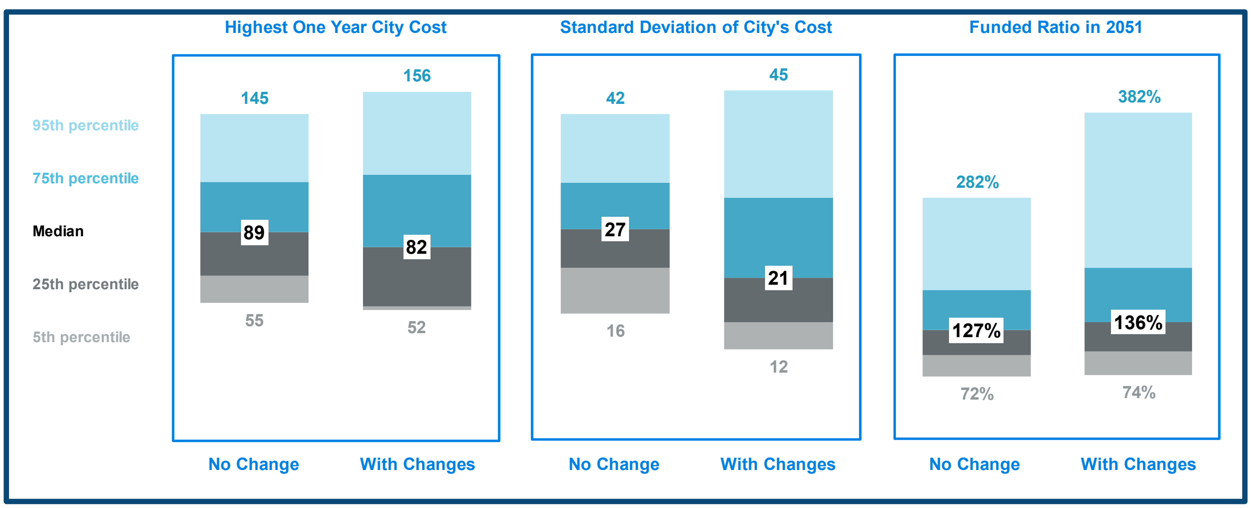


Our clients liked these graphs so much that we now include them in all of our valuation presentation materials.

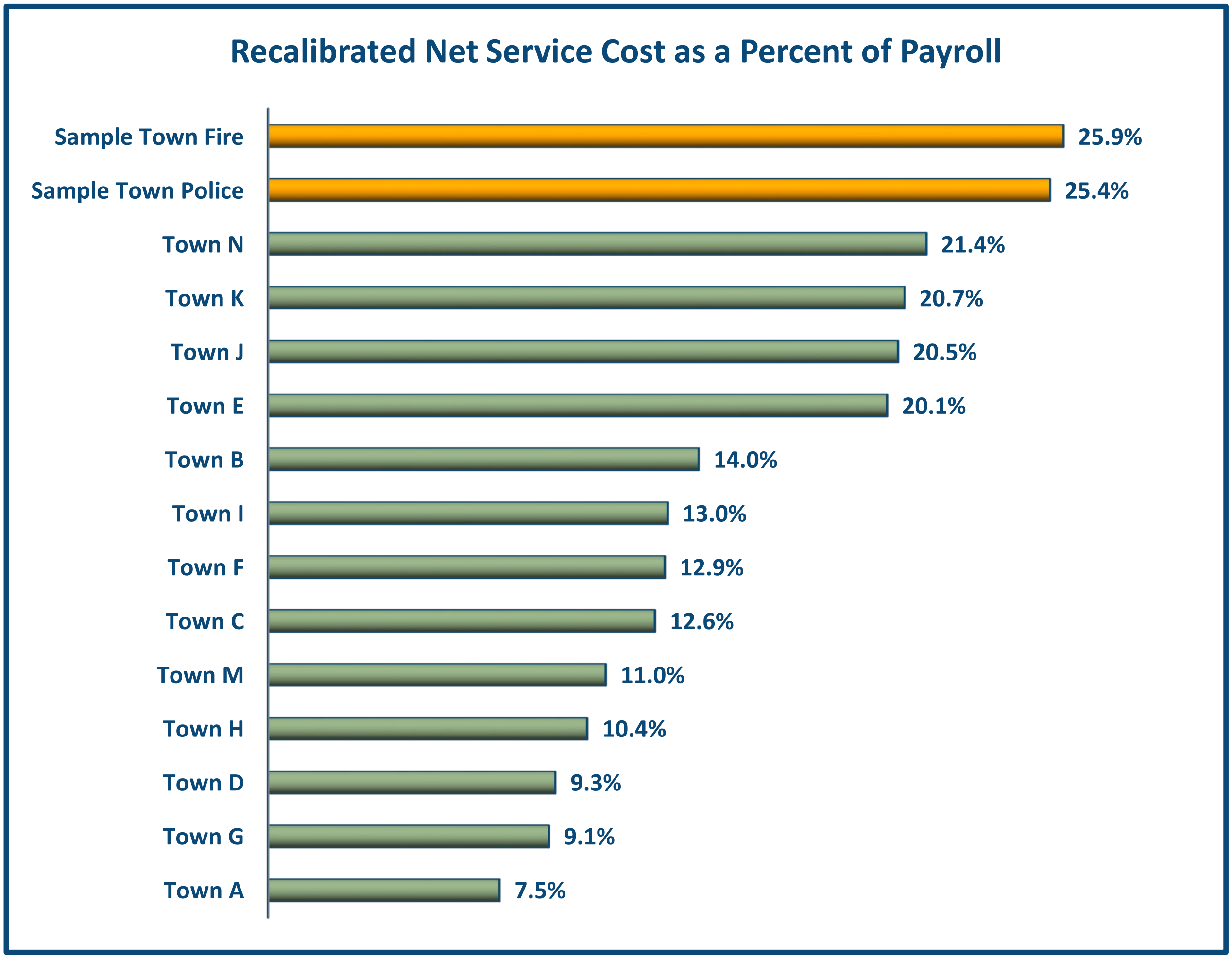
The plan sponsor below wished to explore how changing their method for determining annual pension contributions would impact their long-term finances. We built an interactive stochastic projection model to explore the full range of potential financial outcomes over a 30-year period across 10,000 randomly generated scenarios with respect to future investment returns. The plan sponsor was able to modify the parameters shown below in red and see the results displayed graphically. The model enabled this plan sponsor to better understand how the **long-term financial health of the pension plan** would be impacted by various elements of their funding policy.

Funding Policy

Keep current schedule of fixed percentage ADC increases?	**Switch**
Continue to contribute Normal Cost so long as the funded ratio is below this %	**125%**
End of amortization schedule for unfunded liability	**2040**
Amortization growth rate	**2.25%**
Switch to layered bases when amortization period gets down	**10**
Apply full interest from valuation date to start of FY of contribution?	**Yes**
Asset smoothing period	**5**



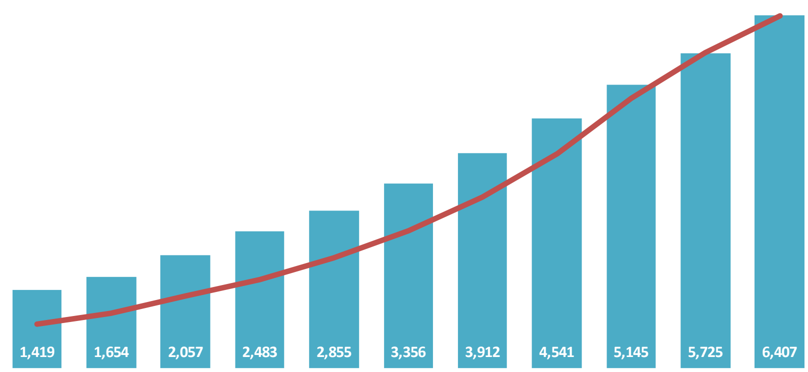
This project was prepared for a plan sponsor who was in negotiations with several unions. The analysis, which is based on readily available public information, enabled the richness of their benefits to be **compared on an apples-to-apples basis** with the benefits provided by peer communities.



This City's pension assets had suffered from significant investment volatility, which was causing strains on their budget. In addition, their employer contributions had not increased sufficiently to make up for the investment losses that had been sustained in the financial crisis. Our model demonstrated how various **asset smoothing mechanisms** (the red inputs) could reduce the volatility of the actuarially determined contribution level, and also enabled the City to design a phased approach (the brown inputs) to increasing their contributions gradually over time in order to reach an actuarially sound level. The model also allowed the City to stress test how their contributions would be **impacted by future volatile investment returns** (the green inputs).

SAMPLE CITY EMPLOYEES PLAN - Projection based on July 1, 2016 valuation results

Valuation Date July 1	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
For Fiscal Year Ending June 30	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Investment returns (Last ten years)	11.98%	13.23%	-5.92%	-3.18%	0.60%	16.46%	10.65%	10.75%	14.90%	-0.57%	-16.07%
Asset Smoothing Corridor	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Asset Smoothing Period	5	5	5	5	5	5	5	5	5	5	5
Amortization Period	25	24	23	22	21	20	19	18	17	16	15
Amortization Growth Rate	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Actuarially Determined Contribution	1,419	1,654	2,057	2,483	2,855	3,356	3,912	4,541	5,145	5,725	6,407
City Contribution with Phase-In	800	1,000	1,300	1,600	2,000	2,500	3,100	3,900	4,900	5,725	6,407



The project pictured below involved analyzing various ways in which a Deferred Retirement Option Plan ("DROP") could be structured. The **DROP design model** we built demonstrated how the DROP benefits would be more or less valuable than if there were no DROP feature, and showed how this value proposition was a function of the member's age and length of service at retirement. This enabled the plan sponsor to better understand how the proposed DROP feature might or might not be cost neutral across the plan population.

Anycity Fire Pension Plan - Analysis of Proposed DROP Feature

Percentage of accrued benefit credited to DROP account	90%
Interest credited to DROP account	5%
Maximum tenure for DROP eligibility	30

Value of benefits with DROP is lower / higher than value of benefits without DROP

Age at DROP	Service at DROP 20	21	22	23	24	25	26	27	28	29	30	31
48	92%	93%	94%	94%	95%	96%	97%	98%	99%	100%	100%	104%
49	92%	93%	94%	94%	95%	96%	97%	98%	99%	100%	100%	104%
50	92%	93%	94%	94%	95%	96%	97%	98%	99%	100%	100%	104%
51	92%	93%	94%	95%	95%	96%	97%	98%	99%	100%	100%	104%
52	93%	94%	94%	95%	96%	97%	97%	98%	99%	100%	100%	104%
53	93%	94%	95%	96%	96%	97%	98%	98%	99%	100%	100%	104%
54	94%	95%	95%	96%	97%	98%	98%	99%	99%	100%	100%	104%
55	94%	95%	96%	97%	97%	98%	99%	99%	99%	100%	100%	104%
56	95%	96%	97%	97%	98%	99%	99%	99%	100%	100%	100%	104%
57	95%	96%	97%	98%	99%	99%	100%	100%	100%	100%	100%	104%
58	96%	97%	98%	99%	99%	100%	100%	100%	100%	100%	100%	104%
59	97%	98%	98%	99%	100%	101%	101%	101%	100%	100%	100%	104%
60	97%	98%	99%	100%	101%	101%	101%	101%	101%	100%	100%	104%
61	98%	99%	100%	101%	102%	102%	102%	102%	101%	101%	100%	104%
62	99%	100%	101%	102%	102%	103%	103%	102%	101%	101%	100%	104%
63	100%	101%	102%	103%	103%	104%	103%	103%	102%	101%	100%	104%
64	101%	102%	103%	103%	104%	105%	104%	103%	102%	101%	100%	104%
65	102%	103%	104%	104%	105%	106%	105%	104%	102%	101%	100%	104%

This example is typical of our interactive models to **analyze projected retirement income**. All of the model inputs with a gray background can be changed, with the model results **recalculated in real time**. This functionality enables the stakeholders to explore an unlimited number of different options:

DEFINED BENEFIT	Current post-2019 hires	Alternative
Benefit accrual rate	1.75%	0.000%
Salary averaging period (years)	3	3
Employee contribution rate	7.00%	0.00%
Interest on employee contributions	6.50%	0.00%
Annual investment returns		7.00%

DEFINED CONTRIBUTION	
Employer contribution rate	8.26%
Employee contribution rate	7.00%
Investment returns before retirement	6.50%
Investment returns after retirement / annuity conversion rate	5.50%

ASSUME ALL EMPLOYEES WORK UNTIL	Input number of years
Years	10

BENEFIT COMPARISON BASIS

RUN ANALYSIS

ANNUAL RETIREMENT BENEFIT COMPARED TO PAY

Current Plan

	Current Length of Service								
Current Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+
Under 25	3%	4%							
25-29	4%	6%	8%						
30-34	6%	9%	11%	15%					
35-39	8%	11%	15%	19%	24%				
40-44	11%	15%	20%	25%	30%	34%			
45-49	14%	19%	25%	31%	37%	54%	62%		
50-54	18%	25%	32%	40%	54%	62%	70%	79%	
55-59	20%	29%	37%	45%	54%	62%	71%	79%	87%
60-64	17%	25%	34%	42%	50%	59%	67%	76%	84%
65+	8%	17%	25%	34%	42%	50%	59%	67%	76%

Alternative Plan

	Current Length of Service								
Current Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+
Under 25	19%	27%							
25-29	20%	28%	37%						
30-34	20%	29%	39%	51%					
35-39	20%	29%	39%	49%	65%				
40-44	19%	28%	37%	48%	58%	68%			
45-49	18%	27%	35%	45%	55%	55%	66%		
50-54	17%	25%	34%	43%	47%	56%	65%	75%	
55-59	18%	26%	35%	44%	54%	64%	77%	88%	94%
60-64	16%	25%	34%	45%	55%	67%	80%	93%	104%
65+	7%	16%	25%	34%	44%	56%	67%	79%	90%

Ratio of Alternative to Current: Alternative Plan Better Benefits / Current Plan Better Benefits

	Current Length of Service								
Current Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+
Under 25	614%	613%							
25-29	454%	454%	457%						
30-34	333%	336%	343%	351%					
35-39	246%	251%	255%	260%	275%				
40-44	181%	185%	188%	194%	198%	200%			
45-49	134%	137%	140%	144%	148%	102%	107%		
50-54	99%	102%	104%	109%	88%	90%	92%	95%	
55-59	88%	91%	94%	98%	101%	103%	109%	111%	108%
60-64	93%	98%	102%	106%	110%	114%	119%	123%	124%
65+	88%	93%	98%	103%	106%	111%	114%	117%	120%

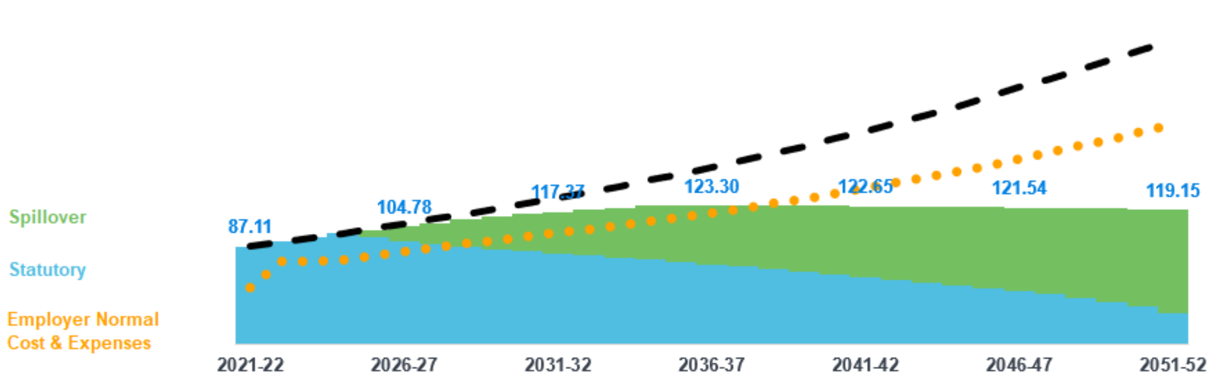
It is important to be comfortable with the long-range financial impact of changes to the retirement program that impact new hires, since it can take 25-30 years for the changes to fully take effect. Below is an example of an **interactive financial forecast model** that allowed exploration of many options for new hires:

Funding for DB plan

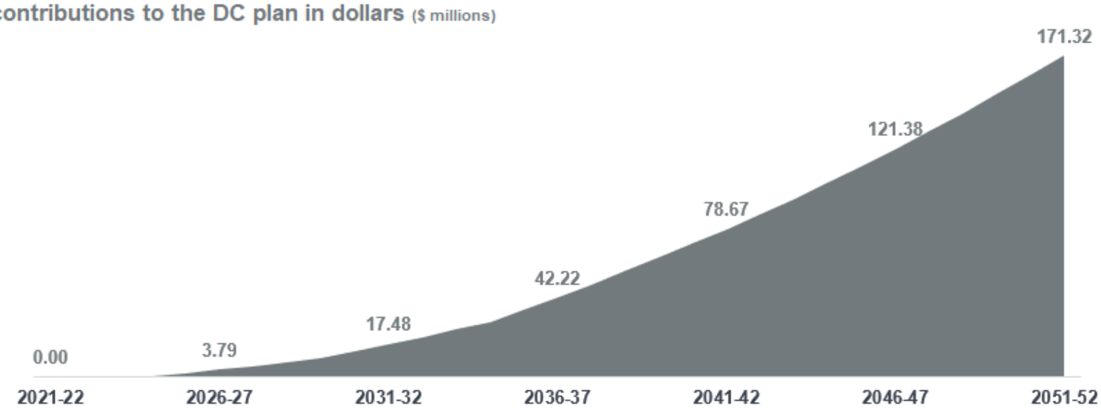
Current employees restored to 2% benefit multiplier / Rule of 85?	Yes
DB benefits for future employees	Hybrid
Benefit multiplier in hybrid plan	1.00%
Rule-of retirement eligibilityin hybrid plan	90

DC plan for future employees	Yes
Employer contribution rate	
Years 0-2	2.00%
Years 3-4	3.00%
Years 5-9	5.00%
Years 10+	8.00%

Employer contributions to the DB plan in dollars ($ millions)



Employer contributions to the DC plan in dollars ($ millions)



For communities contemplating changes in their retirement program, it is important to understand the impact not only on finances but also on **retirement income**. We use interactive models such as the one shown below to allow all of the stakeholders to understand how changing different elements of the retirement program will impact benefit levels for different employees.

CITY OF SOMEWHEREVILLE POLICE - PLAN DESIGN STUDY - 2016

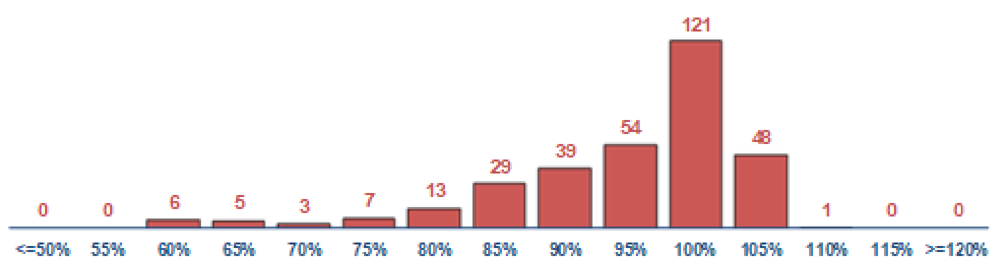
CURRENT PROGRAM		PROPOSED REPLACEMENT PROGRAM	
Defined Benefit Plan for pre-2010 Hires		**Defined Benefit Plan**	
Employee contribution rate	9.50%	Employee contribution rate to DB plan	4.00%
Normal retirement age	65	Normal retirement age	65
Normal retirement service	20	Normal retirement service	25
Benefit multiplier for first 20 years	2.25%	Benefit multiplier for first 20 years	0.80%
Benefit multiplier for service beyond 20	3.00%	Benefit multiplier for service beyond 20	0.80%
Maximum benefit	75%	Maximum benefit	75%
Salary averaging period	1	Salary averaging period	3
Normal form of annuity	100% J&S	Normal form of annuity	Single Life
COLA	1.75%	COLA	0.00%
Employer contribution rate (FY 2017)	28.26%	Employer contribution rate (FY 2017)	TBD
Defined Contribution Plan for post-2009 Hires		**Defined Contribution Plan**	
Retirement age	65	Retirement age	same as
Retirement service	20	Retirement service	DB plan
Employee contribution rate	8.00%	Employee contribution rate	3.50%
Employer contribution rate	8.00%	Employer contribution rate	3.50%
Social Security for post-2009 Hires		**Social Security**	
Employer contribution rate	7.65%	Employer contribution rate	7.65%

PROJECTION ASSUMPTIONS

Investment return for defined contribution plan	6.50%
Salary increases	3.50%

Run Analysis

How different is the employer-paid annual benefit from the proposed plan relative to the current plan?



Section III – Proposed Approach

Describe in narrative form your proposed approach to this engagement, including time deadlines by which you would want information from the City, method of transmission of data from the City to your firm, turn-around time in preparing the report of the annual pension actuarial valuation and OPEB valuation, quality controls within your firm with regard to reviewing the report before it is transmitted, the format of a standard report of an actuarial valuation (attach examples, if possible), how your personnel would participate in the City's labor negotiations where pension changes are involved, how you would want to receive questions arising during labor negotiations, how you would handle those and what the turnaround time would be and how you would propose to work with the four (4) pension Boards of Trustees and the OPEB Trust Board.

Timing

Exhibit A of the Request for Proposals included a valuation report timeline which we propose to follow. We have reproduced it below for completeness. In addition, the GASB 67/68 and GASB 74/75 reports will be prepared **within 15 days** of the receipt of all necessary information.

		Responsible Party		
Task	Target Completion Date	Actuary	City OPM	City HR
Request census data and trust asset statements	July 1	✓		
Provide trust statements for all plans	August 31		✓	
Provide employee census data and OPEB per capita cost information	October 15			✓
Send out census data questions	November 15	✓		
Answer employee data questions	November 30			✓
Finalize plan provisions, methods and assumptions	November 30	✓		✓
Finalize valuation data	December 15	✓		✓
Provide draft valuation reports	January 15	✓		
City to complete its review of the draft valuation reports	January 25			✓
Provide final valuation reports	January 31	✓		
Provide detail (by employee) related to final valuation reports	February 1	✓		

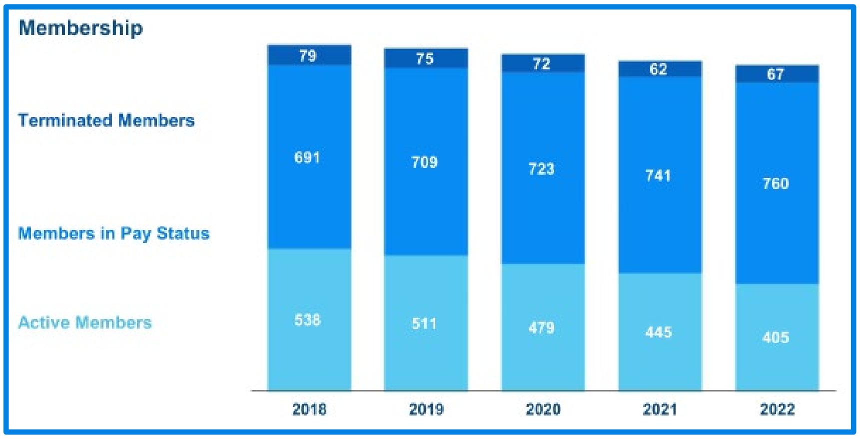
Pension Valuation

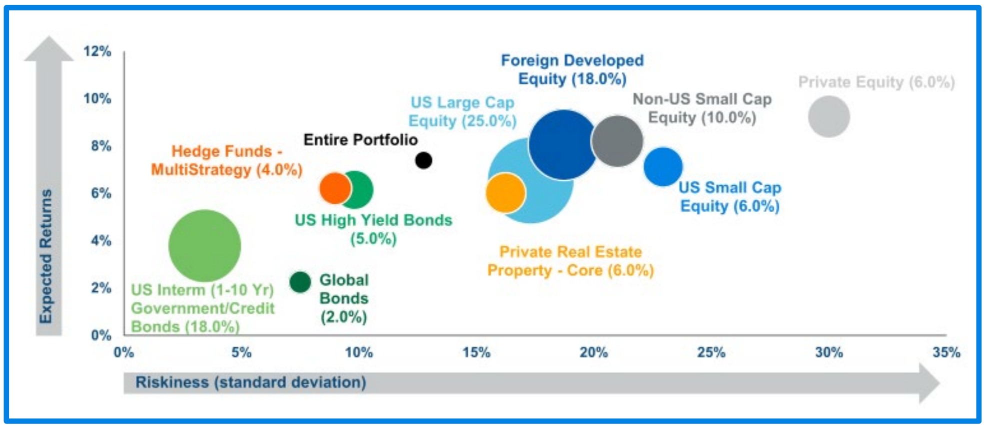
The process of preparing the valuation of a pension plan includes the following steps:

- Process the census data: reconcile the membership with the information from the prior valuation to verify changes in status; check for reasonableness of data, including consistency with prior year values, changes in individual compensation and benefit amounts, overall payroll and head counts, and demographic information (age, service, gender); work with you to resolve data questions.
- Trust statement reconciliation: reconcile the participant records with the trust accounting records for verification of transactions (e.g., benefit payments). The custodian is responsible for and will prepare the trust accounting statements. The annual reconciliation process is not intended to serve as an audit of the trust accounts but to determine the plan's assets for valuation purposes.
- Computer preparation: our actuarial valuations use a sophisticated pension valuation system. This system generates complex patterns of expected cash flows for benefits and contributions, yet it provides simple summaries of the results. To use the system, we encode instructions to describe your benefit formulas and eligibility conditions, and input tables reflecting the actuarial assumptions. To validate our programming, each year we test the calculations for a cross section of members. All calculations for each sample person are checked manually to ensure accuracy and faithfulness to the plan provisions and actuarial assumptions and methods. If there have been software updates since the prior valuation, we recalculate the prior valuation results to identify and quantify any changes made by the update.
- Analyze the experience for the past several years and reevaluate the continued appropriateness of the actuarial assumptions and methods.
- Determine the sources of actuarial gains and losses and evaluate the continued appropriateness of the actuarial methods and assumptions.
- Calculate accrued and projected benefits..
- Calculate the accrued liability, funded status, normal cost, and Actuarially Determined Contribution.
- Evaluate the financial impact of any plan changes or proposed changes in the actuarial methods or assumptions.
- Analyze the risks faced by the plan.
- Prepare a long-range forecast of key financial metrics.
- Meet with you to review the results and decide on any changes to the actuarial methods and assumptions.
- Compile the results in a comprehensive funding valuation report (see the following pages for more detail).
- Provide any ancillary materials for the City's budgeting and administration needs, including a listing of individual member cost information.

Presentation of the Valuation Results

We use a richly detailed set of presentation materials that is designed to put the current valuation results in an historical context, provide information about the plan's membership and assets, explore the continued appropriateness of the interest rate assumption, and go over any proposed changes to the actuarial methods and assumptions. Below are some snippets from our presentation materials; please see **Appendix A** for a complete copy.





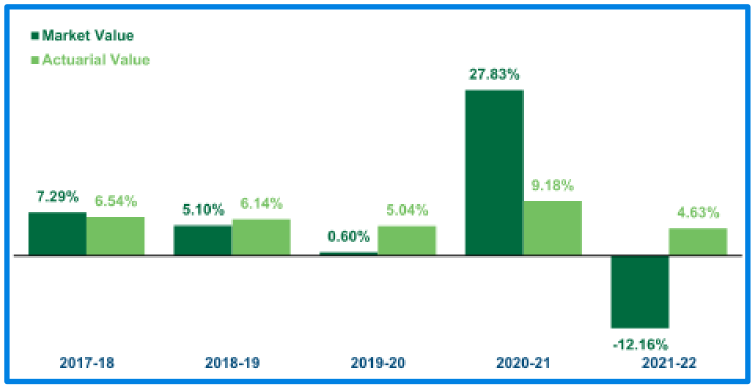
	2021 Valuation	2022 Valuation: No Changes from 2021	2022 Valuation: Update Mortality Improvement Scale
Interest Rate	7.00%	7.00%	7.00%
Mortality Improvement Scale	MP-2019 Ultimate	MP-2019 Ultimate	MP-2021 Ultimate
Accrued Liability	$250,705,565	$265,391,509	$264,783,416
Actuarial Value of Assets	187,431,488	188,034,093	188,034,093
Unfunded Accrued Liability	63,274,077	77,357,416	76,749,323
Funded Ratio	74.8%	70.9%	71.0%
Amortization Period	18	17	17
Amortization Growth Rate	3.25%	3.25%	3.25%
Past Service Cost	4,679,897	5,961,974	5,915,108
Total Normal Cost	4,156,392	4,076,243	4,082,238
Expected Employee Contributions	2,118,434	2,032,180	2,032,158
Net Normal Cost	2,037,958	2,044,063	2,050,080
Expenses and Interest	592,230	709,153	706,293
Actuarially Determined Contribution	7,310,085	8,715,190	8,671,481
For Fiscal Year	2022-23	2023-24	2023-24

The Valuation Report

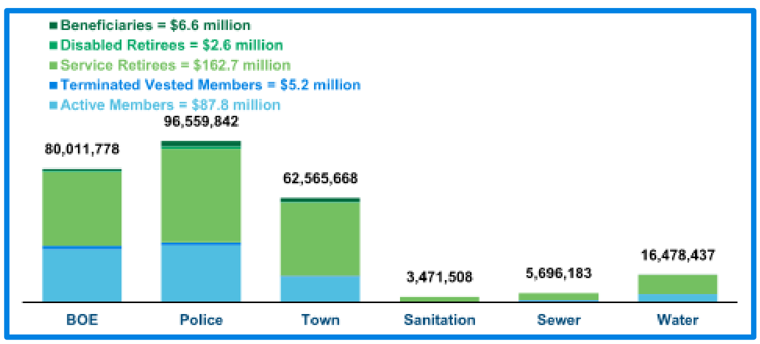
Our valuation reports go far beyond industry standards to include richly detailed information that enables all stakeholders to understand the valuation process, the current valuation results, and what the future may look like.

Many readers desire just a high-level overview of the valuation results, so our reports start with an extensive **Executive Summary**. This ten-page section of the report discusses the current valuation results in terms that are accessible to a wide range of readers.

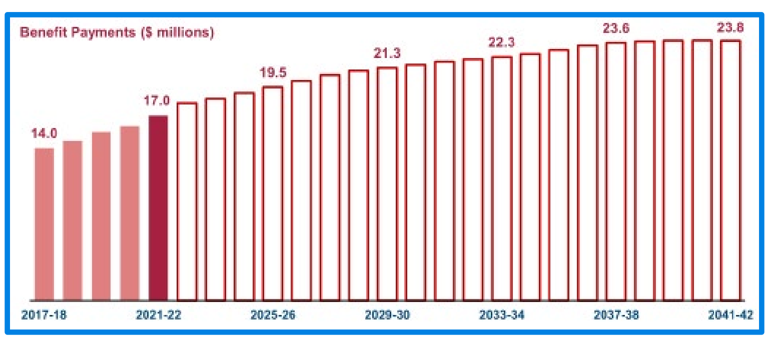
We use many graphs to illustrate how the current results compare to prior valuation results.



We display key valuation results broken down by member status, type of benefit, and other relevant categories.



Our long-range projections provide an understanding of where key metrics are trending over the coming decades.



Following the executive summary, our **Technical Exhibits** present the valuation results in detail. Key sections include information on the plan assets and the asset smoothing mechanism, the current funded status of the plan, and the calculation of the contribution. Throughout this section, detailed descriptions of the calculation methodology and formulas help readers understand the mechanics of the actuarial funding method, as illustrated below:

The Unfunded Accrued Liability that is developed in Section III B is amortized as as follows. The initial base was funded as a level percent of payroll over a 25-year closed period that began January 1, 2016. A new base is created in each subsequent year based on any change in the Unfunded Accrued Liability that arises from actual experience being different than is expected based on the actuarial method and assumptions; this amount is amortized as a level percent over a closed 20-year period. If assumption changes are made, a separate base is established based on the resulting change in the Unfunded Accrued Liability; this amount is amortized as a level percent over a closed period selected by the Board.

1. Amortization Bases Established in Prior Years

Date Established	(a) Outstanding Balance January 1, 2021	Years Remaining January 1, 2021	(b) Annual Amortization Payment
January 1, 2016	$199,621,700	20	$15,072,522
January 1, 2017	1,087,233	16	95,233
January 1, 2018	27,869,159	22	1,983,982
January 1, 2018	(4,175,392)	17	(350,780)
January 1, 2019	8,337,853	18	674,072
January 1, 2020	(2,675,266)	19	(208,743)
Total	230,065,287		17,266,286

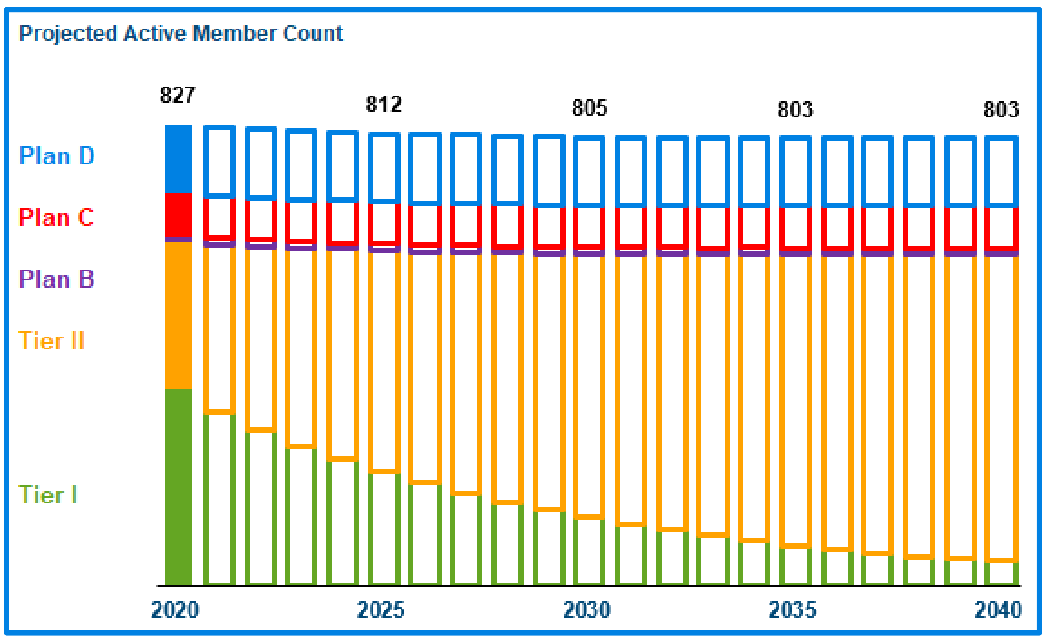
2.	Unfunded Accrued Liability as of January 1, 2021 (see Section III B)	229,116,410
3.	New Amortization Base Established January 1, 2021: (2) - (1a Total)	(948,877)
4.	Amortization Period for New Amortization Base	20
5.	Amortization Growth Rate	3.00%
6.	Amortization Payment for January 1, 2021: (3) amortized over (4)	(71,645)
7.	Total UAL Amortization Payments: (1b Total) + (6)	17,194,641
8.	Expected Payroll for Active Members	86,257,017
9.	UAL Amortization Payment Rate: (7) ÷ (8)	19.934%

The **Summary of Plan Membership** section of the report includes a detailed reconciliation of the plan's membership from the prior valuation and presents a wealth of information about the age, service, pay, and benefits of different segments of the plan membership.

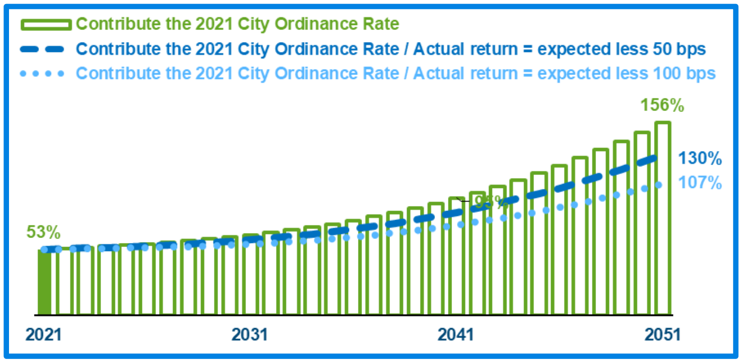
We use data visualization techniques such as heat mapping to make patterns 'leap off the page', rather than being obscured in dense tables of numbers.

	Years of Service							
Age	0-4	5-9	10-14	15-19	20-24	25-29	30+	**Total**
< 25	28							28
25-29	72	15						87
30-34	88	51	11					150
35-39	83	58	32	8				181
40-44	62	47	38	15	3			165
45-49	25	33	35	15	11	5		124
50-54	38	32	47	22	28	11	1	179
55-59	33	28	31	20	27	9	10	158
60-64	17	23	35	15	2	4	3	99
65+	8	10	13	7	12	5	3	58
Total	454	297	242	102	83	34	17	1,229

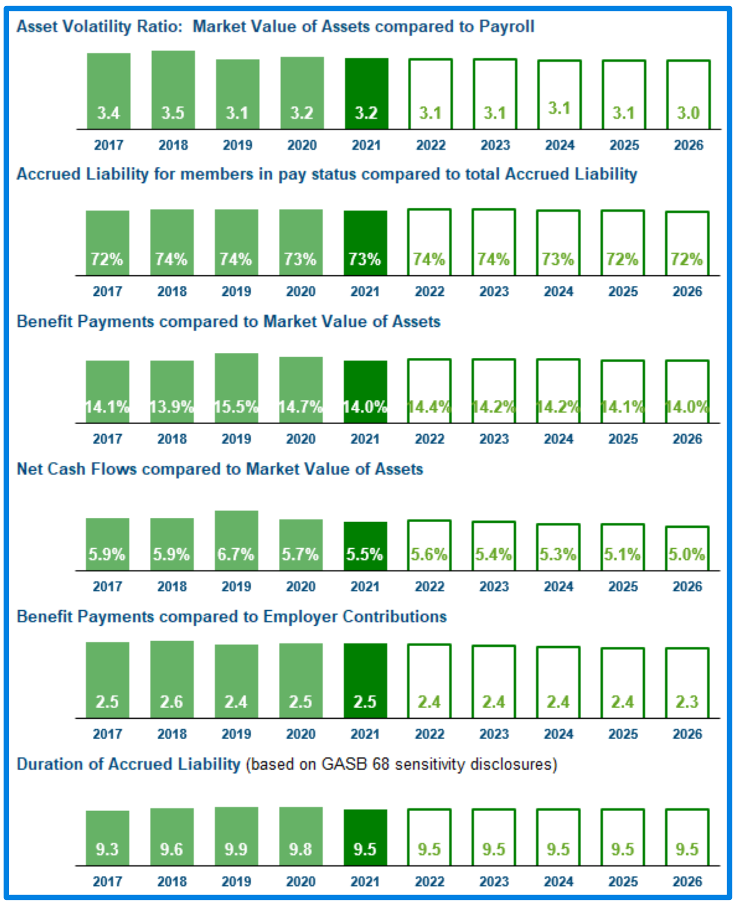
For plans with multiple tiers of benefits, our long-range projections reflect a gradual shift of employees from closed tiers to open tiers. We present this information visually to help readers better understand how the dynamics of the plan are likely to shift in the future.



For pension plan valuation reports, the **Analysis of Risk** section includes a detailed discussion of the risks faced by the plan. We prepare an illustration of the long-range impact of persistent underperformance by the plan's assets to help stakeholders understand how 50 or 100 basis points of chronic underperformance can have a substantial impact when compounded over many years.



We present a range of metrics with respect to the plan's maturity characteristics, with the current levels of each metric shown alongside past and projected levels so that the reader can see where the plan has been and where the plan is heading.



The valuation report concludes with a **Summary of Actuarial Methods and Assumptions**, a **Summary of Plan Provisions**, and a **Glossary** of technical terms. Please see **Appendix B** for a sample pension valuation report.

Pension Financial Reporting

In order to minimize the compliance burden on our clients and their auditors, we designed our GASB 67/68 reports to contain all of the information auditors need. **Your auditors are happy when they see a Milliman report**, because they know that they will have clear and ready access to comprehensive disclosure information. Our GASB 67/68 reports include the following information:

- Net Pension Liability
- Changes in Net Pension Liability
- Schedule of Employer Contributions
- Sensitivity analysis
- Details of the calculation of the money-weighted rate of return
- Details of the determination of the long term expected rate of return on plan assets, including background data broken down by asset classes
- Description of actuarial methods and assumptions used for funding policy
- Depletion date projection*
- Development of bifurcated discount rate
- Calculation of annual pension expense
- Tracking of deferred inflows and outflows of resources
- Glossary

* For many plan sponsors, we believe it is unnecessary to perform a depletion date projection because the plan sponsor has a solid history of fully paying their Actuarially Determined Contributions and because the Actuarially Determined Contribution is calculated in such a way as to bring the plan to a fully funded status by the end of the amortization period.

Please see **Appendix C** for a sample GASB 67/68 report.

OPEB Valuation

The process of preparing the valuation of an OPEB plan consists of the following steps:

- We start by holding discussions with your staff to review the data we will need and identify the sources of the data.
- Our health actuaries analyze your premium rates and claims history to establish a baseline for projecting future cost levels and analyze how costs vary by age and gender. They incorporate data specific to your plan population and benefit program, supplemented by regional and national data.
- Process the census data: reconcile the membership with the information from the prior valuation to verify changes in status; check for reasonableness of data, including consistency with prior year values, changes in medical plan elections, head counts, and demographic information (age, service, gender); work with you to resolve data questions.
- Asset reconciliation: the custodian is responsible for and will prepare the trust accounting statements. The reconciliation process is not intended to serve as an audit of the trust accounts but to determine the plan's assets for valuation purposes.
- Computer preparation: our actuarial valuations use a sophisticated pension valuation system. This system generates complex patterns of expected cash flows for benefits and contributions, yet it provides simple summaries of the results. To use the system, we encode instructions to describe your benefit formulas and eligibility conditions, and input tables reflecting the actuarial assumptions. To validate our programming, each year we test the calculations for a cross section of members. All calculations for each sample person are checked manually to ensure accuracy and faithfulness to the plan provisions and actuarial assumptions and methods. If there have been software updates since the prior valuation, we recalculate the prior valuation results to identify and quantify any changes made by the update.
- Analyze the experience for the past several years and reevaluate the continued appropriateness of the actuarial assumptions and methods.
- Calculate the funded status, normal cost, and Actuarially Determined Contribution.
- Evaluate the financial impact of any plan changes or proposed changes in the actuarial methods or assumptions.
- Prepare a long-range forecast of key financial metrics.
- Meet with you to review the results and decide on any changes to the actuarial methods and assumptions.
- Compile the results in a comprehensive actuarial valuation report.

OPEB Financial Reporting

At the close of each fiscal year we will prepare a comprehensive report containing all of the actuarial information that you need to comply with GASB 74 and GASB 75. Our report will include the following information:

- Net OPEB Liability
- Changes in Net OPEB Liability
- Schedule of Employer Contributions
- Sensitivity analysis
- Details of the calculation of the money-weighted rate of return
- Details of the determination of the long term expected rate of return on plan assets, including background data broken down by asset classes
- Description of actuarial methods and assumptions used for funding policy
- Depletion date projection*
- Development of bifurcated discount rate
- Calculation of annual OPEB expense
- Tracking of deferred inflows and outflows of resources
- Glossary

* For many plan sponsors, we believe it will be unnecessary to perform a depletion date projection either because the plan sponsor has a solid history of fully paying their Actuarially Determined Contributions or because the plan sponsor does not have an OPEB trust and is not prefunding OPEB benefits.

Please see **Appendix D** for a sample OPEB valuation report and **Appendix E** for a sample GASB 74/75 valuation report.

Data Security and Confidentiality

Milliman takes its responsibility to protect member data seriously. Milliman has a comprehensive information security policy based on the ISO 27001 risk management framework. Milliman has implemented a number of layered controls and safeguards, including administrative policies and procedures, physical controls, and automated technical systems. These controls are employed in a defense in depth arrangement to secure electronic information stored on our systems.

Administrative controls include regular staff security awareness training and local involvement in security administration. Every Milliman employee signs Milliman's Acceptable User Agreement. Access to every Milliman office is monitored, and key network equipment is secured. Security incidents are promptly reported to management, including the chief legal officer and information security officer.

Electronic safeguards include preventive and detective controls. Milliman has contracted with a major telecommunication provider to maintain and manage a secure wide-area virtual private network. This network is protected by a layered system of firewalls and intrusion detection and prevention systems monitored 24/7 for security incidents by a third-party managed security services provider. In addition, key data processing facilities are housed in highly available vendor-secured facilities. The implementation of these controls is based on the requirements of the data being protected.

A secure email system is used whenever sensitive personal data is transmitted between Milliman and our clients. One of our first transition steps will be to work with you to determine the appropriate lines of communication and communication protocols. Our email system prevents us from transmitting Social Security Numbers in an unsecure environment and blocks you from sending them to us as well.

Our policies include secure disposal of both electronic and paper data. We adhere to a clean desk policy and use locked shredding bins whose contents are shredded on-site by a professional mobile shredding service.

Quality Controls

Many actuarial firms say they have “quality controls” but few match the scope and rigor of Milliman’s. Our service philosophy is simple. Quality cannot be compromised in the pursuit of other corporate goals. Milliman is known in the industry as the “actuary’s actuary”. We believe this is because our clients and competitors realize what our priorities and objectives are. We will not take on additional work from new or existing clients unless there are enough resources in place to complete all work in a timely, efficient, and quality manner.

Milliman has a strong ethic of peer review that is employed in any project that is undertaken. This process requires a secondary review of the work performed, reports prepared, and overall project management. The reviewer is selected as someone familiar with the project, but who has not performed significant work on the specific project. This allows for impartial review and the opportunity for additional insights. The review is structured to identify any outstanding issues that were not addressed, to ensure that the information is presented in a logical and complete manner, and to ensure that the overall quality of the work meets Milliman’s high standards. This process adds an additional level of security for our clients.

Our goal is to provide our clients with the most useful, timely and ethical professional services of the highest quality possible. Our stringent internal peer-review guidelines assure that our work will be thoroughly reviewed, accurate, of the highest quality, and presented to our clients on a timely basis.

- Within Milliman, professionals must demonstrate competency through substantial responsible experience, superior technical knowledge, and high sensitivity to quality before being granted signature authority. Every practicing pension actuary is subject to the industry's continuing education requirements to maintain enrollment status under ERISA. The attainment of Principal in the firm requires a rigorous demonstration of technical knowledge, years of experience, and a showing of keen professional judgment.

- Under our formal **pre-release** peer review program, client assignments are subject to an internal pre-release peer review by another Milliman professional. The detailed process of checks and balances can only be satisfied by actuaries who have met the firm's stringent qualification requirements. Difficult or complex assignments require review by a Principal of the firm.

- The work of each practice center or office is periodically reviewed by other professionals to ensure that our professional standards have been met. The peer review team reviews work products, methods, and documentation of assignments that have been recently completed. The objective of this **post-release** peer review is to verify that Milliman's standards of practice, as well as those of the American Academy of Actuaries, are being followed by every consulting actuary.

- An internal Employee Benefits Steering Committee monitors the practices and procedures of all Milliman pension and employee benefits professionals in relation to the established professional standards.

- Actuaries adhere to the principles of professional actuarial organizations, including the standards promulgated by the Actuarial Standards Board.

Participation in Labor Negotiations

All of our public sector clients are involved in labor negotiations at one time or another. We find that a good approach is to start with informal discussions concerning the proposed changes, to discuss possible ramifications of the changes and assess ballpark cost implications **before** spending the time and effort involved in developing precise cost figures. We can also educate the parties about which changes are simple to implement, administer, and cost out, and which are more complicated. We help identify the "low hanging fruit" and assist in shaping the plan sponsor's approach to negotiations. We can also use GASB 67/68 disclosures and GASB 74/75 disclosures to compare the current cost of benefits to that of peer communities on an apples-to-apples basis.

The most **cost-efficient** way for us to assess the impact of proposed plan changes is if we are given all of the proposed changes at the same time, with sufficient lead time to have the work performed at the most appropriate staff levels. However, it is the nature of labor negotiations that this ideal is rarely realized! An important component of our assistance to the City is to work to keep our fees low by:

- Helping identify where "back of the envelope" calculations can be substituted for precise calculations.
- Discussing which changes are expensive or inexpensive to cost out.
- Doing our utmost to meet tight timeframes: most proposed changes can be handled within a week or two but sometimes results can be produced overnight. Of course, very tight timeframes mean that the work is being performed by any available staff rather than by the most cost-efficient staff, which leads to the final point:
- Keeping in communication about the likely fees for each additional facet of the negotiations with which we are asked to assist, so that there are no billing surprises.

Relationship with Four Boards of Pension Trustees and the OPEB Board

The City of Stamford needs actuaries who will be there for them. With a team of highly experienced public plan actuaries in close proximity to Stamford, we attend meetings as needed. We also provide prompt responses to phone calls, emails, and letters.

Many of our public sector clients have multiple pension or OPEB plans, sometimes under the jurisdiction of a single board and sometimes under multiple boards. We also often deal with multiple contacts within the municipality's staff, from Director of Finance to Mayor to Personnel, with additional sets of staff at the Board of Education, Fire Department, and Police Department. Our approach is to identify all of the key people and organizations concerned with the pension/OPEB plans, and to clarify the relationships and responsibilities within and among these groups. We need to understand who can supply us with the information we need, who is authorized to request additional services from us, and who is responsible for coordinating billing relationships. **You know from working with us for the past five years that we understand and respect the complex relationships between the various sets of stakeholders**.

Other Consulting Services

We can provide a full array of ancillary consulting services on an as-needed basis, including:

- **Experience studies** to bring the assumptions in line with recent experience and reflect emerging long-term trends. An experience study covers economic assumptions such as the interest rate, salary growth, and inflation; demographic assumptions such as the rates of turnover, retirement, disability, and mortality; and elements of the funding method such as the cost method, asset smoothing method, and amortization mechanism.
- **Demographic projections** form the foundation of the actuarial valuations, but can also be useful to plan sponsors in workforce planning and succession management.
- **Projections and estimates** of contributions. We can provide anything from quick estimates at the close of the fiscal year reflecting the actual investment performance to sophisticated multi-year stochastic models that explore the impact of investment allocation decisions on likely future contribution levels.
- **Asset/liability matching studies** help plan sponsors to control risk and maximize opportunity through managing their investment policy, see the best and the worst that the future may hold, perform due diligence in fulfilling their fiduciary responsibility to plan participants, and better understand the dynamics of the plan financials.
- **Plan design studies.** It is important for plan sponsors to periodically examine their benefits and retirement programs to ensure that they are best meeting the needs of the plan sponsor and its employees, from both financial and human resources points of view. We can also review proposed changes from an actuarial and administrative perspective and advise you with regard to the administrative implications of proposed changes. As we are not a law firm, we are unable to provide legal advice or services.
- **Meetings, hearings and testimony**. Public pension and OPEB plans have many complex dimensions, from the benefit structures to the governance systems to the financing mechanisms. Staff, committees, unions, employees, elected officials, and other interested parties involved in decision making often have little background in these areas. We are known for our ability to take complicated situations and explain them in laypersons' terms.
- Milliman's healthcare consultants provide a wide range of services related to **health, dental, and disability benefits**. Their services include benefit pricing, valuation, experience analysis, claim projections, population health management and pharmacy consulting.
- Milliman's property/casualty consultants can assist the City in managing and reserving for all types of **self-insured risks, including Workers' Compensation**, property coverage, and liability coverage.
- Our communications experts can provide a wide range of **member communications**, including election forms and notices, summary booklets, commonly-used member letters, videos, website design, and more.

Section IV – Fee Proposal

1. **Indicate your firm's proposed fee structure for the scope of work described in Section A of this Request for Proposals for each of the five (5) fiscal years beginning July 1, 2023 to June 30, 2028 and the two (2) option years. Present a fee schedule for valuation work under an annual cycle. It is anticipated that Items 1 through 9 of Section A will be considered core services and be subject to a basic annual fee. However, this should not deter inclusion of some or all of Item 8 into either a basic annual fee or at reduced rates from those that apply for services outside the scope of this engagement. Your fee presentation should include any additional charges for out-of-pocket expenses and include the hourly rates of those individuals who would perform work that is outside the scope of the basic annual fee. Your fee presentation should be clear as to what will or could be charged during each year of the term of the engagement.**

Period	Pension	OPEB	Other Requested Core Services
2023-24	$87,400	$43,100	$6,700
2024-25	90,900	44,800	7,000
2025-26	94,500	46,600	7,300
2026-27	98,300	48,500	7,600
2027-28	102,200	50,400	7,900
2028-29	106,300	52,400	8,200
2029-30	110,600	54,500	8,500

These fees cover **all of Items 1-10** of Section A of the Request for Proposals, as follows:

Pension

- Task 1 (pension valuations and reports for four plans)
- Task 2 (GASB 67/68 reports for four plans plus a separate report for WPCA)
- Task 6 (updates on all federal and state legislation affecting the City's plans)
- Task 7 (meetings with four pension boards)
- Task 8 (triennial benefit adjustments)
- Task 10 (breakdown of valuation results by union / department / employee)

OPEB

- Task 3 (OPEB valuations and reports for two plans)
- Task 4 (GASB 74/75 for one plan plus a separate report for WPCA)
- Task 7 (one meeting with OPEB Trustees)
- Task 10 (breakdown of valuation results by union / department / employee)

Other Requested Core Services: An annual allowance of 20 hours **based on a discounted blended hourly rate** for projects where the scope may vary from year to year. Any time beyond the 20 hours will be billed on the basis of our hourly rates shown below under Question 2.

- Task 5 (scenario analysis)
- Task 7 (attendance at up to five additional meetings per year)
- Task 9 (assistance with labor negotiations)

In establishing our fees, we have assumed the following:

- Complete, accurate member data is provided in an electronic format developed in cooperation with you to permit efficient and accurate processing. While we will check the data for reasonableness, we are not responsible for the accuracy of the data supplied. We have assumed that no more than 20 hours for each plan are required to process the census data.
- Asset data is provided in a consolidated annual format. Additional asset processing, such as if monthly or quarterly statements are provided or if statements from multiple funds must be consolidated, will be billed based on the actual amount of staff time expended.
- The City will compile monthly cash flow information for each fiscal year, and separate GASB reporting will be needed for the WPCA (for CERF and OPEB). Should depletion date projections be required, that work will be billed based on our hourly rates.
- There are no significant changes in the plan provisions.
- Our current contract continues to be mutually acceptable.

We do not charge for out of pocket expenses.

2. Indicate your firm's current hourly billing rates for all classifications of professional personnel for services that might be requested by the City that are beyond the scope of this engagement and identify how, if at all, these rates may be adjusted during the term of the engagement.

Milliman is strictly a fee-for-service consulting firm. Our fees are based upon the expected time which will be expended by the individuals who will be involved in providing the services. We do not charge any contingency fees or commissions. Each staff member has an hourly billing rate which reflects his or her level of expertise and experience. Hourly rates for each year in the contract period are shown below.

Period	Senior Consultants	Consultants	Senior Analysts	Analysts
2023-24	$465-$525	$345-$400	$280-$320	$225-$240
2024-25	$485-$545	$360-$415	$290-$335	$235-$250
2025-26	$505-$565	$375-$430	$300-$350	$245-$260
2026-27	$525-$590	$390-$445	$310-$365	$255-$270
2027-28	$545-$615	$405-$465	$320-$380	$265-$280
2028-29	$565-$640	$420-$485	$335-$395	$275-$290
2029-30	$590-$665	$435-$505	$350-$410	$285-$300

.

3. Describe the method you would use in charging for any special request, reports, or broadening of the scope of the work beyond that described in Section A of this Request for Proposals.

For any non-routine services, we will estimate fees in advance based on the expected hours involved and the hourly billing rates of staff that will contribute to the project. A given assignment is broken down into component parts so that it can be performed at the appropriate level of competency and the lowest billing rate. We are happy to provide commitments for well-defined projects on a “not to exceed” basis. Work will not commence until you are comfortable with the probable cost.

4. Indicate your proposed schedule of billing dates during each year for the basic fee.

Based on the City’s current stated preference, we bill for our services on a quarterly basis.

5. Please provide any additional information about your firm’s proposed charges for this engagement.

Our fees for actuarial and administrative services cover routine phone conversations and emails, as well as keeping you informed of regulatory, accounting, legal, and economic developments through Milliman’s publications and website. **We do not believe in “nickel and diming” our clients by keeping the clock running on every phone call or email exchange.** We recognize that cost control is important to you and is a factor in your decision making process. One of our priorities is maintaining establish clear communications so that your expectations are met and there are no billing surprises.

Section V – Other Information

Summary – Why Milliman?

Milliman believes that the quality of service is not just doing the job right - but going beyond the expectations of our clients. This means:

- Producing valuation reports faster than we promise.
- Consulting in a proactive manner - bringing ideas to your attention **before** you have to ask the questions.
- Doing the little things that are appreciated but unexpected.
- Going beyond just "number crunching" - we have failed if we just give our clients numbers.

The City of Stamford has already experienced the benefits of retaining Milliman:

- Ability to effectively communicate complex subjects to a broad range of audiences.
- Unbiased and independent consulting advice.
- Unparalleled experience in the public sector.
- Cost-effective delivery of services.
- State-of-the-art computer systems.
- Quality and expertise of both national and local professional staff.
- Services and skills available beyond specific proposal requirements.
- Financial strength and resources of an international organization that allows for significant research and development activities.

Section VI – Required RFP Forms

- ☒ Contractor's Statement
- ☒ Non-Collusion Affidavit
- ☒ City of Stamford State of Connecticut Contractor Verification (in accordance with Public Act 16-67) Compliance Affidavit (For all school projects)
- ☒ A Certificate of Corporate Resolution signed by the Secretary of your firm, authorizing you to execute a contract.
- ☒ Proposer's Information and Acknowledgement Form
- ☒ Department of the Treasury Internal Revenue Service Form W-9
- ☒ Commission on Human Rights and Opportunities Contract Compliance Regulations Notification to Bidders Form

Contractor's Statement

Pursuant to Section 103.1 of the Stamford Code of Ordinances, I hereby provide the following:

If a joint venture, trustee, partnership, limited liability company or partnership, the names and addresses of all joint ventures, beneficiaries, partners or members:

Milliman, Inc. does not fall within any of these categories.

If a corporation, the names and addresses of all officers, and the names and addresses of all parties owning over 10% of its common stock or over 10% of its preferred stocks. If any of said stockholders is a holding corporation, the names and addresses of all persons owning a beneficial interest in over 10% if the common or preferred stock of said holding company.

Milliman, Inc. is a corporation wholly owned by its Principals.

No individual owns over 10% of its stock.

The names and positions of all persons listed hereinabove who are elected or appointed officers or employees of the City of Stamford.

None.

Name of Bidder/Proposer: Rebecca A. Sielman

Signature of Bidder/Proposer: Rebecca A. Sielman

Title: Principal and Consulting Actuary

Company Name: Milliman, Inc.

Address: 200 Great Pond Road, Suite 110, Windsor, CT 06095

Indicate if company submitting this proposal is: _________MBE _______WBE _______DBE

Non-Collusion Affidavit

The undersigned, having been duly sworn, affirms and says that to the best of his/her knowledge and belief:

1. The prices in this Proposal have been arrived at independently without collusion, consultation, communication, or agreement with any other Proposer or with any competitor for the purpose of restricting competition.

2. Unless otherwise required by law, the prices, which have been quoted in this Proposal, have not been knowingly disclosed by the Proposer and will not knowingly be disclosed by the Proposer prior to opening, directly or indirectly, to any other Proposer or to any competitor.

3. No attempt has been made or will be made by the Proposer to induce any other person, partnership or corporation to submit or not to submit a Proposal for the purpose of restricting competition.

Name of Proposer: Milliman, Inc.

By: [signature]

Print Name: Rebecca A. Sielman

Title: Principal and Consulting Actuary

ACKNOWLEDGMENT

STATE OF Connecticut

COUNTY OF Hartford ss. Windsor

Date: June 26, 2023

Personally appeared [signature], as Principal and Consulting Actuary of the above named firm, and attested that the foregoing statements are true and accurate to the best of his/her knowledge and belief.

Jessica S. Stanford

Signature of Notary Public

My Commission Expires: 10.31.2027

EFFECTIVE: 2/24/09

JESSICA S. STANFORD NOTARY PUBLIC STATE OF CONNECTICUT

Jessica S. Stanford
NOTARY PUBLIC
State of Connecticut
My Commission Expires
10·31·2027

City of Stamford
State of Connecticut Contractor Verification (in accordance with Public Act 16-67)

Compliance Affidavit

I, the undersigned, personally and on behalf of Milliman, Inc. (Contractor), having been duly sworn, affirm and say that I have read, understand and am in compliance with Public Act 16-67 Concerning the Disclosure of Certain Education Personnel Records, Criminal Penalties for Threatening in Educational Settings and the Exclusion of a Minor's Name from Summary Process Complaints, and that neither I nor said Contractor, to the best or my knowledge, is in possession of any information indicating a finding of abuse or neglect or sexual misconduct, or otherwise have knowledge of such a condition(s) for any employees working on the project identified in RFQ/RFP or Bid S- 2023-0088 (RFQ/RFP or Bid Number). Further, if I or said Contractor become aware of any information indicating such a finding, or otherwise gain knowledge of such a condition, I and/or said Contractor will immediately forward such information to the City of Stamford.

Contractor Name: Milliman, Inc.

Street Address: 200 Great Pond Drive, Suite 110

City, State, Zip: Windsor, CT 06095

Title of person completing this form: Principal and Consulting Actuary

Signature: [signature]

Printed Name: Rebecca A. Sielman

Date: June 26, 2023

ACKNOWLEDGMENT

STATE OF Connecticut

COUNTY OF Hartford ss. Windsor

Date: June 26, 2023

Personally appeared [signature], as Principal and Consulting Actuary of the above named Contractor, and attested that the foregoing statements are true and accurate to the best of his/her knowledge and belief on behalf of himself and said Contractor.

Jessica S. Stanford
Signature of Notary Public

My Commission Expires: 10.31.2027

JESSICA S. STANFORD NOTARY PUBLIC STATE OF CONNECTICUT

Jessica S. Stanford
NOTARY PUBLIC
State of Connecticut
My Commission Expires
10-31-2027

Certification of Corporate Secretary

State of Washington)
ss.
County of King)

Mary C. Clare, being first duly sworn upon oath, deposes and says:

1. I am the duly qualified and acting Corporate Secretary of Milliman, Inc.
2. On December 3, 2002, the following resolution was duly adopted by the Board of Directors of the corporation and remains in effect.

BE IT HEREBY RESOLVED, that each Principal of the firm and any consultant meeting requirements established by the Board of Directors are hereby granted the authority to individually negotiate and enter into proposals, engagement letters, contracts, letters of intent, and other documents on behalf of the corporation for the purpose of providing consulting, actuarial, and other professional services.

3. Rebecca A. Sielman

☒ is a duly elected and acting Principal of the firm

☒ is a consultant of the firm who meets the requirements established by the Board of Directors

DATED this 18th of June 2018

Mary C. Clare
Corporate Secretary

SUBSCRIBED AND SWORN to before me this this 18th of June 2018

JOHANNA BRYANT
NOTARY PUBLIC
STATE OF WASHINGTON
My Commission Expires May 12, 2020

Notary Public in and for the State of Washington,
My commission expires May 12, 2020.

PROPOSER'S INFORMATION AND ACKNOWLEDGEMENT FORM

RFP No: 2023-0088

Date: June 28, 2023

Proposer's Name: Milliman, Inc.

Street Address: 200 Great Pond Drive, Suite 110

Windsor, CT 06095

City State Zip

Business Telephone: (860) 687-0125

Email: Becky.Sielman@milliman.com

Unique Entity ID:__________ Tax Id. No.: 91-0675641

Indicate (Yes/No) if company submitting this proposal is:

__________MBE __________WBE __________DBE

(If yes, attach relevant certification)

Signature: [signature] Date: June 28, 2023

Printed Name: Rebecca A. Sielman

Title: Principal and Consulting Actuary

Addenda Acknowledgement – check and note date of addendum

☒ Addenda No. 1 June 18, 2023	☒ Addenda No. 2 June 20, 2023
☐ Addenda No. 3	☐ Addenda No. 4
☐ Addenda No. 5	☐ Addenda No. 6
☐ Addenda No. 7	☐ Addenda No. 8
☐ Addenda No. 9	☐ Addenda No. 10
☐ Addenda No. 11	☐ Addenda No. 12

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

a **Go to *www.irs.gov/FormW9* for instructions and the latest information.**

Give Form to the requester. Do not send to the IRS.

Print or type. See Specific Instructions on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

MILLIMAN, INC.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☑ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) a ________

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) a

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) **5**

Exemption from FATCA reporting code (if any) ________

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.

1301 5TH AVENUE, SUITE 3800

6 City, state, and ZIP code

SEATTLE, WA 98101

Requester's name and address (optional)

Milliman Lockbox address for check payments:
PO Box 75553
Chicago IL 60675-5553

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN,* later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

☐☐☐ – ☐☐ – ☐☐☐☐

or

Employer identification number

9 1 – 0 6 7 5 6 4 1

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here **Signature of U.S. person** a Matt W... **Date** a 01/04/2022

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9.*

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, *later.*

COMMISSION ON HUMAN RIGHTS AND OPPORTUNITIES
CONTRACT COMPLIANCE REGULATIONS
NOTIFICATION TO BIDDERS

(Revised 09/3/15)

The contract to be awarded is subject to contract compliance requirements mandated by Sections 4a-60 and 4a-60a of the Connecticut General Statutes; and, when the awarding agency is the State, Sections 46a-71(d) and 46a-81i(d) of the Connecticut General Statutes. There are Contract Compliance Regulations codified at Section 46a-68j-21 through 43 of the Regulations of Connecticut State Agencies, which establish a procedure for awarding all contracts covered by Sections 4a-60 and 46a-71(d) of the Connecticut General Statutes.

According to Section 46a-68j-30(9) of the Contract Compliance Regulations, every agency awarding a contract subject to the contract compliance requirements has an obligation to "aggressively solicit the participation of legitimate minority business enterprises as bidders, contractors, subcontractors and suppliers of materials." "Minority business enterprise" is defined in Section 4a-60 of the Connecticut General Statutes as a business wherein fifty-one percent or more of the capital stock, or assets belong to a person or persons: "(1) Who are active in daily affairs of the enterprise; (2) who have the power to direct the management and policies of the enterprise; and (3) who are members of a minority, as such term is defined in subsection (a) of Section 32-9n." "Minority" groups are defined in Section 32-9n of the Connecticut General Statutes as "(1) Black Americans . . . (2) Hispanic Americans . . . (3) persons who have origins in the Iberian Peninsula . . . (4)Women . . . (5) Asian Pacific Americans and Pacific Islanders; (6) American Indians . . ." An individual with a disability is also a minority business enterprise as provided by Section 4a-60g of the Connecticut General Statutes. The above definitions apply to the contract compliance requirements by virtue of Section 46a-68j-21(11) of the Contract Compliance Regulations.

The awarding agency will consider the following factors when reviewing the bidder's qualifications under the contract compliance requirements:

(a) the bidder's success in implementing an affirmative action plan;
(b) the bidder's success in developing an apprenticeship program complying with Sections 46a-68-1 to 46a-68-17 of the Administrative Regulations of Connecticut State Agencies, inclusive;
(c) the bidder's promise to develop and implement a successful affirmative action plan;
(d) the bidder's submission of employment statistics contained in the "Employment Information Form", indicating that the composition of its workforce is at or near parity when compared to the racial and sexual composition of the workforce in the relevant labor market area; and
(e) the bidder's promise to set aside a portion of the contract for legitimate minority business enterprises. See Section 46a-68j-30(10)(E) of the Contract Compliance Regulations.

INSTRUCTIONS AND OTHER INFORMATION

The following BIDDER CONTRACT COMPLIANCE MONITORING REPORT must be completed in full, signed, and submitted with the bid for this contract. The contract awarding agency and the Commission on Human Rights and Opportunities will use the information contained thereon to determine the bidders compliance to Sections 4a-60 and 4a-60a CONN. GEN. STAT., and Sections 46a-68j-23 of the Regulations of Connecticut State Agencies regarding equal employment opportunity, and the bidder's good faith efforts to include minority business enterprises as subcontractors and suppliers for the work of the contract.

1) Definition of Small Contractor

Section 4a-60g CONN. GEN. STAT. defines a small contractor as a company that has been doing business under the same management and control and has maintained its principal place of business in Connecticut for a one year period immediately prior to its application for certification under this section, had gross revenues not exceeding fifteen million dollars in the most recently completed fiscal year, and at least fifty-one percent of the ownership of which is held by a person or persons who are active in the daily affairs of the company, and have the power to direct the management and policies of the company, except that a nonprofit corporation shall be construed to be a small contractor if such nonprofit corporation meets the requirements of subparagraphs (A) and (B) of subdivision 4a-60g CONN. GEN. STAT.

2) Description of Job Categories (as used in Part IV Bidder Employment Information) (Page 2)

MANAGEMENT: Managers plan, organize, direct, and control the major functions of an organization through subordinates who are at the managerial or supervisory level. They make policy decisions and set objectives for the company or departments. They are not usually directly involved in production or providing services. Examples include top executives, public relations managers, managers of operations specialties (such as financial, human resources, or purchasing managers), and construction and engineering managers.

BUSINESS AND FINANCIAL OPERATIONS: These occupations include managers and professionals who work with the financial aspects of the business. These occupations include accountants and auditors, purchasing agents, management analysts, labor relations specialists, and budget, credit, and financial analysts.

MARKETING AND SALES: Occupations related to the act or process of buying and selling products and/or services such as sales engineer, retail sales workers and sales representatives including wholesale.

LEGAL OCCUPATIONS: In-House Counsel who is charged with providing legal advice and services in regards to legal issues that may arise during the course of standard business practices. This category also includes assistive legal occupations such as paralegals, legal assistants.

COMPUTER SPECIALISTS: Professionals responsible for the computer operations within a company are grouped in this category. Examples of job titles in this category include computer programmers, software engineers, database administrators, computer scientists, systems analysts, and computer support specialists

ARCHITECTURE AND ENGINEERING: Occupations related to architecture, surveying, engineering, and drafting are included in this category. Some of the job titles in this category include electrical and electronic engineers, surveyors, architects, drafters, mechanical engineers, materials engineers, mapping technicians, and civil engineers.

OFFICE AND ADMINISTRATIVE SUPPORT: All clerical-type work is included in this category. These jobs involve the preparing, transcribing, and preserving o f written communications and records; collecting accounts; gathering and distributing information; operating office machines and electronic data processing equipment; and distributing mail. Job titles listed in this category include telephone operators, bill and account collectors, customer service representatives, dispatchers, secretaries and administrative assistants, computer operators and clerks (such as payroll, shipping, stock, mail and file).

BUILDING AND GROUNDS CLEANING AND MAINTENANCE: This category includes occupations involving landscaping, housekeeping, and janitorial services. Job titles found in this category include supervisors of landscaping or housekeeping, janitors, maids, grounds maintenance workers, and pest control workers.

CONSTRUCTION AND EXTRACTION: This category includes construction trades and related occupations. Job titles found in this category include boilermakers, masons (all types), carpenters, construction laborers, electricians, plumbers (and related trades), roofers, sheet metal workers, elevator installers, hazardous materials removal workers, paperhangers, and painters. Paving, surfacing, and tamping equipment operators; drywall and ceiling tile installers; and carpet, floor and tile installers and finishers are also included in this category. First line supervisors, foremen, and helpers in these trades are also grouped in this category.

INSTALLATION, MAINTENANCE AND REPAIR: Occupations involving the installation, maintenance, and repair of equipment are included in this group. Examples of job titles found here are heating, ac, and refrigeration mechanics and installers; telecommunication line installers and repairers; heavy vehicle and mobile equipment service technicians and mechanics; small engine mechanics; security and fire alarm systems installers; electric/electronic repair, industrial, utility and transportation equipment; millwrights; riggers; and manufactured building and mobile home installers. First line supervisors, foremen, and helpers for these jobs are also included in the category.

MATERIAL MOVING WORKERS: The job titles included in this group are Crane and tower operators; dredge, excavating, and lading machine operators; hoist and winch operators; industrial truck and tractor operators; cleaners of vehicles and equipment; laborers and freight, stock, and material movers, hand; machine feeders and offbearers; packers and packagers, hand; pumping station operators; refuse and recyclable material collectors; and miscellaneous material moving workers.

PRODUCTION WORKERS: The job titles included in this category are chemical production machine setters, operators and tenders; crushing/grinding workers; cutting workers; inspectors, testers sorters, samplers, weighers; precious stone/metal workers; painting workers; cementing/gluing machine operators and tenders; etchers/engravers; molders, shapers and casters except for metal and plastic; and production workers.

3) Definition of Racial and Ethnic Terms (as used in Part IV Bidder Employment Information) (Page 3)

White (not of Hispanic Origin)-All persons having origins in any of the original peoples of Europe, North Africa, or the Middle East. Black (not of Hispanic Origin)-All persons having origins in any of the Black racial groups of Africa. Hispanic- All persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.	Asian or Pacific Islander- All persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes China, India, Japan, Korea, the Philippine Islands, and Samoa. American Indian or Alaskan Native- All persons having origins in any of the original peoples of North America, and who maintain cultural identification through tribal affiliation or community recognition.

BIDDER CONTRACT COMPLIANCE MONITORING REPORT

PART 1 – Bidder Information

Company Name: Milliman, Inc. Street Address: 200 Great Pond Drive, Suite 110 City & State: Windsor, CT Chief Executive: Dermot Corry	Bidder Federal Employer Identification Number: FEIN: 91-0675641 Or Social Security Number:
Major Business Activity: Actuarial and Consulting Services (brief description)	Bidder Identification (response optional/definitions on page 1) -Bidder is a small contractor? Yes ☐ No ☑ -Bidder is a minority business enterprise? Yes ☐ No ☑ (If yes, check ownership category) Black ☐ Hispanic ☐ Asian American ☐ American Indian/Alaskan Native ☐ Iberian Peninsula ☐ Individual(s) with a Physical Disability ☐ Female ☐ -Bidder is certified as above by State of CT? Yes ☐ No ☑
Bidder Parent Company: NA (If any)	
Other Locations in CT: NA (If any)	

PART II - Bidder Nondiscrimination Policies and Procedures

1. Does your company have a written Affirmative Action/Equal Employment Opportunity statement posted on company bulletin boards? Yes ☑ No ☐	7. Do all of your company contracts and purchase orders contain non-discrimination statements as required by Sections 4a-60 & 4a-60a Conn. Gen. Stat.? Yes ☐ No ☑
2. Does your company have the state-mandated sexual harassment prevention in the workplace policy posted on company bulletin boards? Yes ☑ No ☐	8. Do you, upon request, provide reasonable accommodation to employees, or applicants for employment, who have physical or mental disability? Yes ☑ No ☐
3. Do you notify all recruitment sources in writing of your company's Affirmative Action/Equal Employment Opportunity employment policy? Yes ☐ No ☑	9. Does your company have a mandatory retirement age for all employees? Yes ☐ No ☑
4. Do your company advertisements contain a written statement that you are an Affirmative Action/Equal Opportunity Employer? Yes ☑ No ☐	10. If your company has 50 or more employees, have you provided at least two (2) hours of sexual harassment training to all of your supervisors? Yes ☑ No ☐ N/A ☐ *Answer is specific to CT based employees*
5. Do you notify the Ct. State Employment Service of all employment openings with your company? Yes ☐ No ☑ *We share our postings with the following website through a third party: https://www.cthires.com/vosnet/Default.aspx*	11. If your company has apprenticeship programs, do they meet the Affirmative Action/Equal Employment Opportunity requirements of the apprenticeship standards of the Ct. Dept. of Labor? Yes ☐ No ☐ N/A ☑
6. Does your company have a collective bargaining agreement with workers? Yes ☐ No ☑ 6a. If yes, do the collective bargaining agreements contain non-discrimination clauses covering all workers? Yes ☐ No ☐ 6b. Have you notified each union in writing of your commitments under the nondiscrimination requirements of contracts with the state of CT? Yes ☐ No ☐	12. Does your company have a written affirmative action Plan? Yes ☑ No ☐ If no, please explain. 13. Is there a person in your company who is responsible for equal employment opportunity? Yes ☑ No ☐ If yes, give name and phone number: Victoria Gleeson 206-624-7940

Part III - Bidder Subcontracting Practices

1. Will the work of this contract include subcontractors or suppliers? Yes ☐ No ☑

   1a. If yes, please list all subcontractors and suppliers and report if they are a small contractor and/or a minority business enterprise. (defined on page 1 / use additional sheet if necessary)

   1b. Will the work of this contract require additional subcontractors or suppliers other than those identified in 1a. above? Yes ☐ No ☑

PART IV - Bidder Employment Information

Date: 6/15/2023

JOB CATEGORY *	OVERALL TOTALS	WHITE (not of Hispanic origin)		BLACK (not of Hispanic origin)		HISPANIC		ASIAN or PACIFIC ISLANDER		AMERICAN INDIAN or ALASKAN NATIVE	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Management	26	15	11								
Business & Financial Ops	38	17	14			1		2	4		
Marketing & Sales											
Legal Occupations											
Computer Specialists	9	5	3						1		
Architecture/Engineering											
Office & Admin Support	7		2				2	2	1		
Bldg/ Grounds Cleaning/Maintenance											
Construction & Extraction											
Installation , Maintenance & Repair											
Material Moving Workers											
Production Occupations											
TOTALS ABOVE	81	38	30			1	2	4	6		
Total One Year Ago											
FORMAL ON THE JOB TRAINEES (ENTER FIGURES FOR THE SAME CATEGORIES AS ARE SHOWN ABOVE)											
Apprentices											
Trainees											

*NOTE: JOB CATEGORIES CAN BE CHANGED OR ADDED TO (EX. SALES CAN BE ADDED OR REPLACE A CATEGORY NOT USED IN YOUR COMPANY)

PART V - Bidder Hiring and Recruitment Practices

1. Which of the following recruitment sources are used by you? (Check yes or no, and report percent used)				2. Check (X) any of the below listed requirements that you use as a hiring qualification	
SOURCE	YES	NO	% of applicants provided by source	(X)	
State Employment Service	☑	☐	3	X	Work Experience
Private Employment Agencies	☑	☐	5		Ability to Speak or Write English
Schools and Colleges	☑	☐	12		Written Tests
Newspaper Advertisement	☐	☑			High School Diploma
Walk Ins	☐	☑		X	College Degree
Present Employees	☑	☐	5		Union Membership
Labor Organizations	☐	☑			Personal Recommendation
Minority/Community Organizations	☑	☐	5		Height or Weight
Others (please identify)	☑	☐			Car Ownership
Online job postings	☑	☐	70		Arrest Record
	☐	☐			Wage Garnishments

3. Describe below any other practices or actions that you take which show that you hire, train, and promote employees without discrimination

Anyone in our company who is able to review candidates/applicants to job openings, both internal and external, is required to take a training that advises on equal opportunity and the proper way to screen candidates.

In addition, all employees are required to take Anti-Harassment training annually.

We also hold Affirmative Action plans and make good faith efforts to target minorities, women, individuals with disabilities, and protected veterans following the guidance of those plans.

Certification (Read this form and check your statements on it CAREFULLY before signing). I certify that the statements made by me on this BIDDER CONTRACT COMPLIANCE MONITORING REPORT are complete and true to the best of my knowledge and belief, and are made in good faith. I understand that if I knowingly make any misstatements of facts, I am subject to be declared in non-compliance with Section 4a-60, 4a-60a, and related sections of the CONN. GEN. STAT.

(Signature)	(Title)	(Date Signed)	(Telephone)
	Principal and Consulting Actuary	6/28/2023	(860) 687-0125

Appendix A

Milliman Presentation Materials

Sample Town Pension Plan
Highlights of the July 1, 2022 Valuation

Our team	**Rebecca A. Sielman, FSA**	*oversees public sector work in New England, Upper Midwest*
	Jennifer M. Castelhano, FSA	*handles day-to-day services we provide to the Town*
	Melissa Jankowski; Scott Lindberg, FSA; Michael O'Connell; Sharad Arora	

Our Mission

We serve our clients to protect the health and financial well-being of people everywhere.

Thought leadership	**Dear Actuary** Milliman.com/en/periodicals/dear-actuary	*straightforward answers to common public plan questions*
	Public Pension Funding Study Milliman.com/PPFS	*annual update on 100 largest US public pension plans*
	Public Pension Funding Index Milliman.com/PPFI	*monthly updates reflecting current market conditions*
	Milliman Medical Index Milliman.com/MMIfamilies	*annual update on cost of healthcare for a family of four*
	Underwriting Risk and Innovation Milliman.com/en/insight/Cities-Underwriting-risk-and-innovation	*thought leadership on municipal workers' compensation risks*
	CT Public Pension Forum Becky Sielman and Jenn Castelhano: Managing Contribution Volatility	*Spring 2022 meeting; see CTPublicPensionForum.com*
	CT Society of CPAs Governmental Accounting & Auditing Conference Becky Sielman: The Importance of Sound Actuarial Assumptions	

Not getting our publications via email? Just send a note to Jessica.Stanford@Milliman.com

About Milliman	**1,000+**	*public sector pension and OPEB clients*
	1,100+	*pension outsourcing clients*
	Top 10	*largest pension administrators in mid to large market*
	64 million	*healthcare data for plan members*
	$1.4 B	*firm revenues in 2021*
	4,600	*company employees*
	67	*offices around the globe*

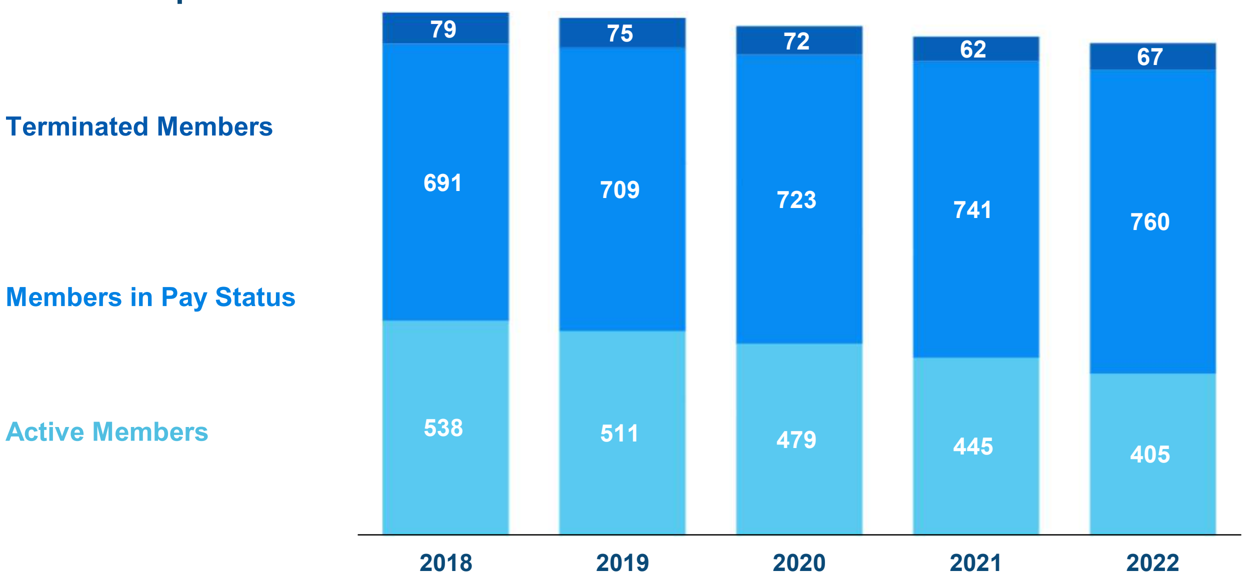
Practice areas

Employee Benefits
Healthcare
Property & Casualty
Life & Financial Risk Management

Sample Town Pension Plan

Highlights of the July 1, 2022 Valuation

Membership



Terminated Members on July 1, 2022

Count due a vested benefit at retirement	65
Count due a refund of member contributtions	2

Members in Pay Status on July 1, 2022

	Service Retirees	Disabled Retirees	Beneficiaries
Count	697	11	52
Average Age	73.1	63.2	73.6
Total Annual Benefit	$16,510,473	$246,656	$713,016
Average Annual Benefit	23,688	22,423	13,712

Active Members on July 1, 2022

BOE	235
Police	105
Town	45
Sanitation	2
Sewer	3
Water	15
Total Count	405
Total Payroll	$29,597,093
Average Payroll	73,079

	Years of Service							
Age	0-4	5-9	10-14	15-19	20-24	25-29	30+	Total
< 25	6							6
25-29	20	5						25
30-34	7	15	2					24
35-39	6	9	24	4				43
40-44		6	6	13	5			30
45-49	2	6	7	12	13	3		43
50-54		4	16	14	19	2		55
55-59	1	5	14	33	15	7	4	79
60-64	3	6	14	20	25	5	7	80
65+			1	7	5	2	5	20
Total	45	56	84	103	82	19	16	405

Average Age
49.9

Average Service
16.3

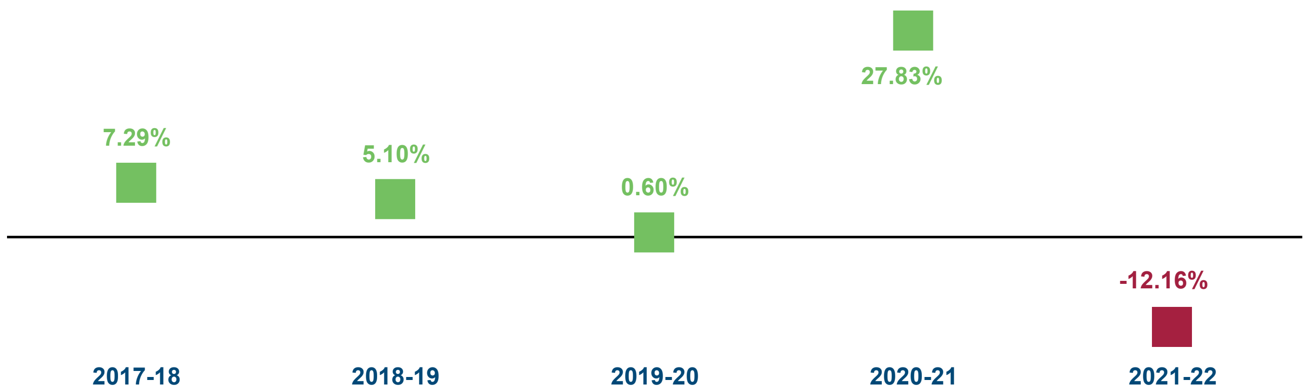
Sample Town Pension Plan

Highlights of the July 1, 2022 Valuation

Assets

Returns

2021-22 saw a year of disappointing market performance following last year's very strong performance, with a rate of return of -12.16% on a Market Value basis. The chart below illustrates the ups and downs in the plan's investment returns.



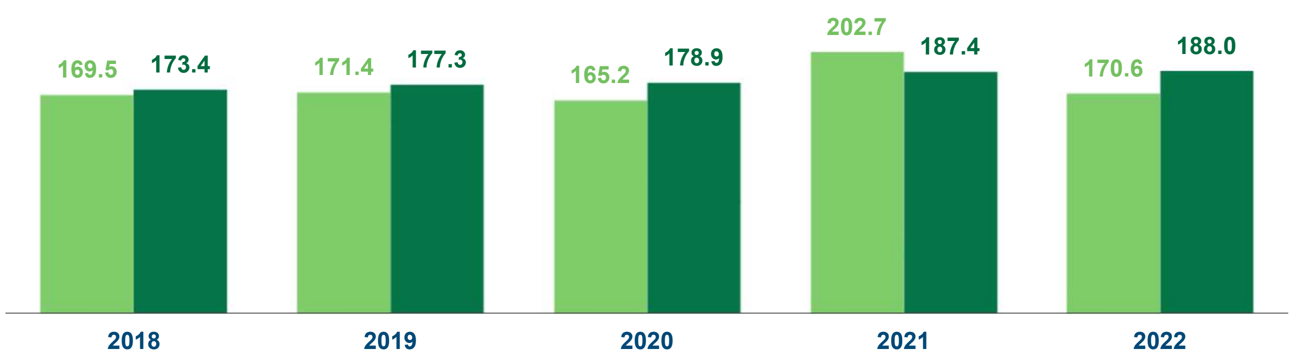
Market value, 07/01/2021	**$202,678,782**
Town Contributions	7,213,955
Member Contributions	1,981,870
Net Investment Income	(24,164,183)
Benefit Payments	(16,972,257)
Administrative Expenses	(116,484)
Market value, 07/01/2022	**170,621,683**
Expected rate of return	7.00%
Expected investment income	13,910,303
Market (gains)/losses	38,074,486

Balances ($ millions)

In order to dampen the volatility of the market and prevent large swings in the Town's contribution, we smooth investment gains or losses over five years. The resulting Actuarial Value of Assets is shown alongside the Market Value of Assets in the chart below.

Market value

Actuarial value



As of July 1, 2022, the Actuarial Value exceeds the Market Value by $17.4 million. This figure represents investment losses that will be gradually recognized over the next five years. This process will exert upward pressure on the Town's contribution, unless there are offsetting market gains.

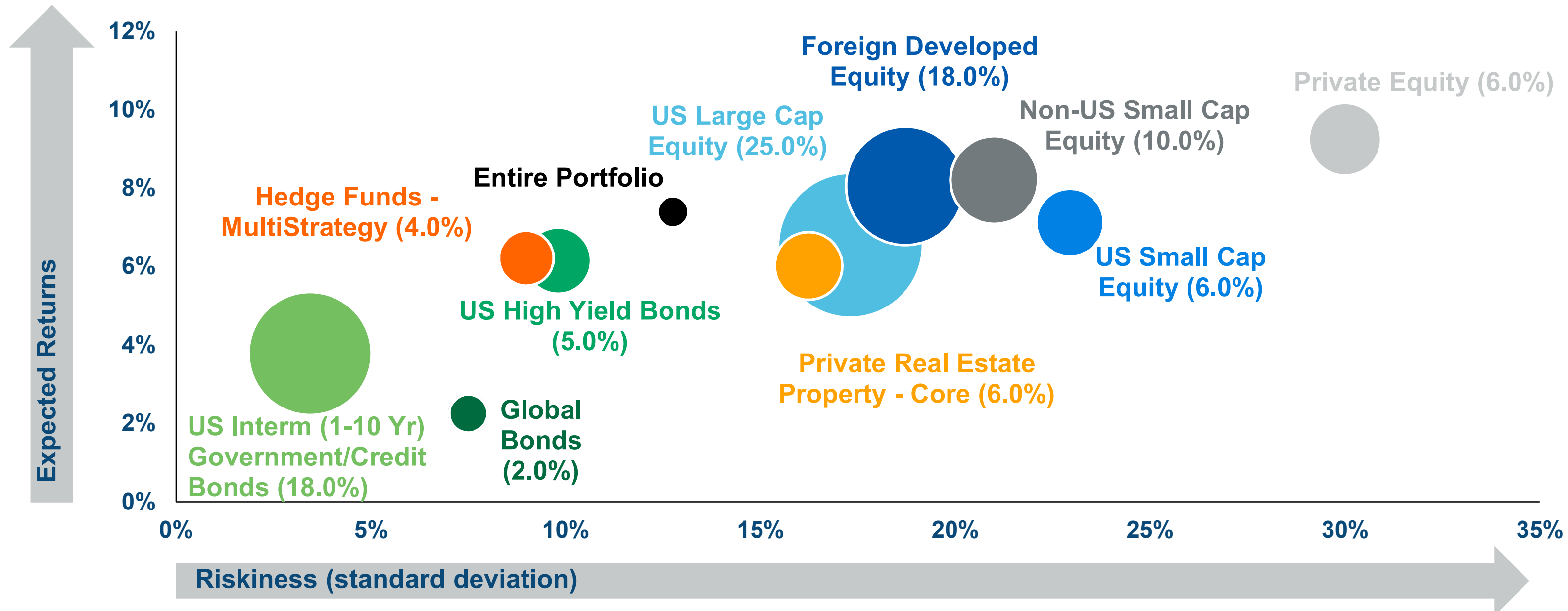
Sample Town Pension Plan

Highlights of the July 1, 2022 Valuation

Interest Rate Assumption

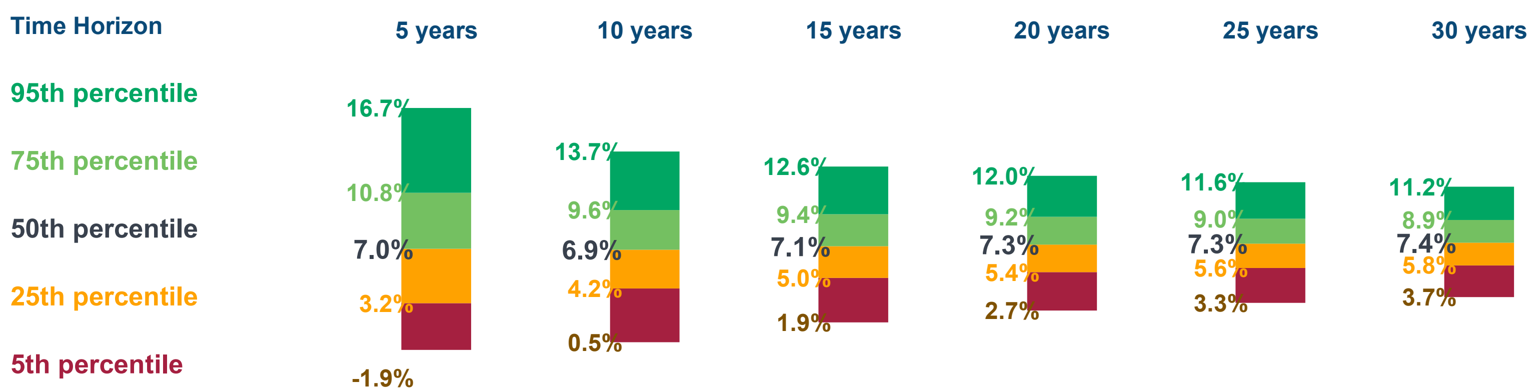
Asset Allocation

The interest rate assumption is based on the expected long-term return of the plan's investments. Using Milliman's June 30, 2022 Capital Market Assumptions, the target asset allocation has the following risk / return dimensions:



Distribution of Expected Returns

In any given year, the plan's investment return can range from very high to very low. As we look at longer and longer periods, the high and low years balance out and the annualized return should converge to the 50th percentile, or median. Using Milliman's June 30, 2022 Capital Market Assumptions, the expected long-term annualized median return of the portfolio, without reflecting a margin for manager alpha, is 7.4%.



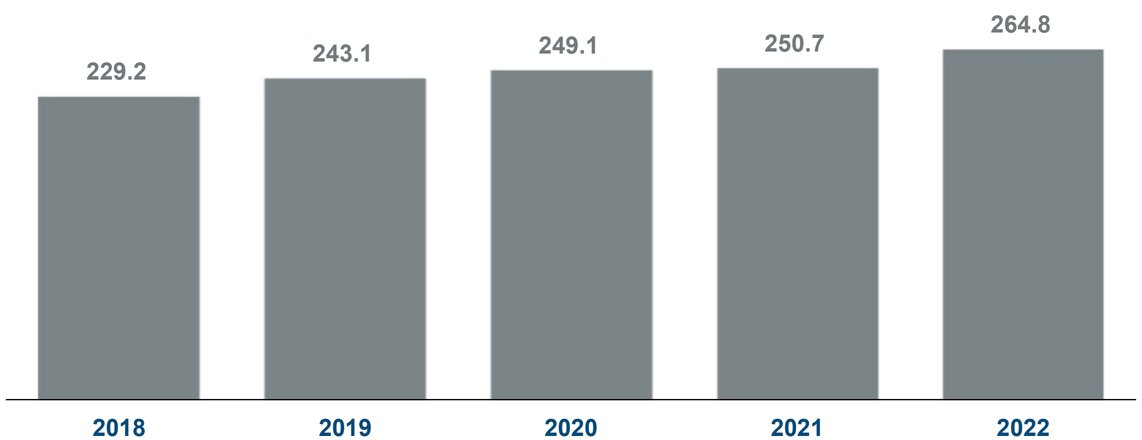
Sample Town Pension Plan

Highlights of the July 1, 2022 Valuation

Funded Status

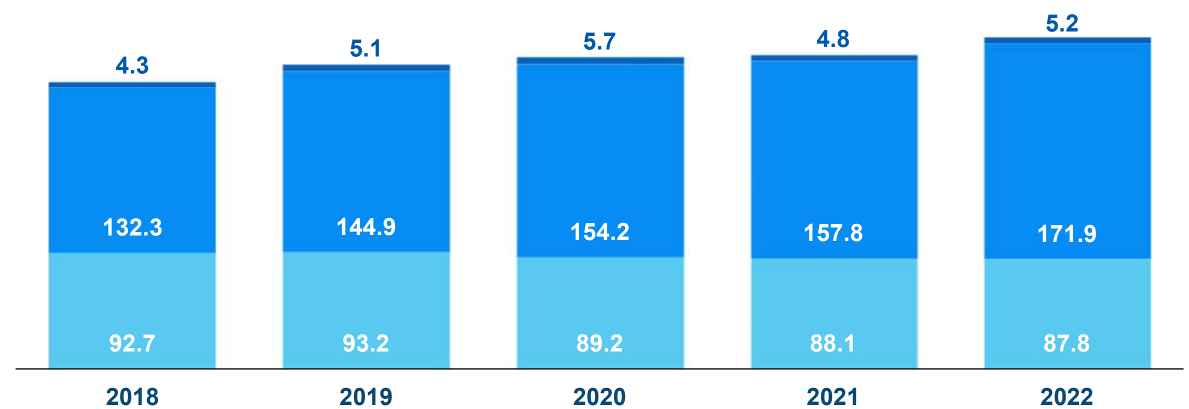
Accrued Liability ($ millions)

Grows as active members earn benefits, goes down as retired members receive benefits



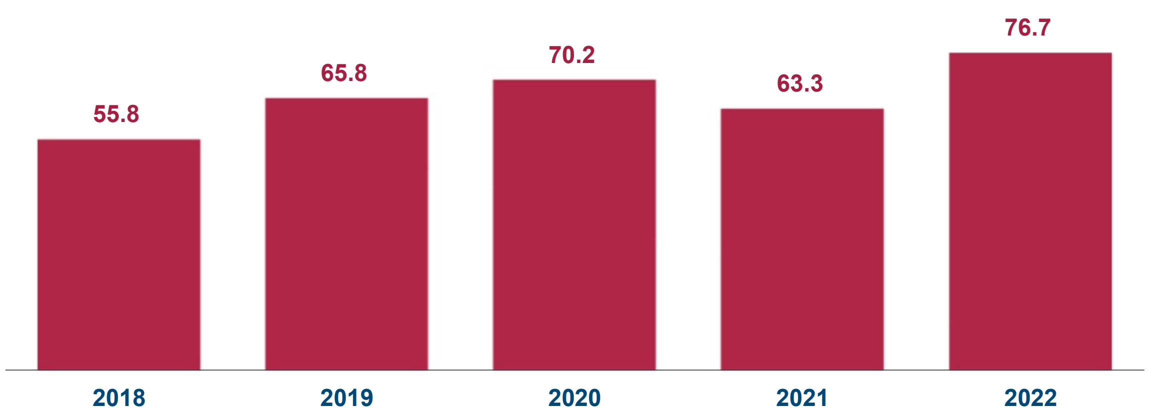
Breakdown By Member Group

Terminated Members Members in Pay Status Active Members



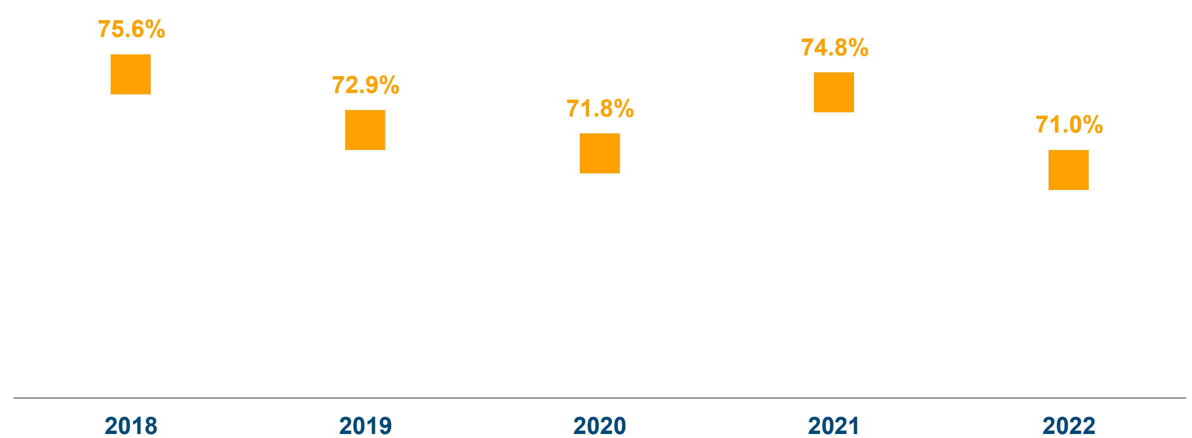
Unfunded Accrued Liability ($ millions)

Dollar difference between the Accrued Liability and the Actuarial Value of Assets



Funded Ratio

Ratio of the Actuarial Value of Assets to the Accrued Liability

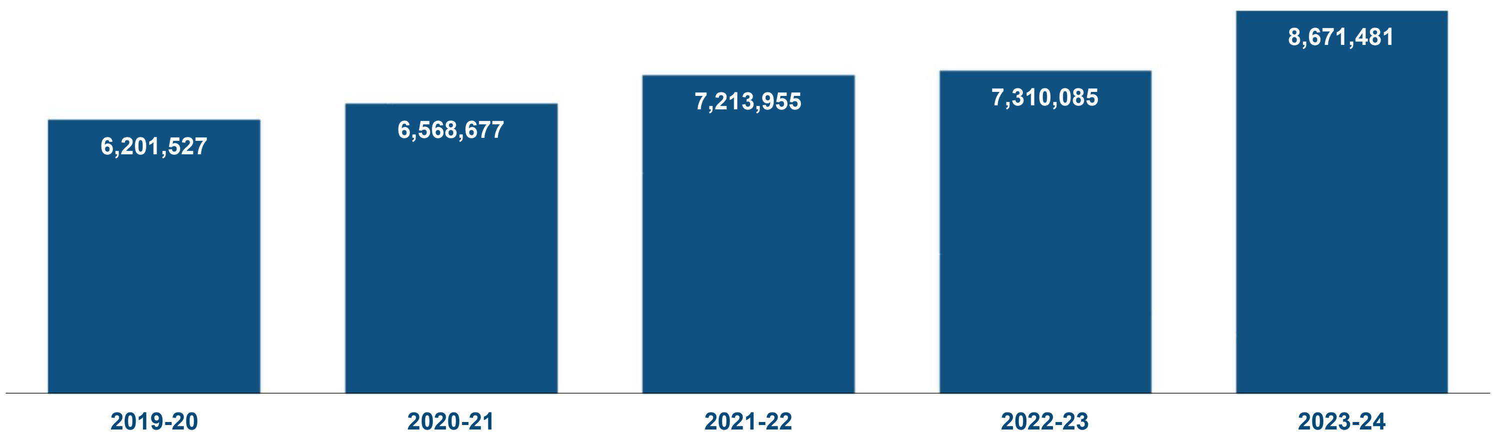


Sample Town Pension Plan

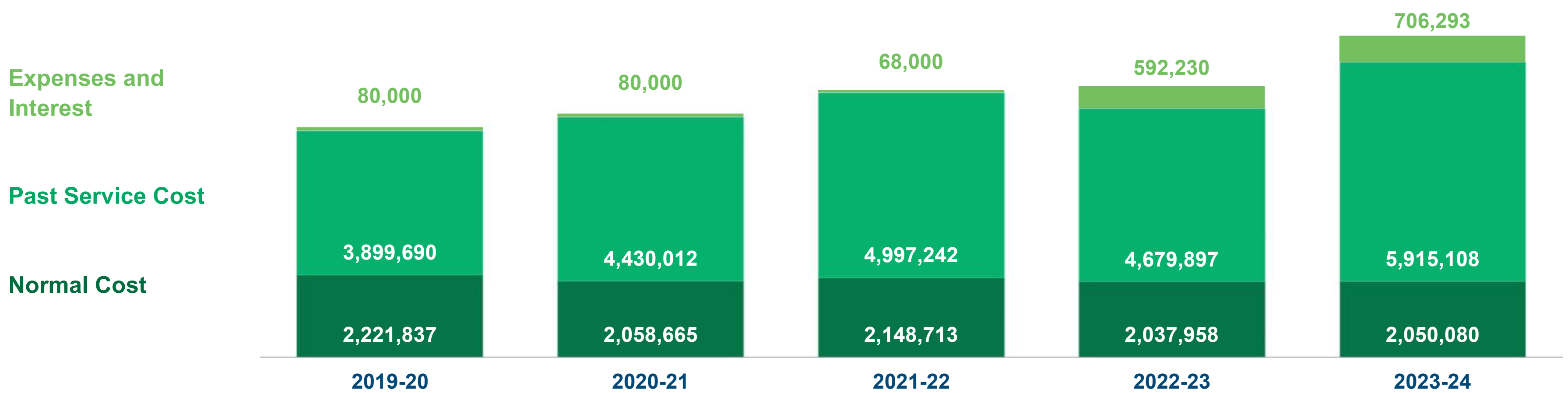
Highlights of the July 1, 2022 Valuation

Actuarially Determined Contribution

Each valuation determines the Actuarially Determined Contribution for the fiscal year starting one year later; that is, the July 1, 2022 valuation determines the Actuarially Determined Contribution for FY 2023-24.



The Actuarially Determined Contribution consists of three pieces: Normal Cost plus a Past Service Cost payment to gradually eliminate the Unfunded Accrued Liability plus an estimate of administrative expenses that will be paid from plan assets plus interest to reflect the timing of the contribution relative to the valuation date.



Sample Town Pension Plan

Highlights of the July 1, 2022 Valuation

Summary of Key Results

	2021 Valuation	2022 Valuation: No Changes from 2021	2022 Valuation: Update Mortality Improvement Scale
Interest Rate	7.00%	7.00%	7.00%
Mortality Improvement Scale	MP-2019 Ultimate	MP-2019 Ultimate	**MP-2021 Ultimate**
Accrued Liability	$250,705,565	$265,391,509	$264,783,416
Actuarial Value of Assets	187,431,488	188,034,093	188,034,093
Unfunded Accrued Liability	63,274,077	77,357,416	76,749,323
Funded Ratio	74.8%	70.9%	71.0%
Amortization Period	18	17	17
Amortization Growth Rate	3.25%	3.25%	3.25%
Past Service Cost	4,679,897	5,961,974	5,915,108
Total Normal Cost	4,156,392	4,076,243	4,082,238
Expected Employee Contributions	2,118,434	2,032,180	2,032,158
Net Normal Cost	2,037,958	2,044,063	2,050,080
Expenses and Interest	592,230	709,153	706,293
Actuarially Determined Contribution	7,310,085	8,715,190	8,671,481
For Fiscal Year	**2022-23**	**2023-24**	**2023-24**

Appendix B

Sample Pension Valuation Report

SAMPLE TOWN PENSION PLAN

Actuarial Valuation as of July 1, 2022
To Determine Funding for Fiscal Year 2023-24

Prepared by

Rebecca A. Sielman, FSA
Consulting Actuary

Jennifer M. Castelhano, FSA
Consulting Actuary

January 20, 2023

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Certification

We have performed an actuarial valuation of the Plan as of July 1, 2022 to determine funding for fiscal year 2023-24. This report presents the results of our valuation.

The ultimate cost of a pension plan is the total amount needed to provide benefits for plan members and beneficiaries and to pay the expenses of administering the plan. Pension costs are met by contributions and by investment return on plan assets. The principal purpose of this report is to set forth an actuarial recommendation of the contribution, or range of contributions, which will properly fund the plan, in accordance with applicable government regulations. In addition, this report provides:

- A valuation of plan assets and liabilities to review the year-to-year progress of funding.
- Information needed to meet disclosure requirements.
- Review of plan experience for the previous year to ascertain whether the assumptions and methods employed for valuation purposes are reflective of actual events and remain appropriate for prospective application.
- Assessment of the relative funded position of the plan, i.e., through a comparison of plan assets and projected plan liabilities.
- Comments on any other matters which may be of assistance in the funding and operation of the plan.

This report may not be used for purposes other than those listed above without Milliman's prior written consent. If this report is distributed to other parties, it must be copied in its entirety, including this certification section.

Milliman's work is prepared solely for the internal business use of the Sample Town ("Town"). To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exceptions: (a) the Town may provide a copy of Milliman's work, in its entirety, to the Town's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the Town; and (b) the Town may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law. No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

In preparing this report, we relied on employee census data and financial information as of the valuation date, furnished by the Town. We performed a limited review of the data used directly in our analysis for reasonableness and consistency and have found them to be reasonably consistent and comparable with data used for other purposes. If the underlying data or information is inaccurate or incomplete, the results of our analysis may likewise be inaccurate or incomplete and our calculations may need to be revised. If there are material defects in the data, it is possible that they would be uncovered by a detailed, systematic review and comparison of the data to search for data values that are questionable or for relationships that are materially inconsistent. Such a review was beyond the scope of our assignment.

Certification

The calculations reported herein have been made on a basis consistent with our understanding of ERISA and the related sections of the tax code. Additional determinations may be needed for purposes other than meeting funding requirements, such as judging benefit security at plan termination or meeting employer accounting requirements. On the basis of the foregoing, we hereby certify that, to the best of our knowledge, this report is complete and accurate and all costs and liabilities were determined in conformance with generally accepted actuarial principles and practices.

The valuation results were developed using models intended for valuations that use standard actuarial techniques. In addition to the models described previously, Milliman has developed certain models to develop the expected long term rate of return on assets used in this analysis. We have reviewed the models, including their inputs, calculations, and outputs for consistency, reasonableness, and appropriateness to the intended purpose and in compliance with generally accepted actuarial practice and relevant actuarial standards of practice (ASOP). The models, including all input, calculations, and output may not be appropriate for any other purpose.

We further certify that, in our opinion, each actuarial assumption, method and technique used is reasonable taking into account the experience of the Plan and reasonable expectations. Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as, but not limited to, the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of the actuarial assignment, we did not perform an analysis of the potential range of such future measurement.

The consultants who worked on this assignment are pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

We are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Rebecca A. Sielman, FSA
Consulting Actuary

Jennifer M. Castelhano, FSA
Consulting Actuary

Section I - Executive Summary
Changes Since the Prior Valuation

Plan Changes

None.

Changes in Actuarial Methods and Assumptions

We updated the mortality assumption to use the MP-2021 Ultimate projection scale in place of the MP-2019 Ultimate projection scale. This change caused the Unfunded Accrued Liability to decrease by about $608,000 and the Actuarially Determined Contribution to decrease by about $44,000.

Other Significant Changes

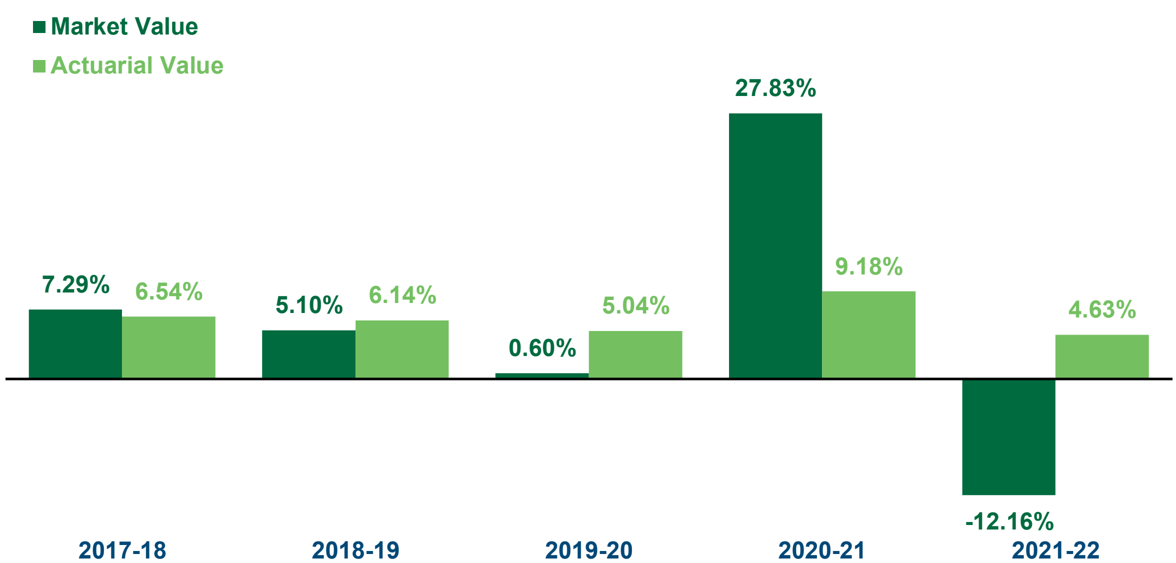
Although it is possible that the COVID-19 pandemic could have a material impact on the projected mortality, liabilities, and contribution requirements, we have chosen not to make an adjustment in the projections at this time, given the substantial current uncertainty regarding the impact of COVID-19 on mortality and plan costs, including whether the pandemic will increase or decrease mortality during the term of our projections. We will be monitoring this development closely and may adjust future projections to reflect the impact of COVID-19, if and when it becomes appropriate.

Section I - Executive Summary
Assets

There are two different measures of the plan's assets that are used throughout this report. The Market Value is a snapshot of the plan's investments as of the valuation date. The Actuarial Value is a smoothed asset value designed to temper the volatile fluctuations in the market by recognizing investment gains or losses asymptotically over five years.

	Market	Actuarial
Value as of July 1, 2021	$202,678,782	$187,431,488
Town and Member Contributions	9,195,825	9,195,825
Investment Income	(24,164,183)	8,495,521
Benefit Payments and Administrative Expenses	(17,088,741)	(17,088,741)
Value as of July 1, 2022	170,621,683	188,034,093

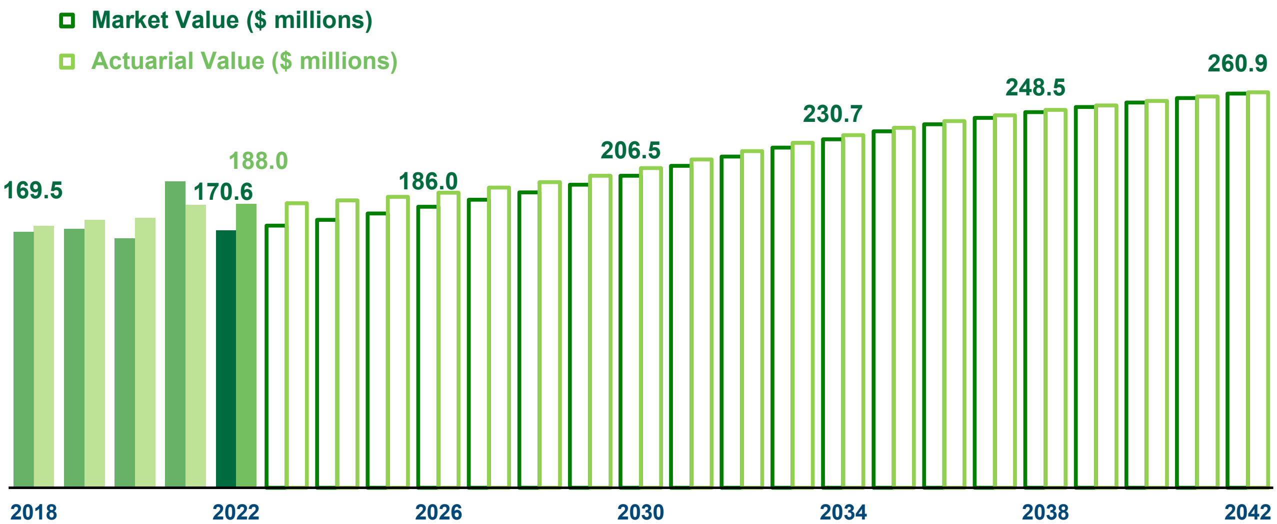
For fiscal year 2021-22, the plan's assets earned -12.16% on a Market Value basis and 4.63% on an Actuarial Value basis. The actuarial assumption for this period was 7.00%; the result is an asset loss of about $38,074,500 on a Market Value basis and a loss of about $4,353,100 on an Actuarial Value basis. Historical rates of return are shown in the graph below.



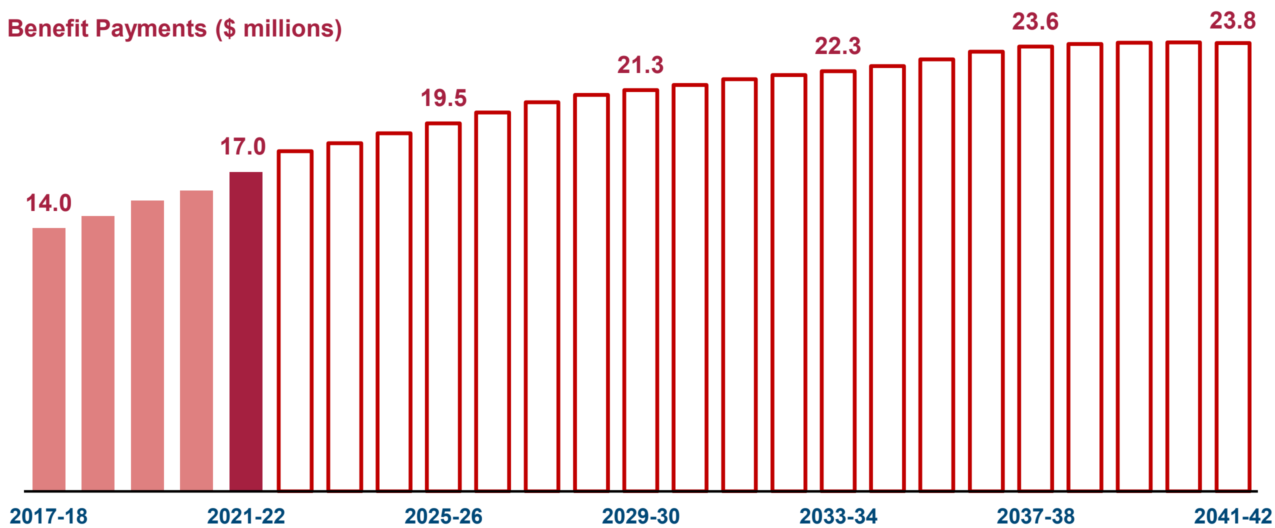
Please note that the Actuarial Value currently exceeds the Market Value by $17.4 million. This figure represents investment losses that will be gradually recognized in future years. This process will exert upward pressure on the Town's contribution, unless there are offsetting market gains.

Section I - Executive Summary
Assets (continued)

The graph below shows how this year's asset values compare to where the plan's assets have been over the past several years and how they are projected to change over the next 20 years. For purposes of this projection, we have assumed that the Town always contributes the Actuarially Determined Contribution and the investments always earn the assumed interest rate each year.

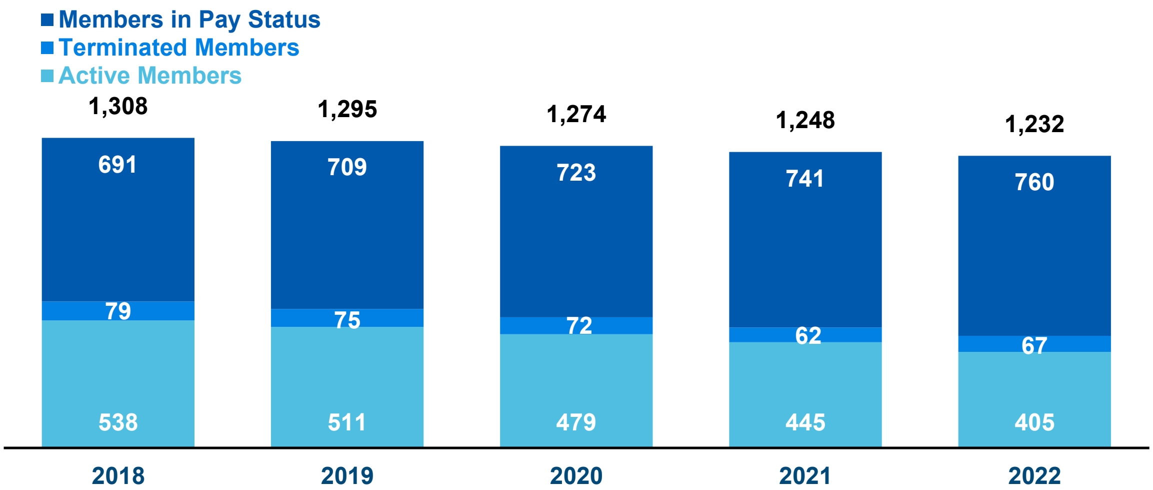


In 2021-22, the plan paid out $17.0 million in benefits to members. Over the next 20 years, the plan is projected to pay out a total of $434 million in benefits to members.



Section I - Executive Summary
Membership

There are three basic categories of plan members included in the valuation: (1) members who are receiving monthly pension benefits, (2) former employees who have a vested right to benefits but have not yet started collecting, and (3) active employees who have met the eligibility requirements for membership.



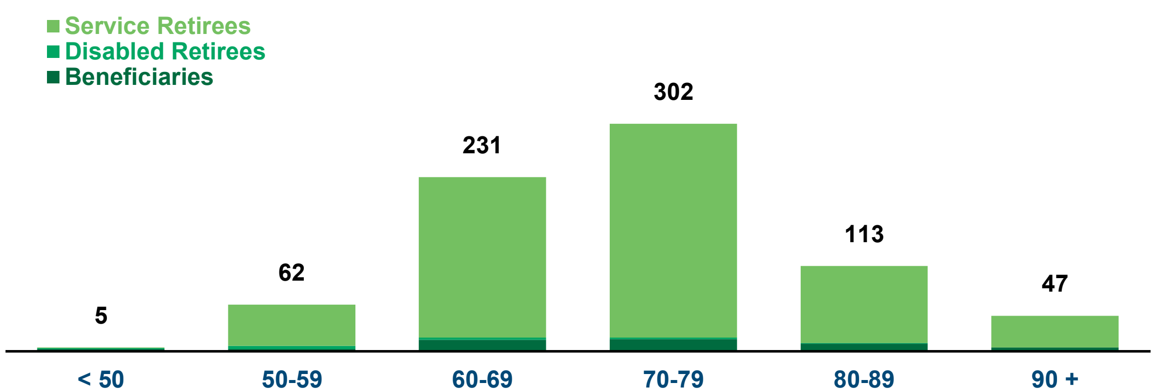
Members in Pay Status on July 1, 2022

BOE	375
Police	120
Town	205
Sanitation	7
Sewer	13
Water	40

Total Count	760
Average Age	73.0
Total Annual Benefit	$16,757,129
Average Annual Benefit	22,049

As of July 1, 2022, there were 697 Service Retirees, 11 Disabled Retirees, and 52 Beneficiaries.

These members in pay status fall across a wide distribution of ages:



Section I - Executive Summary
Membership (continued)

Terminated Vested Members on July 1, 2022

BOE	45	Total Count	65
Police	7	Average Age	55.2
Town	9	Total Annual Benefit	$673,759
Sanitation	0	Average Annual Benefit	10,366
Sewer	3		
Water	1		

Nonvested Members Due Refunds on July 1, 2022

BOE	0	Total Count	2
Police	2	Total Refund Due	$60,388
Town	0		
Sanitation	0		
Sewer	0		
Water	0		

Active Members on July 1, 2022

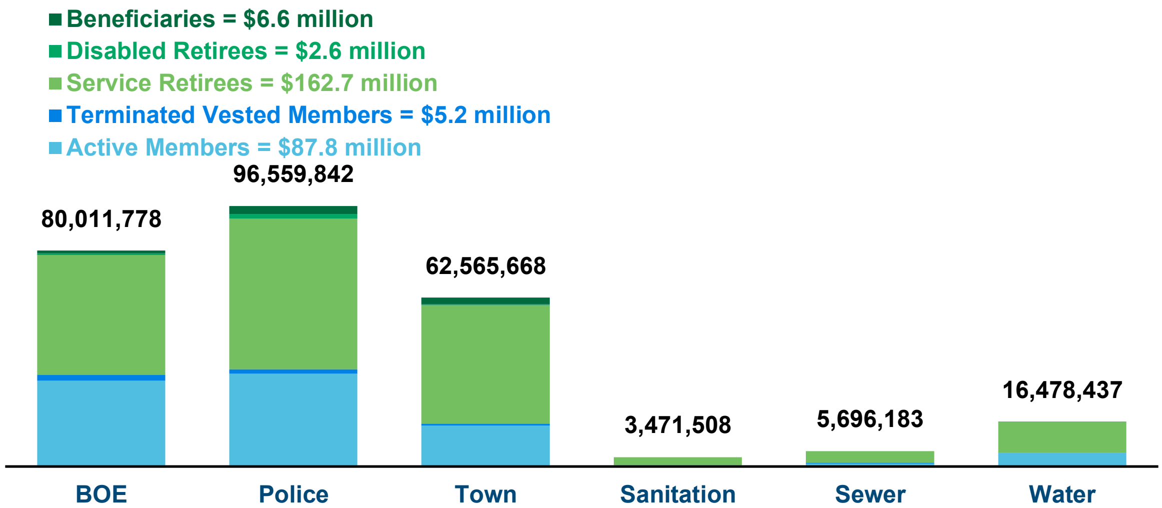
BOE	235	Total Count	405
Police	105	Average Age	49.9
Town	45	Average Service	16.3
Sanitation	2	Payroll	$29,597,093
Sewer	3	Average Payroll	73,079
Water	15		

The table below illustrates the age and years of service of the active membership:

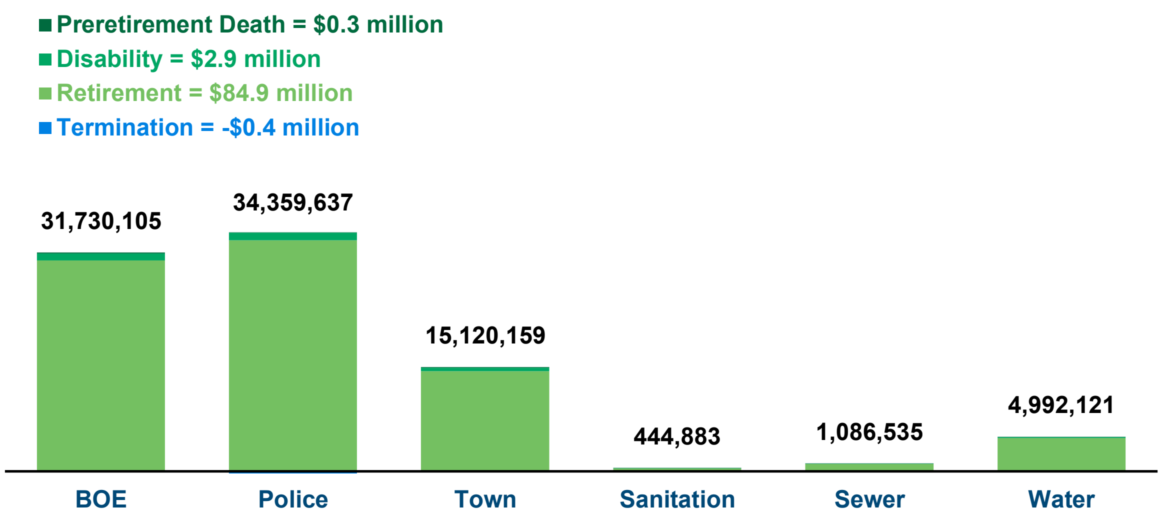
	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25	6							6
25-29	20	5						25
30-34	7	15	2					24
35-39	6	9	24	4				43
40-44		6	6	13	5			30
45-49	2	6	7	12	13	3		43
50-54		4	16	14	19	2		55
55-59	1	5	14	33	15	7	4	79
60-64	3	6	14	20	25	5	7	80
65+			1	7	5	2	5	20
Total	45	56	84	103	82	19	16	405

Section I - Executive Summary
Accrued Liability

The Accrued Liability as of July 1, 2022 is $264,783,416 in total and consists of the following pieces:

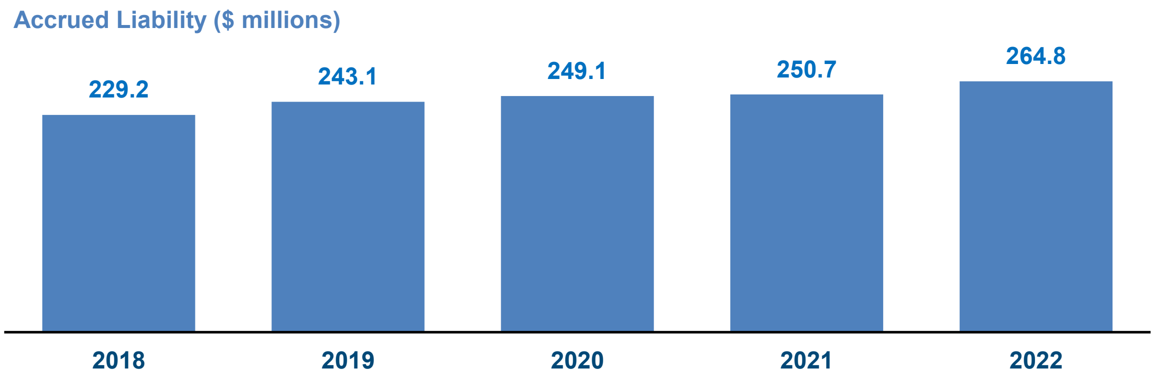


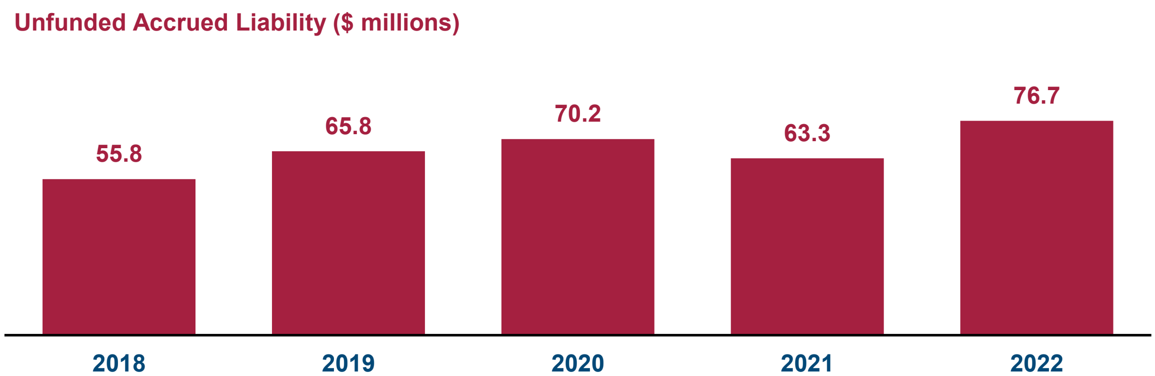
The Accrued Liability for active members can be broken down further by the different types of benefits provided by the plan:

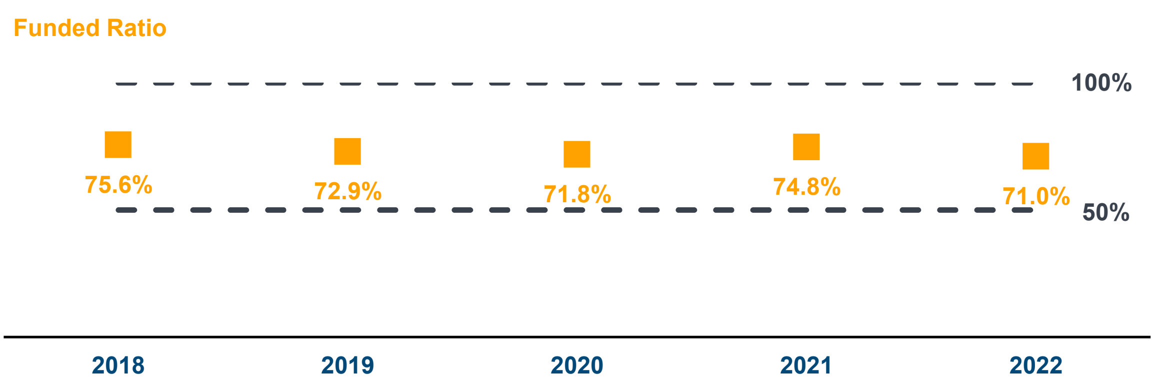


Section I - Executive Summary
Funded Status

The Accrued Liability grows over time as active members earn additional benefits, and goes down over time as members receive benefits; it may also change when there are changes to the plan provisions or changes in the actuarial assumptions. The Unfunded Accrued Liability is the dollar difference between the Accrued Liability and the Actuarial Value of Assets; the Funded Ratio is the ratio of the two.



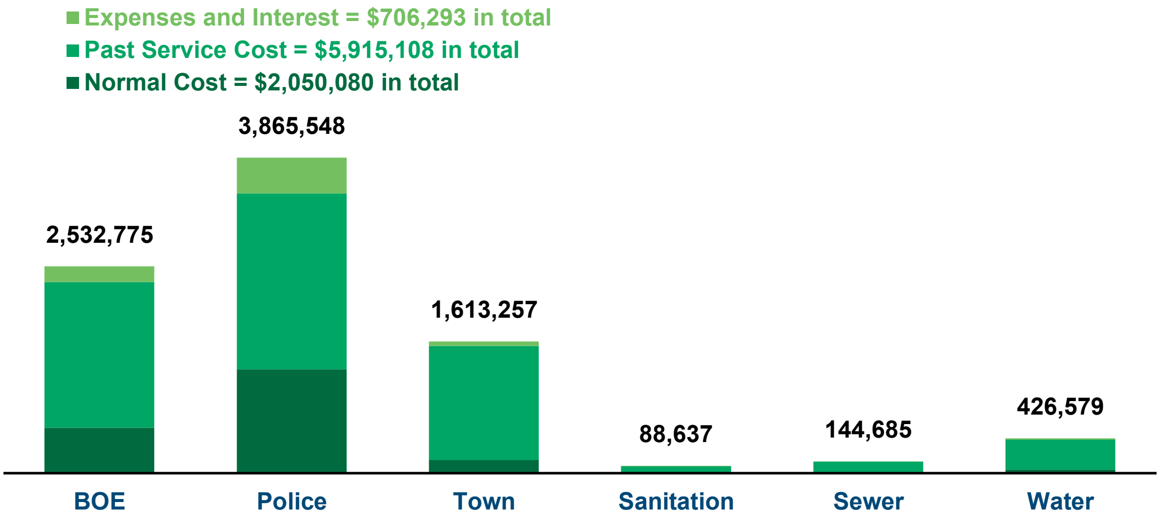




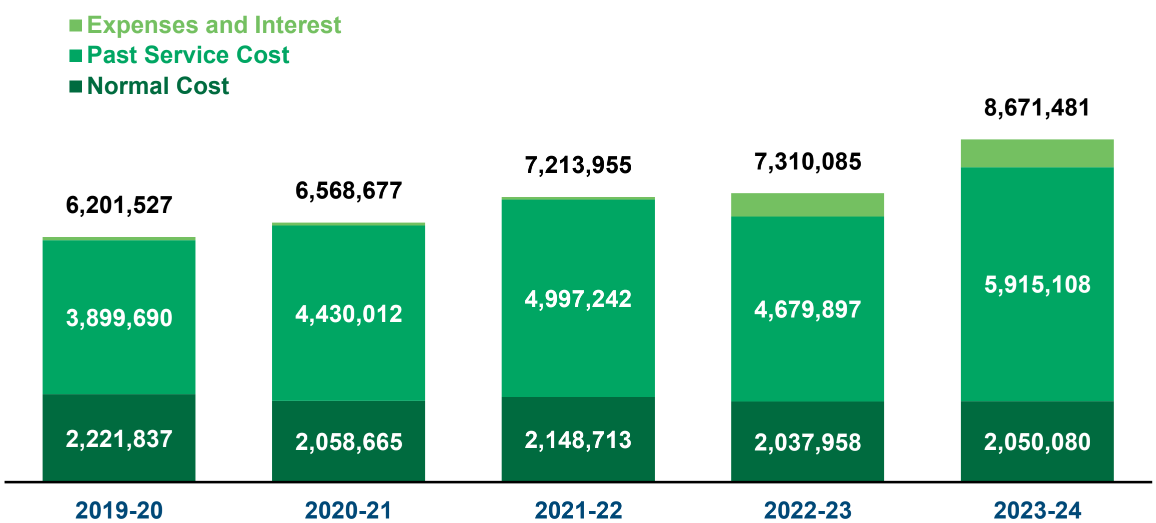
Section I - Executive Summary
Actuarially Determined Contribution

The Actuarially Determined Contribution consists of three pieces: a Normal Cost payment to fund the benefits earned each year, a Past Service Cost to gradually reduce any unfunded or surplus liability, and an estimate of administrative expenses that will be paid from plan assets plus interest to reflect the timing of the contribution relative to the valuation date.

The Actuarially Determined Contribution for fiscal year 2023-24 is $8,671,481; its component pieces are shown graphically below.

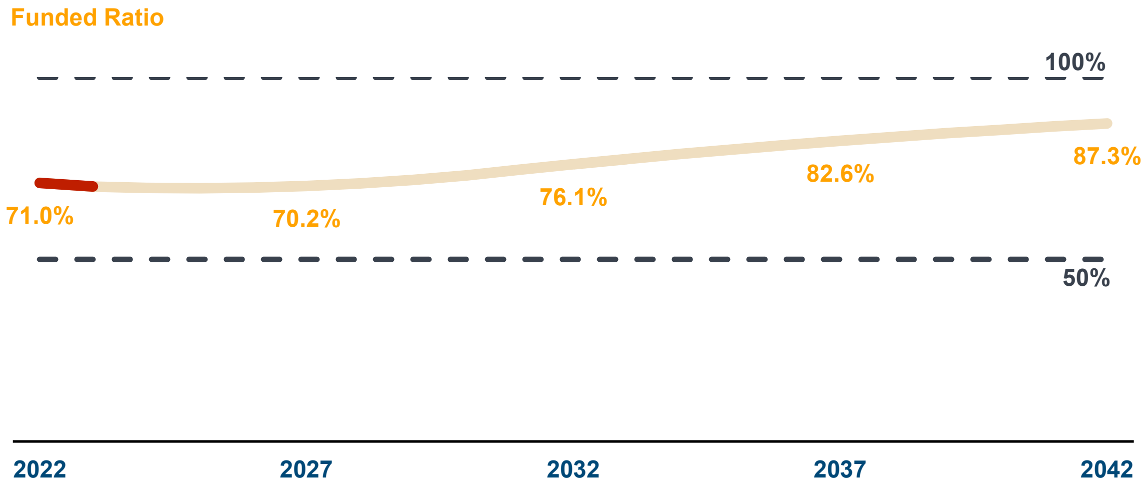


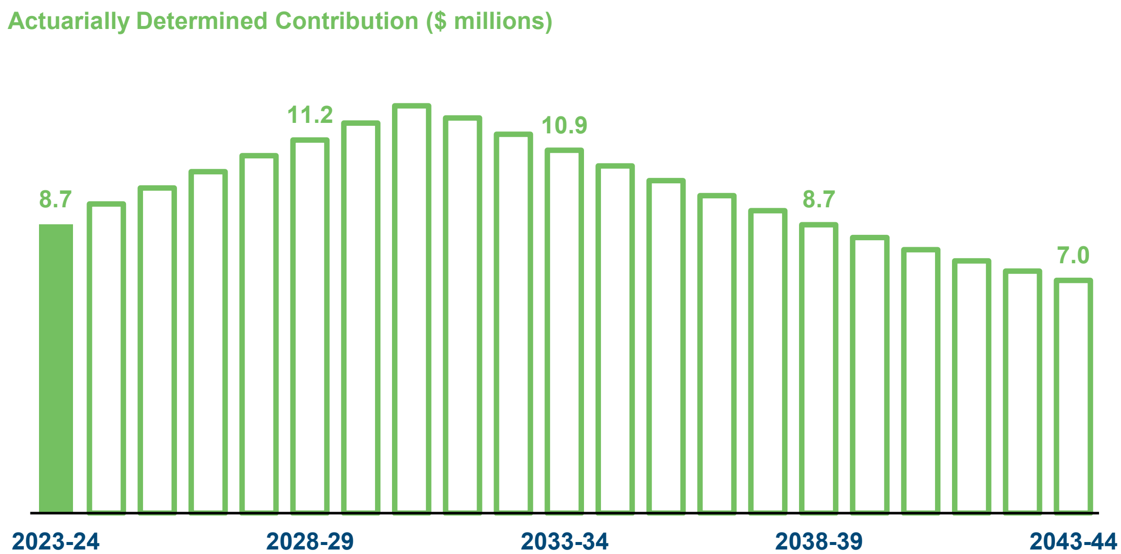
The chart below shows the Actuarially Determined Contribution for the past five fiscal years. Note that the Normal Cost is relatively consistent from year to year, whereas the Past Service Cost tends to be more volatile since it reflects the impact of asset performance.



Section I - Executive Summary
Long-Range Forecast

If the Town pays the Actuarially Determined Contribution each year, the investments earn exactly the assumed interest rate each year, and there are no changes in the plan provisions or in the actuarial methods and assumptions, then we project the following changes in the plan's funded status and the long-range contribution levels:

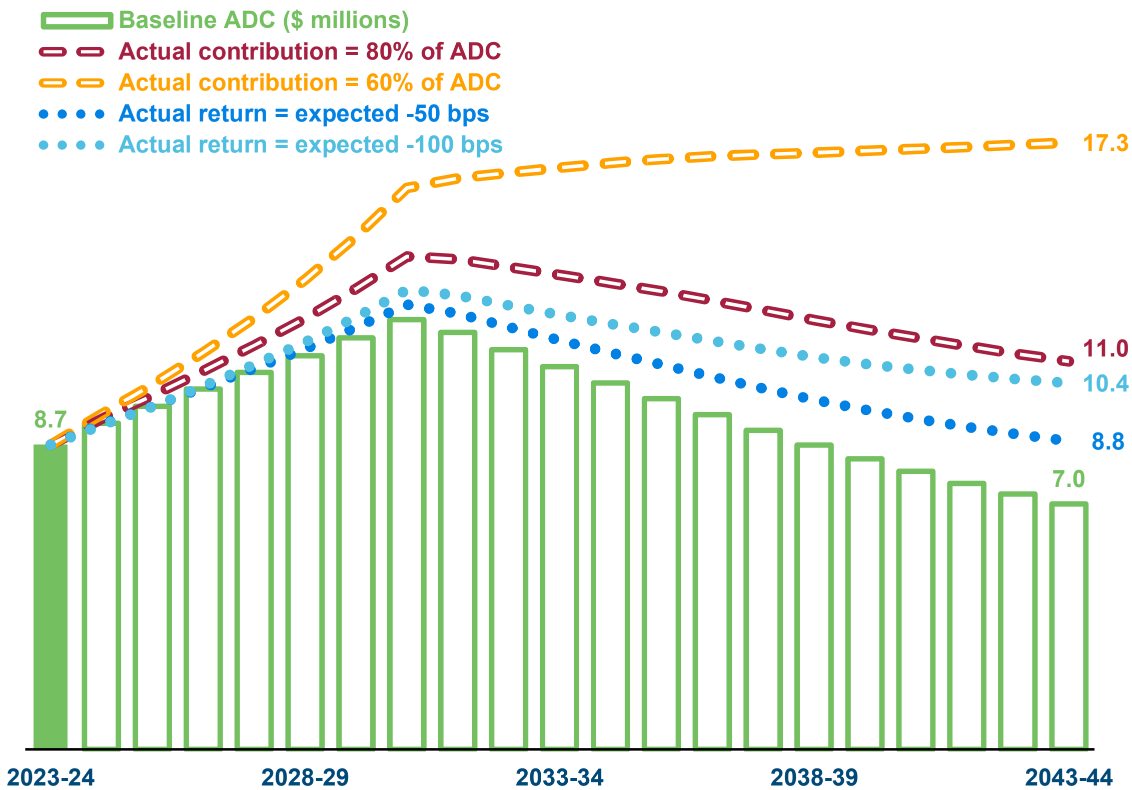




To the extent that there are future investment or liability gains or losses, changes in the actuarial assumptions or methods, or plan changes, the actual valuation results will differ from these forecasts. Please see Section III C for more details of the long range forecast.

Section I - Executive Summary
Long-Range Forecast (continued)

Pension benefits are paid for through a combination of contributions from the Town and from employees, and from investment income. If the Town pays less than the Actuarially Determined Contribution each year, or if the investments persistently earn less than the assumed interest rate, then the plan's funded status would suffer, and to compensate, the Town's contribution levels would be pushed higher. The risks of underfunding and underearning are illustrated in the hypothetical scenarios below:



The scenarios illustrated above are based on deterministic projections that assume emerging plan experience always exactly matches the actuarial assumptions; in particular that actual asset returns will be constant in every year of the projection period. Variation in asset returns, contribution amounts, and many other factors may have a significant impact on the long-term financial health of the plan, the liquidity constraints on plan assets, and the Town's future contribution levels. Stochastic projections could be prepared that would enable the Town to understand the potential range of future results based on the expected variability in asset returns and other factors. Such analysis was beyond the scope of this engagement.

Section I - Executive Summary
Summary of Principal Results

Membership as of	July 1, 2021	July 1, 2022
Active Members	445	405
Terminated Members	62	67
Members in Pay Status	741	760
Total Count	1,248	1,232
Payroll	$29,090,521	$29,597,093

Assets and Liabilities as of	July 1, 2021	July 1, 2022
Market Value of Assets	$202,678,782	$170,621,683
Actuarial Value of Assets	187,431,488	188,034,093
Accrued Liability for Active Members	88,092,234	87,757,238
Accrued Liability for Terminated Members	4,840,324	5,167,609
Accrued Liability for Members in Pay Status	157,773,007	171,858,569
Total Accrued Liability	250,705,565	264,783,416
Unfunded Accrued Liability	63,274,077	76,749,323
Funded Ratio	74.8%	71.0%

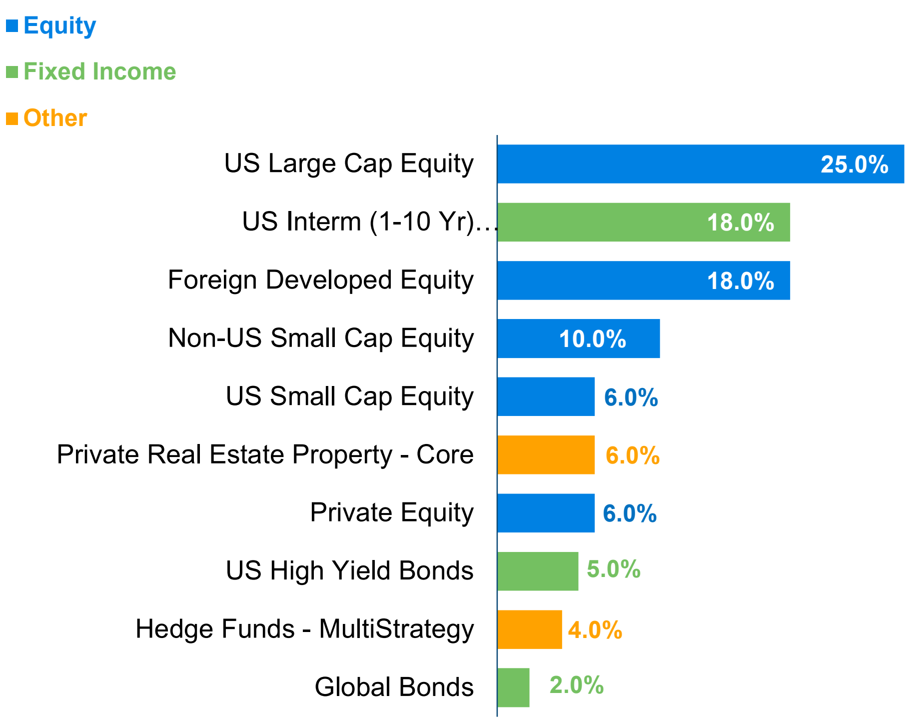
Actuarially Determined Contribution for Fiscal Year	2022-23	2023-24
Normal Cost	$2,037,958	$2,050,080
Past Service Cost	4,679,897	5,915,108
Expenses and Interest	592,230	706,293
Actuarially Determined Contribution	7,310,085	8,671,481
Allocated to BOE	2,048,999	2,532,775
Allocated to Police	3,389,405	3,865,548
Allocated to Town	1,316,059	1,613,257
Allocated to Sanitation	75,318	88,637
Allocated to Sewer	120,281	144,685
Allocated to Water	360,023	426,579
Total	7,310,085	8,671,481

Section II - Plan Assets
A. Summary of Fund Transactions

Market Value as of July 1, 2021	$202,678,782
Town Contributions	7,213,955
Member Contributions	1,981,870
Net Investment Income	(24,164,183)
Benefit Payments	(16,972,257)
Administrative Expenses	(116,484)
Market Value as of June 30, 2022	170,621,683
Expected Return on Market Value of Assets	13,910,303
Market Value (Gain)/Loss	38,074,486
Approximate Rate of Return *	-12.16%

* The rate shown here is not the dollar or time weighted investment yield rate which measures investment performance. It is an approximate net return assuming all activity occurred on average midway through the fiscal year.

Target Asset Allocation as of June 30, 2022



Section II - Plan Assets
B. Development of Actuarial Value of Assets

In order to minimize the impact of market fluctuations on the contribution level, we use an Actuarial Value of Assets that recognizes gains and losses asymptotically over a five year period. The Actuarial Value of Assets as of July 1, 2022 is determined below.

1.	Expected Actuarial Value of Assets:	
	a. Actuarial Value of Assets as of July 1, 2021	$187,431,488
	b. Town and Member Contributions	9,195,825
	c. Benefit Payments and Administrative Expenses	(17,088,741)
	d. Expected Earnings Based on 7.00% Interest	12,848,624
	e. Expected Actuarial Value of Assets as of July 1, 2022	192,387,196
2.	Market Value of Assets as of July 1, 2022	170,621,683
3.	Unrecognized Gains/(Losses): (2) - (1e)	(21,765,513)
4.	Amount Recognized as of July 1, 2022: 20% of (3)	(4,353,103)
5.	Preliminary Actuarial Value of Assets as of July 1, 2022: (1e) + (4)	188,034,093
6.	Preliminary Actuarial Value of Assets as a % of Market Value: (5) / (2)	110.2%
7.	Actuarial Value of Assets as of July 1, 2022: (5), within +/- 20% of (2)	188,034,093
8.	Actual Earnings on Actuarial Value of Assets: (7) - [(1a) + (1b) + (1c)]	8,495,521
9.	Approximate Rate of Return on Actuarial Value of Assets	4.63%
10.	Actuarial Value (Gain)/Loss: (1d) - (8)	4,353,103

Section III - Development of Contribution
A. Past Service Cost

In determining the Past Service Cost, the Unfunded Accrued Liability is amortized as a level percent over a period of 20 years starting on July 1, 2019.

		BOE	Police	Town	Sanitation	Sewer	Water	Total
1.	Accrued Liability							
	Active Members	$31,742,149	$34,371,391	$15,120,159	$444,883	$1,086,535	$4,992,121	$87,757,238
	Terminated Members	2,344,006	1,650,214	797,618	0	290,293	85,478	5,167,609
	Service Retirees	44,311,478	55,864,207	43,819,161	3,026,625	4,319,355	11,348,835	162,689,661
	Disabled Retirees	563,004	1,667,878	342,389	0	0	0	2,573,271
	Beneficiaries	1,051,141	3,006,152	2,486,341	0	0	52,003	6,595,637
	Total Accrued Liability	80,011,778	96,559,842	62,565,668	3,471,508	5,696,183	16,478,437	264,783,416
2.	Actuarial Value of Assets * (see Section IIB)	56,819,805	68,571,297	44,430,572	2,465,267	4,045,105	11,702,047	188,034,093
3.	Unfunded Accrued Liability: (1) - (2)	23,191,973	27,988,545	18,135,096	1,006,241	1,651,078	4,776,390	76,749,323
4.	Funded Ratio: (2) / (1)	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%
5.	Amortization Period	17	17	17	17	17	17	17
6.	Amortization Growth Rate	3.25%	3.25%	3.25%	3.25%	3.25%	3.25%	3.25%
7.	Past Service Cost: (3) amortized over (5)	1,787,417	2,157,091	1,397,681	77,551	127,249	368,119	5,915,108

* The Actuarial Value of Assets is allocated in proportion to each group's Accrued Liability.

Section III - Development of Contribution
B. Actuarially Determined Contribution for FY 2023-24

		BOE	Police	Town	Sanitation	Sewer	Water	Total
1.	Total Normal Cost	$1,309,095	$2,214,419	$389,018	$18,797	$28,425	$122,484	$4,082,238
2.	Expected Member Contributions	754,727	943,737	228,681	10,552	15,457	79,004	2,032,158
3.	Town Normal Cost: (1) - (2)	554,368	1,270,682	160,337	8,245	12,968	43,480	2,050,080
4.	Past Service Cost (see Section IIIA)	1,787,417	2,157,091	1,397,681	77,551	127,249	368,119	5,915,108
5.	Expected Administrative Expenses *	37,587	86,155	10,871	559	880	2,948	139,000
6.	Interest *	153,403	351,620	44,368	2,282	3,588	12,032	567,293
7.	Actuarially Determined Contribution for FY 2023-24: (3) + (4) + (5) + (6)	2,532,775	3,865,548	1,613,257	88,637	144,685	426,579	8,671,481

* The Expected Administrative Expense and Interest are allocated in proportion to the Town Normal Cost.

Section III - Development of Contribution
C. Long Range Forecast

This forecast is based on the results of the July 1, 2022 actuarial valuation and assumes that the Town will pay the Actuarially Determined Contribution each year, the assets will return the assumed interest rate on a market value basis each year, and there are no future changes in the actuarial methods or assumptions or in the plan provisions. Actual results at each point in time will yield different values, reflecting the actual experience of the plan membership and assets.

	Values as of the Valuation Date					Cash Flows Projected to the Following Fiscal Year			
Valuation Date	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio	Fiscal Year	Town Contributions	Member Contributions	Benefit Payments	Net Cash Flows
7/1/2022	$264,783,416	$188,034,093	$76,749,323	71.0%	2023-24	$8,671,481	$1,998,872	($18,483,233)	($7,812,880)
7/1/2023	269,026,000	188,321,000	80,705,000	70.0%	2024-25	9,281,000	1,958,000	(19,007,000)	(7,768,000)
7/1/2024	273,077,000	190,099,000	82,978,000	69.6%	2025-26	9,761,000	1,918,000	(19,546,000)	(7,867,000)
7/1/2025	276,773,000	192,504,000	84,269,000	69.6%	2026-27	10,254,000	1,875,000	(20,124,000)	(7,995,000)
7/1/2026	280,083,000	195,365,000	84,718,000	69.8%	2027-28	10,732,000	1,832,000	(20,664,000)	(8,100,000)
7/1/2027	282,933,000	198,625,000	84,308,000	70.2%	2028-29	11,206,000	1,815,000	(21,054,000)	(8,033,000)
7/1/2028	285,322,000	202,288,000	83,034,000	70.9%	2029-30	11,712,000	1,802,000	(21,313,000)	(7,799,000)
7/1/2029	287,412,000	206,520,000	80,892,000	71.9%	2030-31	12,232,000	1,796,000	(21,581,000)	(7,553,000)
7/1/2030	289,348,000	211,496,000	77,852,000	73.1%	2031-32	11,867,000	1,784,000	(21,883,000)	(8,232,000)
7/1/2031	291,166,000	217,251,000	73,915,000	74.6%	2032-33	11,376,000	1,781,000	(22,114,000)	(8,957,000)
7/1/2032	292,775,000	222,858,000	69,917,000	76.1%	2033-34	10,892,000	1,782,000	(22,319,000)	(9,645,000)
7/1/2033	294,259,000	228,233,000	66,026,000	77.6%	2034-35	10,427,000	1,783,000	(22,577,000)	(10,367,000)
7/1/2034	295,675,000	233,381,000	62,294,000	78.9%	2035-36	9,981,000	1,769,000	(22,948,000)	(11,198,000)
7/1/2035	296,963,000	238,233,000	58,730,000	80.2%	2036-37	9,527,000	1,751,000	(23,342,000)	(12,064,000)
7/1/2036	297,943,000	242,643,000	55,300,000	81.4%	2037-38	9,084,000	1,737,000	(23,613,000)	(12,792,000)
7/1/2037	298,558,000	246,531,000	52,027,000	82.6%	2038-39	8,659,000	1,737,000	(23,758,000)	(13,362,000)
7/1/2038	298,875,000	249,992,000	48,883,000	83.6%	2039-40	8,269,000	1,744,000	(23,829,000)	(13,816,000)
7/1/2039	299,065,000	253,154,000	45,911,000	84.6%	2040-41	7,910,000	1,752,000	(23,849,000)	(14,187,000)
7/1/2040	299,194,000	256,104,000	43,090,000	85.6%	2041-42	7,572,000	1,770,000	(23,805,000)	(14,463,000)
7/1/2041	299,337,000	258,910,000	40,427,000	86.5%	2042-43	7,264,000	1,792,000	(23,666,000)	(14,610,000)

Section III - Development of Contribution
D. History of Funded Status

Valuation Date	Actuarial Value of Assets	Accrued Liability	Unfunded Accrued Liability	Funded Ratio
July 1, 2013	$147,364,410	$186,573,902	$39,209,492	79.0%
July 1, 2014	154,818,726	196,066,167	41,247,441	79.0%
July 1, 2015	160,425,467	206,770,621	46,345,154	77.6%
July 1, 2016	163,275,700	212,558,900	49,283,200	76.8%
July 1, 2017	168,154,844	222,019,846	53,865,002	75.7%
July 1, 2018	173,404,194	229,247,886	55,843,692	75.6%
July 1, 2019	177,298,506	243,091,370	65,792,864	72.9%
July 1, 2020	178,864,320	249,058,345	70,194,025	71.8%
July 1, 2021	187,431,488	250,705,565	63,274,077	74.8%
July 1, 2022	188,034,093	264,783,416	76,749,323	71.0%

Section III - Development of Contribution
E. History of Town Contributions

Fiscal Year	Actuarially Determined Contribution	Actual Town Contribution	Payroll	Actual Contribution as a Percent of Payroll
2012-13	$4,928,588	$4,928,588	$36,222,391	13.6%
2013-14	5,124,026	5,124,026	33,571,741	15.3%
2014-15	5,115,905	5,115,905	34,496,455	14.8%
2015-16	5,243,812	5,243,812	34,912,911	15.0%
2016-17	5,733,801	5,733,801	35,090,818	16.3%
2017-18	6,100,460	6,100,460	33,760,473	18.1%
2018-19	5,849,554	5,867,726	33,094,108	17.7%
2019-20	6,201,527	6,201,527	32,333,836	19.2%
2020-21	6,568,677	6,568,677	32,225,171	20.4%
2021-22	7,213,955	7,213,955	30,970,675	23.3%
2022-23	7,310,085	TBD	29,090,521	TBD
2023-24	8,671,481	TBD	29,597,093	TBD

Section IV - Membership Data
A. Reconciliation of Membership from Prior Valuation

Details of the changes in the Plan membership since the last valuation are shown below. Additional details on the Plan membership are provided in the remainder of Section IV.

	Active Members	Terminated Vested Members	Nonvested Members Due Refunds	Service Retirees	Disabled Retirees	Beneficiaries	Total
Count July 1, 2021	445	62	0	676	11	54	1,248
Terminated							
- refund due	(2)	-	2	-	-	-	0
- paid refund	(6)	-	-	-	-	-	(6)
- vested benefits due	(6)	6	-	-	-	-	0
Retired	(33)	(3)		36	-	-	0
Died							
- with beneficiary	-	-	-	(2)	-	-	(2)
- no beneficiary	(1)	-		(13)	-	(3)	(17)
Benefits expired	-	-	-	-	-	(1)	(1)
New member	7	-	-	-	-	-	7
Rehired	1	-	-	-	-	-	1
New Alternate Payee	-	-	-	-	-	2	2
Correction	-	-		-	-	-	0
Count July 1, 2022	405	65	2	697	11	52	1,232
Breakdown on July 1, 2022							
BOE	235	45	0	356	5	14	655
Police	105	7	2	101	5	14	234
Town	45	9	0	181	1	23	259
Sanitation	2	0	0	7	0	0	9
Sewer	3	3	0	13	0	0	19
Water	15	1	0	39	0	1	56
Total	405	65	2	697	11	52	1,232

Section IV - Membership Data
B. Statistics of Active Membership

		As of July 1, 2021	As of July 1, 2022
Number of Active Members	BOE	259	235
	Police	113	105
	Town	50	45
	Sanitation	3	2
	Sewer	3	3
	Water	17	15
	Total	445	405
Average Age	BOE	53.6	54.0
	Police	37.7	37.0
	Town	55.4	56.1
	Sanitation	53.5	51.9
	Sewer	57.0	58.0
	Water	55.7	56.4
	Total	49.9	49.9
Average Service	BOE	16.2	16.9
	Police	11.5	11.0
	Town	22.1	22.9
	Sanitation	19.0	15.9
	Sewer	21.1	22.1
	Water	23.2	24.2
	Total	16.0	16.3
Total Payroll	BOE	$11,723,765	$12,454,240
	Police	11,366,906	11,161,204
	Town	4,121,810	4,175,989
	Sanitation	275,305	193,079
	Sewer	268,896	287,728
	Water	1,333,839	1,324,853
	Total	29,090,521	29,597,093
Average Payroll	BOE	$45,266	$52,997
	Police	100,592	106,297
	Town	82,436	92,800
	Sanitation	91,768	96,540
	Sewer	89,632	95,909
	Water	78,461	88,324
	Total	65,372	73,079

Section IV - Membership Data
C. Distribution of Active Members as of July 1, 2022

BOE

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25								0
25-29	1	1						2
30-34	2	6						8
35-39	3	5	9	1				18
40-44		6	4	4	3			17
45-49	2	6	4	2	3	1		18
50-54		4	14	6	10	1		35
55-59	1	5	14	25	8	5		58
60-64	3	6	14	19	16	4	3	65
65+			1	7	3	2	1	14
Total	12	39	60	64	43	13	4	235

Police

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25	6							6
25-29	19	4						23
30-34	5	9	2					16
35-39	3	4	15	3				25
40-44			2	5				7
45-49			3	5	8	2		18
50-54			2	2	2	1		7
55-59				1	1			2
60-64							1	1
65+								0
Total	33	17	24	16	11	3	1	105

Town

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25								0
25-29								0
30-34								0
35-39								0
40-44				3	2			5
45-49				3	2			5
50-54				3	5			8
55-59				5	2	2	3	12
60-64				1	8		2	11
65+					2		2	4
Total	0	0	0	15	21	2	7	45

Section IV - Membership Data
C. Distribution of Active Members as of July 1, 2022

Sanitation

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25								0
25-29								0
30-34								0
35-39								0
40-44								0
45-49				1				1
50-54								0
55-59				1				1
60-64								0
65+								0
Total	0	0	0	2	0	0	0	2

Sewer

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25								0
25-29								0
30-34								0
35-39								0
40-44								0
45-49								0
50-54								0
55-59					2			2
60-64					1			1
65+								0
Total	0	0	0	0	3	0	0	3

Water

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25								0
25-29								0
30-34								0
35-39								0
40-44				1				1
45-49				1				1
50-54				3	2			5
55-59				1	2		1	4
60-64						1	1	2
65+							2	2
Total	0	0	0	6	4	1	4	15

Section IV - Membership Data
D. Statistics of Inactive Membership

	As of July 1, 2021	As of July 1, 2022
Terminated Vested Members		
Number	62	65
Total Annual Benefit	$638,128	$673,759
Average Annual Benefit	10,292	10,366
Average Age	55.5	55.2
Nonvested Members Due Refunds		
Number	0	2
Total Refund Due	$0	$60,388
Service Retirees		
Number	676	697
Total Annual Benefit	$15,227,261	$16,510,473
Average Annual Benefit	22,526	23,688
Average Age	72.9	73.1
Disabled Retirees		
Number	11	11
Total Annual Benefit	$245,980	$246,656
Average Annual Benefit	22,362	22,423
Average Age	62.2	63.2
Beneficiaries		
Number	54	52
Total Annual Benefit	$572,745	$713,016
Average Annual Benefit	10,606	13,712
Average Age	74.0	73.6

Section IV - Membership Data
E. Distribution of Inactive Members as of July 1, 2022

	Age	Number	Annual Benefits
Terminated Vested Members	< 50	17	255284
	50 - 59	26	247,151
	60 - 69	22	171,324
	70 - 79	0	0
	80 - 89	0	0
	90 +	0	0
	Total	65	673,759
Service Retirees	< 50	1	$82,563
	50 - 59	55	2,716,147
	60 - 69	213	5,996,184
	70 - 79	284	5,911,854
	80 - 89	102	1,443,999
	90 +	42	359,726
	Total	697	16,510,473
Disabled Retirees	< 50	1	$22,573
	50 - 59	4	93,532
	60 - 69	3	57,019
	70 - 79	2	46,223
	80 - 89	1	27,309
	90 +	0	0
	Total	11	246,656
Beneficiaries	< 50	3	86,160
	50 - 59	3	61,008
	60 - 69	15	179,403
	70 - 79	16	202,809
	80 - 89	10	145,310
	90 +	5	38,326
	Total	52	713,016

Section V - Analysis of Risk
A. Introduction

The results of this actuarial valuation are based on one set of reasonable assumptions. However, it is almost certain that future experience will not exactly match these assumptions. As an example, the plan's investments may perform better or worse than assumed in any single year and over any longer time horizon. It is therefore important to consider the potential impacts of these likely differences when making decisions that may affect the future financial health of the plan, or of the plan's members.

In addition, as plans mature they accumulate larger pools of assets and liabilities. The increase in size in turn increases the potential magnitude of adverse experience. As an example, the dollar impact of a 10% investment loss on a plan with $1 billion in assets and liabilities is much greater than the dollar impact for a plan with $1 million in assets and liabilities. Since pension plans make long-term promises and rely on long-term funding, it is important to consider how mature the plan is today, and how mature it may become in the future.

Actuarial Standard of Practice No. 51 (ASOP 51) directs actuaries to provide pension plan sponsors with information concerning the risks associated with the plan:

- Identify risks that may be significant to the plan.
- Assess the risks identified as significant to the plan. The assessment does not need to include numerical calculations.
- Disclose plan maturity measures and historical information that are significant to understanding the plan's risks.

This section of the report uses the framework of ASOP 51 to communicate important information about significant risks to the plan, the plan's maturity, and relevant historical plan data.

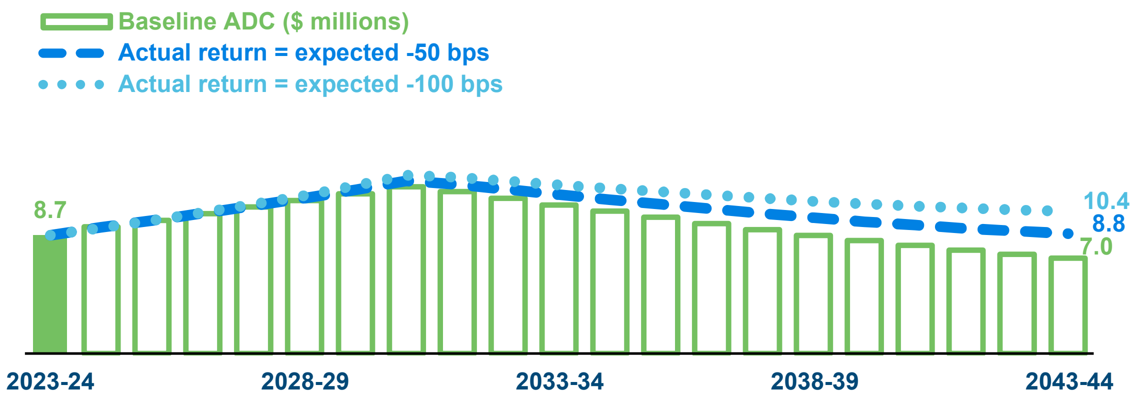
Please see Section III C for more information on the basis for the projected results shown on the following pages.

Section V - Analysis of Risk
B. Risk Identification and Assessment

Investment Risk

Definition: This is the potential that investment returns will be different than expected.

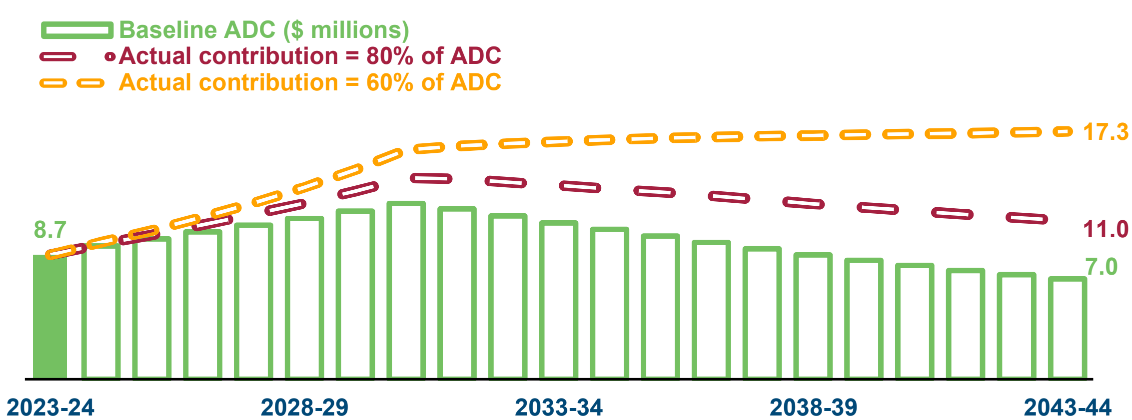
Identification: To the extent that actual investment returns differ from the assumed investment return, the plan's future assets, Actuarially Determined Contributions, and funded status may differ significantly from those presented in this valuation. The consequences of persistent underperformance on future Actuarially Determined Contribution levels are illustrated below:



Contribution Risk

Definition: This is the potential that actual future contributions will be less than the Actuarially Determined Contribution.

Identification: Over the past 10 years, actual contributions have been 100.0% of the Actuarially Determined Contribution in total. The consequences of persistent underfunding on future Actuarially Determined Contribution levels are illustrated below:



Section V - Analysis of Risk
B. Risk Identification and Assessment

Liquidity Risk

Definition: This is the potential that assets must be liquidated at a loss earlier than planned in order to pay for the plan's benefits and operating costs. This risk is heightened for plans with negative cash flows, in which contributions are not sufficient to cover benefit payments plus expenses.

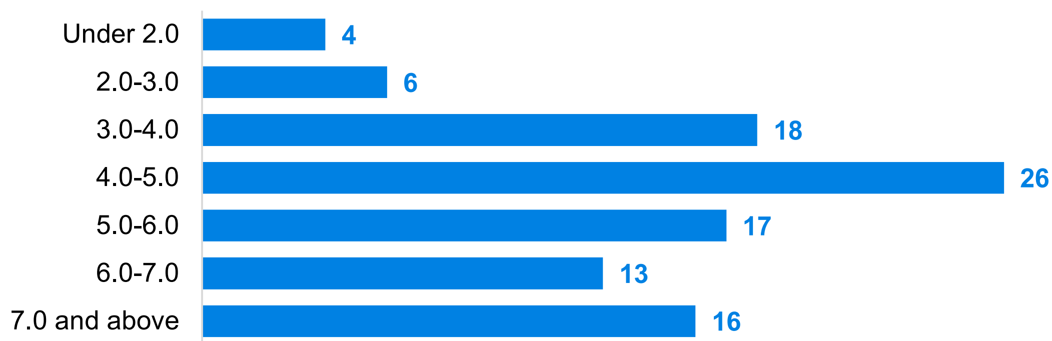
Identification: In 2021-22, the plan had negative cash flow, with town and member contributions to the plan of $9,195,825 compared to $17,088,741 of benefit payments and administrative expenses paid out of the plan. We suggest that you consult with your investment advisors with respect to the liquidity characteristics of the plan's investment holdings.

Maturity Risk

Definition: This is the potential for total plan liabilities to become more heavily weighted toward inactive liabilities over time, and for plan assets and/or liabilities to become larger relative to the active member liability.

Identification: The plan is subject to maturity risk because as plan assets and liabilities continue to grow, the dollar impact of any gains or losses on the assets or liabilities also becomes larger.

Assessment: As of July 1, 2022, the plan's Asset Volatility Ratio (the ratio of the market value of plan assets to payroll) is 5.8. According to Milliman's 2021 Public Pension Funding Study, the 100 largest US public pension plans have the following range of Asset Volatility Ratios:



Inflation Risk

Definition: This is the potential for a pension to lose purchasing power over time due to inflation.

Identification: The members of pension plans without fully inflation-indexed benefits are subject to the risk that their purchasing power will be reduced over time due to inflation.

Assessment: This plan does not contain a mechanism to regularly increase benefits after retirement, so members bear all of the inflation risk.

Section V - Analysis of Risk
B. Risk Identification and Assessment

Insolvency Risk

Definition: This is the potential that a plan will become insolvent; that is, assets will be fully depleted.

Identification: If a plan becomes insolvent, contractually required benefits must be paid from the plan sponsor's other remaining assets.

Assessment: Under the GASB 68 depletion date methodology, the plan is not projected to become insolvent. Please see the GASB 68 report for more details on the underlying analysis.

Demographic Risks

Definition: This is the potential that mortality, turnover, retirement, or other demographic experience will be different than expected.

Identification: The pension liabilities reported herein have been calculated by assuming that members will follow patterns of demographic experience as described in Appendix B. If actual demographic experience or future demographic assumptions are different from what is assumed to occur in this valuation, future pension liabilities, Actuarially Determined Contributions, and funded status may differ significantly from those presented in this valuation. Formal Experience Studies performed on a regular basis are helpful in ensuring that the demographic assumptions reflect emerging plan experience. A formal experience study was conducted in 2020 covering the period 2014-2019.

Retirement Risk

Definition: This is the potential for members to retire and receive subsidized benefits that are more valuable than expected.

Identification: This plan has valuable early retirement benefits. If members retire at earlier ages than are anticipated by the actuarial assumptions, this will put upward pressure on subsequent Actuarially Determined Contributions.

Pensionable Earnings Risk

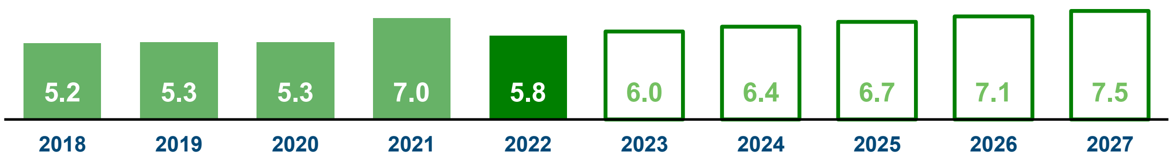
Definition: This is the potential for active members to add items to their pensionable earnings and receive pension benefits that are higher than expected.

Identification: This plan includes overtime in pensionable earnings. If members earn unusual amounts of overtime in the years just prior to retirement, this will put upward pressure on subsequent Actuarially Determined Contributions.

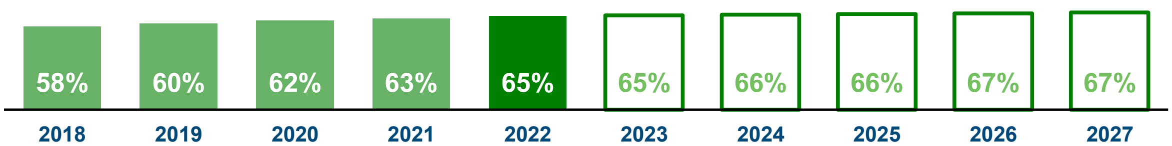
Section V - Analysis of Risk
C. Maturity Measures

The metrics presented below are different ways of understanding the plan's maturity level, both in the past and as it is expected to change in the coming years.

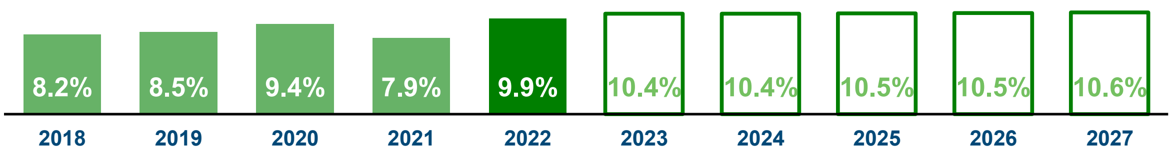
Asset Volatility Ratio: Market Value of Assets compared to Payroll



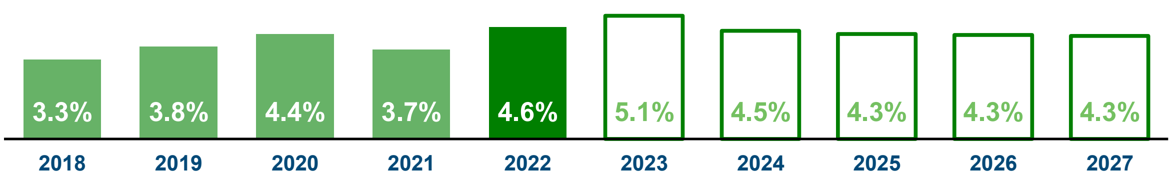
Accrued Liability for members in pay status compared to total Accrued Liability



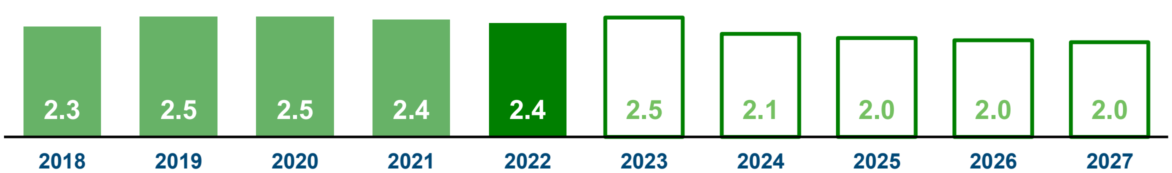
Benefit Payments compared to Market Value of Assets



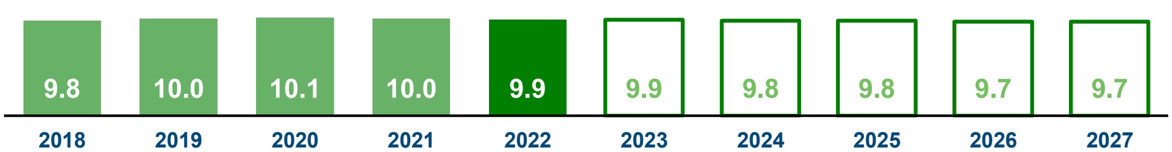
Net Cash Flows compared to Market Value of Assets



Benefit Payments compared to Town Contributions



Duration of Accrued Liability (based on GASB 68 sensitivity disclosures)



Appendix A - Actuarial Funding Method

The actuarial funding method used in the valuation of this Plan is known as the Entry Age Normal Method. The Actuarially Determined Contribution consists of three pieces: Normal Cost plus a Past Service Cost payment to gradually eliminate the Unfunded Accrued Liability plus an estimate of administrative expenses that will be paid from plan assets plus interest to reflect the timing of the contribution relative to the valuation date.

The Normal Cost is determined by calculating the present value of future benefits for present active Members that will become payable as the result of death, disability, retirement or termination. This cost is then spread as a level percentage of earnings from entry age to termination as an Active Member. If Normal Costs had been paid at this level for all prior years, a fund would have accumulated. Because this fund represents the portion of benefits that would have been funded to date, it is termed the Accrued Liability. In fact, it is calculated by adding the present value of benefits for Retired Members and Terminated Vested Members to the present value of benefits for Active Members and subtracting the present value of future Normal Cost contributions.

The funding cost of the Plan is derived by making certain specific assumptions as to rates of interest, mortality, turnover, etc. which are assumed to hold for many years into the future. Since actual experience may differ somewhat from the assumptions, the costs determined by the valuation must be regarded as estimates of the true costs of the Plan.

The Unfunded Accrued Liability is the excess of the Accrued Liability over the assets which have been accumulated for the plan. This Unfunded Accrued Liability is amortized as a level percent over a period of 20 years starting on July 1, 2019. The amortization period will decrease each year until it reaches 10 years, after which point it will remain at 10 years.

The Actuarial Value of Assets is determined by recognizing market gains and losses asymptotically over a five year period, so long as the resulting value is within +/- 20% of the Market Value.

The long-range forecasts included in this report have been developed by assuming that members will terminate, retire, become disabled, and die according to the actuarial assumptions with respect to these causes of decrement, and that pay increases, cost of living adjustments, and so forth will likewise occur according to the actuarial assumptions. For those unions whose new employees are eligible to participate in this plan, members who are projected to leave active employment are assumed to be replaced by new active members with the same age, service, gender, and pay characteristics as those hired in the past few years.

Appendix B - Actuarial Assumptions

Each of the assumptions used in this valuation was set based on a formal study of the plan's experience for the period ending June 30, 2019 which reflected industry standard published tables and data, the particular characteristics of the plan, relevant information from the plan sponsor or other sources about future expectations, and our professional judgment regarding future plan experience. We believe the assumptions are reasonable for the contingencies they are measuring, and are not anticipated to produce significant cumulative actuarial gains or losses over the measurement period.

Interest Rate 7.00%

Inflation 2.60%

Amortization Growth Rate 3.25%

Expenses Average of the actual administrative expenses paid by the pension trust in the preceding three years, increased by one year of inflation and rounded to the nearest $1,000.

Salary Scale

Age	Police	Town	BOE
25	8.90%	6.25%	6.25%
30	6.40%	4.00%	4.75%
35	5.20%	3.25%	4.50%
40	4.50%	3.00%	4.25%
45	4.20%	3.00%	4.00%
50	3.90%	3.00%	2.80%
55	3.50%	3.00%	2.80%
60	3.25%	2.70%	2.80%
65	3.00%	2.70%	2.80%
70	3.00%	2.70%	2.80%

Marital Status 80% of male members and 60% of female members are assumed to be married at retirement, with husbands 2 years older than their spouses.

Mortality

Police PubS-2010 Mortality Table with generational projection per the MP-2021 ultimate scale, with employee rates before benefit commencement and healthy or disabled annuitant rates after benefit commencement. This assumption includes a margin for improvements in longevity beyond the valuation date.

Town/BOE PubG-2010 Mortality Table with generational projection per the MP-2021 ultimate scale, with employee rates before benefit commencement and healthy or disabled annuitant rates after benefit commencement. This assumption includes a margin for improvements in longevity beyond the valuation date.

Appendix B - Actuarial Assumptions

Turnover

Police

Service	Rate
0	12.00%
1	10.00%
2	8.00%
3	5.00%
4	3.00%
5	2.00%
6+	0.00%

Town

Age	Male	Female
20	10.00%	20.00%
25	8.00%	15.00%
30	6.00%	8.00%
35	1.50%	1.50%
40	1.50%	1.50%
45	1.50%	1.50%
50	1.50%	1.50%
55+	0.00%	0.00%

BOE

Age	Male	Female
20	10.00%	20.00%
25	5.00%	15.00%
30	5.00%	8.00%
35	4.00%	6.50%
40	2.00%	5.00%
45	1.50%	5.00%
50	1.00%	4.50%
55	1.00%	4.00%
60	0.00%	3.25%
65+	0.00%	2.00%

Disability

Police

50% of the 1985 Disability Pension Table Class 4 Rates

Age	Male	Female
20	0.09%	0.05%
30	0.18%	0.15%
40	0.35%	0.32%
50	0.68%	0.66%
60+	1.72%	1.23%

Appendix B - Actuarial Assumptions

Disability

Town/BOE

50% of the 1985 Disability Pension Table Class 1 Rates

Age	Male	Female
20	0.01%	0.02%
30	0.02%	0.04%
40	0.06%	0.11%
50	0.18%	0.27%
60+	0.63%	0.58%

Retirement

Police

Age	Rate
49	30%
50	50%
51-52	30%
53	50%
54-59	15%
60	100%

Town/BOE

First Rule of 80 Eligible Age		Other Ages	
Age	Rate	Age	Rate
<58	2%	50-55	4%
58	25%	56	6%
59-61	20%	57	2%
62-64	50%	58	5%
65-67	65%	59	6%
68	75%	60	8%
69	85%	61	9%
70	100%	62	16%
		63	12%
		64	20%
		65-67	25%
		68	30%
		69	40%
		70-74	20%
		75	100%

Appendix C - Summary of Plan Provisions - Town/BOE

This exhibit summarizes the major provisions of the Plan. It is not intended to be, nor should it be interpreted as a complete statement of all plan provisions. All eligibility requirements and benefit amounts shall be determined in strict accordance with the plan document itself. To the extent that this summary does not accurately reflect the plan provisions, then the results of this valuation may not be accurate.

Effective Date January 1, 1987

Earnings Basic Compensation including overtime, commissions, bonuses, and any other form of additional compensation excluding any maintenance or special payments.

Employees Covered Any full-time and permanent part-time employee in the employ of the Town, excluding police and Teachers. The Town plan is closed to new entrants.

Participant's Contributions 5.0% of Earnings if as of September 1, 1995 you were within 7 years of being eligible to retire under normal or special retirement (age 62 with 25 years of contributory service).

5.9% of Earnings for unaffiliated employees and employees covered by certain bargaining units.

6.4% of Earnings for all other employees.

No contributions will be required after 33⅓ years of contributing service (35 years for Teamsters).

Credited Interest 5% per annum.

Contributory Service Years and full months from date of participation, not greater than 33⅓.

Final Average Earnings Average Earnings paid to a member during the highest 3 years out of active employment.

Normal or Special Retirement

Eligibility Hired prior to 7/1/1995: Earlier of age plus years of contributory service of at least 80 or age 62.

Hired on or after 7/1/1995: Earlier of age plus years of contributory service of at least 80 or age 65 and 5 years of contributory service.

Benefit 2% of Final Average Earnings multiplied by years of contributing service up to a maximum of 66-2/3%.

Appendix C - Summary of Plan Provisions - Town/BOE

Early Retirement

Eligibility Age 55 and 10 years of contributory service.

Benefit Normal Retirement Benefit based on Credited Service and Final Average Earnings to date of actual retirement reduced by 3% for each of the first 3 years by which the participant's retirement date precedes age 65 and 5% for each of the next 7 years (reduced by 6% per year for Teamsters).

Deferred Retirement

Eligibility Members may continue to work beyond Normal Retirement.

Benefit Normal Retirement Benefit based on Credited Service and Final Average Earnings to actual date of retirement.

Death Benefits

Before Retirement A monthly survivor benefit payable on behalf of an employee who has attained age 55 and completed 10 years of contributory service, and who has a surviving spouse. The monthly benefit will be 50% of the monthly retirement benefit which such employee would have received had he retired on the day before he died and elected a 50% Joint & Survivor Annuity.

For those not eligible for the spouse's benefit, a lump sum benefit is payable equal to the employee contributions with interest.

After Retirement Based on form of benefit elected at retirement.

Disability Benefits

Eligibility A member who becomes disabled during the performance of duties or who has 15 years of contributory service and becomes permanently and totally disabled as a result of a non-service connected injury.

Benefit Greater of 50% of final average earnings at time of disability or 2% of final average earnings at date of disability, multiplied by full and partial years of contributory service to a maximum of 33⅓ years (35 years for Rule of 80 employees).

Appendix C - Summary of Plan Provisions - Town/BOE

Vesting

100% vesting after 5 years of Credited Service. If vested, may elect a refund of contributions with interest in lieu of pension. 100% vesting after 10 years of Credited Service for an Unaffiliated Employee hired after October 1, 2003.

Normal Form of Annuity

Modified Cash Refund

Appendix D - Summary of Plan Provisions - Police

This exhibit summarizes the major provisions of the Plan. It is not intended to be, nor should it be interpreted as a complete statement of all plan provisions. All eligibility requirements and benefit amounts shall be determined in strict accordance with the plan document itself. To the extent that this summary does not accurately reflect the plan provisions, then the results of this valuation may not be accurate.

Effective Date

January 1, 1987

Earnings

Basic Compensation including overtime, commissions, bonuses, and any other form of additional compensation excluding any maintenance or special payments. If hired on or after March 7, 2017, worker's compensation payments are included.

Employees Covered

Any full-time and permanent part-time employee in the employ of the Police Department. Employees hired on or after March 7, 2017 may make an irrevocable election to be covered by the Money Purchase Pension Plan instead of this plan.

Employee Contributions

8.5% of Earnings. If hired on or after March 7, 2017, 8.5% of Earnings excluding overtime, salary reductions, and qualified transportation fringes. No contributions will be required after 33⅓ years of contributing service.

Credited Interest

5% per annum.

Contributory Service

Years and full months from date of participation, not greater than 33⅓. If hired on or after March 7, 2017, includes periods of worker's compensation so long as employee contributions continue.

Final Average Earnings

Average Earnings paid to a member during the highest 3 years out of active employment.

Normal Retirement

Eligibility

Earlier of age 50 or 25 years of service. If hired on or after March 7, 2017, earlier of age 53 or 25 years of service.

Benefit

2.5% of Final Average Earnings per years of contributing service up to a maximum of 68%. If hired on or after March 7, 2017, 2.25% of Final Average Earnings per years of contributing service up to a maximum of 68%.

Appendix D - Summary of Plan Provisions - Police

Deferred Retirement

Eligibility

Members may continue to work beyond Normal Retirement (age 50) only with approval from the General Manager.

Benefit

Normal Retirement Benefit based on Credited Service and Final Average Earnings to date of actual retirement.

Death Benefits

Before Retirement

A monthly survivor benefit payable on behalf of an employee who has completed 5 years of contributory service, and who has a surviving spouse. The benefit will be 50% of the monthly retirement benefit which such employee would have received had he retired on the day before he died and elected a 50% Joint & Survivor Annuity. The benefit will commence at the later of the first day of the month following date of death and age 40. If the beneficiary is a dependent child, the benefit will commence on the first day of the month following date of death.

For those not eligible for the spouse's or dependent child benefit, a lump sum benefit is payable equal to the employee contributions with interest.

After Retirement

Based on form of benefit elected at retirement.

Disability Benefits

Non-Service

A member who has completed at least 5 years of credited service and becomes permanently and totally disabled as a result of a non-service connected injury is entitled to receive their normal retirement benefit based on Credited Service and Final Average Earnings at the date of disability. Maximum benefit of 50% of Final Average Earnings.connected injury.

Service

A member who becomes permanently and totally disabled as a result of a service connected injury is entitled to receive their Normal Retirement Benefit based on Credited Service and Final Average Earnings at the date of disability. Maximum benefit of 50% of Final Average Earnings.years (35 years for Rule of 80 employees).

Vesting

100% vesting after 10 years of Credited Service if hired after July 1, 2005. 100% vesting after 5 years of Credited Service if hired before July 1, 2005. If vested, may elect a refund of contributions with interest in lieu of pension.

Normal Form of Annuity

Modified Cash Refund.

Appendix E - Glossary

Actuarial Cost Method - This is a procedure for determining the Actuarial Present Value of Benefits and allocating it to time periods to produce the Actuarial Accrued Liability and the Normal Cost.

Accrued Liability - This is the portion of the Actuarial Present Value of Benefits attributable to periods prior to the valuation date by the Actuarial Cost Method (i.e., that portion not provided by future Normal Costs).

Actuarial Assumptions - With any valuation of future benefits, assumptions of anticipated future events are required. If actual events differ from the assumptions made, the actual cost of the plan will vary as well. Some examples of key assumptions include the interest rate, salary scale, and rates of mortality, turnover and retirement.

Actuarial Present Value of Benefits - This is the present value, as of the valuation date, of future payments for benefits and expenses under the Plan, where each payment is: a) multiplied by the probability of the event occurring on which the payment is conditioned, such as the probability of survival, death, disability, termination of employment, etc.; and b) discounted at the assumed interest rate.

Actuarial Value of Assets - This is the value of cash, investments and other property belonging to the plan, typically adjusted to recognize investment gains or losses over a period of years to dampen the impact of market volatility on the Actuarially Determined Contribution.

Actuarially Determined Contribution ("ADC") - This is the employer's periodic contributions to a defined benefit plan, calculated in accordance with actuarial standards of practice.

Attribution Period - The period of an employee's service to which the expected benefit obligation for that employee is assigned. The beginning of the attribution period is the employee's date of hire and costs are spread across all employment.

Interest Rate - This is the long-term expected rate of return on any investments set aside to pay for the benefits. In a financial reporting context (e.g., GASB 68) this is termed the Discount Rate.

Normal Cost - This is the portion of the Actuarial Present Value of Benefits allocated to a valuation year by the Actuarial Cost Method.

Past Service Cost - This is a catch-up payment to fund the Unfunded Accrued Liability over time (generally 10 to 30 years). A closed amortization period is a specific number of years counted from one date and reducing to zero with the passage of time; an open amortization period is one that begins again or is recalculated at each valuation date. Also known as the Amortization Payment.

Return on Plan Assets - This is the actual investment return on plan assets during the fiscal year.

Unfunded Accrued Liability - This is the excess of the Accrued Liability over the Actuarial Value of Assets.

Appendix C

Sample GASB 67/68 Report

SAMPLE TOWN
PENSION PLAN

GASB 67 and 68 DISCLOSURE
Fiscal Year: July 1, 2021 to June 30, 2022

Prepared by

Rebecca A. Sielman, FSA
Consulting Actuary

January 20, 2023

Table of Contents

Certification

Actuarial computations presented in this report under Statements No. 67 and 68 of the Governmental Accounting Standards Board are for purposes of assisting the Town in fulfilling its financial accounting requirements. No attempt is being made to offer any accounting opinion or advice. This report is for fiscal year July 1, 2021 to June 30, 2022. The reporting date for determining plan assets and obligations is June 30, 2022. The calculations enclosed in this report have been made on a basis consistent with our understanding of the plan provisions. Determinations for purposes other than meeting financial reporting requirements may be significantly different than the results contained in this report. Accordingly, additional determinations may be needed for other purposes, such as judging benefit security or meeting employer funding requirements.

In preparing this report, we relied, without audit, on information as of July 1, 2021 and June 30, 2022 furnished by the Town. This information includes, but is not limited to, statutory provisions, member census data, and financial information. Please see Milliman's funding valuation report dated December 16, 2021 for more information on the plan's participant group as of July 1, 2021 as well as a summary of the plan provisions and a summary of the actuarial methods and assumptions used for funding purposes.

We performed a limited review of the census and financial information used directly in our analysis and have found them to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

We hereby certify that, to the best of our knowledge, this report, including all costs and liabilities based on actuarial assumptions and methods, is complete and accurate and determined in conformance with generally recognized and accepted actuarial principles and practices, which are consistent with the Actuarial Standards of Practice promulgated by the Actuarial Standards Board and the applicable Guides to Professional Conduct, amplifying Opinions and supporting Recommendations of the American Academy of Actuaries.

Each of the assumptions used in this valuation with the exception of those set by law was set based on industry standard published tables and data, the particular characteristics of the plan, relevant information from the plan sponsor or other sources about future expectations, and our professional judgment regarding future plan experience. We believe the assumptions are reasonable for the contingencies they are measuring, and are not anticipated to produce significant cumulative actuarial gains or losses over the measurement period.

This valuation report is only an estimate of the Plan's financial condition as of a single date. It can neither predict the Plan's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of Plan benefits, only the timing of Plan contributions. While the valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct. Determining results using alternative assumptions is outside the scope of our engagement.

Certification

Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as, but not limited to, the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of the actuarial assignment, we did not perform an analysis of the potential range of such future measurements.

The valuation results were developed using models intended for valuations that use standard actuarial techniques. In addition, Milliman has developed certain models to develop the expected long term rate of return on assets used in this analysis. We have reviewed the models, including their inputs, calculations, and outputs for consistency, reasonableness, and appropriateness to the intended purpose and in compliance with generally accepted actuarial practice and relevant actuarial standards of practice. The models, including all input, calculations, and output may not be appropriate for any other purpose.

Milliman's work is prepared solely for the internal use and benefit of the Sample Town. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exceptions: (a) the Plan Sponsor may provide a copy of Milliman's work, in its entirety, to the Plan Sponsor's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the Town; and (b) the Plan Sponsor may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law.

No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their specific needs.

The consultants who worked on this assignment are pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and has been prepared in accordance with generally recognized accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Rebecca A. Sielman, FSA
Consulting Actuary

Overview of GASB 67 and GASB 68

The Governmental Accounting Standards Board (GASB) released accounting standards for public pension plans and participating employers in 2012. These standards, GASB Statements No. 67 and 68, have substantially revised the accounting requirements previously mandated under GASB Statements No. 25 and 27. The most notable change is the distinct separation of funding from financial reporting. The Annual Required Contribution (ARC) has been eliminated under GASB 67 and 68 and is no longer relevant for financial reporting purposes. As a result, plan sponsors have been encouraged to establish a formal funding policy that is separate from financial reporting calculations.

GASB 67 applies to financial reporting for public pension plans and is required to be implemented for plan fiscal years beginning after June 15, 2013. Note that a plan's fiscal year might not be the same as the employer's fiscal year. Even if the plan does not issue standalone financial statements, but rather is considered a pension trust fund of a government, it is subject to GASB 67. Under GASB 67, enhancements to the financial statement disclosures are required, along with certain required supplementary information.

GASB 68 governs the specifics of accounting for public pension plan obligations for participating employers and is required to be implemented for employer fiscal years beginning after June 15, 2014. GASB 68 requires a liability for pension obligations, known as the Net Pension Liability, to be recognized on the balance sheets of participating employers. Changes in the Net Pension Liability will be immediately recognized as Pension Expense on the income statement or reported as deferred inflows/outflows of resources depending on the nature of the change.

Executive Summary

Relationship Between Valuation Date, Measurement Date, and Reporting Date

The Valuation Date is July 1, 2021. This is the date as of which the actuarial valuation is performed. The Measurement Date is June 30, 2022. This is the date as of which the net pension liability is determined. The Reporting Date is June 30, 2022. This is the plan's and/or employer's fiscal year ending date.

Significant Changes

Given the substantial uncertainty regarding the impact of COVID-19 on plan costs, including whether the pandemic will increase or decrease costs during the term of our projections, we have chosen not to make an adjustment in the expected plan costs. It is possible that the COVID-19 pandemic could have a material impact on the projected costs.

Participant Data as of July 1, 2021

Actives	445
Terminated vested & other inactives	62
Retirees and beneficiaries	741
Total	1,248

Schedule of Employer Contributions

Fiscal Year Ending June 30	Actuarially Determined Contribution	Actual Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll	Contribution as a % of Covered Payroll
2013	$4,928,588	$4,928,588	$0	$36,222,391	13.61%
2014	5,124,026	5,124,026	0	33,571,741	15.26%
2015	5,115,905	5,115,905	0	34,496,455	14.83%
2016	5,243,812	5,243,812	0	34,912,911	15.02%
2017	5,733,801	5,733,801	0	35,090,818	16.34%
2018	6,100,460	6,100,460	0	33,760,473	18.07%
2019	5,849,554	5,867,726	(18,172)	33,094,108	17.73%
2020	6,201,527	6,201,527	0	32,333,836	19.18%
2021	6,568,677	6,568,677	0	32,225,171	20.38%
2022	7,213,955	7,213,955	0	30,970,675	23.29%

Actuarial Methods and Assumptions Used for Funding Policy

The following actuarial methods and assumptions were used in the July 1, 2021 funding valuation. Please see the valuation report dated December 16, 2021 for further details.

Valuation Timing	Actuarially determined contribution rates are calculated as of June 30, two years prior to the end of the fiscal year in which the contributions are reported.
Actuarial Cost Method	Entry Age Normal
Amortization Method	
Level percent or level dollar	Level percent
Closed, open, or layered periods	Closed
Amortization period at 07/01/2021	18 years
Amortization growth rate	3.25%
Asset Valuation Method	
Smoothing period	5 years
Recognition method	Asymptotic
Corridor	20%
Inflation	2.60%
Salary Increases	Graded by age; varies by group
Investment Rate of Return	7.00%
Cost of Living Adjustments	None
Retirement Age	Graded by age; varies by group
Turnover	Rates based on service for Police; age based rates for Town and Board of Education
Mortality	Pub-2010 Mortality Table with generational projection per MP-2019 Ultimate Scale

Money-Weighted Rate of Return

Fiscal Year Ending June 30	Net Money-Weighted Rate of Return
2014	14.19%
2015	2.42%
2016	-0.90%
2017	12.42%
2018	7.21%
2019	5.02%
2020	0.59%
2021	27.38%
2022	-12.04%

Calculation of Money-Weighted Rate of Return

The money-weighted rate of return considers the changing amounts actually invested during a period and weights the amount of pension plan investments by the proportion of time they are available to earn a return during that period. External cash flows are determined on a monthly basis and are assumed to occur at the beginning of each month. External cash inflows are netted with external cash outflows, resulting in a net external cash flow in each month. The money-weighted rate of return is calculated net of investment expenses.

	Net External Cash Flows	Periods Invested	Period Weight	Net External Cash Flows With Interest
Beginning Value - July 1, 2021	$202,678,782	12.00	1.00	$178,273,793
Monthly net external cash flows:				
July	3,959,392	12.00	1.00	3,482,633
August	(1,283,381)	11.00	0.92	(1,140,493)
September	(1,201,918)	10.00	0.83	(1,080,505)
October	(1,184,651)	9.00	0.75	(1,075,969)
November	(1,186,347)	8.00	0.67	(1,088,626)
December	(1,240,950)	7.00	0.58	(1,151,957)
January	751,859	6.00	0.50	705,141
February	(1,288,646)	5.00	0.42	(1,221,043)
March	(1,274,905)	4.00	0.33	(1,222,053)
April	(1,349,241)	3.00	0.25	(1,306,650)
May	(1,324,387)	2.00	0.17	(1,295,813)
June	(1,269,741)	1.00	0.08	(1,256,775)
Ending Value - June 30, 2022	170,621,683			170,621,683
Money-Weighted Rate of Return	-12.04%			

Long-Term Expected Rate of Return

The assumption for the long-term expected rate of return is determined by adding expected inflation to expected long-term real returns and reflecting expected volatility and correlation. The capital market assumptions are per Milliman's investment consulting practice as of June 30, 2021.

Asset Class	Index	Target Allocation*	Long-Term Expected Arithmetic Real Rate of Return	Long-Term Expected Geometric Real Rate of Return
US Interm Gov/Credit Bonds	BBgBarc US Govt/Credit Interm	18.00%	0.94%	0.86%
US High Yield Bonds	ICE BofA US High Yield TR	5.00%	3.95%	3.37%
Global Bonds	FTSE WGBI	2.00%	-0.13%	-0.41%
US Large Cap Equity	S&P 500 TR	25.00%	5.15%	3.65%
US Small Cap Equity	Russell 2000	6.00%	6.58%	3.89%
Foreign Developed Equity	MSCI EAFE NR	18.00%	6.27%	4.52%
Non-US Small Cap Equity	MSCI EAFE Small Cap	10.00%	6.76%	4.59%
Private Real Estate Property	NCREIF Property	6.00%	4.62%	3.58%
Private Equity	Cambridge Assoc. US Private Eq	6.00%	10.30%	6.09%
Hedge Funds - MultiStrategy	HFRI:Fund Wtd Composite	4.00%	3.75%	3.24%
Assumed Inflation - Mean			2.60%	2.60%
Assumed Inflation - Standard Deviation			1.16%	1.16%
Portfolio Real Mean Return			4.89%	4.03%
Portfolio Nominal Mean Return			7.49%	6.73%
Portfolio Standard Deviation				12.86%
Long-Term Expected Rate of Return				**7.00%**

* As outlined in the Plan's investment policy dated December 19, 2019

Depletion Date Projection

GASB 67 and 68 generally require that a blended discount rate be used to measure the Total Pension Liability (the Actuarial Accrued Liability calculated using the Individual Entry Age Normal Cost Method). The long-term expected return on plan investments may be used to discount liabilities to the extent that the plan's Fiduciary Net Position (fair market value of assets) is projected to cover benefit payments and administrative expenses. A 20-year high quality (AA/Aa or higher) municipal bond rate must be used for periods where the Fiduciary Net Position is not projected to cover benefit payments and administrative expenses. Determining the discount rate under GASB 67 and 68 will often require that the actuary perform complex projections of future benefit payments and asset values. GASB 67 and 68 (paragraph 29) do allow for alternative evaluations of projected solvency, if such evaluation can reliably be made. GASB does not contemplate a specific method for making an alternative evaluation of sufficiency; it is left to professional judgment.

The following circumstances justify an alternative evaluation of sufficiency for the Sample Town:

- The Sample Town has at least a 5-year history of paying 100% of the Actuarially Determined Contribution (previously termed the Annual Required Contribution).

- The Actuarially Determined Contribution is based on a closed amortization period, which means that payment of the Actuarially Determined Contribution each year will bring the plan to a 100% funded position by the end of the amortization period.

- GASB 67 and 68 specify that the projections regarding future solvency assume that plan assets earn the assumed rate of return and there are no future changes in the plan provisions or actuarial methods and assumptions, which means that the projections would not reflect any adverse future experience which might impact the plan's funded position.

Based on these circumstances, it is our professional opinion that the detailed depletion date projections outlined in GASB 67 and 68 will show that the Fiduciary Net Position is always projected to be sufficient to cover benefit payments and administrative expenses.

Net Pension Liability

Net Pension Liability	June 30, 2021	June 30, 2022
Total pension liability	$254,280,377	$255,868,042
Fiduciary net position	202,678,782	170,621,683
Net pension liability	51,601,595	85,246,359
Fiduciary net position as a % of total pension liability	79.71%	66.68%
Covered payroll	32,225,171	30,970,675
Net pension liability as a % of covered payroll	160.13%	275.25%

The total pension liability was determined by an actuarial valuation as of the valuation date, calculated based on the discount rate and actuarial assumptions below, and was then projected forward to the measurement date. Any significant changes during this period have been reflected as prescribed by GASB 67 and 68.

Discount Rate

Discount rate	7.00%	7.00%
Long-term expected rate of return, net of investment expense	7.00%	7.00%
Municipal bond rate	N/A	N/A

The plan's fiduciary net position was projected to be available to make all projected future benefit payments of current active and inactive employees. Therefore, the discount rate for calculating the total pension liability is equal to the long-term expected rate of return.

Other Key Actuarial Assumptions

The actuarial assumptions that determined the total pension liability as of June 30, 2022 were based on the results of an actuarial experience study for the period 7/1/2013 - 6/30/2020.

Valuation date	July 1, 2020	July 1, 2021
Measurement date	June 30, 2021	June 30, 2022
Actuarial cost method	Entry Age Normal	Entry Age Normal
Inflation	2.60%	2.60%
Salary increases including inflation	Graded by age	Graded by age
Mortality	Pub-2010 Mortality Table with generational projection per MP-2019 Ultimate Scale	Pub-2010 Mortality Table with generational projection per MP-2019 Ultimate Scale

Please see Milliman's funding valuation report dated December 16, 2021 for more detail.

Changes in Net Pension Liability

Changes in Net Pension Liability	Increase (Decrease) Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)
Balances as of June 30, 2021	$254,280,377	$202,678,782	$51,601,595
Changes for the year:			
Service cost	4,156,392		4,156,392
Interest on total pension liability	17,506,591		17,506,591
Effect of plan changes	721,987		721,987
Effect of economic/demographic gains or losses	(3,825,048)		(3,825,048)
Effect of assumptions changes or inputs	0		0
Benefit payments	(16,972,257)	(16,972,257)	0
Employer contributions		7,213,955	(7,213,955)
Member contributions		1,981,870	(1,981,870)
Net investment income		(24,164,183)	24,164,183
Administrative expenses		(116,484)	116,484
Balances as of June 30, 2022	255,868,042	170,621,683	85,246,359

Sensitivity Analysis

The following presents the net pension liability of the Town, calculated using the discount rate of 7.00%, as well as what the Town's net pension liability would be if it were calculated using a discount rate that is 1 percentage point lower (6.00%) or 1 percentage point higher (8.00%) than the current rate.

	1% Decrease 6.00%	Current Discount Rate 7.00%	1% Increase 8.00%
Total pension liability	$283,323,812	$255,868,042	$232,655,341
Fiduciary net position	170,621,683	170,621,683	170,621,683
Net pension liability	112,702,129	85,246,359	62,033,658

Schedule of Changes in Net Pension Liability and Related Ratios

	Fiscal Year Ending June 30									
	2022	**2021**	**2020**	**2019**	**2018**	**2017**	**2016**	**2015**	**2014**	**2013**
Total Pension Liability										
Service cost	$4,156,392	$4,194,089	$4,195,579	$4,199,742	$4,155,857	$4,224,970	$4,427,661	$4,259,959	$4,407,693	N/A
Interest on total pension liability	17,506,591	17,553,194	16,209,236	16,019,077	15,625,584	15,273,882	14,859,978	14,331,955	13,894,690	N/A
Effect of plan changes	721,987	0	0	0	0	0	0	0	0	N/A
Effect of economic/demographic gains or losses	(3,825,048)	(2,974,369)	2,477,017	(1,427,151)	1,055,241	(831,537)	1,620,809	1,089,991	(468,761)	N/A
Effect of assumption changes or inputs	0	(2,935,407)	12,029,360	2,977,682	2,719,087	0	2,537,024	2,102,673	0	N/A
Benefit payments	(16,972,257)	(15,975,736)	(15,453,671)	(14,623,744)	(13,974,921)	(13,527,222)	(12,688,129)	(12,206,197)	(11,648,710)	N/A
Net change in total pension liability	1,587,665	(138,229)	19,457,521	7,145,606	9,580,848	5,140,093	10,757,343	9,578,381	6,184,912	N/A
Total pension liability, beginning	254,280,377	254,418,606	234,961,085	227,815,479	218,234,631	213,094,538	202,337,195	192,758,814	186,573,902	N/A
Total pension liability, ending (a)	255,868,042	254,280,377	254,418,606	234,961,085	227,815,479	218,234,631	213,094,538	202,337,195	192,758,814	N/A
Fiduciary Net Position										
Employer contributions	$7,213,955	$6,568,677	$6,201,527	$5,867,726	$6,100,460	$5,733,801	$5,243,812	$5,115,905	$5,124,026	N/A
Member contributions	1,981,870	2,070,539	2,181,222	2,247,714	2,347,594	2,369,670	2,413,838	2,458,733	2,330,367	N/A
Net investment income	(24,164,183)	44,946,382	1,000,494	8,471,652	11,709,279	18,624,626	(1,414,322)	3,826,544	20,104,158	N/A
Benefit payments	(16,972,257)	(15,975,736)	(15,453,671)	(14,623,744)	(13,974,921)	(13,527,222)	(12,688,129)	(12,206,197)	(11,648,710)	N/A
Administrative expenses	(116,484)	(170,342)	(120,454)	(43,164)	(36,473)	(138,774)	(316,261)	(165,225)	0	N/A
Net change in plan fiduciary net position	(32,057,099)	37,439,520	(6,190,882)	1,920,184	6,145,939	13,062,101	(6,761,062)	(970,240)	15,909,841	N/A
Fiduciary net position, beginning	202,678,782	165,239,262	171,430,144	169,509,960	163,364,021	150,301,920	157,062,982	158,033,222	142,123,381	N/A
Fiduciary net position, ending (b)	170,621,683	202,678,782	165,239,262	171,430,144	169,509,960	163,364,021	150,301,920	157,062,982	158,033,222	N/A
Net pension liability, ending = (a) - (b)	$85,246,359	$51,601,595	$89,179,344	$63,530,941	$58,305,519	$54,870,610	$62,792,618	$45,274,213	$34,725,592	N/A
Fiduciary net position as a % of total pension liability	66.68%	79.71%	64.95%	72.96%	74.41%	74.86%	70.53%	77.62%	81.98%	N/A
Covered payroll	$30,970,675	$32,225,171	$32,333,836	$33,094,108	$33,760,473	$35,090,818	$34,912,911	$34,496,455	$33,571,741	N/A
Net pension liability as a % of covered payroll	275.25%	160.13%	275.81%	191.97%	172.70%	156.37%	179.86%	131.24%	103.44%	N/A

This schedule is presented to illustrate the requirement to show information for 10 years. However, recalculations of prior years are not required, and if prior years are not reported in accordance with the current GASB standards, they should not be reported.

Pension Expense

Pension Expense	July 1, 2020 to June 30, 2021	July 1, 2021 to June 30, 2022
Service cost	$4,194,089	$4,156,392
Interest on total pension liability	17,553,194	17,506,591
Effect of plan changes	0	721,987
Administrative expenses	170,342	116,484
Member contributions	(2,070,539)	(1,981,870)
Expected investment return net of investment expenses	(11,305,234)	(13,910,303)
Recognition of Deferred Inflows/Outflows of Resources		
Recognition of economic/demographic gains or losses	(272,392)	(1,438,474)
Recognition of assumption changes or inputs	4,171,427	3,326,150
Recognition of investment gains or losses	(5,517,800)	3,683,516
Pension Expense	6,923,087	12,180,473

As of June 30, 2022, the deferred inflows and outflows of resources are as follows:

Deferred Inflows / Outflows of Resources	Deferred Inflows of Resources	Deferred Outflows of Resources
Differences between expected and actual experience	($4,021,977)	$225,184
Changes of assumptions	(1,304,625)	1,093,577
Net difference between projected and actual earnings	0	15,218,988
Contributions made subsequent to measurement date	0	0
Total	(5,326,602)	16,537,749

Amounts currently reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows:

Year ended June 30:	
2023	$2,248,509
2024	911,077
2025	436,663
2026	7,614,898
2027	0
Thereafter*	0

* Note that additional future deferred inflows and outflows of resources may impact these numbers.

Schedule of Deferred Inflows and Outflows of Resources

	Original Amount	Date Established	Original Rec. Period*	Amount Recognized in Pension Expense for FYE 06/30/2022	Amount Recognized in Pension Expense through 06/30/2022	Balance of Deferred Inflows as of 06/30/2022	Balance of Deferred Outflows as of 06/30/2022
Economic/ demographic gains or losses	($3,825,048)	6/30/2022	3.4	($1,125,014)	($1,125,014)	($2,700,034)	$0
	(2,974,369)	6/30/2021	3.6	(826,213)	(1,652,426)	(1,321,943)	0
	2,477,017	6/30/2020	3.3	750,611	2,251,833	0	225,184
	(1,427,151)	6/30/2019	3.6	(237,858)	(1,427,151)	0	0
		Total		(1,438,474)	(1,952,758)	(4,021,977)	225,184
Assumption changes or inputs	(2,935,407)	6/30/2021	3.6	(815,391)	(1,630,782)	(1,304,625)	0
	12,029,360	6/30/2020	3.3	3,645,261	10,935,783	0	1,093,577
	2,977,682	6/30/2019	3.6	496,280	2,977,682	0	0
		Total		3,326,150	12,282,683	(1,304,625)	1,093,577
Investment gains or losses	38,074,486	6/30/2022	5.0	7,614,897	7,614,897	0	30,459,589
	(33,641,148)	6/30/2021	5.0	(6,728,230)	(13,456,460)	(20,184,688)	0
	10,671,936	6/30/2020	5.0	2,134,387	6,403,161	0	4,268,775
	3,376,552	6/30/2019	5.0	675,310	2,701,240	0	675,312
	(64,248)	6/30/2018	5.0	(12,848)	(64,248)	0	0
		Total		3,683,516	3,198,590	(20,184,688)	35,403,676
Total for economic/demographic gains or losses and assumption changes or inputs						(5,326,602)	1,318,761
Net deferred (inflows)/outflows for investment gains or losses						0	15,218,988
Total deferred (inflows)/outflows						(5,326,602)	16,537,749
Total net deferrals							11,211,147

* Investment (gains)/losses are recognized in pension expense over a period of five years; economic/demographic (gains)/losses and assumption changes or inputs are recognized over the average remaining service life for all active and inactive members.

	Total Pension Liability	Plan Fiduciary Net Position	Net Pension Liability	Deferred (Inflows)	Deferred Outflows	Net Investment (Inflows)/ Outflows	Net Deferrals	Net Pension Liability plus Net Deferrals	Annual Expense
Balances as of June 30, 2021	($254,280,377)	$202,678,782	($51,601,595)	($4,506,030)	$6,210,913	($19,171,982)	($17,467,099)	($69,068,694)	
Service cost	(4,156,392)		(4,156,392)						4,156,392
Interest on total pension liability	(17,506,591)		(17,506,591)						17,506,591
Effect of plan changes	(721,987)		(721,987)						721,987
Effect of liability gains or losses	3,825,048		3,825,048	(3,825,048)			(3,825,048)		
Effect of assumption changes or inputs	0		0				0		
Benefit payments	16,972,257	(16,972,257)	0						
Administrative expenses		(116,484)	(116,484)						116,484
Member contributions		1,981,870	1,981,870						(1,981,870)
Expected net investment income		13,910,303	13,910,303						(13,910,303)
Investment gains or losses		(38,074,486)	(38,074,486)			38,074,486	38,074,486		
Employer contributions		7,213,955	7,213,955					7,213,955	
Recognition of liability gains or losses				2,189,085	(750,611)		1,438,474		(1,438,474)
Recognition of assumption changes or inputs				815,391	(4,141,541)		(3,326,150)		3,326,150
Recognition of investment gains or losses						(3,683,516)	(3,683,516)		3,683,516

Annual expense								(12,180,473)	12,180,473
	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	
Balances as of June 30, 2022	(255,868,042)	170,621,683	(85,246,359)	(5,326,602)	1,318,761	15,218,988	11,211,147	(74,035,212)	

Glossary

Actuarially Determined Contribution
A target or recommended contribution to a defined benefit pension plan for the reporting period, determined based on the funding policy and most recent measurement available when the contribution for the reporting period was adopted.

Deferred Inflows/Outflows of Resources
Portion of changes in net pension liability that is not immediately recognized in Pension Expense. These changes include differences between expected and actual experience, changes in assumptions, and differences between expected and actual earnings on plan investments.

Discount Rate
Single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the sum of:

1) The actuarial present value of benefit payments projected to be made in future periods where the plan assets are projected to be sufficient to meet benefit payments, calculated using the Long-Term Expected Rate of Return.
2) The actuarial present value of projected benefit payments not included in (1), calculated using the Municipal Bond Rate.

Fiduciary Net Position
Equal to market value of assets.

Long-Term Expected Rate of Return
Long-term expected rate of return on pension plan investments expected to be used to finance the payment of benefits, net of investment expenses.

Money-Weighted Rate of Return
The internal rate of return on pension plan investments, net of investment expenses.

Municipal Bond Rate
Yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher.

Net Pension Liability
Total Pension Liability minus the Plan's Fiduciary Net Position (unfunded accrued liability).

Projected Benefit Payments
All benefits estimated to be payable through the pension plan to current active and inactive employees as a result of their past service and expected future service.

Service Cost
The portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.

Total Pension Liability
The portion of actuarial present value of projected benefit payments that is attributable to past periods of member service using the Entry Age Normal cost method based on the requirements of GASB 67 and 68.

Appendix D

Sample OPEB Valuation Report

SAMPLE CITY
OTHER POSTEMPLOYMENT BENEFIT PROGRAM

Actuarial Valuation as of July 1, 2020
To Determine Funding for Fiscal Year 2021-22

Prepared by

Rebecca A. Sielman, FSA
Consulting Actuary

November 11, 2020

Table of Contents

Certification

We have performed an actuarial valuation of the Plan as of July 1, 2020 to determine funding for fiscal year 2021-22. This report presents the results of our valuation.

The ultimate cost of an Other Post-Employment Benefits (OPEB) plan is the total amount needed to provide benefits for plan members and beneficiaries and to pay the expenses of administering the plan. OPEB costs are met by contributions and by investment return on plan assets. The principal purpose of this report is to set forth an actuarial recommendation of the contribution, or range of contributions, which will properly fund the plan, in accordance with applicable actuarial standards of practice. In addition, this report provides:

- A valuation of plan assets and liabilities to review the year-to-year progress of funding.
- Review of plan experience since the previous valuation to ascertain whether the assumptions and methods employed for valuation purposes are reflective of actual events and remain appropriate for prospective application.
- Assessment of the relative funded position of the plan, i.e., through a comparison of plan assets and projected plan liabilities.
- Comments on any other matters which may be of assistance in the funding and operation of the plan.

This report may not be used for purposes other than those listed above without Milliman’s prior written consent. If this report is distributed to other parties, it must be copied in its entirety, including this certification section.

Milliman’s work is prepared solely for the internal business use of the Sample City ("City"). To the extent that Milliman’s work is not subject to disclosure under applicable public records laws, Milliman’s work may not be provided to third parties without Milliman’s prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman’s consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exceptions: (a) the City may provide a copy of Milliman’s work, in its entirety, to the City’s professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman’s work for any purpose other than to benefit the City; and (b) the City may provide a copy of Milliman’s work, in its entirety, to other governmental entities, as required by law. No third party recipient of Milliman’s work product should rely upon Milliman’s work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

In preparing this report, we relied on employee census data and financial information as of the valuation date, furnished by the City. We performed a limited review of the data used directly in our analysis for reasonableness and consistency and have found them to be reasonably consistent and comparable with data used for other purposes. If the underlying data or information is inaccurate or incomplete, the results of our analysis may likewise be inaccurate or incomplete and our calculations may need to be revised. If there are material defects in the data, it is possible that they would be uncovered by a detailed, systematic review and comparison of the data to search for data values that are questionable or for relationships that are materially inconsistent. Such a review was beyond the scope of our assignment.

Certification

The calculations reported herein have been made on a basis consistent with our understanding of the plan provisions. Additional determinations may be needed for purposes other than determining funding amounts, such as judging benefit security at plan termination or meeting employer accounting requirements. On the basis of the foregoing, we hereby certify that, to the best of our knowledge, this report is complete and accurate and all costs and liabilities were determined in conformance with generally accepted actuarial principles and practices.

The valuation results were developed using models employing standard actuarial techniques. In addition to the models described previously, Milliman has developed certain models to develop the expected long term rate of return on assets and estimate the claim costs and trend used in this analysis. We have reviewed the models, including their inputs, calculations, and outputs for consistency, reasonableness, and appropriateness to the intended purpose and in compliance with generally accepted actuarial practice and relevant actuarial standards of practice. The models, including all input, calculations, and output may not be appropriate for any other purpose.

Information relating to periods prior to July 1, 2018 was taken from reports prepared by the prior actuary.

At the direction of the City, we have used a 7.00% discount rate assumption. Based on Milliman's capital market assumptions as of July 1, 2020 and the Plan's target investment allocation, the average long term (75 years) investment return is expected to be 5.84% (50th percentile). The 7.00% assumption is outside the 75th percentile of expected returns. We recommend that the City consider reducing the discount rate assumption.

With the exception of the discount rate assumption, we certify that, in our opinion, each actuarial assumption, method and technique used is reasonable taking into account the experience of the Plan and reasonable expectations. Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as, but not limited to, the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan’s funded status); and changes in plan provisions or applicable law. Due to the limited scope of the actuarial assignment, we did not perform an analysis of the potential range of such future measurement.

The consultant who worked on this assignment is an actuary. Milliman’s advice is not intended to be a substitute for qualified legal or accounting counsel.

The undersigned is a member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Rebecca A. Sielman, FSA
Consulting Actuary

Section I - Executive Summary
Changes Since the Prior Valuation

Demographic Changes and Plan Experience

From July 1, 2018 to July 1, 2020, the overall membership increased from 2,067 to 2,086. The number of active members stayed the same at 1,519, and the total number of members and spouses/dependents receiving benefits increased from 548 to 567.

The average age of active members decreased slightly from 47.0 to 46.5, and the average age of members receiving benefits increased from 65.1 to 66.1.

Based on additional census information received from the City regarding the Medicare status of retirees, we applied Medicare coordination factors to the expected per capita costs.

Plan Changes

Police officers hired before March 10, 2020 contribute 1.625% of compensation to the OPEB Program and Police officers hired on or after March 10, 2020 contribute 1.875% of compensation to the OPEB Program (prior: 0.00%).

Effective July 1, 2020, firefighters contribute 1.00% of compensation to the OPEB Program (prior: 0.75%).

The combined effect of these changes was no change in the Unfunded Accrued Liability and a decrease in the Actuarially Determined Contribution of about $197,000.

Changes in Actuarial Methods and Assumptions

We updated the assumptions for Certified employees to reflect the assumptions used in the June 30, 2020 Actuarial Valuation Report for the Connecticut State Teachers' Retirement System. The combined effect of these changes was an increase in the Unfunded Accrued Liability of about $323,000 and a decrease in the Actuarially Determined Contribution of about $9,000.

Other Significant Changes

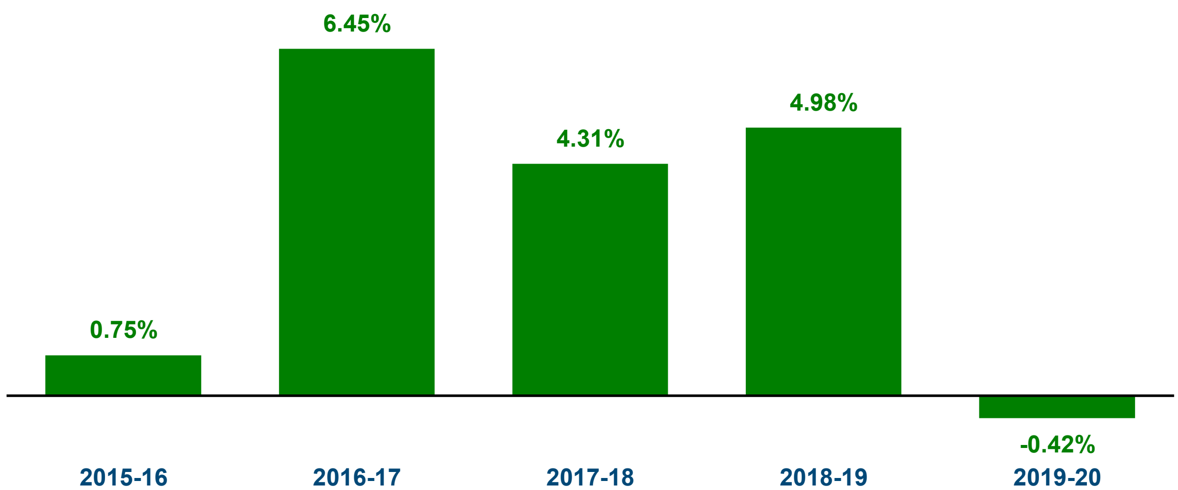
None.

Section I - Executive Summary
Assets

The Market Value is a snapshot of the plan's investments as of the valuation date. For the two-year period since the last valuation, the plan's Market Value changed as follows:

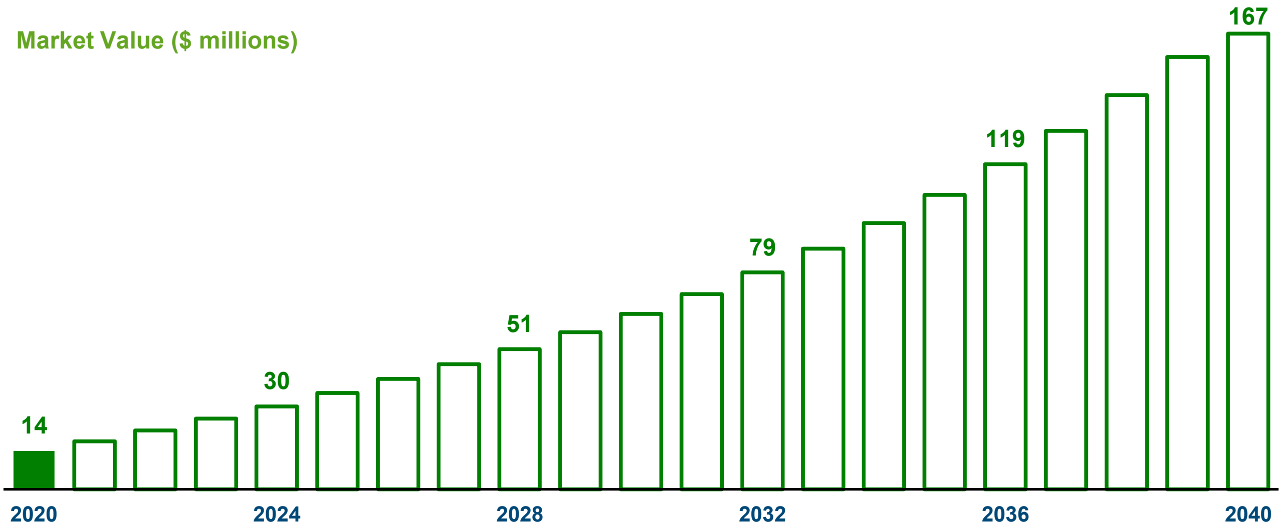
Value as of July 1, 2018	$9,926,387
City and Active Member Contributions	16,871,665
Investment Income	484,142
Benefit Payments and Administrative Expenses	(13,190,763)
Value as of July 1, 2020	14,091,431

For fiscal year 2018-19, the plan's assets earned 4.98% on a Market Value basis. For fiscal year 2019-20, the plan's assets earned -0.42% on a Market Value basis. Historical rates of return are shown in the graph below.

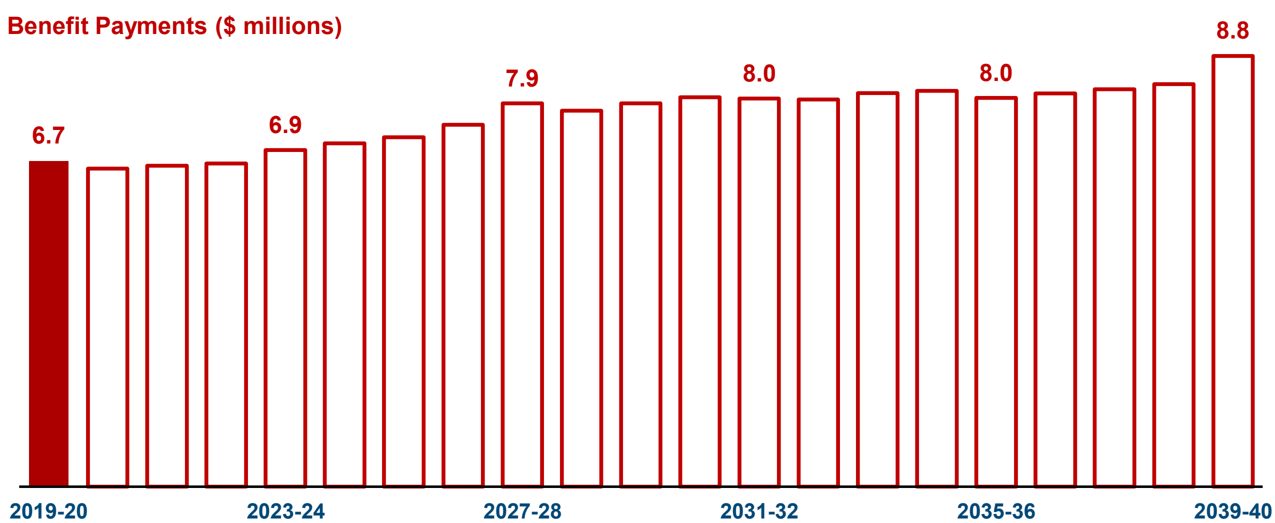


Section I - Executive Summary
Assets (continued)

The graph below shows how this year's asset values compare to where the plan's assets have been over the past several years and how they are projected to change over the next 20 years. For purposes of this projection, we have assumed that the City always contributes the Actuarially Determined Contribution and the investments always earn the assumed interest rate each year.

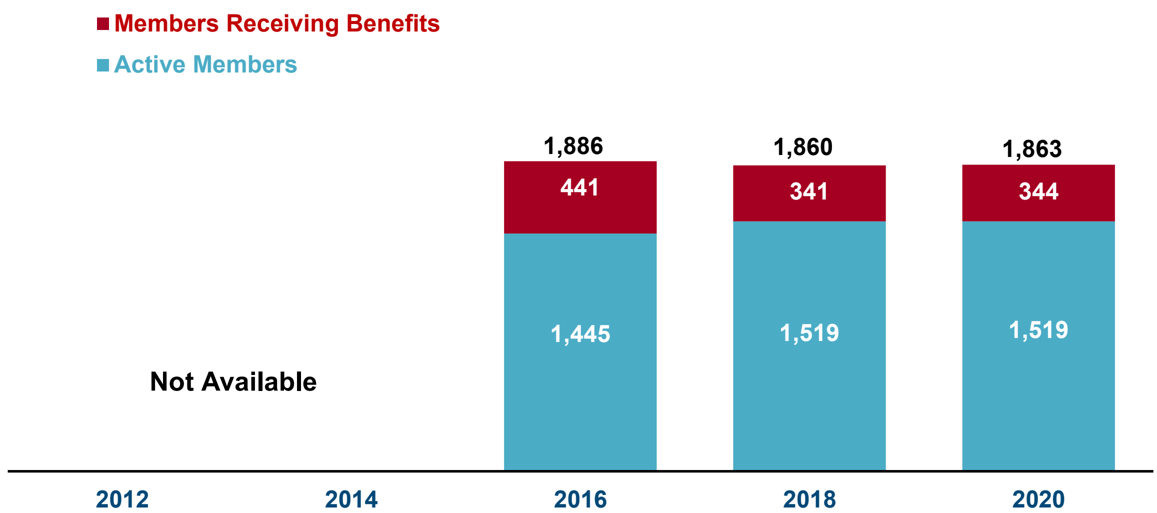


In 2019-20, the plan paid out $6.7 million in benefits to members. Over the next 20 years, the plan is projected to pay out a total of $149 million in benefits to members.



Section I - Executive Summary
Membership

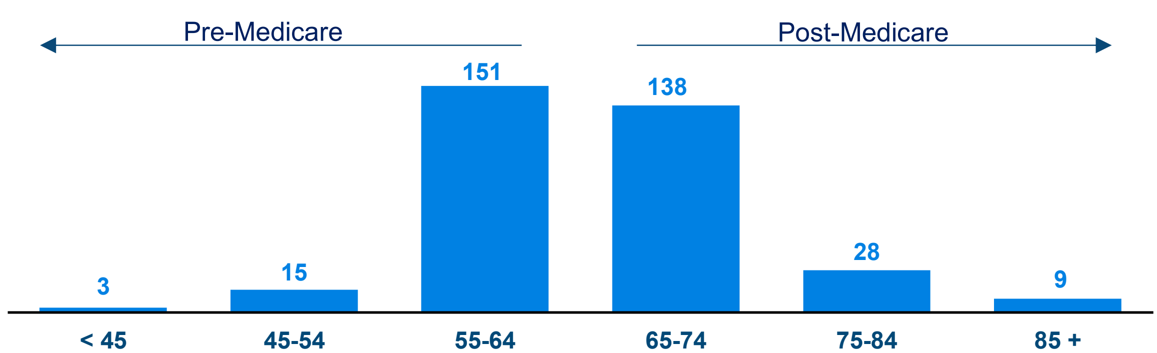
There are two basic categories of plan members included in the valuation: (1) members who are receiving benefits and (2) active employees who have met the eligibility requirements for membership.



Members Receiving Benefits on July 1, 2020

City	115	Average Age	66.1
Water	18		
Police	57		
Fire	21		
BOE Certified	60		
BOE Non-Certified	73		
Total	344		

As of July 1, 2020, there were 344 members receiving benefits and 223 spouses/dependents receiving benefits. The members receiving benefits fall across a wide distribution of ages:



Section I - Executive Summary
Membership (continued)

Active Members on July 1, 2020

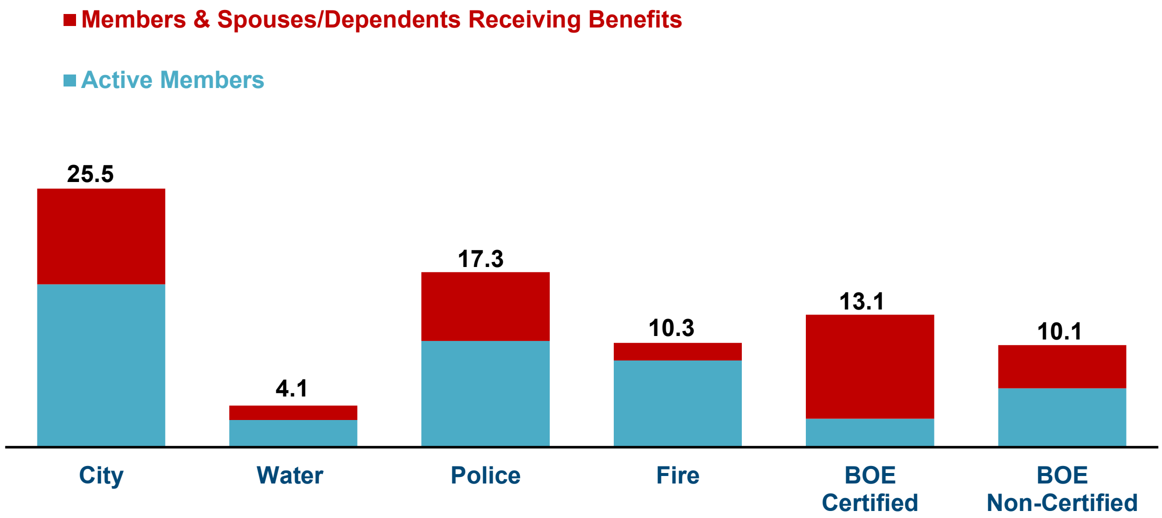
City	311	Average Age	46.5
Water	37	Average Service	12.7
Police	119	Payroll	$105,736,504
Fire	84	Average Payroll	69,609
BOE Certified	635		
BOE Non-Certified	333		
Total	1,519		

The table below illustrates the age and years of service of the active membership:

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25	22							22
25-29	97	20						117
30-34	63	79	9					151
35-39	53	38	70	18				179
40-44	50	32	50	74	7			213
45-49	30	28	35	54	45	8	1	201
50-54	24	26	53	42	44	29	9	227
55-59	30	26	29	63	32	9	33	222
60-64	16	13	22	36	24	11	19	141
65+	1	6	9	15	6	1	8	46
Total	386	268	277	302	158	58	70	1,519

Section I - Executive Summary
Accrued Liability

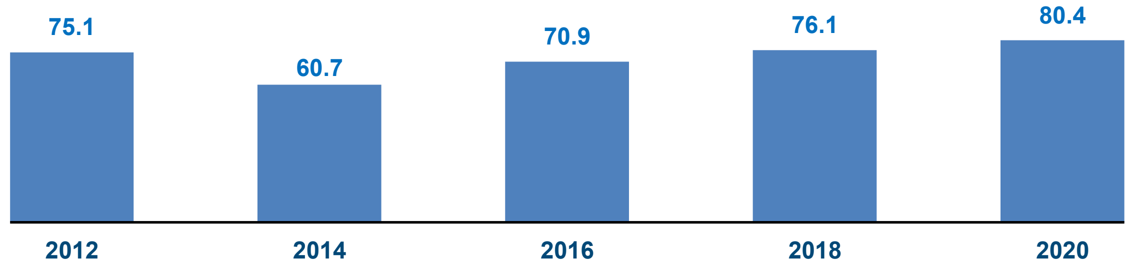
The Accrued Liability as of July 1, 2020 is $80,355,418, which consists of the following pieces ($ millions):



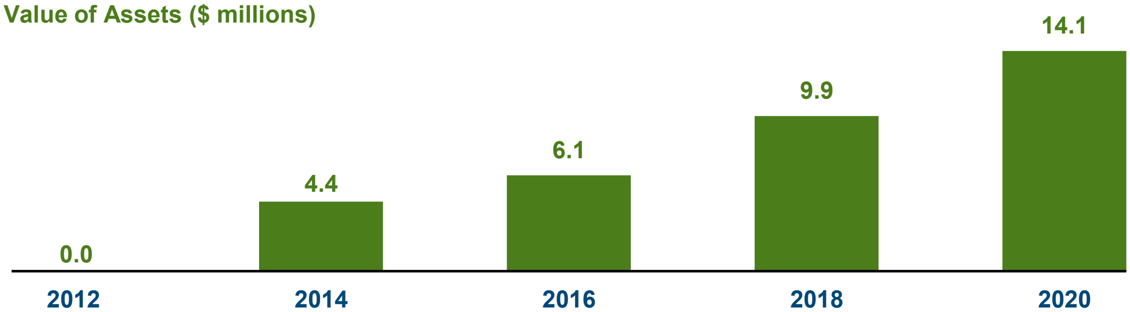
Section I - Executive Summary
Funded Status

The Accrued Liability grows over time as active members earn additional benefits, and goes down over time as members receive benefits; it may also change when there are changes to the plan provisions or changes in the actuarial assumptions. The Unfunded Accrued Liability is the dollar difference between the Accrued Liability and the Actuarial Value of Assets; the Funded Ratio is the ratio of the two.

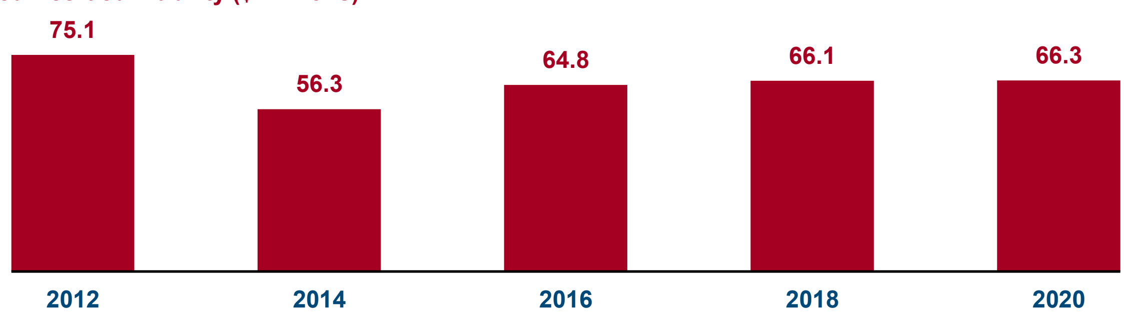
Accrued Liability ($ millions)



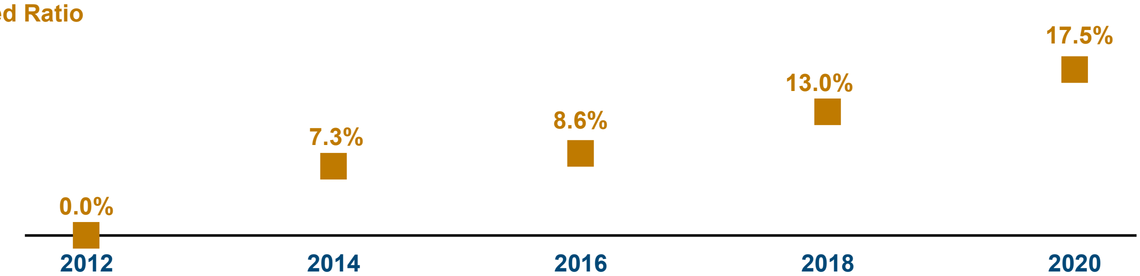
Market Value of Assets ($ millions)



Unfunded Accrued Liability ($ millions)

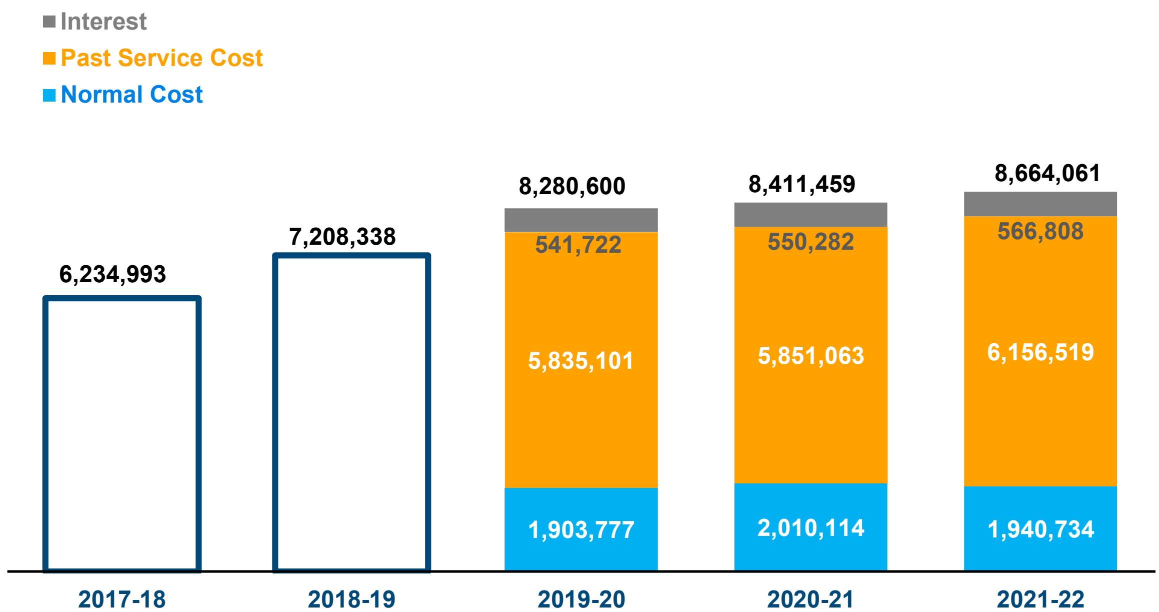


Funded Ratio



Section I - Executive Summary
Actuarially Determined Contribution

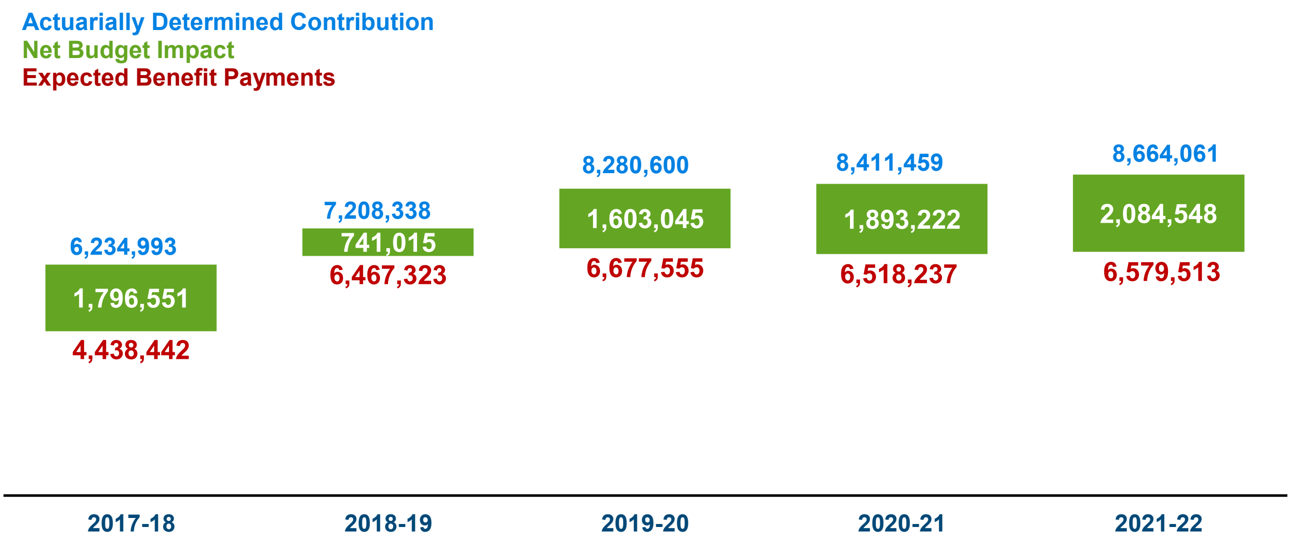
The Actuarially Determined Contribution consists of three pieces: a Normal Cost payment to fund the benefits earned each year, a Past Service Cost to gradually reduce any unfunded or surplus liability, and Interest to reflect the timing of the contribution relative to the valuation date. The chart below shows the Actuarially Determined Contribution for the past five fiscal years.



Section I - Executive Summary
Net Budget Impact

The Town is currently paying healthcare benefits outside of the OPEB Trust. In addition to the Actuarially Determined Contribution, we calculate the Net Budget Impact as the additional cash contribution to the Trust. The Net Budget Impact is found by subtracting the Expected Benefit Payments from the Actuarially Determined Contribution.

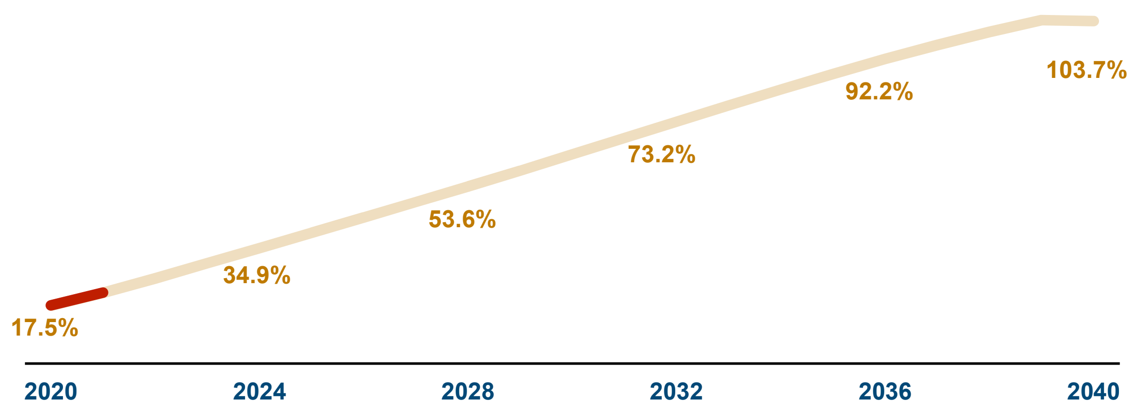
The chart below shows the Net Budget Impact for the past five fiscal years.



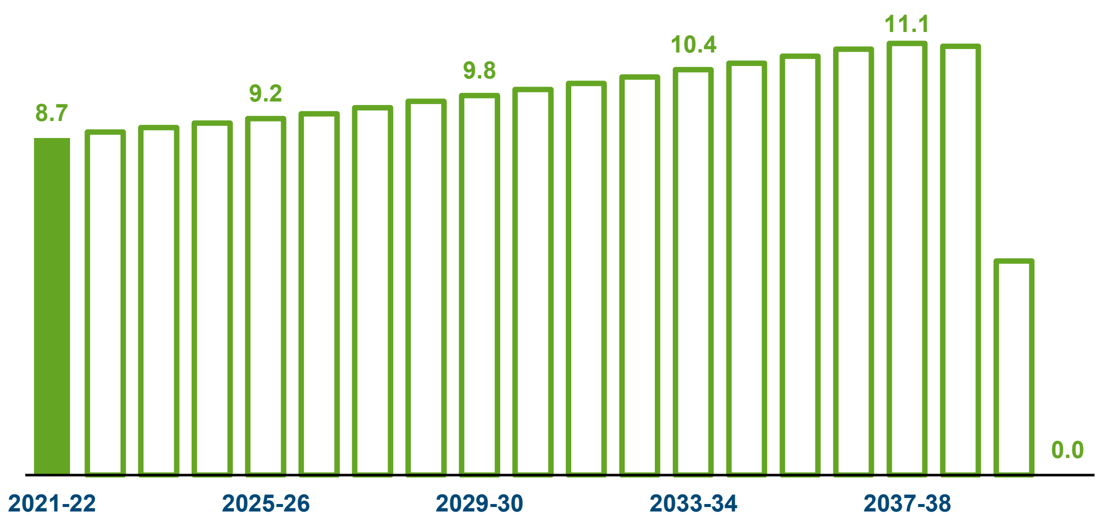
Section I - Executive Summary
Long-Range Forecast

If the City pays the Actuarially Determined Contribution each year, the investments earn exactly the assumed interest rate each year, and there are no changes in the plan provisions or in the actuarial methods and assumptions, then we project the following changes in the plan's funded status and the long-range contribution levels:

Funded Ratio



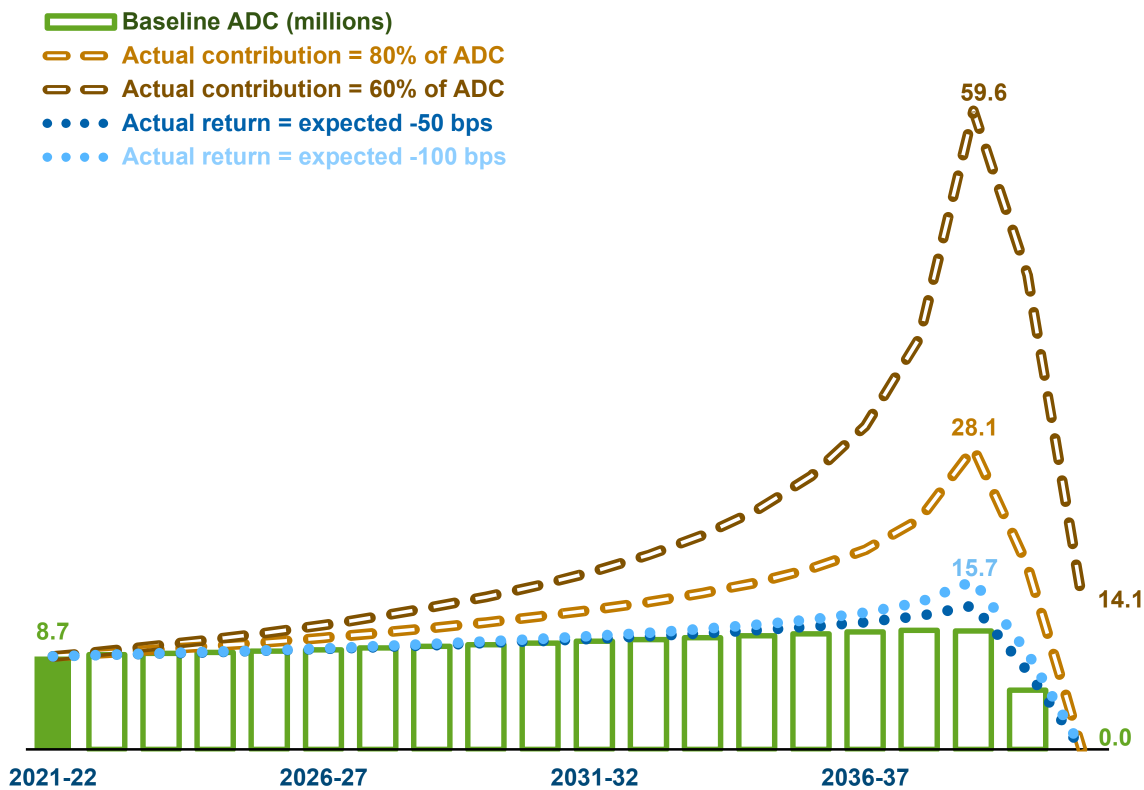
Actuarially Determined Contribution ($ millions)



To the extent that there are future investment or liability gains or losses, changes in the actuarial assumptions or methods, or plan changes, the actual valuation results will differ from these forecasts. Please see Section III C for more details of the long range forecast.

Section I - Executive Summary
Long-Range Forecast (continued)

Benefits are paid for through a combination of contributions from the City and from employees, and from investment income. If the City pays less than the Actuarially Determined Contribution each year, or if the investments persistently earn less than the assumed interest rate, then the plan's funded status would suffer, and to compensate, the City's contribution levels would be pushed higher. The risks of underfunding and underearning are illustrated in the hypothetical scenarios below:



The scenarios illustrated above are based on deterministic projections that assume emerging plan experience always exactly matches the actuarial assumptions; in particular that actual asset returns will be constant in every year of the projection period. Variation in asset returns, contribution amounts, and many other factors may have a significant impact on the long-term financial health of the plan, the liquidity constraints on plan assets, and the City's future contribution levels. Stochastic projections could be prepared that would enable the City to understand the potential range of future results based on the expected variability in asset returns and other factors. Such analysis was beyond the scope of this engagement.

Section I - Executive Summary
Summary of Principal Results

Membership as of	July 1, 2018	July 1, 2020
Active Members	1,519	1,519
Members Receiving Benefits	341	344
Total Count	1,860	1,863
Payroll	$105,705,084	$105,736,504

Assets and Liabilities as of	July 1, 2018	July 1, 2020
Market Value of Assets	$9,926,387	$14,091,431
Accrued Liabiilty for Active Members	42,708,682	46,406,844
Accrued Liabiilty for Members Receiving Benefits	33,362,047	33,948,574
Total Accrued Liability	76,070,729	80,355,418
Unfunded Accrued Liability	66,144,342	66,263,987
Funded Ratio	13.0%	17.5%

Actuarially Determined Contribution for Fiscal Year	2019-20	2021-22
Normal Cost	$1,903,777	$1,940,734
Past Service Cost	5,835,101	6,156,519
Interest	541,722	566,808
Actuarially Determined Contribution	8,280,600	8,664,061
Allocated to City	$2,529,663	$2,467,433
Allocated to Water	488,163	479,056
Allocated to Police	1,987,690	1,891,854
Allocated to Fire	1,040,427	1,084,829
Allocated to BOE Certified	1,181,522	1,441,667
Allocated to BOE Non-Certified	1,053,135	1,299,222
Total	8,280,600	8,664,061

Section II - Plan Assets
A. Summary of Fund Transactions

Market Value as of July 1, 2018	$9,926,387
City Contributions	7,917,323
Member Contributions	390,715
Net Investment Income	540,355
Benefit Payments	(6,467,323)
Administrative Expenses	0
Market Value as of June 30, 2019	12,307,457
Approximate Rate of Return, 2018-19*	4.98%
Market Value as of July 1, 2019	$12,307,457
City Contributions	8,127,555
Member Contributions	436,072
Net Investment Income	(56,213)
Benefit Payments	(6,677,555)
Administrative Expenses	(45,885)
Market Value as of June 30, 2020	14,091,431
Approximate Rate of Return, 2019-20*	-0.42%

* The rates shown here are not the dollar or time weighted investment yield rate which measures investment performance. They are an approximate net return assuming all activity occurred on average midway through the fiscal year.

Section III - Development of Contribution
A. Summary of Liabilities

We have calculated the Accrued Liability separately for 6 groups, who are eligible for different OPEB benefits. We have broken the accrued liability into several pieces: benefits that are expected to be paid prior to age 65 (i.e. prior to Medicare) and after age 65 (i.e. after Medicare) to current active members and their covered dependents after retirement, and the same figures for members who have already retired and are currently receiving benefits. In all cases, the Accrued Liability only reflects benefits that are paid for by the City, taking into account any implicit rate subsidies.

	City	Water	Police	Fire	BOE Certified	BOE Non-Certified	Total
Current active members							
Members Under Age 65	$5,631,864	$1,031,492	$5,151,059	$3,406,006	$1,789,675	$2,573,257	$19,583,353
Members Over Age 65	3,154,287	377,821	462,009	976,679	140,480	756,846	5,868,122
Spouses/Dependents Under Age 65	4,840,203	1,043,206	4,703,782	3,801,239	780,156	1,463,088	16,631,674
Spouses/Dependents Over Age 65	2,447,453	221,794	177,163	364,199	106,643	1,006,443	4,323,695
Total	16,073,807	2,674,313	10,494,013	8,548,123	2,816,954	5,799,634	46,406,844
Current members receiving benefits							
Members Under Age 65	3,006,954	728,830	2,766,347	593,443	359,593	1,347,987	8,803,154
Members Over Age 65	2,225,085	163,505	765,117	279,060	9,783,072	1,168,082	14,383,921
Spouses/Dependents Under Age 65	2,775,076	437,922	2,772,715	695,028	120,390	1,052,398	7,853,529
Spouses/Dependents Over Age 65	1,441,172	102,066	490,158	172,853	0	701,721	2,907,970
Total	9,448,287	1,432,323	6,794,337	1,740,384	10,263,055	4,270,188	33,948,574
Total Accrued Liability	25,522,094	4,106,636	17,288,350	10,288,507	13,080,009	10,069,822	80,355,418

Accrued Liability Sensitivity	**1% Decrease**	**Baseline**	**1% Increase**
Discount Rate	86,625,947	80,355,418	74,713,458
Trend Rate	73,699,298	80,355,418	88,004,328

Section III - Development of Contribution
B. Actuarially Determined Contribution

The Actuarially Determined Contribution (ADC) for the OPEB program consists of three pieces: a **Normal Cost** (the cost of benefits earned each year) plus a **Past Service Cost** (a catch-up accrual to amortize the Unfunded Accrued Liability as a level annual amount) plus **Interest** to reflect the timing lag between the valuation date and the fiscal year. On this basis, the ADC is determined as follows:

	City	Water	Police	Fire	BOE Certified	BOE Non-Certified	Total
Accrued Liability	$25,522,094	$4,106,636	$17,288,350	$10,288,507	$13,080,009	$10,069,822	$80,355,418
Market Value of Assets*	6,339,546	71,011	4,014,988	3,665,886	0	0	14,091,431
Unfunded Accrued Liability	19,182,548	4,035,625	13,273,362	6,622,621	13,080,009	10,069,822	66,263,987
Funded Ratio	24.8%	1.7%	23.2%	35.6%	0.0%	0.0%	17.5%
Amortization Period	18	18	18	18	18	18	18
Amortization Growth Rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Past Service Cost	1,782,231	374,946	1,233,214	615,301	1,215,250	935,577	6,156,519
Total Normal Cost	813,823	107,350	692,984	456,397	124,403	272,722	2,467,679
Employee Contributions	305,066	36,997	168,287	63,895	0	0	574,245
Expenses	15,024	2,417	10,177	6,056	7,699	5,927	47,300
Net Normal Cost	523,781	72,770	534,874	398,558	132,102	278,649	1,940,734
Interest	161,421	31,340	123,766	70,970	94,315	84,996	566,808
ADC for FY 2021-22	**2,467,433**	**479,056**	**1,891,854**	**1,084,829**	**1,441,667**	**1,299,222**	**8,664,061**
Expected Benefit Payouts	(2,196,474)	(364,036)	(1,444,064)	(557,240)	(861,885)	(1,155,814)	(6,579,513)
Net Budget Impact	**270,959**	**115,020**	**447,790**	**527,589**	**579,782**	**143,408**	**2,084,548**

* Allocation provided by the City

Section III - Development of Contribution
C. Long Range Forecast

This forecast is based on the results of the July 1, 2020 actuarial valuation and assumes that the City will pay the Actuarially Determined Contribution each year, the assets will return the assumed interest rate on a market value basis each year, and there are no future changes in the actuarial methods or assumptions or in the plan provisions. For purposes of this forecast the amortization period declines to 1 year to illustrate the progress of the plan towards becoming fully funded; in actual practice the amortization period will not be less than 10 years in order to shield the City from contribution volatility. Actual results at each point in time will yield different values, reflecting the actual experience of the plan membership and assets.

	Values as of the Valuation Date					Cash Flows Projected to the Following Fiscal Year			
Valuation Date	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio	Fiscal Year	City Contributions	Member Contributions	Benefit Payments	Net Cash Flows
7/1/2020	$80,355,418	$14,091,431	$66,263,987	17.5%	2021-22	$8,664,061	$591,472	($6,579,513)	$2,676,020
7/1/2021	81,995,000	17,583,000	64,412,000	21.4%	2022-23	8,818,000	609,000	(6,624,000)	2,803,000
7/1/2022	83,593,000	21,533,000	62,060,000	25.8%	2023-24	8,938,000	627,000	(6,901,000)	2,664,000
7/1/2023	85,403,000	25,889,000	59,514,000	30.3%	2024-25	9,047,000	646,000	(7,038,000)	2,655,000
7/1/2024	87,218,000	30,405,000	56,813,000	34.9%	2025-26	9,163,000	666,000	(7,165,000)	2,664,000
7/1/2025	89,202,000	35,227,000	53,975,000	39.5%	2026-27	9,291,000	686,000	(7,417,000)	2,560,000
7/1/2026	91,380,000	40,393,000	50,987,000	44.2%	2027-28	9,445,000	706,000	(7,857,000)	2,294,000
7/1/2027	93,654,000	45,811,000	47,843,000	48.9%	2028-29	9,606,000	727,000	(7,711,000)	2,622,000
7/1/2028	95,839,000	51,332,000	44,507,000	53.6%	2029-30	9,757,000	749,000	(7,857,000)	2,649,000
7/1/2029	98,546,000	57,578,000	40,968,000	58.4%	2030-31	9,916,000	772,000	(7,984,000)	2,704,000
7/1/2030	101,509,000	64,287,000	37,222,000	63.3%	2031-32	10,073,000	795,000	(7,960,000)	2,908,000
7/1/2031	104,770,000	71,519,000	33,251,000	68.3%	2032-33	10,239,000	819,000	(7,935,000)	3,123,000
7/1/2032	108,540,000	79,467,000	29,073,000	73.2%	2033-34	10,424,000	843,000	(8,067,000)	3,200,000
7/1/2033	112,870,000	88,192,000	24,678,000	78.1%	2034-35	10,587,000	869,000	(8,117,000)	3,339,000
7/1/2034	117,639,000	97,605,000	20,034,000	83.0%	2035-36	10,768,000	895,000	(7,968,000)	3,695,000
7/1/2035	123,020,000	107,819,000	15,201,000	87.6%	2036-37	10,948,000	921,000	(8,066,000)	3,803,000
7/1/2036	129,255,000	119,114,000	10,141,000	92.2%	2037-38	11,099,000	949,000	(8,148,000)	3,900,000
7/1/2037	136,169,000	131,310,000	4,859,000	96.4%	2038-39	11,027,000	978,000	(8,256,000)	3,749,000
7/1/2038	143,830,000	144,458,000	(628,000)	100.4%	2039-40	5,506,000	1,007,000	(8,833,000)	(2,320,000)
7/1/2039	152,253,000	158,366,000	(6,113,000)	104.0%	2040-41	0	1,037,000	(9,299,000)	(8,262,000)

Section III - Development of Contribution
D. History of Funded Status

Valuation Date	Actuarial Value of Assets	Accrued Liability	Unfunded Accrued Liability	Funded Ratio
July 1, 2012	$0	$75,051,605	$75,051,605	0.0%
July 1, 2014	4,439,558	60,732,614	56,293,056	7.3%
July 1, 2016	6,127,608	70,896,937	64,769,329	8.6%
July 1, 2018	9,926,387	76,070,729	66,144,342	13.0%
July 1, 2020	14,091,431	80,355,418	66,263,987	17.5%

Section III - Development of Contribution
E. History of City Contributions

Fiscal Year	Actuarially Determined Contribution	Actual City Contribution	Contribution Deficiency (Excess)
2013-14	$9,322,000	$4,446,594	$4,875,406
2014-15	7,008,204	3,156,480	3,851,724
2015-16	7,308,579	3,961,206	3,347,373
2016-17	7,256,765	6,583,891	672,874
2017-18	6,234,993	5,801,097	433,896
2018-19	7,208,338	7,917,323	(708,985)
2019-20	8,280,600	8,127,555	153,045
2020-21	8,411,459	TBD	TBD
2021-22	8,664,061	TBD	TBD

Section IV - Membership Data
A. Statistics of Active Membership

		As of July 1, 2018	As of July 1, 2020
Number of Active Members	City	303	311
	Water	35	37
	Police	116	119
	Fire	85	84
	BOE Certified	644	635
	BOE Non-Certified	336	333
	Total	1,519	1,519
Average Age	City	48.4	47.2
	Water	44.7	46.3
	Police	39.2	38.7
	Fire	45.5	45.7
	BOE Certified	45.3	45.1
	BOE Non-Certified	52.2	51.5
	Total	47.0	46.5
Average Service	City	11.0	10.6
	Water	12.4	12.7
	Police	13.0	12.9
	Fire	16.7	17.3
	BOE Certified	13.7	13.7
	BOE Non-Certified	12.2	11.5
	Total	12.9	12.7

Section IV - Membership Data
B. Distribution of Active Members as of July 1, 2020

City

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25	6							6
25-29	22	2						24
30-34	21	18						39
35-39	16	6	6	1				29
40-44	14	7	5	5	1			32
45-49	8	7	5	2	2	3	1	28
50-54	4	6	13	7	14	2	6	52
55-59	14	8	6	14	8	2	3	55
60-64	7	6	10	7	4		2	36
65+		2	1	6			1	10
Total	112	62	46	42	29	7	13	311

Water

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25								0
25-29	2	2						4
30-34		3	1					4
35-39	2	1						3
40-44	2							2
45-49		1	4	2				7
50-54			2	2	3	1	1	9
55-59	1	1	1	1	1		1	6
60-64			1					1
65+		1						1
Total	7	9	9	5	4	1	2	37

Police

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25	7							7
25-29	9	7						16
30-34	5	22	3					30
35-39		4	11	3				18
40-44		3	3	7	1			14
45-49		1		5	5	2		13
50-54		1	1	1	3	5	1	12
55-59			1		1	2	4	8
60-64							1	1
65+								0
Total	21	38	19	16	10	9	6	119

Section IV - Membership Data
B. Distribution of Active Members as of July 1, 2020

Fire

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25	1							1
25-29	3	3						6
30-34	2	4						6
35-39		5	5	3				13
40-44		2	6	7				15
45-49			3	6	2	2		13
50-54			4	2	4			10
55-59		1			3		11	15
60-64					1		4	5
65+								0
Total	6	15	18	18	10	2	15	84

BOE Certified

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25	5							5
25-29	50	6						56
30-34	24	27	4					55
35-39	16	19	47	11				93
40-44	18	16	29	53	3			119
45-49	9	11	15	36	34	1		106
50-54	8	9	13	18	14	16	1	79
55-59	1	8	7	20	7	4	11	58
60-64	2	1	4	13	9	3	12	44
65+		1	4	4	4	1	6	20
Total	133	98	123	155	71	25	30	635

BOE Non-Certified

	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25	3							3
25-29	11							11
30-34	11	5	1					17
35-39	19	3	1					23
40-44	16	4	7	2	2			31
45-49	13	8	8	3	2			34
50-54	12	10	20	12	6	5		65
55-59	14	8	14	28	12	1	3	80
60-64	7	6	7	16	10	8		54
65+	1	2	4	5	2		1	15
Total	107	46	62	66	34	14	4	333

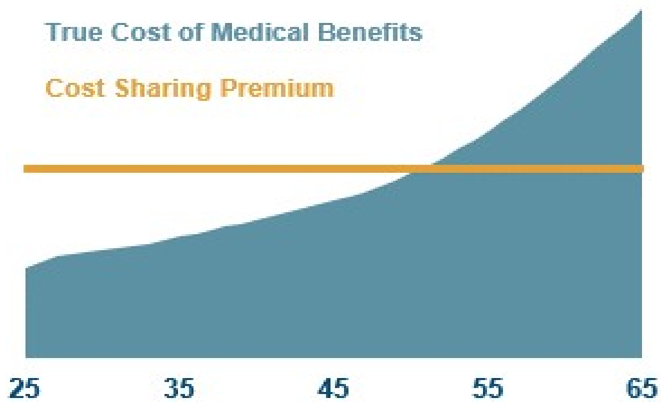
Section IV - Membership Data
C. Information on Members Receiving Benefits

	As of July 1, 2018	As of July 1, 2020
Members Receiving Benefits		
City	109	115
Water	19	18
Police	58	57
Fire	21	21
BOE Certified	69	60
BOE Non-Certified	65	73
Total	341	344
Member Average Age		
City	65.3	66.8
Water	61.7	63.1
Police	59.1	59.8
Fire	64.4	64.6
BOE Certified	69.4	71.6
BOE Non-Certified	66.8	66.5
Total	65.1	66.1
Spouses/Dependents Receiving Benefits		
City	79	89
Water	13	12
Police	48	47
Fire	19	19
BOE Certified	12	8
BOE Non-Certified	36	48
Total	207	223
Spouse/Dependent Average Age		
City	64.7	65.8
Water	59.1	61.8
Police	58.7	58.8
Fire	62.5	62.6
BOE Certified	63.5	59.8
BOE Non-Certified	67.0	64.4
Total	63.1	63.3

Section V - Healthcare Information
A. Introduction

In many cases, the cost sharing premium is lower than the true cost of providing the medical benefits, for two reasons:

- The cost sharing premium is usually a fixed amount such as a COBRA premium that does not take into account the age of the retiree and his/her dependents. Since medical costs generally increase with age, the cost sharing premium is often lower than the true cost of the medical benefits:



- The cost sharing premium is usually a blended rate that takes into account the cost of medical benefits for active employees as well as retirees. Medical costs are generally higher for retirees than for active employees of the same age. This means that, again, the cost sharing premium is often lower than the true cost of the medical benefits.

Because of these two factors, a retiree who is paying 100% of the cost sharing premium is most likely not paying 100% of the true cost of the medical benefits. This situation is known as an "implicit rate subsidy." GASB 74 and 75 require the plan sponsor to measure the liability for this subsidy; that is, the difference between the true cost of the medical benefits and the cost sharing premiums paid by the retiree. To do this, our valuation consists of several steps:

First, we calculate the liability for the true cost of medical benefits expected to be received by retirees and their dependents. This liability is based on factors developed by Milliman's health actuaries that reflect how the cost of medical benefits varies by age and gender, as well as the other assumptions discussed in Appendix B. We term this amount the "gross liability."

Next, we calculate the liability for the future premiums expected to be paid by the retiree for their own and their dependents' coverage. This liability is based on the current premium rates without adjustment for age or gender. It also is based on the terms of the Other Postemployment Benefit Program – different retirees pay different percentages based on their union, date of retirement, age at retirement, and other factors. We term this amount the "offset liability."

Finally, the net liability for the City is calculated as the difference between the gross liability and the offset liability.

Section V - Healthcare Information
B. Current Premiums

Based on current plan elections, we developed the following blended annual premiums as of July 1, 2020:

Pre-65 Medical Plan	Employee	Spouse
BOE Certified	$10,220.12	$11,192.56
All Others	11,273.68	12,439.20
Post-65 Medical Plan	5,365.86	6,739.11
Dental Premium	313.68	542.76

Section V - Healthcare
C. Expected Healthcare Costs

Milliman's Health Cost Guidelines were used to develop the expected true cost of healthcare benefits by age and gender, separately for employees and spouses. Representative healthcare cost factors are shown in the tables below. These factors were then applied to the plan's healthcare rates for the year beginning July 1, 2020 to arrive at the expected annual per capita claims costs for a 65-year-old, which are also shown below.

Medical for BOE Certified

	Employee		Spouse	
Age	Male	Female	Male	Female
45	0.34090	0.53050	0.34090	0.53150
55	0.59240	0.73220	0.59240	0.73220
65	1.00000	1.00000	1.00000	1.00000
75	1.43740	1.34970	1.43740	1.34970
85	1.84870	1.69670	1.84870	1.69670

Age 65 per capita claims cost

All Periods	$19,985.68	$18,067.81	$19,649.11	$17,763.54

Medical for All Others

	Employee		Spouse	
Age	Male	Female	Male	Female
45	0.34090	0.53050	0.34090	0.53150
55	0.59240	0.73220	0.59240	0.73220
65	1.00000	1.00000	1.00000	1.00000
75	1.17370	1.09650	1.17370	1.09650
85	1.17710	1.05830	1.17710	1.05830

Age 65 per capita claims cost

Pre-65	$21,983.66	$19,874.06	$21,938.10	$19,832.88
Post-65	5,821.10	5,568.55	5,861.50	5,607.21

Dental for All Groups

	Employee		Spouse	
Age	Male	Female	Male	Female
45	0.63680	0.74960	0.64960	0.75860
55	0.79510	0.88340	0.80240	0.88770
65	1.00000	1.00000	1.00000	1.00000
75	1.07940	1.02060	1.07650	1.01980
85	1.07940	1.02060	1.07650	1.01980

Age 65 per capita claims cost

All Periods	$660.80	$645.77	$685.04	$669.99

Appendix A - Actuarial Funding Method

The actuarial funding method used in the valuation of this Plan is known as the Entry Age Normal Method. The Actuarially Determined Contribution consists of three pieces: Normal Cost plus a Past Service Cost payment to gradually eliminate the Unfunded Accrued Liability plus Interest to reflect the timing of the contribution relative to the valuation date.

The Normal Cost is determined by calculating the present value of future benefits for present active Members that will become payable as the result of death, disability, retirement or termination. This cost is then spread as a level percentage of earnings from entry age to termination as an Active Member. If Normal Costs had been paid at this level for all prior years, a fund would have accumulated. Because this fund represents the portion of benefits that would have been funded to date, it is termed the Accrued Liability. In fact, it is calculated by adding the present value of benefits for Retired Members and Terminated Vested Members to the present value of benefits for Active Members and subtracting the present value of future Normal Cost contributions.

The funding cost of the Plan is derived by making certain specific assumptions as to rates of interest, mortality, turnover, etc. which are assumed to hold for many years into the future. Since actual experience may differ somewhat from the assumptions, the costs determined by the valuation must be regarded as estimates of the true costs of the Plan.

The Unfunded Accrued Liability is the excess of the Accrued Liability over the assets which have been accumulated for the plan. This Unfunded Accrued Liability is amortized as a level dollar amount over a closed 20 year period. The amortization period will decrease each year until it reaches 10 years, after which time it will remain at 10 years..

The long-range forecasts included in this report have been developed by assuming that members will terminate, retire, become disabled, and die according to the actuarial assumptions with respect to these causes of decrement, and that pay increases, cost of living adjustments, and so forth will likewise occur according to the actuarial assumptions. For those unions whose new employees are eligible to participate in this plan, members who are projected to leave active employment are assumed to be replaced by new active members with the same age, service, gender, and pay characteristics as those hired in the past few years.

Appendix B - Actuarial Assumptions

Each of the assumptions used in this valuation (except for BOE Certified) was set based on a formal study of the plan's experience for the period July 1, 2011 through June 30, 2015 which reflected industry standard published tables and data, the particular characteristics of the plan, relevant information from the plan sponsor or other sources about future expectations, and our professional judgment regarding future plan experience. We believe the assumptions are reasonable for the contingencies they are measuring, and are not anticipated to produce significant cumulative actuarial gains or losses over the measurement period.

Discount Rate 7.00%

Inflation Rate 2.70%

Amortization Growth Rate 0%

Medical Trend 5.10% to 4.20% over 53 years

Dental Trend 4.00%

Salary Scale

BOE Certified: Salaries are assumed to increase based on service as follows.

Current		Prior	
Service	**Rate**	**Service**	**Rate**
0	6.50%	0-1	6.50%
1	6.25%	2-9	6.25%
2-9	6.00%	10-11	5.50%
10-11	5.50%	12-14	5.00%
12	5.25%	15	4.75%
13	5.00%	16	4.50%
14	4.75%	17	4.25%
15	4.50%	18	4.00%
16	4.00%	19	3.75%
17	3.75%	20	3.50%
18	3.50%	21+	3.25%
19	3.25%		
20+	3.00%		

City and BOE Non-Certified: Salaries are assumed to increase based on age as follows.

Age	Rate
25 and below	6.75%
30	5.75%
35	5.00%
40	4.50%
45	4.00%
50	3.75%
55	3.50%
60 and above	3.25%

Appendix B - Actuarial Assumptions

Salary Scale

Police and Fire: Salaries are assumed to increase at the following rates based on age.

Age	Rate
25 and below	7.00%
30	5.00%
35	4.00%
40	3.75%
45	3.50%
50 and above	3.25%

Healthy Mortality

BOE Certified#: PubT-2010 Mortality Table for Employees and Healthy Annuitants (adjusted 105% for males and 103% for females at ages 82 and above) with generational projection of future improvements per the MP-2019 Ultimate scale. The PubT-2010 Contingent Survivor Table projected generationally per the MP-2019 Ultimate scale and set forward 1 year for both males and females is used for survivors and beneficiaries. This assumption includes a margin for improvements in longevity beyond the valuation date.

Prior: For healthy retirees and beneficiaries, the RPH-2014 White Collar table with employee and annuitant rates blended from ages 50 to 80 projected to the year 2020 using the BB improvement scale and further adjusted to grade in increases (5% for females and 8% for males) to rates over age 80.

All Others: RP-2000 Mortality Table for Employees and Healthy Annuitants with generational projection per Scale BB. This assumption includes a margin for mortality improvements beyond the valuation date.

Disabled Mortality

BOE Certified#: PubT-2010 Disabled Mortality Table for males and females with generational projection of future improvements per the MP-2019 Ultimate scale. This assumption includes a margin for mortality improvement beyond the valuation date.

Prior: RPH-2014 Disabled Mortality Table projected to 2017 using the BB improvement scale.

All Others: RP-2000 Mortality Table for Healthy Annuitants with generational projection per Scale BB. This assumption includes a margin for mortality improvements beyond the valuation date.

Appendix B - Actuarial Assumptions

Turnover

BOE Certified#: rates based on gender and length of service for the first ten years and gender and age thereafter.

Service	Male	Female
0-1	15.00%	12.00%
1-2	11.00%	11.00%
2-3	8.50%	9.50%
3-4	7.00%	8.00%
4-5	5.50%	7.50%
5-6	4.50%	7.00%
6-7	4.00%	6.50%
7-8	3.50%	6.00%
8-9	3.50%	5.50%
9-10	3.50%	5.00%
10+	1.80%	6.00%

Age	Male	Female
25	1.80%	6.00%
35	1.80%	4.25%
45	1.80%	2.00%
55	4.00%	3.90%

Prior:

Service	Male	Female
0-1	14.00%	12.00%
1-2	11.00%	10.50%
2-3	8.00%	8.75%
3-4	6.50%	7.50%
4-5	4.50%	6.75%
5-6	3.50%	6.00%
6-7	3.00%	5.25%
7-8	2.75%	4.75%
8-9	2.50%	4.25%
10+	2.50%	4.00%

Age	Male	Female
25	1.50%	4.00%
35	1.50%	3.50%
45	1.59%	1.50%
55	3.44%	2.50%

Appendix B - Actuarial Assumptions

Turnover

City and BOE Non-Certified: Rates according to the following table.

Age	Rate
20	18.00%
25	18.00%
30	12.00%
35	7.00%
40	5.00%
45	2.50%
50	1.75%
55	1.00%

Police: Rates according to the following table.

Age	Rate
20	5.0%
25	5.0%
30	2.0%
35	1.0%
40	1.0%
45	1.0%
50	0.0%

Fire: Rates according to the following table.

Age	Rate
20	5%
25	5%
30	2%
35 and above	0%

Appendix B - Actuarial Assumptions

Retirement

BOE Certified[#]: Rates based on age, eligibility for pension benefits, and gender.

	Unreduced			
	< 35 years of service		35+ years of service	
Age	**Male**	**Female**	**Male**	**Female**
50-59			35.00%	30.00%
60	20.00%	20.00%	30.00%	30.00%
61	20.00%	20.00%	30.00%	30.00%
62	22.50%	20.00%	30.00%	30.00%
63	22.50%	20.00%	30.00%	30.00%
64	25.00%	25.00%	30.00%	30.00%
65	27.50%	32.50%	35.00%	37.50%
66	27.50%	30.00%	35.00%	37.50%
67-74	27.50%	30.00%	30.00%	32.50%
75	100.00%	100.00%	100.00%	100.00%

	Proratable		Reduced	
Age	**Male**	**Female**	**Male**	**Female**
50-52			1.50%	1.25%
53			1.50%	1.75%
54			2.00%	2.25%
55			3.00%	3.00%
56			4.00%	3.75%
57			5.00%	4.50%
58			6.50%	5.50%
59			8.00%	7.00%
60	6.00%	5.00%		
61	6.00%	6.00%		
62	6.00%	7.00%		
63	9.00%	8.00%		
64	12.00%	9.00%		
65	15.00%	12.00%		
66-68	18.00%	15.00%		
69-79	28.50%	15.00%		
80	100.00%	100.00%		

Appendix B - Actuarial Assumptions

Retirement

Prior: **BOE Certified[#]:** Rates based on age, eligibility for pension benefits, and gender.

	Unreduced		Proratable		Reduced	
Age	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
50	27.50%	27.50%			1.00%	1.00%
51	27.50%	27.50%			1.00%	1.25%
52	27.50%	27.50%			1.00%	1.75%
53	27.50%	27.50%			2.00%	2.25%
54	27.50%	27.50%			3.00%	2.75%
55	38.50%	27.50%			4.00%	4.75%
56	38.50%	27.50%			6.00%	6.25%
57	38.50%	27.50%			7.00%	6.75%
58	38.50%	27.50%			8.00%	7.25%
59	38.50%	27.50%			11.00%	8.50%
60	22.00%	27.50%	6.00%	5.50%		
61	25.30%	27.50%	6.00%	6.50%		
62	25.30%	27.50%	9.00%	7.50%		
63	27.50%	27.50%	11.00%	7.50%		
64	27.50%	27.50%	10.00%	8.00%		
65	36.30%	32.50%	13.00%	12.50%		
66-67	27.50%	32.50%	20.00%	12.50%		
68	27.50%	32.50%	20.00%	12.00%		
69	27.50%	32.50%	30.00%	14.50%		
70-73	100.00%	32.50%	30.00%	14.50%		
74-79	100.00%	32.50%	30.00%	18.00%		
80	100.00%	100.00%	100.00%	100.00%		

Appendix B - Actuarial Assumptions

Retirement

City and BOE Non-Certified: Members are assumed to retire according to the following rates.

Age	Attained Rule of 80	Not Yet Attained
53-54	10%	0%
55-56	22%	1%
57-59	20%	1%
60-61	25%	2%
62	25%	5%
63	28%	5%
64	25%	5%
65	20%	10%
66-69	30%	10%
70	100%	100%

Police: Members who have satisfied normal retirement eligibility are assumed to retire according to the following rates.

Age	Rate
47-49	25%
50	40%
51-54	25%
55-57	25%
58-59	40%
60-64	30%
65+	100%

Fire: Members who have satisfied normal retirement eligibility are assumed to retire according to the following rates.

Age	Rate
49	10%
50-54	5%
55-56	10%
57-59	15%
60	50%
61	70%
62-64	40%
65+	100%

Appendix B - Actuarial Assumptions

Disability

BOE Certified#: Rates based on age and gender.

Age	Male	Female
20	0.0200%	0.0200%
30	0.0200%	0.0200%
40	0.0300%	0.0600%
50	0.1500%	0.1500%
60	0.1500%	0.1500%

Prior:

Age	Male	Female
20	0.0341%	0.0500%
30	0.0341%	0.0410%
40	0.0536%	0.0720%
50	0.2438%	0.2630%
60	0.9604%	0.5000%

Police and Fire: 1985 Pension Disability Table (DP-85) Class 4 with 100% of disabilities assumed to be service-connected.

All Others: None.

Future Retiree Coverage

60% of **BOE Certified** and **Non-Certified**, and 95% of **All Other** active members are assumed to elect coverage at retirement.

Future Dependent Coverage

80% of current active members are assumed to elect dependent coverage at retirement. All female spouses are assumed to be 3 years younger than males.

Future Post-65 Coverage

Teachers: 50% of current actives and pre-65 retirees are assumed either to enroll in retiree health coverage through the Connecticut State Teachers Retirement System at age 65, or transfer to a Medicare Supplement Plan. 95% of current actives and pre-65 retirees are assumed to be Medicare-eligible.

All Others: N/A.

Valuation of Benefits for Children

Benefits attributed to children have been excluded from this valuation for all groups, as they were determined to be de minimis.

Certain actuarial demographic assumptions for Teachers and Administrators are based on the assumptions used in the June 30, 2020 valuation of the Connecticut State Teachers' Retirement System.

Appendix C - Summary of Plan Provisions

This exhibit summarizes the major provisions of the Plan. It is not intended to be, nor should it be interpreted as a complete statement of all plan provisions. All eligibility requirements and benefit amounts shall be determined in strict accordance with the plan document itself. To the extent that this summary does not accurately reflect the plan provisions, then the results of this valuation may not be accurate.

Eligibility

Teachers and **Administrators:** Age 55 with 20 Years of Service

Police: Retirement with 25 Years of Service or Disabled with any Years of Service

Fire: Retirement at (i) any age with 25 Years of Service or (ii) age 65 with 20 Years of Service or Disabled with any Years of Service

All Others: Rule of 80 with minimum age 55

Benefits

Teachers: Medical, drug and dental coverage for self and spouse with a $700 annual subsidy* for the first 7 years of retirement. Teachers not eligible for Medicare can stay on the plan after age 65.

Administrators: Medical, drug and dental coverage for self and spouse with a $750 annual subsidy* for the first 7 years of retirement. Administrators hired after July 1, 2017 are not eligible for the subsidy.

AFSCME A: Full-time employees and 10 month employees retired before July 1, 2013 receive medical and drug coverage for self and spouse for 10 years and pay the active cost share (currently 14%). Retirees can continue on Medicare supplement plans at age 65.

10 month employees who retire on or after July 1, 2013 receive the same coverage as above, but for 5 years.

AFSCME B: Retirees hired before July 1, 2004 receive medical and drug coverage for self and spouse for 10 years and pay the active cost share (currently 18%). Retirees can continue on Medicare supplement plans at age 65.

Retirees hired after July 1, 2004 receive medical and drug coverage for self only for 5 years and pay the active cost share (currently 18%).

AFSCME C: Retirees hired before July 1, 1992 receive medical, drug, and dental coverage for self and spouse at no cost for the first 5 years following retirement and pay the active cost share (currently 18%) for the next 5 years. Retirees can continue on Medicare supplement plans at age 65.

Retirees hired after July 1, 1992 can elect the same coverage at their own expense.

*Only Teachers and Administrators who retire at Normal Retirement (age 60 with 20 Years of Service or 35 Years of Service) are eligible for the BOE subsidy.

Appendix C - Summary of Plan Provisions

Benefits

Certified Non-Bargaining: Retirees receive medical, drug, and dental coverage for self and spouse for 10 years at 16% cost sharing. Retirees go on to the state plan at age 65.

Non-Certified Non-Bargaining: Retirees receive medical, drug, and dental coverage for self and spouse for 10 years at no cost. Retirees can continue on Medicare supplement plans at age 65.

City: Retirees receive medical and drug coverage for self and spouse for 10 years when hired before the respective dates in the below table. Retirees hired after the dates in the table receive 5 years of coverage. Effective cost shares are also shown in the table. Retirees can continue on Medicare supplement plans at age 65.

Group	Effective Date	Cost Share
Local D	12/1/2010	None
Local E	9/8/2010	None
Local F	6/30/2011	None
Non Bargaining	4/11/2011	None
Health District	07/01/2012*	5.0%

* 10 month health aides hired before this date get 5 years of coverage instead of 10 years. 10 month health aides hired after this date can elect coverage at their own expense.

Fire: Retirees receive medical and drug coverage for self and spouse for 10 years at no cost. Retirees can continue on Medicare supplement plans at age 65. Retirees may elect to defer their retiree health coverage until the retiree reaches a maximum of age 55. Benefits will be the same if a retiree elects immediate or deferred commencement.

Police: Retirees receive medical and drug coverage for self and spouse for 10 years at no cost. Retirees can continue on Medicare supplement plans at age 65. Some current Police retirees are eligible to receive benefits for 15 years and are identified by the City.

Employee Contributions

City: Employees contribute 1.50% of compensation to the OPEB Program.

Fire: Effective July 1, 2020, employees contribute 1.00% of compensation to the OPEB Program (prior: 0.75%).

Police: Officers hired before March 10, 2020 contribute 1.625% of compensation to the OPEB Program and officers hired on or after March 10, 2020 contribute 1.875% of compensation to the OPEB Program (prior: 0.00%).

BOE (all groups): None.

Appendix D - Glossary

Actuarial Cost Method - This is a procedure for determining the Actuarial Present Value of Benefits and allocating it to time periods to produce the Actuarial Accrued Liability and the Normal Cost.

Accrued Liability - This is the portion of the Actuarial Present Value of Benefits attributable to periods prior to the valuation date by the Actuarial Cost Method (i.e., that portion not provided by future Normal Costs).

Actuarial Assumptions - With any valuation of future benefits, assumptions of anticipated future events are required. If actual events differ from the assumptions made, the actual cost of the plan will vary as well. Some examples of key assumptions include the interest rate, salary scale, and rates of mortality, turnover and retirement.

Actuarial Present Value of Benefits - This is the present value, as of the valuation date, of future payments for benefits and expenses under the Plan, where each payment is: a) multiplied by the probability of the event occurring on which the payment is conditioned, such as the probability of survival, death, disability, termination of employment, etc.; and b) discounted at the assumed interest rate.

Actuarial Value of Assets - This is the value of cash, investments and other property belonging to the plan, typically adjusted to recognize investment gains or losses over a period of years to dampen the impact of market volatility on the Actuarially Determined Contribution.

Actuarially Determined Contribution ("ADC") - This is the employer's periodic contributions to a defined benefit plan, calculated in accordance with actuarial standards of practice.

Attribution Period - The period of an employee's service to which the expected benefit obligation for that employee is assigned. The beginning of the attribution period is the employee's date of hire and costs are spread across all employment.

Interest Rate - This is the long-term expected rate of return on any investments set aside to pay for the benefits. In a financial reporting context (e.g., GASB 75) this is termed the Discount Rate.

Normal Cost - This is the portion of the Actuarial Present Value of Benefits allocated to a valuation year by the Actuarial Cost Method.

Past Service Cost - This is a catch-up payment to fund the Unfunded Accrued Liability over time (generally 10 to 30 years). A closed amortization period is a specific number of years counted from one date and reducing to zero with the passage of time; an open amortization period is one that begins again or is recalculated at each valuation date. Also known as the Amortization Payment.

Return on Plan Assets - This is the actual investment return on plan assets during the fiscal year.

Unfunded Accrued Liability - This is the excess of the Accrued Liability over the Actuarial Value of Assets.

Appendix E

Sample GASB 74/75 Report

SAMPLE TOWN
OTHER POST-RETIREMENT BENEFITS PROGRAM

GASB 74 and 75 DISCLOSURE
Fiscal Year: July 1, 2021 to June 30, 2022

Prepared by

Rebecca A. Sielman, FSA
Consulting Actuary

Jennifer M. Castelhano, FSA
Consulting Actuary

January 20, 2023

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Certification

Actuarial computations presented in this report under Statements No. 74 and 75 of the Governmental Accounting Standards Board are for purposes of assisting the Town in fulfilling its financial accounting requirements. No attempt is being made to offer any accounting opinion or advice. This report is for fiscal year July 1, 2021 to June 30, 2022. The reporting date for determining plan assets and obligations is June 30, 2022. The calculations enclosed in this report have been made on a basis consistent with our understanding of the plan provisions. Determinations for purposes other than meeting financial reporting requirements may be significantly different than the results contained in this report. Accordingly, additional determinations may be needed for other purposes, such as judging benefit security or meeting employer funding requirements.

In preparing this report, we relied, without audit, on information as of July 1, 2020 and June 30, 2022 furnished by the Town. This information includes, but is not limited to, statutory provisions, member census data, and financial information. Please see Milliman's valuation report dated December 27, 2021 for more information on the plan's participant group as of July 1, 2020 as well as a summary of the plan provisions and a summary of the actuarial methods and assumptions used for funding purposes.

We performed a limited review of the census and financial information used directly in our analysis and have found them to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

We hereby certify that, to the best of our knowledge, this report, including all costs and liabilities based on actuarial assumptions and methods, is complete and accurate and determined in conformance with generally recognized and accepted actuarial principles and practices, which are consistent with the Actuarial Standards of Practice promulgated by the Actuarial Standards Board and the applicable Code of Professional Conduct, amplifying Opinions and supporting Recommendations of the American Academy of Actuaries.

Each of the assumptions used in this valuation with the exception of those set by law was set based on industry standard published tables and data, the particular characteristics of the plan, relevant information from the plan sponsor or other sources about future expectations, and our professional judgment regarding future plan experience. We believe the assumptions are reasonable for the contingencies they are measuring, and are not anticipated to produce significant cumulative actuarial gains or losses over the measurement period. Assumptions related to the claims costs and healthcare trend (cost inflation) rates for the retiree healthcare program discussed in this report were determined by Milliman actuaries qualified in such matters.

This valuation report is only an estimate of the plan's financial condition as of a single date. It can neither predict the plan's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of plan benefits, only the timing of plan contributions. While the valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct. Determining results using alternative assumptions is outside the scope of our engagement.

Certification

Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as, but not limited to, the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of the actuarial assignment, we did not perform an analysis of the potential range of such future measurements.

The valuation results were developed using models intended for valuations that use standard actuarial techniques. In addition, Milliman has developed certain models to develop the expected long term rate of return on assets and estimate the claim costs and trend used in this analysis. We have reviewed the models, including their inputs, calculations, and outputs for consistency, reasonableness, and appropriateness to the intended purpose and in compliance with generally accepted actuarial practice and relevant actuarial standards of practice. The models, including all input, calculations, and output may not be appropriate for any other purpose.

Milliman's work is prepared solely for the internal use and benefit of the Sample Town. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exceptions: (a) the Plan Sponsor may provide a copy of Milliman's work, in its entirety, to the Plan Sponsor's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the Town; and (b) the Plan Sponsor may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law.

No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and has been prepared in accordance with generally recognized accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Rebecca A. Sielman, FSA Consulting Actuary	Jennifer M. Castelhano, FSA Consulting Actuary

Overview of GASB 74 and GASB 75

The Governmental Accounting Standards Board (GASB) released accounting standards for public postemployment benefit plans other than pension (OPEB) and participating employers in 2015. These standards, GASB Statements No. 74 and 75, have substantially revised the accounting requirements previously mandated under GASB Statements No. 43 and 45. The most notable change is the that the Annual Required Contribution (ARC) has been eliminated and the Net OPEB Liability will be an item on the employer's financial statement rather than a footnote entry.

GASB 74 applies to financial reporting for public OPEB plans funded by OPEB trusts and is required to be implemented for plan fiscal years beginning after June 15, 2016. Note that a plan's fiscal year might not be the same as the employer's fiscal year. Even if the plan does not issue standalone financial statements, but rather is considered a trust fund of a government, it is subject to GASB 74. Under GASB 74, enhancements to the financial statement disclosures are required, along with certain required supplementary information.

GASB 75 governs the specifics of accounting for public OPEB plan obligations for participating employers and is required to be implemented for employer fiscal years beginning after June 15, 2017. GASB 75 requires a liability for OPEB obligations, known as the Net OPEB Liability (Total OPEB Liability for unfunded plans), to be recognized on the balance sheets of participating employers. Changes in the Net OPEB Liability (Total OPEB Liability for unfunded plans) will be immediately recognized as OPEB Expense on the income statement or reported as deferred inflows/outflows of resources depending on the nature of the change.

Executive Summary

Relationship Between Valuation Date, Measurement Date, and Reporting Date

The Valuation Date is July 1, 2020. This is the date as of which the actuarial valuation is performed. The Measurement Date is June 30, 2022. This is the date as of which the total OPEB liability is determined. The Reporting Date is June 30, 2022. This is the plan's and/or employer's fiscal year ending date.

Significant Changes

Given the substantial uncertainty regarding the impact of COVID-19 on plan costs, including whether the pandemic will increase or decrease costs during the term of our projections, we have chosen not to make an adjustment in the expected plan costs. It is possible that the COVID-19 pandemic could have a material impact on the projected costs.

Participant Data as of July 1, 2020

Actives	1,519
Retirees	789
Spouses of Retirees	390
Beneficiaries	17
Total	2,715

Schedule of Employer Contributions

Fiscal Year Ending June 30	Actuarially Determined Contribution	Actual Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll	Contribution as a % of Covered Payroll
2013	$15,593,000	$11,710,937	$3,882,063	N/A	N/A
2014	16,825,300	11,053,005	5,772,295	N/A	N/A
2015	18,044,288	11,416,349	6,627,939	N/A	N/A
2016	16,015,703	9,702,726	6,312,977	N/A	N/A
2017	17,205,340	10,120,280	7,085,060	N/A	N/A
2018	24,771,245	8,312,818	16,458,427	N/A	N/A
2019	26,339,013	12,296,522	14,042,491	105,387,048	11.67%
2020	23,318,511	7,796,906	15,521,605	105,387,048	7.40%
2021	24,842,628	8,636,961	16,205,667	117,103,526	7.38%
2022	18,918,869	9,260,040	9,658,829	117,103,526	7.91%

Actuarial Methods and Assumptions Used for Funding Policy

The following actuarial methods and assumptions were used in the July 1, 2020 funding valuation. Please see the valuation report dated December 27, 2021 for further details.

Valuation Timing	Actuarial valuations for funding purposes are performed biennially as of July 1. The most recent valuation was performed as of July 1, 2020.
Actuarial Cost Method	Entry Age Normal
Amortization Method	
Level percent or level dollar	Level Percent
Closed, open, or layered periods	Closed
Amortization period at July 1, 2020	17
Amortization growth rate	3.50%
Asset Valuation Method	Market Value
Smoothing period	N/A
Recognition method	N/A
Corridor	N/A
Inflation	2.60%
Salary Increases	Graded by age; scale varies by group
Discount Rate	2.21%, linked to the municipal bond index
Healthcare Trend Rates	4.80% - 4.10% over 53 years pre-Medicare -1.88% - 4.10% over 53 years post-Medicare

Money-Weighted Rate of Return

Fiscal Year Ending June 30	Net Money-Weighted Rate of Return
2017	0.85%
2018	7.96%
2019	5.77%
2020	7.66%
2021	24.34%
2022	-12.11%

Calculation of Money-Weighted Rate of Return

The money-weighted rate of return considers the changing amounts actually invested during a period and weights the amount of plan investments by the proportion of time they are available to earn a return during that period. External cash flows are determined on a monthly basis and are assumed to occur at the beginning of each month. External cash inflows are netted with external cash outflows, resulting in a net external cash flow in each month. The money-weighted rate of return is calculated net of investment expenses.

	Net External Cash Flows	Periods Invested	Period Weight	Net External Cash Flows With Interest
Beginning Value - July 1, 2021	$4,256,599	12.00	1.00	$3,741,172
Monthly net external cash flows:				
July	2,891	12.00	1.00	2,541
August	2,816	11.00	0.92	2,501
September	2,755	10.00	0.83	2,475
October	2,708	9.00	0.75	2,458
November	2,693	8.00	0.67	2,470
December	4,184	7.00	0.58	3,882
January	3,013	6.00	0.50	2,825
February	3,013	5.00	0.42	2,854
March	3,013	4.00	0.33	2,887
April	3,013	3.00	0.25	2,917
May	2,951	2.00	0.17	2,887
June	4,192	1.00	0.08	4,149
Ending Value - June 30, 2022	3,776,018			3,776,018
Money-Weighted Rate of Return	-12.11%			

Long-Term Expected Rate of Return

The assumption for the long-term expected rate of return is determined by adding expected inflation to expected long-term real returns and reflecting expected volatility and correlation. The capital market assumptions are per Milliman's investment consulting practice as of June 30, 2021.

Asset Class	Index	Allocation	Long-Term Expected Arithmetic Real Rate of Return	Long-Term Expected Geometric Real Rate of Return
US Cash	BAML 3-Month T-Bills	0.04%	-0.32%	-0.32%
US Core Fixed Income (Aggregate)	Bloomberg Barclays Aggregate	36.14%	1.37%	1.26%
US Large Cap Equity	S&P 500 TR USD	58.28%	5.15%	3.65%
Global Equity	MSCI ACWI NR USD	5.54%	5.81%	4.23%
Assumed Inflation - Mean			2.60%	2.60%
Assumed Inflation - Standard Deviation			1.16%	1.16%
Portfolio Real Mean Return			3.82%	3.18%
Portfolio Nominal Mean Return			6.42%	5.86%
Portfolio Standard Deviation				10.96%
Long-Term Expected Rate of Return				**6.00%**

* Based on the plan's asset allocation as of June 30, 2022.

Depletion Date Projection

GASB 74 and 75 generally require that a blended discount rate be used to measure the Total OPEB Liability (the Actuarial Accrued Liability calculated using the Individual Entry Age Normal Cost Method). The long-term expected return on plan investments may be used to discount liabilities to the extent that the plan's Fiduciary Net Position (fair market value of assets) is projected to cover benefit payments and administrative expenses. A 20-year high quality (AA/Aa or higher) municipal bond yield or index rate must be used for periods where the Fiduciary Net Position is not projected to cover benefit payments and administrative expenses. Determining the discount rate under GASB 74 and 75 will often require that the actuary perform complex projections of future benefit payments and asset values. GASB 74 and 75 (paragraph 29) do allow for alternative evaluations of projected solvency, if such evaluation can reliably be made. GASB does not contemplate a specific method for making an alternative evaluation of sufficiency; it is left to professional judgment.

The following circumstances justify an alternative evaluation of sufficiency for the Sample Town:

- The Town has contributed, on average over the last 5 years, about 39% of the Actuarially Determined Contribution.

- GASB 74 and 75 specify that the projections regarding future solvency assume that plan assets earn the assumed rate of return and there are no future changes in the plan provisions or actuarial methods and assumptions, which means that the projections would not reflect any adverse future experience which might impact the plan's funded position.

Based on these circumstances, it is our professional opinion that the detailed depletion date projections outlined in would show that the Fiduciary Net Position will not be sufficient to cover benefit payments and administrative expenses. Since the current Fiduciary Net Position is less than one year of benefit payments, we believe the plan assets would be immediately depleted and therefore the municipal bond index rate should be used, without adjustment.

Net OPEB Liability

Net OPEB Liability	June 30, 2021	June 30, 2022
Total OPEB liability	$210,628,379	$174,232,995
Fiduciary net position	4,256,599	3,776,018
Net OPEB liability	206,371,780	170,456,977
Fiduciary net position as a % of total OPEB liability	2.02%	2.17%
Covered payroll	117,103,526	117,103,526
Net OPEB liability as a % of covered payroll	176.23%	145.56%

The total OPEB liability was determined by an actuarial valuation as of the valuation date, calculated based on the discount rate and actuarial assumptions below, and was then projected forward to the measurement date. Any significant changes during this period have been reflected as prescribed by GASB 74 and 75.

Discount Rate

Discount rate	2.16%	3.54%
Long-term expected rate of return, net of investment expense	6.00%	6.00%
20 Year Tax-Exempt Municipal Bond Yield	2.16%	3.54%

The plan's fiduciary net position was not projected to be available to make all projected future benefit payments of current active and inactive employees. Therefore, the discount rate for calculating the total OPEB liability is equal to the 20 Year Tax-Exempt Municipal Bond Yield.

Other Key Actuarial Assumptions

The actuarial assumptions that determined the total OPEB liability as of June 30, 2022 were based on the results of an actuarial experience study for the period 2014 to 2019.

Valuation date	July 1, 2020	July 1, 2020
Measurement date	June 30, 2021	June 30, 2022
Actuarial cost method	Entry Age Normal	Entry Age Normal
Inflation	2.60%	2.60%
Medical Trend Rate	4.80% - 4.10% over 53 years pre-Medicare, -1.88% - 4.10% over 53 years post-Medicare	4.80% - 4.10% over 53 years pre-Medicare, -1.88% - 4.10% over 53 years post-Medicare
Salary increases including inflation	Graded by age; scale varies by group	Graded by age; scale varies by group

Please see Milliman's funding valuation report dated December 27, 2021 for more detail.

Changes in Net OPEB Liability

Changes in Net OPEB Liability	Increase (Decrease) Total OPEB Liability (a)	Plan Fiduciary Net Position (b)	Net OPEB Liability (a) - (b)
Balances as of June 30, 2021	$210,628,379	$4,256,599	$206,371,780
Changes for the year:			
Service cost	8,104,788		8,104,788
Interest on total OPEB liability	4,625,162		4,625,162
Effect of plan changes	0		0
Effect of economic/demographic gains or losses	0		0
Effect of assumptions changes or inputs	(39,865,294)		(39,865,294)
Benefit payments	(9,260,040)	(9,260,040)	0
Employer contributions		9,260,040	(9,260,040)
Member contributions		37,242	(37,242)
Net investment income		(517,823)	517,823
Administrative expenses		0	0
Balances as of June 30, 2022	174,232,995	3,776,018	170,456,977

Sensitivity Analysis

The following presents the net OPEB liability of the Town, calculated using the discount rate of 3.54%, as well as what the Town's net OPEB liability would be if it were calculated using a discount rate that is 1 percentage point lower (2.54%) or 1 percentage point higher (4.54%) than the current rate.

	1% Decrease 2.54%	Current Discount Rate 3.54%	1% Increase 4.54%
Total OPEB liability	$201,784,185	$174,232,995	$152,263,198
Fiduciary net position	3,776,018	3,776,018	3,776,018
Net OPEB liability	198,008,167	170,456,977	148,487,180

The following presents the net OPEB liability of the Town, calculated using the current healthcare cost trend rates as well as what the Town's net OPEB liability would be if it were calculated using trend rates that are 1 percentage point lower or 1 percentage point higher than the current trend rates.

	1% Decrease	Current Trend Rate	1% Increase
Total OPEB liability	$147,439,977	$174,232,995	$208,696,546
Fiduciary net position	3,776,018	3,776,018	3,776,018
Net OPEB liability	143,663,959	170,456,977	204,920,528

Schedule of Changes in Net OPEB Liability and Related Ratios

	Fiscal Year Ending June 30									
	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Total OPEB Liability										
Service cost	$8,104,788	$12,443,816	$9,638,716	$8,211,745	$9,091,466	$10,676,214	N/A	N/A	N/A	N/A
Interest on total OPEB liability	4,625,162	8,106,725	10,044,897	10,754,274	10,026,514	8,666,824	N/A	N/A	N/A	N/A
Effect of plan changes	0	(2,015,378)	0	(381,358)	0	0	N/A	N/A	N/A	N/A
Effect of economic/demographic (gains) or losses	0	(37,422,890)	0	(17,333,796)	0	0	N/A	N/A	N/A	N/A
Effect of assumption changes or inputs	(39,865,294)	(120,518,148)	65,561,249	15,493,086	(12,007,180)	(33,108,025)	N/A	N/A	N/A	N/A
Benefit payments	(9,260,040)	(8,636,961)	(7,796,906)	(10,296,522)	(6,569,640)	(10,770,762)	N/A	N/A	N/A	N/A
Net change in total OPEB liability	(36,395,384)	(148,042,836)	77,447,956	6,447,429	541,160	(24,535,749)	N/A	N/A	N/A	N/A
Total OPEB liability, beginning	210,628,379	358,671,215	281,223,259	274,775,830	274,234,670	298,770,419	N/A	N/A	N/A	N/A
Total OPEB liability, ending (a)	174,232,995	210,628,379	358,671,215	281,223,259	274,775,830	274,234,670	N/A	N/A	N/A	N/A
Fiduciary Net Position										
Employer contributions	$9,260,040	$8,636,961	$7,796,906	$12,296,522	$8,312,818	$10,120,280	N/A	N/A	N/A	N/A
Member contributions	37,242	15,518	0	0	0	0	N/A	N/A	N/A	N/A
Net Investment income	(517,823)	830,815	243,695	165,422	295,020	12,548	N/A	N/A	N/A	N/A
Benefit payments	(9,260,040)	(8,636,961)	(7,796,906)	(10,296,522)	(6,569,640)	(9,802,177)	N/A	N/A	N/A	N/A
Administrative expenses	0	0	(28,700)	0	0	0	N/A	N/A	N/A	N/A
Net change in plan fiduciary net position	(480,581)	846,333	214,995	2,165,422	2,038,198	330,651	N/A	N/A	N/A	N/A
Fiduciary net position, beginning	4,256,599	3,410,266	3,195,271	1,029,849	(1,008,349)	(1,339,000)	N/A	N/A	N/A	N/A
Fiduciary net position, ending (b)	3,776,018	4,256,599	3,410,266	3,195,271	1,029,849	(1,008,349)	N/A	N/A	N/A	N/A
Net OPEB liability, ending = (a) - (b)	$170,456,977	$206,371,780	$355,260,949	$278,027,988	$273,745,981	$275,243,019	N/A	N/A	N/A	N/A
Fiduciary net position as a % of total OPEB liability	2.17%	2.02%	0.95%	1.14%	0.37%	-0.37%	N/A	N/A	N/A	N/A
Covered payroll	$117,103,526	$117,103,526	$105,387,048	$105,387,048	N/A	N/A	N/A	N/A	N/A	N/A
Net OPEB liability as a % of covered payroll	145.56%	176.23%	337.10%	263.82%	N/A	N/A	N/A	N/A	N/A	N/A

This schedule is presented to illustrate the requirement to show information for 10 years. However, recalculations of prior years are not required, and if prior years are not reported in accordance with the current GASB standards, they should not be reported.

OPEB Expense

OPEB Expense	July 1, 2020 to June 30, 2021	July 1, 2021 to June 30, 2022
Service cost	$12,443,816	$8,104,788
Interest on total OPEB liability	8,106,725	4,625,162
Effect of plan changes	(2,015,378)	0
Administrative expenses	0	0
Member contributions	(15,518)	(37,242)
Expected investment return net of investment expenses	(205,055)	(256,560)
Recognition of Deferred Inflows/Outflows of Resources		
Recognition of economic/demographic gains or losses	(7,344,599)	(7,344,599)
Recognition of assumption changes or inputs	(4,298,046)	(8,121,700)
Recognition of investment gains or losses	(221,909)	(67,034)
OPEB Expense	6,450,036	(3,097,185)

As of June 30, 2022, the deferred inflows and outflows of resources are as follows:

Deferred Inflows / Outflows of Resources	Deferred Inflows of Resources	Deferred Outflows of Resources
Differences between expected and actual experience	($34,734,012)	$0
Changes of assumptions	(124,792,905)	38,183,899
Net difference between projected and actual earnings	0	173,735
Contributions made subsequent to measurement date	0	0
Total	(159,526,917)	38,357,634

Amounts currently reported as deferred outflows of resources and deferred inflows of resources related to other postemployment benefits will be recognized in OPEB expense as follows:

Year ended June 30:	
2023	($14,388,859)
2024	(14,371,484)
2025	(15,314,629)
2026	(25,048,754)
2027	(25,203,629)
Thereafter*	(26,841,928)

* Note that additional future deferred inflows and outflows of resources may impact these numbers.

Schedule of Deferred Inflows and Outflows of Resources

	Original Amount	Date Established	Original Rec. Period*	Amount Recognized in Expense for FYE 06/30/2022	Amount Recognized in Expense through 06/30/2022	Balance of Deferred Inflows 06/30/2022	Balance of Deferred Outflows 06/30/2022
Economic/ demographic (gains)/losses	($37,422,890)	6/30/2021	8.0	($4,677,861)	($9,355,722)	($28,067,168)	$0
	(17,333,796)	6/30/2019	6.5	(2,666,738)	(10,666,952)	(6,666,844)	0
		Total		(7,344,599)	(20,022,674)	(34,734,012)	0
Assumption changes or inputs	(39,865,294)	6/30/2022	7.3	(5,460,999)	(5,460,999)	(34,404,295)	0
	(120,518,148)	6/30/2021	8.0	(15,064,769)	(30,129,538)	(90,388,610)	0
	65,561,249	6/30/2020	5.9	11,112,076	33,336,228	0	32,225,021
	15,493,086	6/30/2019	6.5	2,383,552	9,534,208	0	5,958,878
	(12,007,180)	6/30/2018	4.4	(1,091,560)	(12,007,180)	0	0
		Total		(8,121,700)	(4,727,281)	(124,792,905)	38,183,899
Investment (gains)/losses	774,383	6/30/2022	5.0	154,877	154,877	0	619,506
	(625,760)	6/30/2021	5.0	(125,152)	(250,304)	(375,456)	0
	(132,346)	6/30/2020	5.0	(26,469)	(79,407)	(52,939)	0
	(86,872)	6/30/2019	5.0	(17,374)	(69,496)	(17,376)	0
	(264,572)	6/30/2018	5.0	(52,916)	(264,572)	0	0
		Total		(67,034)	(508,902)	(445,771)	619,506
Total for economic/demographic gains or losses and assumption changes or inputs						(159,526,917)	38,183,899
Net deferred (inflows)/outflows for investment gains or losses						0	173,735
Total deferred (inflows)/outflows						(159,526,917)	38,357,634
Total net deferrals						(121,169,283)	

* Investment (gains)/losses are recognized in OPEB expense over a period of five years; economic/demographic (gains)/losses and assumption changes or inputs are recognized over the average remaining service life for all active and inactive members.

	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability	Deferred Inflows	Deferred Outflows	Net Investment (Inflows)/ Outflows	Net Deferrals	Net OPEB Liability plus Net Deferrals	Annual Expense
Balances as of June 30, 2021	($210,628,379)	$4,256,599	($206,371,780)	($148,623,550)	$51,679,527	($667,682)	($97,611,705)	($303,983,485)	
Service cost	(8,104,788)		(8,104,788)						8,104,788
Interest on total OPEB liability	(4,625,162)		(4,625,162)						4,625,162
Effect of plan changes	0		0						0
Effect of liability gains or losses	0		0				0		
Effect of assumption changes or inputs	39,865,294		39,865,294	(39,865,294)			(39,865,294)		
Benefit payments	9,260,040	(9,260,040)	0						
Administrative expenses		0	0						0
Member contributions		37,242	37,242						(37,242)
Expected net investment income		256,560	256,560						(256,560)
Investment gains or losses		(774,383)	(774,383)			774,383	774,383		
Employer contributions		9,260,040	9,260,040					9,260,040	
Recognition of liability gains or losses				7,344,599			7,344,599		(7,344,599)
Recognition of assumption changes or inputs				21,617,328	(13,495,628)		8,121,700		(8,121,700)
Recognition of investment gains or losses						67,034	67,034		(67,034)
Annual expense								3,097,185	(3,097,185)
Balances as of June 30, 2022	(174,232,995)	3,776,018	(170,456,977)	(159,526,917)	38,183,899	173,735	(121,169,283)	(291,626,260)	

Glossary

Actuarially Determined Contribution
A target or recommended contribution to a defined benefit OPEB plan for the reporting period, determined based on the funding policy and most recent measurement available when the contribution for the reporting period was adopted.

Deferred Inflows/Outflows of Resources
Portion of changes in net OPEB liability that is not immediately recognized in OPEB Expense. These changes include differences between expected and actual experience, changes in assumptions, and differences between expected and actual earnings on plan investments.

Discount Rate
Single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the sum of:

1) The actuarial present value of benefit payments projected to be made in future periods where the plan assets are projected to be sufficient to meet benefit payments, calculated using the Long-Term Expected Rate of Return.
2) The actuarial present value of projected benefit payments not included in (1), calculated using the Municipal Bond Rate.

Fiduciary Net Position
Equal to market value of assets.

Long-Term Expected Rate of Return
Long-term expected rate of return on plan investments expected to be used to finance the payment of benefits, net of investment expenses.

Money-Weighted Rate of Return
The internal rate of return on plan investments, net of investment expenses.

Municipal Bond Rate
Yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher.

Net OPEB Liability
Total OPEB Liability minus the Plan's Fiduciary Net Position.

Projected Benefit Payments
All benefits estimated to be payable through the OPEB plan to current active and inactive employees as a result of their past service and expected future service.

Service Cost
The portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.

Total OPEB Liability
The portion of actuarial present value of projected benefit payments that is attributable to past periods of member service using the Entry Age Normal cost method based on the requirements of GASB 74 and 75.