

STATE OF CONNECTICUT
MUNICIPAL ACCOUNTABILITY REVIEW BOARD (MARB)

MEETING NOTICE AND AGENDA
West Haven Subcommittee of the MARB

Meeting Date and Time: Tuesday, October 15, 2019 10:00 AM – 11:30 AM

Meeting Location: Conference Room 1011, First Floor, 55 Farmington Ave., Hartford, CT

Agenda

- I. Call to Order & Opening Remarks
- II. Approval of minutes: August 13, 2019
- III. Update: FY 2019 Audit process
- IV. Update: FY 2018 Audit findings and corrective action plan
- V. Update: Efficiency Measures
- VI. Update: Partnership Transition
- VII. Update: Sale of Properties
- VIII. Update: July 2018 Pension Valuation
- IX. Adjourn

DRAFT
STATE OF CONNECTICUT
MUNICIPAL ACCOUNTABILITY REVIEW BOARD (MARB)

MEETING MINUTES
West Haven Subcommittee of the MARB

Meeting Date and Time: Tuesday, August 13, 2019 10:00 AM – 11:30 PM

Meeting Location: Board of Regents Conference Room, 61 Woodland Street, Hartford, CT

MARB West Haven Subcommittee Members Present: Kimberly Kennison (OPM Secretary designee), Deputy State Treasurer Linda Savitsky (State Treasurer designee), Commissioners Tom Hamilton and Scott Jackson (phone)

OPM Staff Present: Julian Freund, William Plummer

City Staff Present: Mayor Nancy Rossi, Finance Director Frank Cieplinski, School Superintendent Neil Cavallaro (phone), Business Manager Matt Cavallaro (phone)

I. Call to Order & Opening Remarks

The meeting was called to order by Deputy Treasurer Savitsky at 10:15 AM.

II. Approval of minutes

July 25, 2019 minutes: The minutes were approved with one abstention by Commissioner Jackson.

III. Review, Discussion and Possible Action: Labor Contract

- (a) **AFSCME Local 2706:** Mr. Freund noted that legislation had recently been adopted whereby MERA contracts negotiated by boards of education are now subject to approval by the MARB. He referred Commissioners to the contractual agreement in today's packet and provided a brief overview. Mr. Cavallaro went over the contractual provisions in the agreement including the provisions in the agreement related to the high deductible health plan (HDHP) and that the agreement has sufficient flexibility that would allow the Board of Education to move to the Partnership plan if that was ultimately decided upon.

Commissioner Hamilton asked whether consideration had been given to increasing the employee share of the health insurance premium cost. Superintendent Cavallaro explained that the employee share was held at 17% with no increase as an incentive to move employees to the high deductible plan. Mr. Hamilton asked about the potential savings and timing of moving BOE employees to the State Partnership Plan. Mr. Cavallaro replied that different assessments have been provided by two firms exploring the Partnership. Committee members suggested the possibility of bringing the two firms together. Commissioner Hamilton requested additional data regarding the tentative agreement, including the projected savings from a switch to the high deductible plan, its impact on OPEB, and the budgetary impact of the wage adjustment in the third year of the contract.

Deputy Secretary Savitsky made a motion to move the contract proposal forward to the scheduled September full MARB meeting. She indicated that by then answers to the questions posed in today's meeting would be expected. The motion was approved.

IV. Review and Discussion of Audit Process

Finance Director Frank Cieplinski went over the schedule of items necessary for the completion of the June 30, 2019 audit. He indicated that it was the City's intent to ensure that the June 30, 2019 audit is completed on time and that the audit report is issued by the December 31st due date. Commissioner Kennison indicated that the schedule had been well prepared. She indicated however, that she would like to see another column on the Schedule to indicate the due dates for when the items needed in order for the auditor to complete the audit was projected to be delivered. This would help to gauge what items are behind schedule and could cause a delay in issuing the audit report.

V. Review and Discussion: FY 2018 Audit Findings and Corrective Action Plan

The findings included in today's package were reviewed by Commissioners and a discussion ensued. Several questions were posed to Mr. Cieplinski. Commissioner Hamilton expressed his desire to obtain the Board of Education responses to the Board of Education audit findings. In regard to the findings affecting the City Clerk's Office, Commissioner Hamilton indicated that the City needs to ensure that corrective action is taken to resolve those findings. Mayor Rossi inquired with Commissioners as to what authority the Mayor has to compel corrections as the City Clerk is an elected position. Commissioner Jackson noted that several of the findings in the City Clerk's Office related to computer equipment and other assets owned by the City. As these are assets of the City, City policy has authority regarding the proper controls over those City assets.

VI. Update – Efficiency Measures

Mr. Cieplinski described the efficiency measures taken to date by the City and indicated that City had utilized various studies and outside consultants to assist.

VII. Update: Fall 2019 Bond Issue

Mr. Cieplinski provided a brief update on the anticipated bond issue. He is currently working to determine what projects the City needs to be financed with the upcoming bond issue. Commissioner Hamilton inquired about the City's 5 year financial plan for which he had expressed concern in a previous meeting that the FY 2020-21 tax increase called for in the plan appeared to be at a higher rate of increase than each of the other years in the plan. He had asked that the City revisit the plan to try to smooth out the rate of increase in FY 2020-21. Mayor Rossi indicated that she would like to address Commissioner Hamilton's concern over the next several months when she and her staff would be able to better gauge the grand list for that year and its possible impact on the tax levy. Commissioner Kennison indicated that she anticipates that there will be a rescheduling of the meeting scheduled for September 5th.

VIII. Meeting adjourned at 11:30 PM

**CITY OF WEST HAVEN
FY17 - 18 Audit Issues**

ID #	Area	Condition	Remedy	Comments	Status
1	Payroll	Currently, the City Data Processing Lead Operator processes the payroll and has the ability to change employee pay rates. In addition, the payroll register is not reviewed and approved prior to the payroll being processed.	An employee in the Personnel Department will be responsible for changing rates when needed.	Training has been completed, Human Resources has been making any needed rate adjustments	
2	Payroll	Currently, the Data Processing Lead Operator has access to the check signature key.	Check signature key will be kept in the Finance Director's office safe.		
3	Year-End Closing Procedures	The City's closing process was not complete until approximately six months after year end.	Finance Director and Accounting Director will drive process and accountability targeting Dec 31, 2019 completion of FY18-19 audit		
4.A	Cash Disbursements	During our testing, we noted multiple invoices (insignificant amounts) that were for services provided in fiscal year 2017 that were paid during the fiscal year 2018. This was due to the submission of invoices by City departments to the Finance Department after the City had closed the fiscal year.	Complete development of vendor payment tool to identify unpaid bills Communicate to Department Heads the need to identify any unpaid bills related to FY19 no later than Aug 1 Accounting to prepare entries moving needed costs into FY19		
4.B	Cash Disbursements	Currently, the signature key is maintained in the IT Department.	Check signature key will be kept in the Finance Director's office safe.		
5	Bidding Documentation	<ul style="list-style-type: none"> • Bid documentation for certain projects could not be located. • A project that was initially below the bid threshold expended into a larger project above the bid threshold. • Allingtown is not following the City's bid policy. • Items purchased under State bid were not formally documented on the purchase order or voucher 	<p>The document referred to was a 2012 project, misfiled after employee turnovers. The files containing bid documents have been relocated to ensure improper removal no longer occurs.</p> <p>Department heads have been notified to contact purchasing director prior to addressing any further issues that may be exposed.</p> <p>Finance Director will forward the Purchasing Policy to Allingtown.</p> <p>Department heads have been notified that all purchases made from the State Approved vendor list need to be properly documented.</p>		
6.A	City Clerk	Currently, there are no unique separate logins for each City Clerk Department employee. All employees process transactions using the same login.	Need to investigate and propose solution.	Clerk's office is trying to determine the best way to handle the front register when busy.	
6.B	City Clerk	Since the login is shared, all users have rights to void transactions.	Need to investigate and propose solution.	Reliant on solution from 6A	
6.C	City Clerk	During our testing, we noted that the number of days of activity that was deposited ranges from 4 to 31 days, with the average being 15 days.	Instruct City Clerk that deposits must be brought to Accounting daily (or at worst weekly).		
7	Building Department	During our testing, we noted that in certain instances deposits were not made on a weekly basis.	Instruct Building Department that deposits must be brought to Accounting daily.		
8	Tax Department	Currently, voided transactions must be approved by a senior staff member, but there is no review and approval of a monthly void report by the Tax Collector to monitor compliance with the procedure.	Tax Director will work with IT to develop needed reports.		
9	Capital Assets	We noted that the City's capital asset addition identification policies and procedures do not include a procedure to review the minutes for land additions, donations and sales.	Accounting Director will develop a new policy (currently there is no written policy).		
10.A	Pension Plans	Currently the Police Pension Plan and Allingtown Pension Plan investments are managed by separate investment advisors with separate investment strategies.	Finance Director to investigate and propose solution	My opinion is to put the pension plans out to bid under the same fund manager. Requires Police and Fire Commission approval	

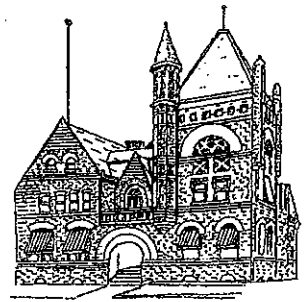
**CITY OF WEST HAVEN
FY17 - 18 Audit Issues**

ID #	Area	Condition	Remedy	Comments	Status
10.B	Pension Plans	Currently, the City Finance Department does not received the Police Pension Plan investments statements on a monthly basis and therefore does not reconcile activity or monitor the statements to ensure that the activity is properly recorded until year end.	Finance Director to request copies of monthly statements going forward and retain.	Request has been made...waiting for statements	
10.C	Alternative Investments	Although the City has their investment manager monitor their pension investments, currently, there is no formal monitoring of the alternative investments by the City Finance Department and/or Pension Commission.	Finance Director to request copies of quarterly statements going forward and retain.	Request has been made...waiting for statements	
10.D	Alternative Investments	State Statutes require that when pension obligation bonds have been issued that the plan maintain a funded level of 100%. At June 30, 2018 the plan is funded at 85%.	Build line into future budgets to build up funding.		
11	Allingtown FD Personnel files	The City Personnel Department does not maintain adequate personnel files and salary related documentation of the Allingtown Fire Department employees.	Finance Director has met with AFD, personnel files will be collected and delivered to City Personnel Department (copies kept at AFD).	Still some pushback from Allingtown, need to followup	
12	Allingtown FD Capital Assets	Capital asset deletions should be identified and reported annually. We noted that the Allingtown Fire Department have not had any significant deletions over the past two fiscal years.	Finance Director has met with AFD, physical inventory will be conducted and completed before 6/30. Accounting Director to work with AFD to enforce process being used by the City.		
13	Allingtown FD Budget & General Ledger	Currently, the Allingtown Fire Department budget format does not present the budget in a format that is consistent with the City's financial statement presentation with respect to expenditure classification and categorization.	Finance Director has met with AFD, and will work with them to review and finalize account mappings. AFD will use the same budget file as all other City Departments in the FY20-21 budget cycle.		
14	Allingtown FD Unallocated Contingency Account	Currently, the Allingtown Fire Department records expenditures directly to the unallocated contingency budget line account.	Budget Transfer file has been sent to AFD. Going forward they will be part of the Finance Director's crackdown on departments not following the City transfer policy.		
15	Board of Education	Currently, the Board of Education journal entries are prepared and recorded by the Business Manager.	All journal entries are prepared by the BOE Business Manager and entered into MUNIS by the Business Office secretary.		
16.A	Board of Education	Currently, there are certain student activity and other accounts for which the only authorized signor is the teacher advisor.	The authorized signor for all accounts include the School Principal and the BOE Business Manager		
16.B	Board of Education	Various student activity fund accounting records are maintained on a manual basis and are not under general ledger control	Training on QuickBooks is set to begin now that school is back in session.	Training Needed	
16.C	Board of Education	Currently, one employee at each school is responsible for all aspects of cash receipts, cash disbursements, record keeping and accounting related to the student activity funds.	Once the QuickBooks project is up and running, the Business office will perform spot checks throughout the year to monitor all activity.		
17.A	Board of Education	We noted that in some instance certain education grants are overexpended during the year, but are adjusted to the correct balances after year end.	To go along with the current monthly monitoring, journal entries will be entered on a monthly basis to ensure balances are correct in real time in MUNIS		
17.B	Board of Education	During our testing, we noted that a significant number and dollar value of invoices that related to the June 30, 2018 fiscal year were incorrectly charged to July and August 2018. The invoices were subsequently properly reclassified as accounts payable and charged to the fiscal 2018 budget.	Accounts payable entires were reduced by over \$1.2 million related to June 30, 2019. Fiscal years were adjusted prior to processing when the invoices were received at the end of the fiscal year.		
18	Investment Policy	The City does not currently have a comprehensive investment policy that addresses all funds and the related allowable investments.	Need to investigate and propose solution.		
19	Employee Security Training	The City experienced an IT security event that affected the City IT systems.	IT Director to investigate and propose solution.	Additional software and monitoring is in place. IT director has occasionally sent out "test" emails to see if employees click on their links.	



Office of the Mayor

City of West Haven
355 Main Street
West Haven, Connecticut 06516



City Hall
1896-1968

Nancy R. Rossi
Mayor

October 10, 2019

State of Connecticut, Office of Policy and Management
Municipal Accountability Review Board
450 Capitol Avenue
Hartford, CT 06106

Dear Municipal Accountability Review Board (MARB) Members,

On May 30, 2019 I provided MARB members with a list of projects the City was pursuing to achieve efficiencies, cost savings and revenue enhancements. This initiative was in accordance with the Memorandum of Agreement (MOA) between the State of Connecticut Office of Policy and Management (OPM) and the City of West Haven which required the City to develop "...a list of potential operational efficiencies to be achieved through consolidation, shared services, technological enhancements, and other operational improvements that have been given consideration." Also required by this MOA was the development of City plans/policies for the sale of City-owned assets, a General Fund Balance policy and a Medical Benefits Insurance Trust Fund Balance policy.

Many of these projects have been discussed and reviewed to varying degrees by the MARB over the past six months; however, at OPM's suggestion we have developed the following summary in outline form, which is a compilation of the status of each initiative.

A. Energy Projects

1. Municipal Energy Purchasing – Competitively Bid Procurement of Electricity
 - Bid completed on July 2, 2019
 - Lowest bid received from Constellation Energy
 - New rates effective December 10, 2019
 - Contract term three years – with blend and extend option
 - Estimated annualized savings (vs. current rate) \$280,260
 - Estimated savings in current fiscal year \$151,800

2. Energy Saving Performance Contracting
 - City to schedule interviews in early November with two prequalified consultants to act as the “Owner’s Representatives” appointment should follow within two weeks of interviews
 - “Owner’s Representative” performs the preliminary energy assessment of all facilities, prepares and solicits RFP for a Qualified Energy Services Provider (QESP), supervise the development of an investment grade audit, and oversee all elements of project until completion

B. Medical Benefits/Health Insurance

1. Pursue alternative medical benefit plan coverage to achieve cost savings
 - Transitioning five City bargaining unions to State Partnership Health Plan (SPP) – January 1, 2020
 - Estimated annual savings \$648,000
 - Estimated savings in current fiscal year \$324,000
 - Conducting financial analysis relative to feasibility of transitioning Over 65 Retirees to SPP
 - Financially not feasible to transition Under 65 Retirees to SPP
 - Board of Education evaluating transitioning employees to SPP next fiscal year
 - City planning to transition Allingtown Fire employees next fiscal year
(Note: There is a more detailed status report being transmitted to MARB from Michael Milone.)
2. Organizational Evaluation of Human Resources/Benefit Administration
 - Joint initiative between the City and Board of Education
 - Conducted Request for Proposal (RFP) for a Human Resources Audit on April 9, 2019
 - Hired the Human Resource Consulting Group on May 22, 2019 to conduct Human Resources Audit
 - Draft report presented on September 24, 2019
 - Proposed presentation to MARB at November committee meeting (report and plan of action)
3. Benefits Consulting Services
 - Changed third party COBRA benefits administrator
 - Plan to conduct RFP for medical benefits consulting services

C. Sale of Fixed Assets

- Bayview Park property sold for \$257,000
- Stiles and Thompson schools sold for \$450,000 – closing pending
- Blake Building sold for \$425,000 – closing pending
- Developed a plan for the sale of city-owned assets and transmitted to MARB on April 1, 2019

D. Development of Financial Policies

- Developed a policy relative to establishing and managing a General Fund Balance and transmitted to MARB on June 21, 2019
- Developed a policy/plan to mitigate the medical benefits insurance trust fund liability and maintain a positive fund balance. This was transmitted to the MARB on June 21, 2019

E. User Fee Evaluation

- City budget identifies approximately 27 categories of use fees approximating about 157 separate user charges
- Generate approximately \$3.1M annually from user fees
- Initiated evaluation in August with recommendations expected to be completed by December 31, 2019
- Targeted increase of at least 5% in revenue approximating \$150,000

F. Reevaluate City's Current Solid Waste and Recycling Collection

- Initiative was based on solid waste contract expiration of June 30, 2019 – upon further analysis a one-year extension at no additional cost has been identified
- Extension provision has allowed for reevaluation of initiative, which has commenced among staff and could allow for pursuit of additional options

G. Institute Social Security Exclusion for Temporary/Part Time/Seasonal Employees

- Federal statutes allow City and BOE exemption from employer 6.2% Social Security wage contribution for temporary/part time/seasonal employees meeting qualifications
- Substitute savings plan must be offered but at lesser employer contribution
- Estimated that the City and BOE combined contribute \$1.350M in Social Security contributes for this group of employees
- Analysis and recommendation to be completed by December 31, 2019

H. Expand and Enhance Utilization of the MUNIS Financial Management Software System to All City Departments

- Implemented a purchase requisition pre-audit procedure- partially automated and partially manual until full automation process completed
- Process change has significantly enhanced internal controls
- Have expanded utilization of MUNIS by departments
- Ultimate goal of completing comprehensive MUNIS utilization delayed due to priority associated with audit preparation and resolution of FY '18 audit comments

I. Transition to Biweekly Payroll Disbursement Process

- Being deferred until City institutes transition of all active employees with medical benefit coverage to the State Partnership Plan

J. Establish a Single Installment of Personal Property and Motor Vehicle Taxes

- The City Charter would have to be changed to allow the City Council to consider such a policy. There is a Charter Revision proposal but it does not include this revision

K. Fire Department Study

- Presented to MARB at meeting on August 1, 2019

L. Addendum to Preliminary Project List

The items listed below were not included in the preliminary project list transmittal to MARB in January and February of this year but were added to my report of May 30, 2019.

1. FY '19 Financial Audit

- On schedule to have this completed by December 31, 2019

2. Establish an Other Post-Employment Benefits (OPEB) Trust

- Received Council approval to establish trust fund
- Developing internal accounting and operational procedures to facilitate segregation of identified funds and purpose of trust
- Will eventually result in authority from MARB for guidelines for transferring funds into the Trust account(s)

3. Telecommunications and Solid Waste Collection Bill Review Audit

- Through assistance from the Connecticut Conference of Municipalities contracted with consulting firm to audit the past three years of telecommunications and solid waste disposal billings
- Expectation to achieve cost recoveries from incorrect billings and identify potential pricing options in the telecommunications area
- Expect report by December 31, 2019

Very truly yours,



Nancy R. Rossi
Mayor

CC: Frank Cieplinski
Michael A. Milone

To: Municipal Accountability Review Board
From: Michael Milone, OPM Liaison to West Haven
Date: October 9, 2019
Subject: Partnership Transition Update

Since the status report issued to the MARB at the September 19, 2019 committee meeting the city conducted three presentation/information workshops to all the members of the affected union groups, except the police union. As I mentioned in my previous report the police union has refused to agree to this benefit change, alleging that the plans are not substantially equivalent. Labor Attorney Chris Hodgson has been in discussions with the Police Union attorney to attempt to resolve this, short of arbitration.

Beth Sabo, the City's Human Resource Director, informed me that the information workshops conducted for the other union members went quite well with many good questions and positive comments.

The next step in this planned dialogue is for the City staff, Beth Sabo and Attorneys Hodgson and Ryan to meet collectively with the union leadership representatives, except police, to address any remaining issues and plan for the formalization of this transition. As attorney Hodgson has previously stated and I reported to the MARB, in the event that any of the unions do not agree to the change, the City has bargained for the right to implement the change in coverage and will proceed accordingly, even if there is arbitration. But the City's goal remains to work with the unions to implement the change with their cooperation and assistance. Attorney Hodgson reports that the MOUs for the bargaining units agreeable to the switch are currently being developed.

The City's CT Partnership Plan 2.0 application was filed by Beth Sabo on September 27, 2019, in advance of the due date. The application is then forwarded to United Health Care, the benefits provider, for review. Meetings will then follow with City staff and Lockton (the City's benefit consultant), to review the census data and other administrative issues.

Last week, a meeting was held with Zenith, the third party administrator for the post-65 retiree health plan. The purpose of the meeting was to identify the coverage differences between the existing Medicare F plan and the state's similar plan and to determine the options that can be implemented to resolve the coverage differences.

Zenith will conduct an analysis that would generate coverage comparisons for medical expenses. In essence they should be able to quantify the comparative costs to an individual, using a 12 month experience period under their existing coverage and what their cost would have been had they been enrolled in the State plan. They will have to review the data to ensure that they can conduct these matches, but were confident it could be done. The prescription portion might be more challenging because of the variations in the formulary's used by each plan.

Summary Information
City of West Haven Police Pension Plan
Actuarial Valuation as of July 1, 2018
Valuation prepared by Milliman, August 2019

Background

The City recently received an updated actuarial valuation of the Police Pension Plan as of July 1, 2018. The prior actuarial valuation, as of January 1, 2016, had provided the basis for budgeting for the City's contributions to the pension plan and projecting contributions in the 5-Year Plan.

Assumptions

The latest valuation of the City's Police Pension Plan used the same assumptions as the January 2016 valuation with the exception of the assumed investment rate of return which was reduced from 7.375% to 7.125%. The major actuarial assumptions used in both the July 2018 and January 2016 actuarial valuations are depicted in the following table.

Assumption	July 2018 Valuation	January 2016 Valuation
Interest	7.125%	7.375%
Projected salary increase	3.50%	3.50%
Next pay grade adjustment	4.00%	4.00%
Amortization growth rate	3.50%	3.50%
COLA pre 7/1/93 hire	3.00%	3.00%
COLA after 7/1/93 hire	1.75%	1.75%

Recent Contributions History

Page 19 of the valuation report provides a history of the City's contributions to the Police Pension fund as compared to the actuarially determined contribution (ADC) for each year since FY 2010. The table below provides the recent history with additional data for the recently completed FY 2019 and the budgeted amount for FY 2020. As shown in the table, the City contributed the ADC for FY 2019 and has budgeted an amount sufficient to fund the ADC in the current fiscal year.

Fiscal Year	Actuarially Determined Contribution	Actual City Contribution
2016	\$1,848,528	\$1,850,000
2017	\$1,861,931	\$1,850,000
2018	\$1,927,100	\$2,091,000
2019	\$1,994,500	\$1,994,500
2020*	\$2,203,317	\$2,498,000

* Actual City Contribution for FY 2020 represents amount budgeted.

Funded Ratio

Page 13 of the actuarial valuation provides a summary of the results of the valuation. As of July 1, 2018, the funded ratio of the Police Pension plan was 90.6%. This compares to a funded ratio of 91.7% as of January 2016.

Projections

Page 17 of the actuarial valuation provides a long range forecast of pension fund values, funded ratio and required contributions. The table below compares the projected required contributions from the City over the next five years compared to the projected contributions that are included in the most recent version of the City's updated 5-Year Plan.

Fiscal Year	Projected City Contributions		Potential Adjustment to 5-Year Plan
	Actuarial Valuation	5-Year Plan (June 2019 version)	
2020	\$2,203,317	\$2,498,000	(\$294,683)
2021	\$2,412,000	\$3,334,000	(\$922,000)
2022	\$2,430,000	\$3,432,000	(\$1,002,000)
2023	\$2,452,000	\$3,467,000	(\$1,015,000)
2024	\$2,543,000	\$3,636,000	(\$1,093,000)



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August 5, 2019

Mr. Frank Cieplinski
Director of Finance
City of West Haven
355 Main Street
West Haven, CT 06516

Re: City of West Haven Police Pension Plan
July 1, 2018 Actuarial Valuation

Dear Frank:

We have performed an actuarial valuation of the City of West Haven Police Pension Plan as of July 1, 2018 for the Fiscal Year 2019-20. The results of the valuation are contained in the following report.

In our opinion, this report fairly presents the financial and actuarial position of the City of West Haven Police Pension Plan at July 1, 2018. On the basis of the foregoing, we hereby certify that, to the best of our knowledge, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices set forth by the American Academy of Actuaries.

Respectfully submitted,

Jennifer M. Castelhana, FSA
Consulting Actuary

JC

WHV2018ValLetter



CITY OF WEST HAVEN POLICE PENSION PLAN

**Actuarial Valuation as of July 1, 2018
To Determine Funding for Fiscal Year 2019-20**

Prepared by

Jennifer M. Castelhana, FSA
Consulting Actuary

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Certification

We have performed an actuarial valuation of the Plan as of July 1, 2018 to determine funding for fiscal year 2019-20. 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.

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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 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.

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

I am a member of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.



Jennifer M. Castelhana, FSA
Consulting Actuary

Section I - Executive Summary Changes Since the Prior Valuation

Plan Changes

This valuation reflects the change in the Plan Year from January 1 to July 1.

Changes in Actuarial Methods and Assumptions

In order to better anticipate future experience, the interest rate assumption was lowered from 7.375% to 7.125%. This change increased the Accrued Liability by about \$3.8 million and increased the Actuarially Determined Contribution by \$444,000.

We added an explicit assumption with respect to administrative expenses that are paid out of plan assets.

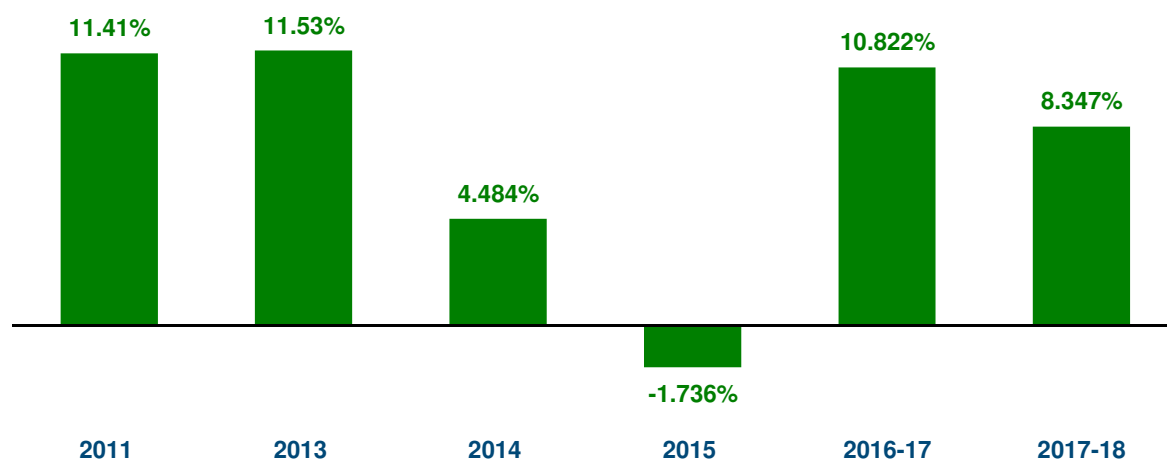
Because of the half-year change in the Plan Year, we reset the Actuarial Value of Assets to equal the Market Value of Assets as of July 1, 2018.

Section I - Executive Summary Assets

In order to dampen the impact of market fluctuations, we use an Actuarial Value of Assets to determine the City's contribution. Because of the half-year shift in the Plan Year, we reset the Actuarial Value of Assets to equal the Market Value of Assets as of July 1, 2018.

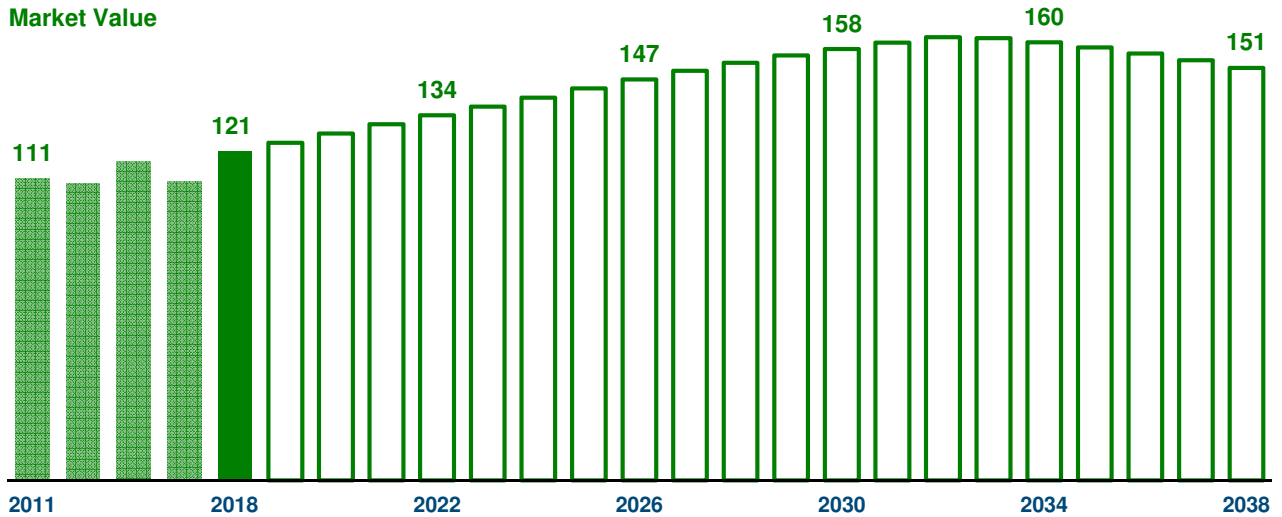
Value as of January 1, 2016	\$109,338,357
City and Member Contributions	2,137,203
Investment Income	1,039,925
Benefit Payments and Administrative Expenses	<u>(3,539,350)</u>
Value as of July 1, 2016	108,976,135
City and Member Contributions	2,430,520
Investment Income	11,537,731
Benefit Payments and Administrative Expenses	<u>(7,160,318)</u>
Value as of July 1, 2017	115,784,068
City and Member Contributions	2,657,567
Investment Income	9,468,711
Benefit Payments and Administrative Expenses	<u>(7,361,871)</u>
Value as of July 1, 2018	120,548,475

For fiscal years 2016-17 and 2017-18, the plan's assets earned 10.822% and 8.347%, respectively, on a Market Value basis. The actuarial assumption for this period was 7.375%; the result is an asset gain of about \$3.7 million for 2016-17 and an asset gain of about \$1.1 million for 2017-18. Historical rates of return are shown in the graph below.

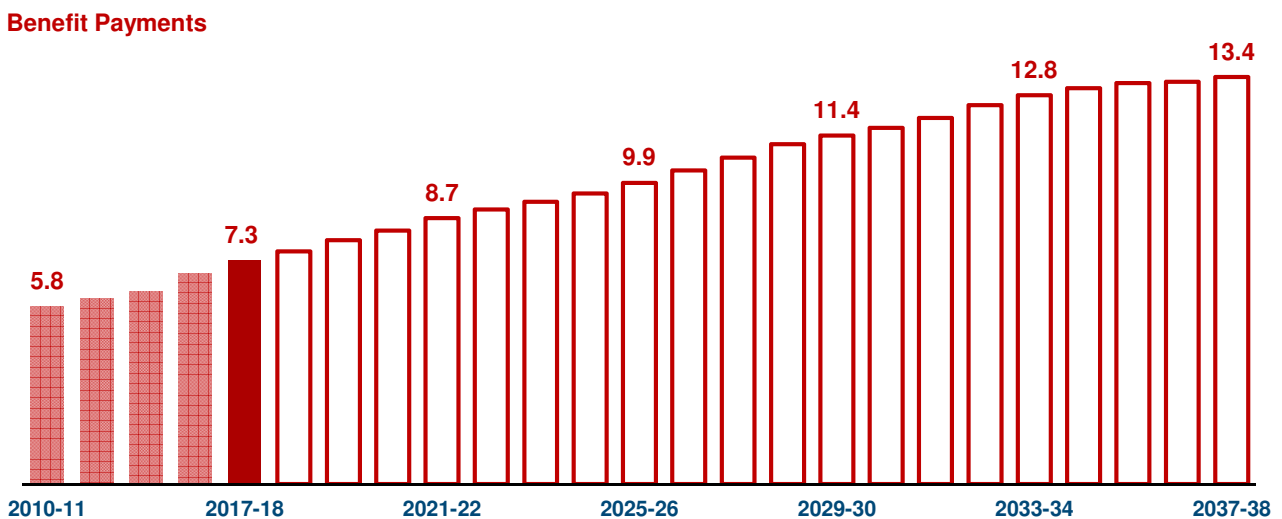


Section I - Executive Summary Assets (continued)

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.

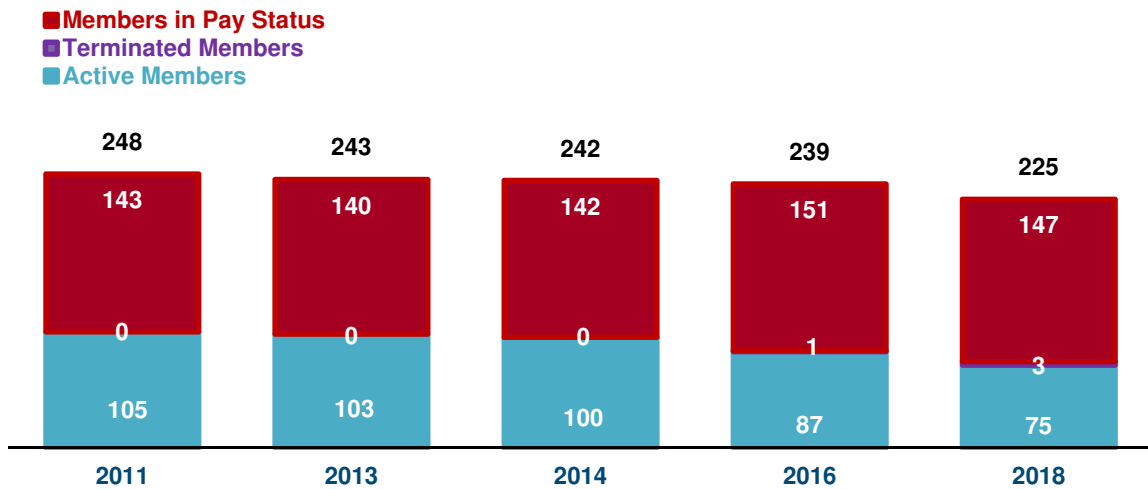


In 2017-18, the plan paid out \$7.3 million in benefits to members. Over the next 20 years, the plan is projected to pay out a total of \$216 million in benefits to members.



Section I - Executive Summary Membership

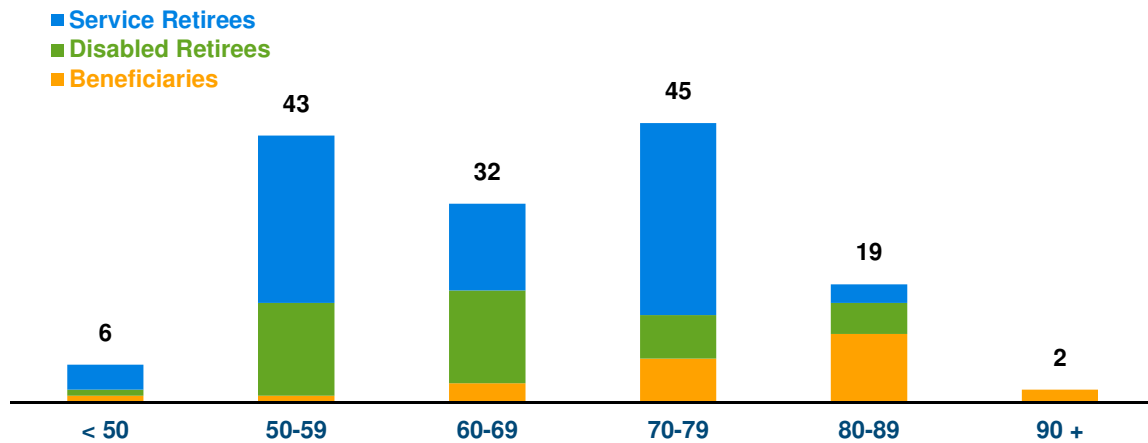
There are three basic categories of plan members included in the valuation: (1) members who are receiving monthly pension benefits, (2) former employees who have a vested right to benefits but have not yet started collecting, and (3) active employees who have met the eligibility requirements for membership.



Members in Pay Status on July 1, 2018

Service Retirees	79	Average Age	67.4
Disabled Retirees	43	Total Annual Benefit	\$7,353,141
Beneficiaries	25	Average Annual Benefit	50,021
Total	147		

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



Section I - Executive Summary Membership (continued)

Terminated Vested Members on July 1, 2018

Count	3
Average Age	43.4
Total Annual Benefit	\$61,030
Average Annual Benefit	20,343

Nonvested Members Due Refunds on July 1, 2018

Count	0
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Active Members on July 1, 2018

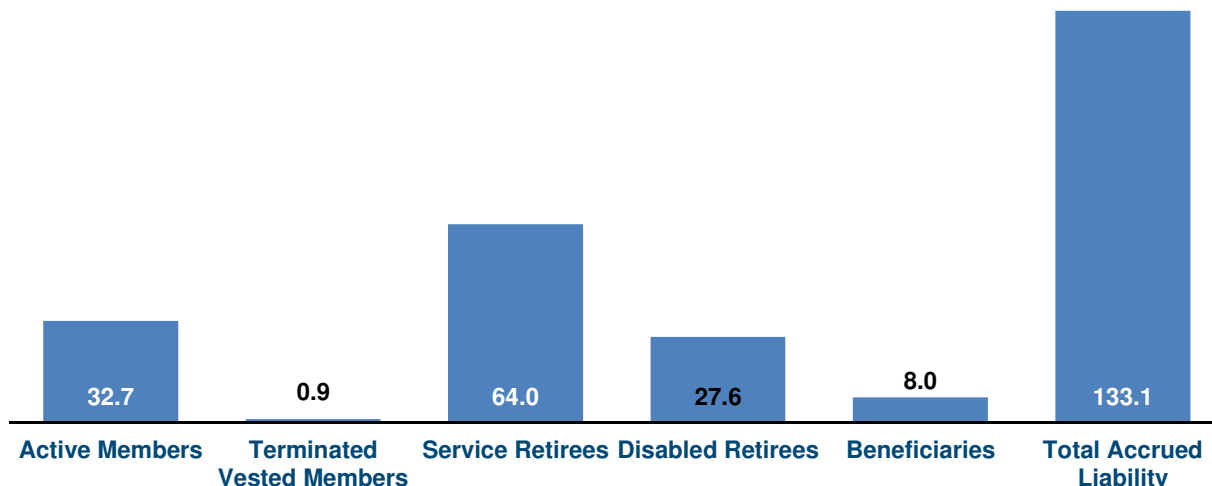
Count	75
Average Age	46.4
Average Service	18.8
Payroll	\$5,765,537
Average Payroll	76,874

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

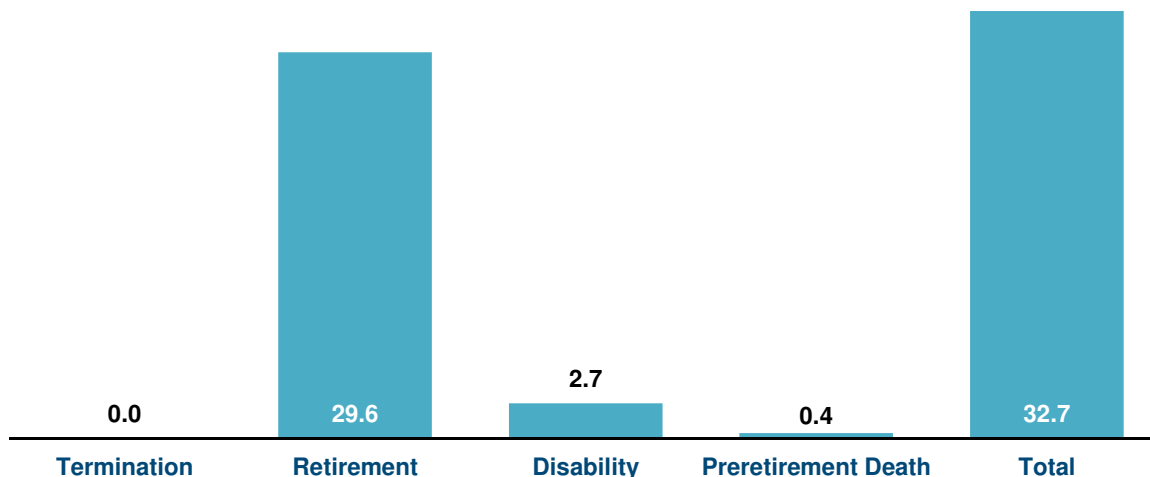
Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25								0
25-29								0
30-34		4						4
35-39		7	8	4				19
40-44		1	1	6				8
45-49		1		10	6	2		19
50-54			2	5	3	4	1	15
55-59			1	1	1	1	1	5
60-64				1			2	3
65+							2	2
Total	0	13	12	27	10	7	6	75

Section I - Executive Summary Accrued Liability

The Accrued Liability as of July 1, 2018 (\$ millions) 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:

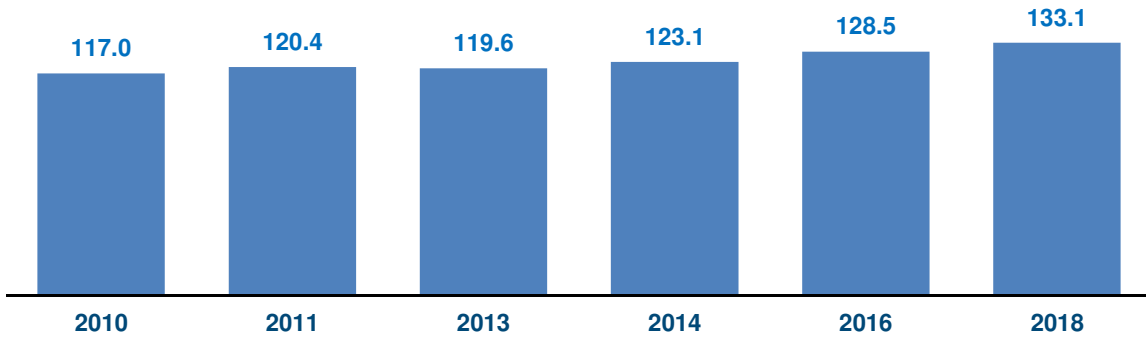


For purposes of determining the City's contribution, the Accrued Liability is measured using the Projected Unit Credit actuarial cost method. A different actuarial cost method, Entry Age Normal, is required to be used to measure liability for financial reporting purposes per GASB 67/68. As of July 1, 2018, the Entry Age Normal Accrued Liability is \$136,380,165.

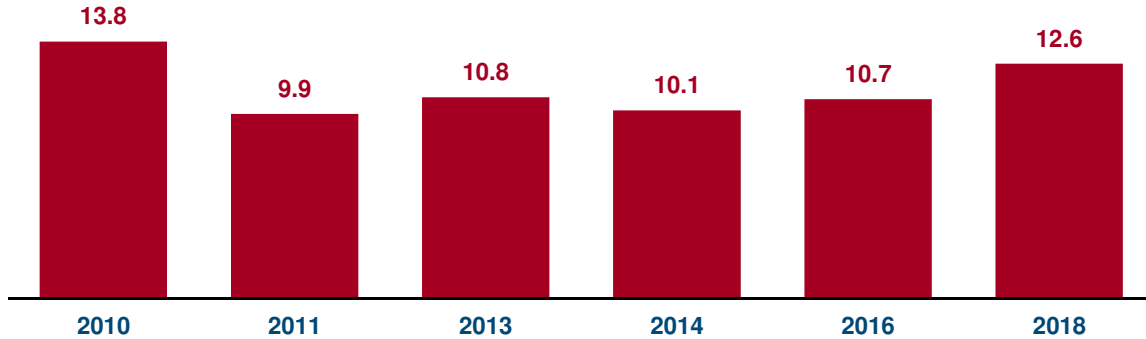
Section I - Executive Summary Funded Status

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.

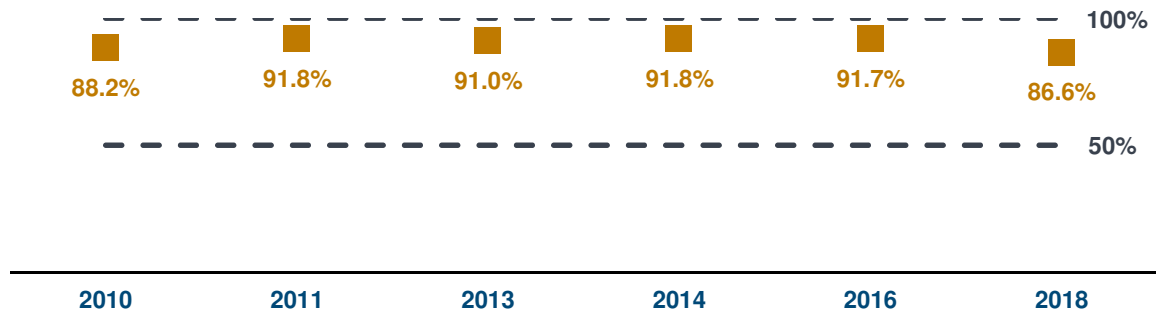
Accrued Liability (\$ millions)



Unfunded Accrued Liability (\$ millions)



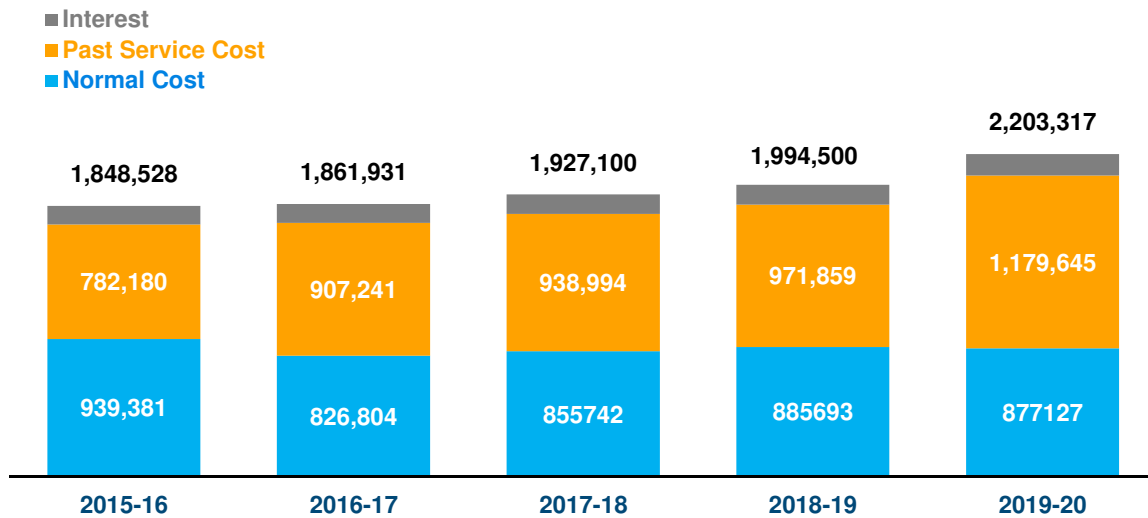
Funded Ratio



Section I - Executive Summary Actuarially Determined Contribution

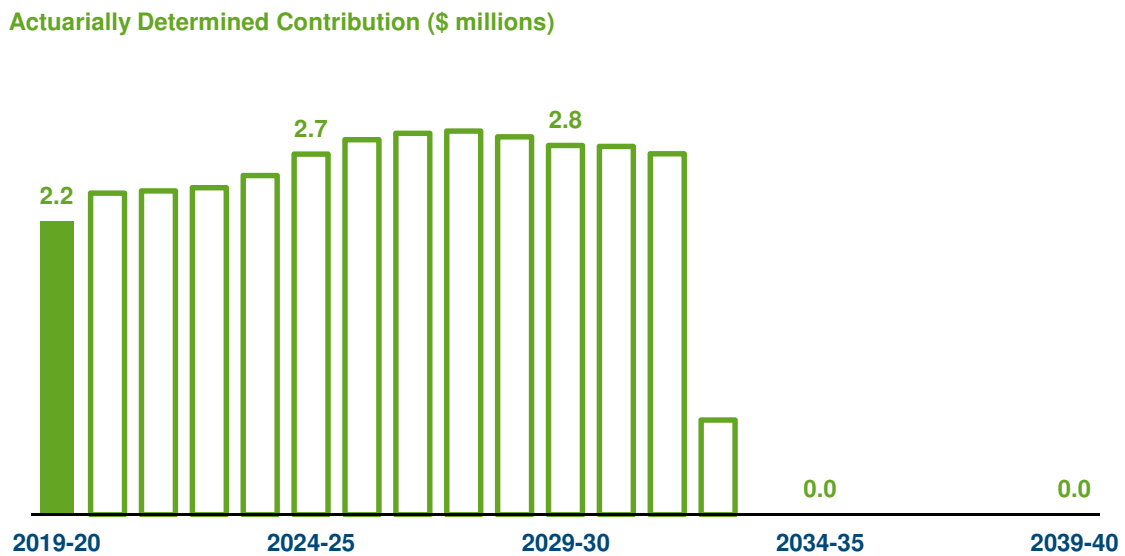
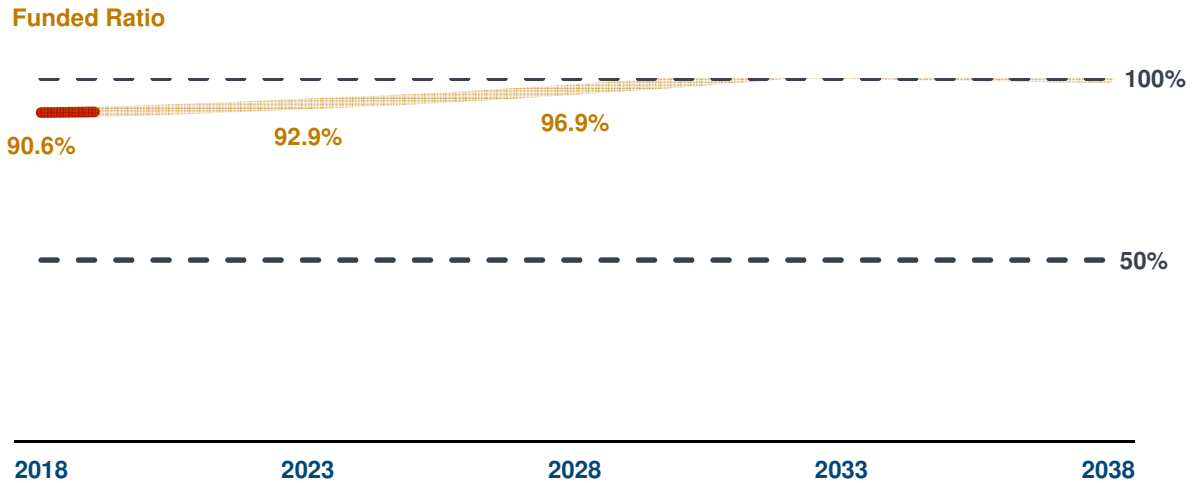
The Actuarially Determined Contribution consists of three pieces: a Normal Cost payment to fund the benefits earned each year, a Past Service Cost to gradually reduce any unfunded or surplus liability, and Interest to reflect the timing of the contribution relative to the valuation date.

The Actuarially Determined Contribution for fiscal year 2019-20 is shown graphically below, along with the comparable figures for the preceding four 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

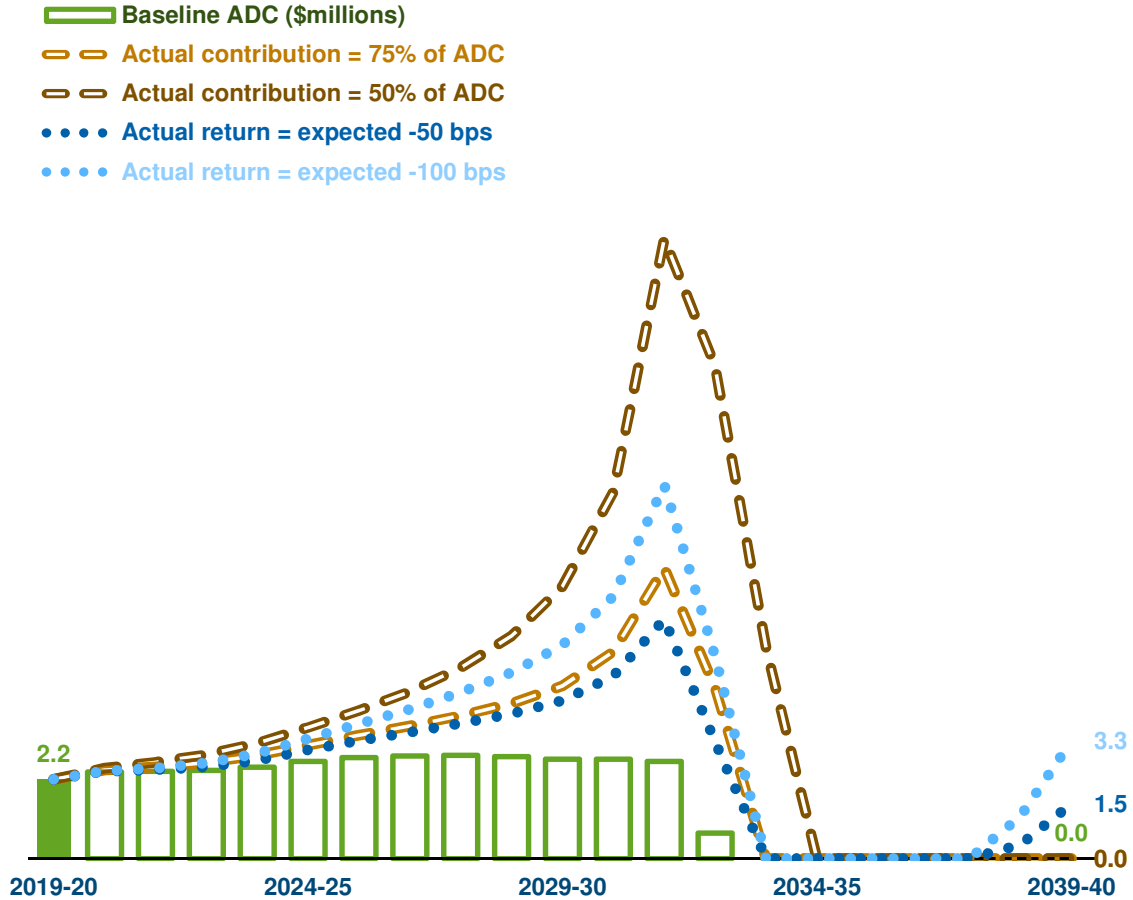
If the City pays the Actuarially Determined Contribution each year, the investments earn exactly the assumed interest rate each year, and there are no changes in the plan provisions or in the actuarial methods and assumptions, then we project the following changes in the plan's funded status and the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



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 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	January 1, 2016	July 1, 2018
Active Members	87	75
Terminated Members	1	3
Members in Pay Status	<u>151</u>	<u>147</u>
Total Count	239	225

Payroll	\$6,588,354	\$5,765,537
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Assets and Liabilities as of	January 1, 2016	July 1, 2018
Market Value of Assets	\$109,338,357	\$120,548,475
Actuarial Value of Assets	117,864,576	120,548,475
Accrued Liability for Active Members	34,992,999	32,741,612
Accrued Liability for Terminated Members	264,593	925,770
Accrued Liability for Members in Pay Status	<u>93,261,569</u>	<u>99,458,425</u>
Total Accrued Liability	128,519,161	133,125,807

Unfunded Accrued Liability	10,654,585	12,577,332
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Funded Ratio	91.7%	90.6%
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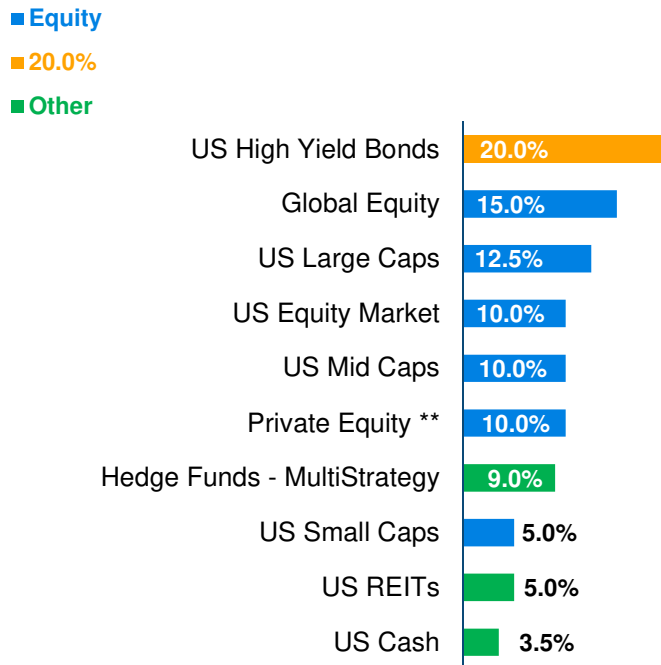
Actuarially Determined Contribution for Fiscal Year	2016-17	2019-20
Normal Cost	\$826,804	\$877,127
Past Service Cost	907,241	1,179,645
Interest	<u>127,886</u>	<u>146,545</u>
Actuarially Determined Contribution	1,861,931	2,203,317

Section II - Plan Assets

A. Summary of Fund Transactions

Market Value as of January 1, 2016	\$109,338,357
City Contributions	5,791,000
Member Contributions	1,434,290
Net Investment Income	22,046,367
Benefit Payments	(18,044,696)
Administrative Expenses	(16,843)
 Market Value as of June 30, 2018	 120,548,475

Target Asset Allocation as of June 30, 2018



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 closed period of 17 years starting on January 1, 2014.

	January 1, 2016	July 1, 2018
1. Accrued Liability		
Active Members	\$34,992,999	\$32,741,612
Terminated Members	264,593	925,770
Service Retirees	53,893,835	63,955,736
Disabled Retirees	28,349,282	27,551,793
Beneficiaries	<u>11,018,452</u>	<u>7,950,896</u>
Total Accrued Liability	128,519,161	133,125,807
2. Actuarial Value of Assets	117,864,576	120,548,475
3. Unfunded Accrued Liability: (1) - (2)	10,654,585	12,577,332
4. Funded Ratio: (2) / (1)	91.7%	90.6%
5. Amortization Period	15	13
6. Amortization Growth Rate	3.50%	3.50%
7. Past Service Cost: (3) amortized over (5)	907,241	1,179,645

Section III - Development of Contribution

B. Actuarially Determined Contribution

	2016-17	2019-20
1. Total Normal Cost	\$1,399,501	\$1,384,520
2. Expected Member Contributions	572,697	524,693
3. Expected Administrative Expenses	0	17,300
4. Net Normal Cost: (1) - (2) + (3)	826,804	877,127
5. Past Service Cost (see Section IIIA)	907,241	1,179,645
6. Interest on (4) + (5) to the start of the fiscal year	127,886	146,545
7. Actuarially Determined Contribution: (6) + (7) + (8)	1,861,931	2,203,317

Section III - Development of Contribution

C. Long Range Forecast

This forecast is based on the results of the July 1, 2018 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.

Valuation Date	Values as of the Valuation Date				Fiscal Year	Cash Flows Projected to the Following Fiscal Year			
	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio		City Contributions	Member Contributions	Benefit Payments	Net Cash Flows
7/1/2018	\$133,125,807	\$120,548,475	\$12,577,332	90.6%	2019-20	\$2,203,317	\$515,129	(\$8,001,071)	(\$5,282,625)
7/1/2019	136,251,000	123,677,000	12,574,000	90.8%	2020-21	2,412,000	506,000	(8,326,000)	(5,408,000)
7/1/2020	139,256,000	126,999,000	12,257,000	91.2%	2021-22	2,430,000	484,000	(8,730,000)	(5,816,000)
7/1/2021	142,159,000	130,428,000	11,731,000	91.7%	2022-23	2,452,000	479,000	(9,011,000)	(6,080,000)
7/1/2022	144,752,000	133,677,000	11,075,000	92.3%	2023-24	2,543,000	475,000	(9,270,000)	(6,252,000)
7/1/2023	147,268,000	136,885,000	10,383,000	92.9%	2024-25	2,703,000	469,000	(9,536,000)	(6,364,000)
7/1/2024	149,778,000	140,143,000	9,635,000	93.6%	2025-26	2,812,000	451,000	(9,889,000)	(6,626,000)
7/1/2025	152,230,000	143,516,000	8,714,000	94.3%	2026-27	2,859,000	418,000	(10,296,000)	(7,019,000)
7/1/2026	154,478,000	146,857,000	7,621,000	95.1%	2027-28	2,877,000	380,000	(10,720,000)	(7,463,000)
7/1/2027	156,367,000	150,029,000	6,338,000	95.9%	2028-29	2,835,000	341,000	(11,160,000)	(7,984,000)
7/1/2028	157,866,000	152,966,000	4,900,000	96.9%	2029-30	2,769,000	321,000	(11,445,000)	(8,355,000)
7/1/2029	158,854,000	155,572,000	3,282,000	97.9%	2030-31	2,762,000	303,000	(11,691,000)	(8,626,000)
7/1/2030	159,604,000	157,979,000	1,625,000	99.0%	2031-32	2,707,000	272,000	(12,016,000)	(9,037,000)
7/1/2031	160,122,000	160,276,000	(154,000)	100.1%	2032-33	710,000	225,000	(12,440,000)	(11,505,000)
7/1/2032	160,231,000	162,310,000	(2,079,000)	101.3%	2033-34	0	186,000	(12,761,000)	(12,575,000)
7/1/2033	159,758,000	161,933,000	(2,175,000)	101.4%	2034-35	0	156,000	(12,991,000)	(12,835,000)
7/1/2034	158,745,000	160,420,000	(1,675,000)	101.1%	2035-36	0	133,000	(13,164,000)	(13,031,000)
7/1/2035	157,261,000	158,529,000	(1,268,000)	100.8%	2036-37	0	125,000	(13,210,000)	(13,085,000)
7/1/2036	155,377,000	156,299,000	(922,000)	100.6%	2037-38	0	100,000	(13,363,000)	(13,263,000)
7/1/2037	153,303,000	153,853,000	(550,000)	100.4%	2038-39	0	54,000	(13,658,000)	(13,604,000)

Section III - Development of Contribution

D. History of Funded Status

Valuation Date	Actuarial Value of Assets	Accrued Liability	Unfunded Accrued Liability	Funded Ratio
January 1, 2008	\$118,784,141	\$112,464,527	(\$6,319,614)	105.6%
January 1, 2010	103,217,463	116,990,872	13,773,409	88.2%
January 1, 2011	110,509,793	120,389,438	9,879,645	91.8%
January 1, 2013	108,818,183	119,605,999	10,787,816	91.0%
January 1, 2014	113,076,769	123,147,731	10,070,962	91.8%
January 1, 2016	117,864,576	128,519,161	10,654,585	91.7%
July 1, 2018	120,548,475	133,125,807	12,577,332	90.6%

Section III - Development of Contribution

E. History of City Contributions

Fiscal Year	Actuarially Determined Contribution	Actual City Contribution	Payroll	Actual Contribution as a Percent of Payroll
2009-10	\$1,157,342	\$1,157,342	\$7,812,621	14.8%
2010-11	3,950,896	1,050,000	7,074,123	14.8%
2011-12	3,141,846	979,292	7,008,211	14.0%
2012-13	3,141,846	1,285,750	7,008,211	18.3%
2013-14	3,312,178	1,157,000	7,191,938	16.1%
2014-15	2,342,798	1,274,950	7,160,460	17.8%
2015-16	1,848,528	1,850,000	7,160,460	25.8%
2016-17	1,861,931	1,850,000	6,588,354	28.1%
2017-18	1,927,100	2,091,000	6,588,354	TBD
2018-19	1,994,500	TBD	6,588,354	TBD
2019-20	2,203,317	TBD	5,765,537	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
January 1, 2016	87	1	0	70	45	36	239
Terminated							
- no benefits due	-	-	-	-	-	-	0
- paid refund	-	-	-	-	-	-	0
- vested benefits due	(2)	2	-	-	-	-	0
Retired	(10)	-	-	10	-	-	0
Died							
- with beneficiary	-	-	-	-	(2)	2	0
- no beneficiary	-	-	-	(4)	-	(9)	(13)
Benefits expired	-	-	-	-	-	(1)	(1)
New member	-	-	-	-	-	-	0
Rehired	-	-	-	-	-	-	0
New Alternate Payee	-	-	-	-	-	-	0
Correction	-	-	-	3	-	(3)	0
July 1, 2018	75	3	0	79	43	25	225

Section IV - Membership Data
B. Statistics of Active Membership

	As of January 1, 2016	As of July 1, 2018
Number of Active Members	87	75
Average Age	45.0	46.4
Average Service	17.6	18.8
Total Payroll	\$6,588,354	\$5,765,537
Average Payroll	75,728	76,874

Section IV - Membership Data

C. Statistics of Inactive Membership

	As of January 1, 2016	As of July 1, 2018
Terminated Vested Members		
Number	1	3
Total Annual Benefit	\$21,776	\$61,030
Average Annual Benefit	21,776	20,343
Average Age	42.0	43.4
Nonvested Members Due Refunds		
Number	0	0
Service Retirees		
Number	70	79
Total Annual Benefit	\$3,696,164	\$4,361,321
Average Annual Benefit	52,802	55,207
Average Age	65.1	65.2
Disabled Retirees		
Number	45	43
Total Annual Benefit	\$2,050,766	\$2,040,263
Average Annual Benefit	45,573	47,448
Average Age	62.6	64.7
Beneficiaries		
Number	36	25
Total Annual Benefit	\$1,289,295	\$951,557
Average Annual Benefit	35,814	38,062
Average Age	75.5	78.7

Section IV - Membership Data
D. Distribution of Inactive Members as of July 1, 2018

	Age	Number	Annual Benefits
Terminated Vested Members	< 50	3	\$61,030
	50 - 59	0	0
	60 - 69	0	0
	70 - 79	0	0
	80 - 89	0	0
	90 +	<u>0</u>	<u>0</u>
	Total	3	61,030
Service Retirees	< 50	4	\$172,223
	50 - 59	27	1,452,017
	60 - 69	14	841,096
	70 - 79	31	1,748,581
	80 - 89	3	147,404
	90 +	<u>0</u>	<u>0</u>
	Total	79	4,361,321
Disabled Retirees	< 50	1	\$42,198
	50 - 59	15	689,879
	60 - 69	15	840,838
	70 - 79	7	309,334
	80 - 89	5	158,014
	90 +	<u>0</u>	<u>0</u>
	Total	43	2,040,263
Beneficiaries	< 50	1	\$46,065
	50 - 59	1	40,583
	60 - 69	3	145,761
	70 - 79	7	299,321
	80 - 89	11	372,187
	90 +	<u>2</u>	<u>47,641</u>
	Total	25	951,557

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.

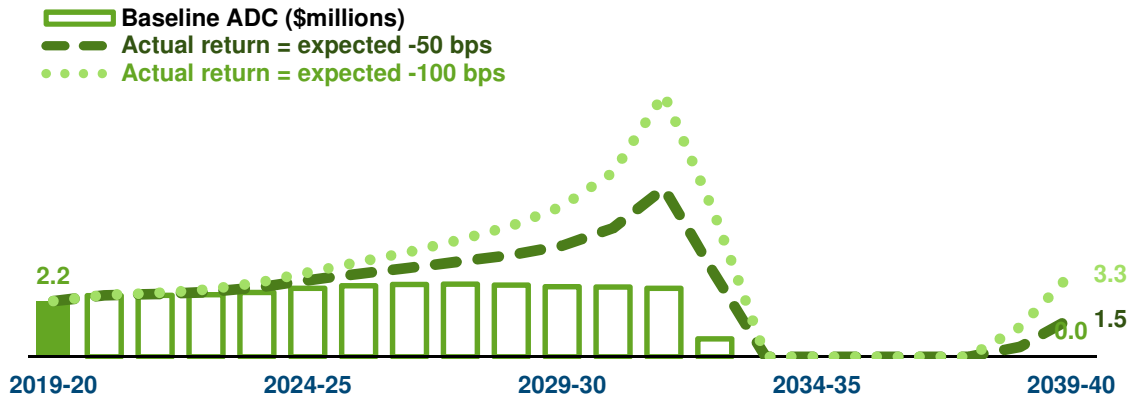
Section V - Analysis of Risk

B. Risk Identification and Assessment

Investment Risk

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

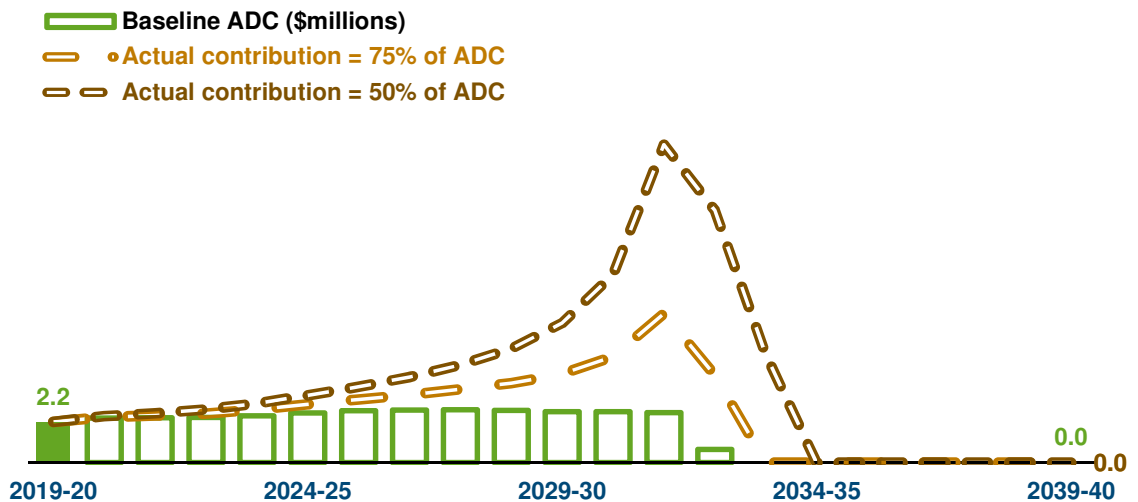
Identification: To the extent that actual investment returns differ from the assumed investment return, the plan's future assets, Actuarially Determined Contributions, and funded status may differ significantly from those presented in this valuation. The consequences of persistent underperformance on 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 8 years, actual contributions have been 53.6% 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.

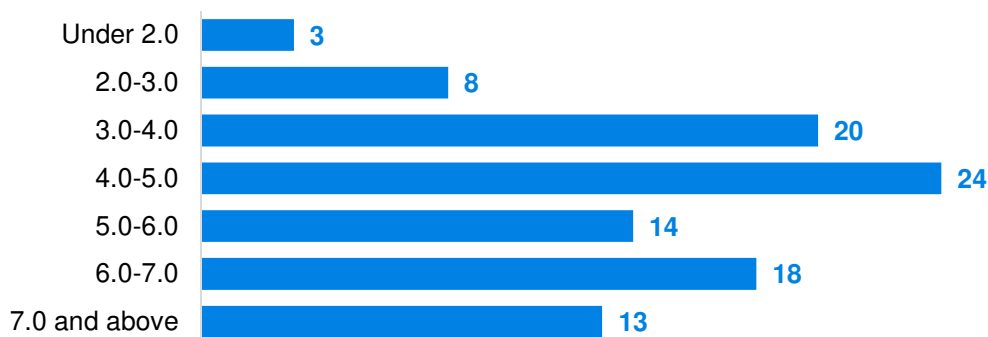
Identification: In 2017-18, the plan had negative cash flow, with city and member contributions to the plan of \$2,657,567 compared to \$7,361,871 of benefit payments and administrative expenses paid out of the plan. We suggest that you consult with your investment advisors with respect to the liquidity 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, 2018, the plan's Asset Volatility Ratio (the ratio of the market value of plan assets to payroll) is 20.9. According to Milliman's 2018 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 provides for postretirement benefit increases that are tied to pay increases for active members. This largely protects the benefits of retired members from erosion due to inflation.

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.

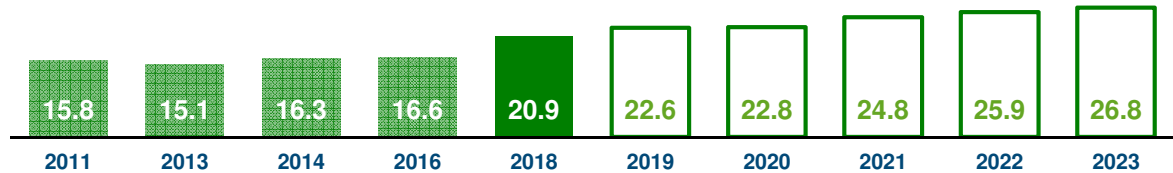
Identification: The pension liabilities reported herein have been calculated by assuming that members will follow patterns of demographic experience as described in Appendix B. If actual demographic experience or future demographic assumptions are different from what is assumed to occur in this valuation, 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.

Section V - Analysis of Risk

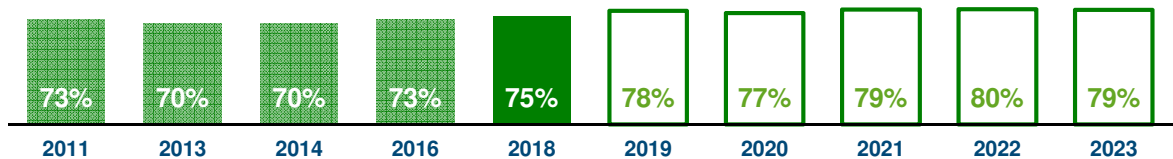
C. Maturity Measures

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



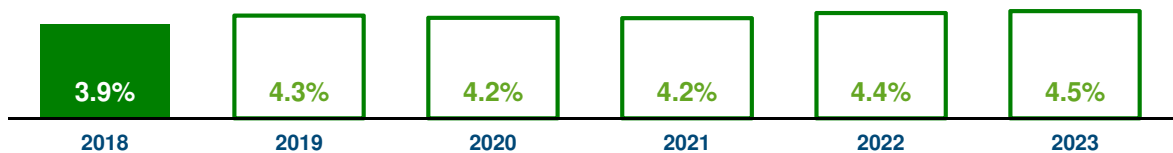
Accrued Liability for members in pay status compared to total Accrued Liability



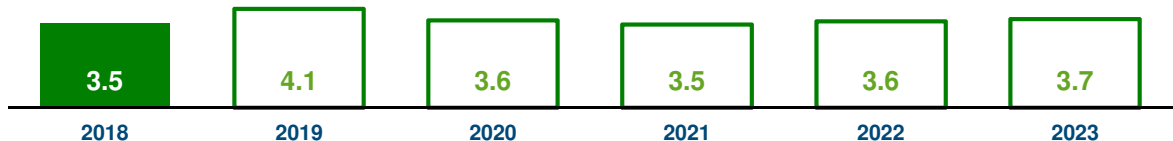
Benefit Payments compared to Market Value of Assets



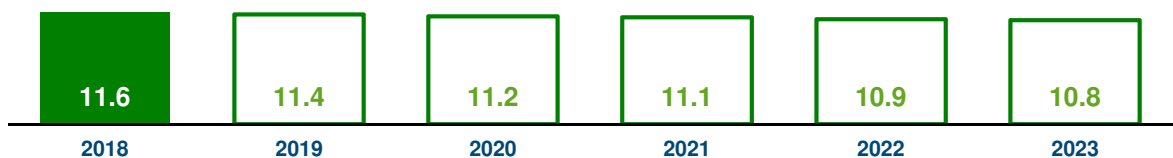
Net Cash Flows compared to Market Value of Assets



Benefit Payments compared to City 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 Projected Unit Credit 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.

Under this cost method a projected retirement benefit at assumed retirement age is computed for each member. The Normal Cost for each member is computed as the present value of the pro-rata portion of the member's projected benefit which is accrued or earned during the plan year being valued. The normal cost of the plan is the total of the individually computed normal costs for all members. The Accrued Liability at any point in time for an active member is the present value of that portion of the projected benefit which has been accrued up to the valuation date. For members receiving benefits or entitled to a deferred benefit, the accrued liability is equal to the present value of their future benefit payments. The accrued liability for the plan is the total of individually computed accrued liability amounts for all members.

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 closed period of 17 years starting on January 1, 2014.

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. The Actuarial Value of Assets as of July 1, 2018 has been reset to equal the Market Value of Assets. In subsequent years, the Actuarial Value of Assets will be determined by recognizing market gains and losses over five years.

Appendix B - Actuarial Assumptions

Each of the assumptions used in this valuation 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.

Interest	7.125% (Prior: 7.375%)
Next Pay Grade Adjustment	4.00% for Members hired before January 1, 1999 with 25 years of service.
Salary Scale	3.50%
Amortization Growth Rate	3.50%
Cost of Living Increases	3.00% for Members hired before July 1, 1993 1.75% for Members hired after June 30, 1993
Expenses	Prior year administrative expenses paid from plan assets increased by 3% and rounded to \$100 (Prior: none).
Healthy Mortality	RP-2000 Mortality Table (with blue collar adjustment) for Healthy Annuitants and Non-Annuitants projected to 2020 per Scale AA. This assumption includes a margin for improvements in longevity beyond the valuation date. No deaths are assumed to be in the line of duty.
Disabled Mortality	RP-2000 Disabled Mortality Table. This assumption does not include a margin for improvements in longevity beyond the valuation date.
Turnover	None
Disability	1965 Railroad Disability rates. No disabilities are assumed to be in the line of duty.
Retirement	40% are assumed to retire on the 25th anniversary of employment; 95% of the remaining are assumed to retire on the 30th anniversary of employment and every year thereafter; all remaining participants are assumed to retire no later than age 65 or attained age.
Percent Married	100% of participants are assumed to have an eligible spouse.
Age of Spouse	The female spouse is assumed to be three years younger than the male spouse.

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.

Effective Date of Plan	July 1, 1991
Eligibility	Any Police employee of the City of West Haven hired prior to November 1, 2009.
Years of Service	Years and completed months from date of employment.
Compensation	Base salary rate, excluding extra duty, overtime, longevity, shift premiums and all other additional pay.
Final Compensation	Annual Compensation on final day of employment. For a member employed prior to January 1, 1999 who completed 25 or more years of service, annual compensation of a Member holding the next higher rank.
Member Contributions	9.0% of annual compensation through July 1, 2016, 9.5% as of July 1, 2016. Interest is credited from January 1 following the date of the contribution to the date of distribution at a rate of 3.0%.
Normal Retirement Date	Age 65 or 20 years of service, whichever is earlier.
Normal Retirement Benefit	2.25% of Final Compensation for years of service up to 20 <u>plus</u> 3% of Final Compensation for Years of Service in excess of 20. If a Member who commenced employment prior to January 1, 1999 retires with 25 or more Years of Service, the Final Compensation used for calculating benefits will be that of one job grade higher than that attained at retirement. The minimum benefit is \$2,000 per year. The maximum benefit is 75% of Final Compensation.
Non-Service Disability Benefit	2.25% of Final Compensation for years of service up to 20 <u>plus</u> 3% of Final Compensation for Years of Service in excess of 20. If a Member who commenced employment prior to January 1, 1999 retires with 25 or more Years of Service, the Final Compensation used for calculating benefits will be that of one job grade higher than that attained at retirement. The minimum benefit is \$2,000 per year. The maximum benefit is 50% of Final Compensation.

Appendix C - Summary of Plan Provisions

In-Service Disability	If Member is disabled as a result of being shot or stabbed in the line of duty, 2.25% of Final Compensation for Years of Service up to 20 <u>plus</u> 3% of Final Compensation for Years of Service in excess of 20. If a Member who commenced employment prior to January 1, 1999 retires with 25 or more Years of Service, the Final Compensation used for calculating benefits will be that of one job grade higher than that attained at retirement. The minimum benefit is \$2,000 per year. The maximum benefit is 75% of Final Compensation.
Normal Form of Annuity	100% Joint and Survivor Annuity.
Vested Benefit Eligibility	10 Years of Service.
Vested Benefit	2.25% of Final Compensation at date of termination, multiplied by Years of Service as of the date of the Member's termination of employment. Benefit is payable on the date the Member would have had 20 Years of Service if termination of employment had not occurred.
Pre-Retirement Spouse's Non-Service Death Benefit	2.25% of Final Compensation for years of service up to 20 <u>plus</u> 3% of Final Compensation for Years of Service in excess of 20. If a Member who commenced employment prior to January 1, 1999 retires with 25 or more Years of Service, the Final Compensation used for calculating benefits will be that of one job grade higher than that attained at retirement. The minimum benefit is \$2,000 per year. The maximum benefit is 75% of Final Compensation.
Pre-Retirement Spouse's In-Service Death Benefit	2.25% of Final Compensation for years of service up to 20 <u>plus</u> 3% of Final Compensation for Years of Service in excess of 20. If a Member who commenced employment prior to January 1, 1999 retires with 25 or more Years of Service, the Final Compensation used for calculating benefits will be that of one job grade higher than that attained at retirement. The minimum benefit is \$2,000 per year. The maximum benefit is 90% of Final Compensation.
Cost of Living Adjustment	<p>Members hired before July 1, 1993: 50% of the dollar amount of annual compensation increase granted to active employees holding a rank equivalent to the rank held by the retired member.</p> <p>Members hired after June 30, 1993: 50% of the percentage of compensation increase granted to active employees.</p>

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 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.