



# City of Marine City Retirement System

**JUNE 30, 2017 ACTUARIAL VALUATION**

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At the request of the plan sponsor, this report summarizes the Retirement System for the City of Marine City as of June 30, 2017. The purpose of this report is to communicate the following results of the valuation:

- Funded Status;
- and Actuarially Determined Contribution for the Fiscal Year beginning July 1, 2018.

This report has been prepared in accordance with the applicable Federal and State laws. Consequently, it may not be appropriate for other purposes. Please contact Nyhart prior to disclosing this report to any other party or relying on its content for any purpose other than that explained above. Failure to do so may result in misrepresentation or misinterpretation of this report.

The results in this report were prepared using information provided to us by other parties. The census and asset information has been provided to us by the employer. We have reviewed the provided data for reasonableness when compared to prior information provided, but have not audited the data. Where relevant data may be missing, we have made assumptions we believe to be reasonable. We are not aware of any significant issues with and have relied on the data provided. Any errors in the data provided may result in a different result than those provided in this report. A summary of the data used in the valuation is included in this report.

The actuarial assumptions and methods are unchanged from the prior actuary and appear to be reasonable overall. However, we will be thoroughly reviewing assumptions prior to the delivery of the June 30, 2018 report. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following:

- plan experience differing from that anticipated by the economic or demographic assumptions;
- changes in economic or demographic assumptions;
- 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); and
- changes in plan provisions or applicable law.

We did not perform an analysis of the potential range of future measurements due to the limited scope of our engagement. This report has been prepared in accordance with generally accepted actuarial principles and practice.

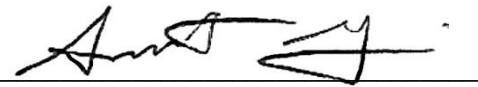
Neither Nyhart nor any of its employees have any relationship with the plan or its sponsor which could impair or appear to impair the objectivity of this report. To the extent that this report or any attachment concerns tax matters, it is not intended to be used and cannot be used by a taxpayer for the purpose of avoiding penalties that may be imposed by law.

The undersigned are compliant with the continuing education requirements of the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States and are available for any questions.

Nyhart



Nick H. Meggos, EA, FCA



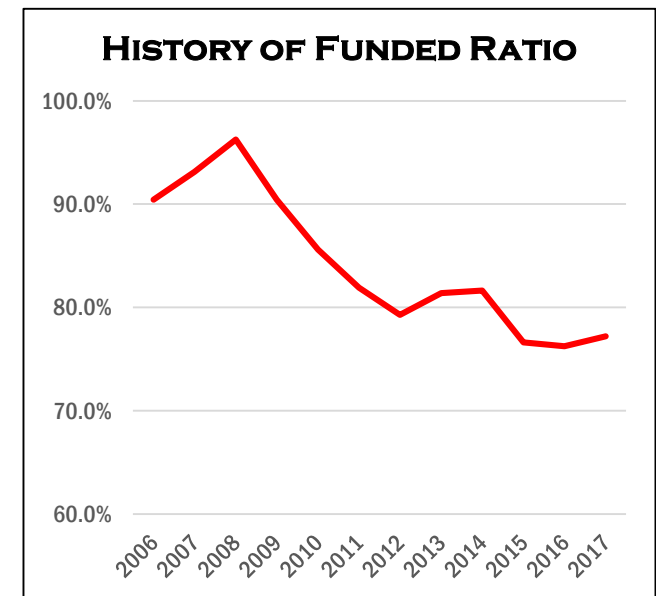
Scott Gavin, FSA, EA, MAAA

July 26, 2018  
Date

**Summary Results**

The actuarial valuation's primary purpose is to produce a scorecard measure displaying the funding progress of the plan toward the ultimate goal of paying benefits at retirement. The accrued liability is based on an entry age level percentage of pay.

	<b>June 30, 2016</b>	<b>June 30, 2017</b>
<b>Funded Status Measures</b>		
Accrued Liability	\$6,950,695	\$6,919,054
Actuarial Value of Assets	<u>5,299,897</u>	<u>5,340,534</u>
Unfunded Actuarial Accrued Liability (UAAL)	\$1,650,798	\$1,578,520
Funded Percentage (AVA)	76.25%	77.19%
Funded Percentage (MVA)	69.74%	72.88%
<b>Cost Measures</b>		
Recommended Contribution for Following Year	\$189,645	\$209,066
Recommended Contribution (as a % of payroll)	65.5%	73.6%
<b>Asset Performance</b>		
Market Value of Assets (MVA)	\$4,847,088	\$5,042,689
Actuarial Value of Assets (AVA)	\$5,299,897	\$5,340,534
Actuarial Value/Market Value	109.3%	105.9%
Market Value Rate of Return	-3.47%	9.32%
Actuarial Value Rate of Return	5.73%	5.52%
<b>Participant Information</b>		
Active Participants	5	5
Terminated Vested Participants	4	4
Retirees, Beneficiaries, and Disabled Participants	<u>24</u>	<u>24</u>
Total	33	33
Payroll for year ending	\$289,641	\$283,870



**Changes since Prior Valuation and Key Notes**

There have been no changes to the plan provisions since the last valuation.

There have been no changes to the assumptions since the last valuation.

The calculation of interest within the recommended contribution has been adjusted to reflect monthly payments in the following fiscal year.

The prior valuation (and therefore any information shown in this report prior to June 30, 2017) was performed by a different actuary.

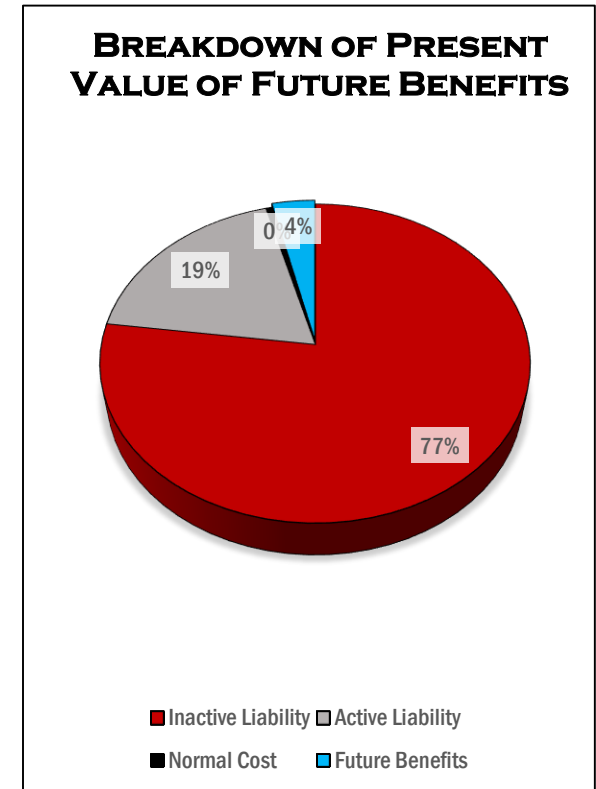
**Present Value of Future Benefits**

The Present Value of Future Benefits represents the future benefits payable to the existing participants.

**June 30, 2017**

**Present Value of Future Benefits**

Active participants	
Retirement	\$1,460,762
Disability	89,166
Death	44,428
Termination	56,148
Total active	\$1,650,504
Inactive participants	
Retired participants	\$4,653,295
Beneficiaries	89,270
Disabled participants	0
Terminated vested participants	825,885
Total inactive	\$5,568,450
Total	\$7,218,954
Present value of future payrolls	\$2,380,643



**Accrued Liability**

The Funding Liability measures the present value of benefits earned as of the valuation date, using a specified set of actuarial assumptions.

	<b>June 30, 2017</b>
<b>Funding Liabilities – Entry Age Normal as Percent of Pay</b>	
Active participants	
Retirement	\$1,216,897
Disability	65,312
Death	32,323
Termination	<u>36,072</u>
Total Active	\$1,350,604
Inactive participants	
Retired participants	\$4,653,295
Beneficiaries	89,270
Disabled participants	0
Terminated vested participants	<u>825,885</u>
Total Inactive	\$5,568,450
Total	\$6,919,054
 Total Normal Cost	 \$38,798



**Asset Information**

The amount of assets backing the pension promise is the most significant driver of volatility and future costs within a pension plan. The investment performance of the assets directly offsets the ultimate cost.

	<b>June 30, 2017</b>
<b>Market Value Reconciliation</b>	
Market value of assets, beginning of prior year	\$4,847,088
Contributions	
Employer contributions	\$211,847
Employee contributions	14,194
Total	\$226,041
Investment income	\$440,552
Benefit payments	(\$470,992)
Market value of asset, beginning of current year	\$5,042,689
Return on Market Value	9.32%
Market value of assets available for pension benefits	\$5,042,689
<b>Actuarial Value of Assets</b>	
Value at beginning of current year	\$5,340,534

**Asset Information (continued)**

Plan Assets are used to develop funded percentages and contribution requirements.

	June 30, 2017
1. Expected Investment Income	
(a) Actuarial value of assets, beginning of prior year	\$5,299,897
(b) Employee Contributions	14,194
(c) Employer Contributions	211,847
(d) Refund of Member Contributions	0
(e) Benefit payments	470,992
(f) Expected Investment Income – end of year $[7.25\% \times (a) + 7.25\% \times (1/2) \times \{(b)+(c)-(d)-(e)\}]$	\$375,363
2. Market value of Investment Income, beginning of current year	\$440,552
3. Amount subject to phase in $[(2) - (1f)]$	\$65,189
4. Phase in of gain/(loss) $[25\% \times (3)]$	\$16,297
5. Phased-In Recognition of Investment Income	
(a) Current Year Phase in of gain/(loss) (4)	\$16,297
(b) First Prior Year	(138,738)
(c) Second Prior Year	(69,260)
(d) Third Prior Year	101,926
(e) Total	(\$89,775)
6. Preliminary actuarial value of assets, beginning of current year $[(1a)+(1b)+(1c)-(1d)-(1e)+(1f)+(5e)]$	\$5,340,534
7. 80% Market value of assets (Market Value = \$5,042,689)	\$4,034,151
8. 120% Market value of assets (Market Value = \$5,042,689)	\$6,051,227
9. Adjusted actuarial value of assets	\$5,340,534
10. Final actuarial value of assets	\$5,340,534
11. Return on actuarial value of assets	5.52%

**Assets and Liabilities**

**Reconciliation of Gain/Loss**

	<b>June 30, 2017</b>
<b>Liability (gain)/loss</b>	
Actuarial liability, beginning of prior year	\$6,950,695
Normal cost	32,617
Benefit payments and refund of member contributions	(470,992)
Expected Interest	<u>489,217</u>
Expected actuarial liability, beginning of current year	\$7,001,537
Actual actuarial liability	<u>\$6,919,054</u>
Liability (gain)/loss	(\$82,483)
<b>Asset (gain)/loss</b>	
Actuarial value of assets, beginning of prior year	\$5,299,897
Contributions	226,041
Benefit payments and refund of member contributions	(470,992)
Expected investment return	<u>375,363</u>
Expected actuarial value of assets, beginning of current year	\$5,430,309
Actual actuarial value of assets, beginning of current year	<u>\$5,340,534</u>
Asset (gain)/loss	<u>\$89,775</u>
<b>Total (gain)/loss</b>	<b>\$7,292</b>

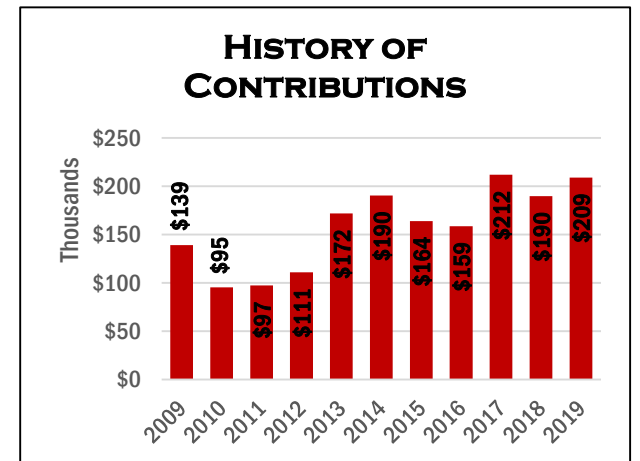
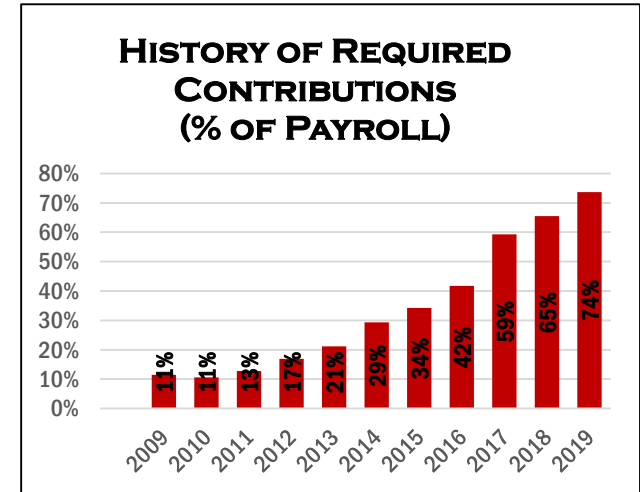
**Reconciliation of Unfunded Actuarial Accrued Liability (UAAL)**

	June 30, 2017
1. UAAL beginning of prior year	\$1,650,798
2. Normal Cost	\$32,617
3. Expenses	\$0
4. Employer Contributions	(\$211,847)
5. Non-Employer Contributions	(\$14,194)
6. Interest	\$113,854
7. Expected UAAL, beginning of current year	\$1,571,228
8. Changes due to:	
(a) Amendments	\$0
(b) Assumptions	\$0
(c) Funding Methods	\$0
(d) (Gain)/Loss	\$7,292
(e) Total	\$7,292
9. UAAL beginning of current year	\$1,578,520

**Development of Actuarially Determined Contribution**

The recommended actuarially determined contribution is the annual amount necessary to fund the plan according to funding policies and/or applicable laws. It is anticipated to be paid uniformly throughout the Fiscal Year beginning July 1, 2018.

	June 30, 2017
<b>Funded Position</b>	
1. Entry age accrued liability	\$6,919,054
2. Actuarial value of assets	5,340,534
3. Unfunded actuarial accrued liability (UAAL)	\$1,578,520
<b>Employer Contributions for Fiscal Year 2019</b>	
1. Normal Cost	
(a) Total normal cost	\$38,798
(b) Interest-adjusted Expected participant contributions	14,396
(c) Net normal cost	\$24,402
2. Amortization of UAAL (15 years)	164,158
3. Interest	20,506
4. Total contribution for Fiscal 2019	\$209,066
As a percentage of most recent payroll	73.6%



**Demographic Information**

The foundation of a reliable actuarial report is the participant information provided by the plan sponsor. Monitoring trends in demographic information is crucial for long-term pension planning.

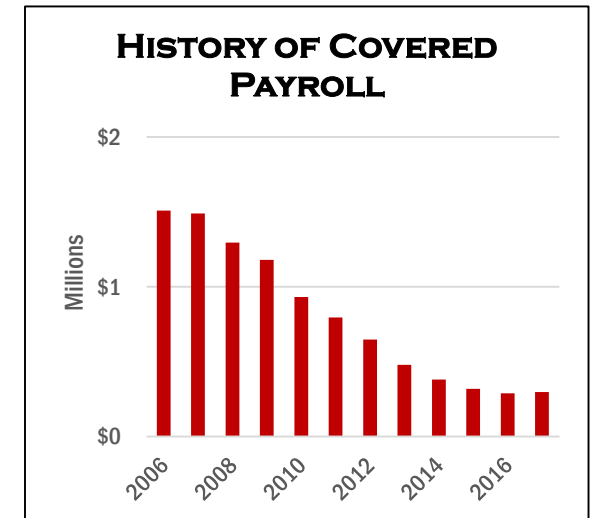
**June 30, 2017**

**Participant Counts**

Active Participants	5
Retired Participants	22
Beneficiaries	2
Disabled Participants	0
Terminated Vested Participants	4
<b>Total Participants</b>	<b>33</b>

**Active Participant Demographics**

Average Age	51.2
Average Service	22.1
Average Compensation	\$56,774
Covered Payroll for Year Ending	\$283,870
Total Payroll for Year Ending	\$283,870



**Demographic Information (continued)**

**June 30, 2017**

**Retiree Statistics**

Average Age	67.0
Average Monthly Benefit	\$1,672

**Beneficiary Statistics**

Average Age	82.5
Average Monthly Benefit	\$705

**Disabled Participants Statistics**

Average Age	N/A
Average Monthly Benefit	N/A

**Terminated Participants Statistics**

Average Age	53.7
Average Monthly Benefit	\$2,275

**Participant Reconciliation**

	Active	Terminated Vested	Disabled	Retired	Beneficiaries	Totals
<b>Prior Year</b>	5	4	0	22	2	33
<b>Active</b>						
To Retired	0	0	0	0	0	0
To Terminated Vested	0	0	0	0	0	0
<b>Terminated Vested</b>						
To Retired	0	0	0	0	0	0
<b>Retired</b>						
To Survivor	0	0	0	0	0	0
To Death	0	0	0	0	0	0
<b>Survivor</b>						
To Death	0	0	0	0	0	0
<b>Additions</b>	0	0	0	0	0	0
<b>Departures</b>	0	0	0	0	0	0
<b>Current Year</b>	5	4	0	22	2	33



**Active Participant Schedule**

Active participant information grouped based on age and service.

Age Group	Years of Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	
Under 25											0
25 to 29											0
30 to 34											0
35 to 39											0
40 to 44					1						1
45 to 49						1					1
50 to 54				1				1			2
55 to 59						1					1
60 to 64											0
65 to 69											0
70 & up											0
<b>Total</b>	0	0	0	1	1	2	0	1	0	0	5

### **Plan Effective Date**

The effective date of the Plan is July 1, 1980. The most recent amendment was effective January 1, 2009.

### **Fiscal Year**

The period beginning July 1, and ending on the next June 30.

### **Eligibility for Participation**

The Plan is closed to new participants.

### **Accrual of Benefits**

An eligible participant's monthly benefit shall be equal to the product of 2.25% of the participant's final average compensation, and the number of years of credited service at retirement or termination.

### **Benefits**

#### **Normal Retirement**

Eligibility Attainment of age 55 with 25 or more years of credited service or age 60 and 10 or more years of credited service.

Benefit Unreduced Accrued Benefit payable immediately.

#### **Early Retirement**

Eligibility Attainment of age 55 with 15 or more years of credited service.

Benefit The early retirement benefit shall be equal to the participant's Accrued Benefit, reduced by 0.5% for each month by which the date of benefit commencement precedes the attainment of age 60.

#### **Termination**

Eligibility 10 years of credited service.

Benefit The participant's Accrued Benefit payable at age 60.

**Death Before Retirement**

Eligibility 10 years of credited service.

Benefit If a participant dies after becoming vested but prior to commencement of benefit, the spouse or beneficiary will receive a benefit as if the participant had retired under the joint and 100% survivor option. The beneficiary may elect to receive a lump sum payment in lieu of monthly benefits.

**Disability**

Eligibility Totally and permanently disabled at a time prior to normal retirement date after completion of 10 years of credited service.

Benefit Accrued Benefit payable immediately, reduced for any earnings from gainful employment, worker's compensation or unemployment payments.

**Final Average Compensation**

Defined as the average of the five consecutive years of compensation out of the previous 10 years that produces the highest average. Compensation includes base salary or wages, overtime salary or wages, longevity pay, vacation, holiday or illness pay, and worker's compensation benefits.

**Credited Service**

The number of calendar years worked by a participant. If the participant works less than 1,000 hours in a calendar year, the credited service granted for that calendar year will be the number of hours worked divided by 1,000.

**Employee Contributions**

5% of compensation.

**Payment Forms**

Normal Form Single Life Annuity

Optional Forms      50% or 100% Joint and Survivor Annuity

Social Security Adjustment Annuity

**Actuarial Equivalence**

1971 Group Annuity Mortality Table, set back no years for males and five years for females, and the interest rate published monthly by the Pension Benefit Guaranty Corporation for use in converting a series of monthly annuity payments into a lump sum value.

**Cost-of-Living Allowance (COLA)**

None

**Plan Provisions Not Included**

We are not aware of any plan provisions not included in the valuation.

**Adjustments Made for Subsequent Events**

We are not aware of any event following the measurement date and prior to the date of this report that would materially impact the results of this report.

The following assumptions and methods are unchanged from the prior actuary and appear to be reasonable overall. However, we will be thoroughly reviewing assumptions prior to the delivery of the June 30, 2018 report.

<b>Valuation Date</b>	June 30, 2017
<b>Participant and Asset Information Collected as of</b>	June 30, 2017
<b>Cost Method</b>	Individual Entry Age Cost Method % of pay
<b>Amortization Method</b>	15 year closed level dollar amortization of Unfunded Actuarial Accrued Liability
<b>Asset Valuation Method</b>	4 year smoothing of asset gains and losses
<b>Interest Rates</b>	7.25% net of expenses The interest rate is the long-term rate of return on assets. This assumption is supported by the investment mix of the plan assets and long-term capital market return assumptions.
<b>Annual Pay Increases</b>	Pay increases follow the schedule below: The annual pay increase reflects a general salary inflation assumption of 3.75% and a merit increase up to 3.99%.

<u>Age</u>	<u>Base Rate</u>	<u>Merit Rate</u>
20	3.50%	3.99%
25	3.50%	3.25%
30	3.50%	2.79%
35	3.50%	2.47%
40	3.50%	2.22%
45	3.50%	1.75%
50	3.50%	1.18%
55	3.50%	0.69%
60	3.50%	0.17%

**Mortality Rates**

Healthy & Disabled

RP-2000 Combined Mortality projected to 2010 with Scale AA

As the plan is not large enough to have credible experience, mortality assumptions are set to reflect general population trends.

**Marital Status and Ages**

100% of Participants assumed to be married with wives assumed to be 3 years younger than husbands.

**Retirement Rates**

Rates based on age shown below.

<u>Age</u>	<u>Rate</u>
55	30%
56	25%
57	20%
58	15%
59	20%
60	20%
61	40%
62	70%
63	50%
64	50%
65	80%
66	70%
67	60%
68	60%
69	70%
70	100%

**Disability Rates**

Rates based on age. Sample rates below.

<u>Age</u>	<u>Rate</u>
20	0.05%
25	0.07%
30	0.08%
35	0.10%
40	0.16%
45	0.24%
50	0.39%
55	0.69%
60	1.15%

**Withdrawal Rates**

Rates based on age and service. Sample rates below.

<u>Age</u>	<u>Service</u>	<u>Rate</u>
ALL	0	30.00%
ALL	1	20.00%
ALL	2	15.00%
ALL	3	10.00%
ALL	4	7.00%
25	5+	6.00%
30	5+	5.50%
35	5+	4.40%
40	5+	1.85%
45	5+	1.25%
50	5+	1.25%
55	5+	1.25%
60	5+	1.25%