

The experience and dedication you deserve



Pensacola General Pension and **Retirement Fund**

Actuarial Valuation Report as of September 30, 2018





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The experience and dedication you deserve

February 13, 2019

The City of Pensacola and The Board of Trustees Pensacola General Pension and Retirement Fund Pensacola, FL

Dear Board of Trustees:

This report presents the results of the September 30, 2018 biennial actuarial valuation of the Pensacola General Pension and Retirement Fund. This valuation is used to determine the contributions for the City's fiscal years beginning October 1, 2019 and October 1, 2020.

The City contribution requirements are summarized below. The contribution amounts assume bi-weekly payments.

Required City contribution for plan year beginning October 1, 2019 and October 1, 2020

Payable as a Lump Sum on October 1, \$5,941,147

Interest Adjustments for Bi-Weekly Payments 234,614

Total \$6,175,761

The assumptions used in the valuation are outlined in Table X. Provisions of the Fund are set forth in Table XI. Information required to be disclosed by the State of Florida under Chapter 112 is presented in Table Va. The projected unfunded actuarial accrued liability (UAAL) is shown in Table Vb. Tables VIa and VIb provide information about the Fund's assets. Tables VIIa though VIIh provide accounting information required under Governmental Accounting Standards Board (GASB) Statement No. 67, while Tables VIIIa through VIIIc provide information about the membership data. Finally, Table IX provides detailed historical data.



The actuarial computations presented in this report are to be used for the following purposes:

- 1) Determining the contributions necessary to fund the Plan. These calculations have been made on a basis consistent with our understanding of the Plan's funding requirements and goals.
- 2) Providing the information required to be disclosed by the State of Florida under Chapter 112.
- 3) Providing accounting information required under Governmental Accounting Standards Board (GASB) Statement No. 67.

Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. The interest rate used for determining liabilities is based on the expected return on assets. Therefore, liability amounts in this report cannot be used to assess a settlement of the obligation.

Certification

This actuarial valuation and/or cost determination was prepared and completed by me or under my direct supervision and I acknowledge responsibility for the results. To the best of my knowledge, the results are complete and accurate and, in my opinion, the techniques and assumptions used are reasonable and meet the requirements and intent of Part VII, Chapter 112, Florida Statutes. There is no benefit or expense to be provided by the plan and/or paid from the plan's assets for which liabilities or current costs have not been established or otherwise taken into account in the valuation. All known events or trends which may require a material increase in plan costs or required contribution rates have been taken into account in the valuation.

This is to certify that the independent consulting actuary is a Member of the American Academy of Actuaries, meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein and has experience in performing valuations for public retirement systems, that the valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the Plan and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of the Plan.

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

Sincerely yours,

Todd B. Green, ASA, FCA, MAAA Principal and Consulting Actuary Micki R. Taylor, ASA, EA, FCA, MAAA

Consulting Actuary

Enrollment Number 17-5975

Micki R. Taylor

TBG/MRT:jnw

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Comments

1. Changes in Benefit Provisions, Actuarial Assumptions and Methods

Since the previous valuation, the assumed rate of return was lowered from 7.60% to 7.40%. The assumed rate of return will be lowered by 0.2% in 5 biennial steps for each valuation beginning September 30, 2014.

The assumption changes are reflected in the valuation and increased the Unfunded Actuarial Accrued Liability (UAAL) by \$3.3 million.

2. Health Insurance Premium Assistance program

The valuation of the Health Insurance Premium Assistance Program and pension benefits provided by the Fund are combined in the results that follow, except where noted.





		Sept	As of tember 30, 2018	As of September 30, 2016		
1.	Number of Members				, , , , , , , , , , , , , , , , , , ,	
	a. Active Members:		108		136	
	b. Deferred Vested Members:		58		60	
	c. DROP Members:		21		27	
	d. Retired Members:					
	i. Non-disabled		429		426	
	ii. Disabled		34		37	
	iii. Beneficiaries		145		148	
	iv. Subtotal	_	608		611	
	e. Total Members:		795		834	
2.	Total Annual Compensation	\$	5,599,750	\$	6,347,558	
3.	Total Projected Payroll	\$	5,599,750	\$	6,347,558	
4.	Total Retired Member Benefits	\$	13,658,544	\$	13,240,153	
5.	Annual Cost (Pension and Retiree Healthcare combined)					
	a. Present Value of Future Benefits	\$	183,986,812	\$	183,540,758	
	b. Present Value of Future Normal Cost		(4,054,062)		(4,978,150)	
	City Portion		2,315,187		2,800,381	
	Member Portion		1,738,875		2,177,769	
	c. Actuarial Accrued Liability (AAL)		179,932,750		178,562,608	
	d. Actuarial Value of Assets		(145,388,687)		(137,831,800)	
	e. Unfunded Accrued Liability	\$	34,544,063	\$	40,730,808	
6.	Actuarially Determined Contribution (Payable Bi-Weekly)					
	a. Normal Cost	\$	744,083	\$	868,174	
	b. Payment to Amortize Unfunded Liability		5,392,620		5,595,199	
	c. Administrative Expenses		112,430		102,605	
	d. Interest Adjustment		234,614		253,017	
	e. Total	\$	6,483,747	\$	6,818,995	
	f. Expected Member Contributions	\$	307,986	\$	370,603	
	g. Estimated City Contributions		6,175,761		6,448,392	
	h. Total	\$	6,483,747	\$	6,818,995	





		As of ember 30, 2018	As of September 30, 2016		
6. Actuarially Determined Contribution (Payable as					
a Lump Sum on October 1st)					
a. Normal Cost	\$	744,083	\$	868,174	
b. Payment to Amortize Unfunded Liability		5,392,620		5,595,199	
c. Administrative Expenses		112,430		102,605	
e. Total	\$	6,249,133	\$	6,565,978	
f. Expected Member Contributions	\$	307,986	\$	370,603	
g. Estimated City Contributions		5,941,147		6,195,375	
h. Total	\$	6,249,133	\$	6,565,978	

Unfunded Actuarial Accrued Liability (UAAL)

Table II

1.	Actual Unfunded Accrued Liability as of 9/30/2016	\$	40,730,808
2.	Expected Change in Unfunded Liability During the 2016/2017 & 2017/2018 Pl	an Y	ears:
	 a. Due to Normal Cost b. Due to Contributions c. Due to Interest d. Total Expected Change = (a b. + c.) 		1,633,761 13,636,012 5,537,529 (6,464,722)
3.	Expected Unfunded Accrued Liability as of 9/30/2018	\$	34,266,086
4.	Change in Unfunded Liability During the 2016/2017 & 2017/2018 Plan Years a. Method changes b. Assumption changes c. Plan amendments	Due \$	to: 0 3,260,021 0
	d. Total change	\$	3,260,021
5.	Actual Unfunded Accrued Liability as of 9/30/2018	\$	34,544,063
6.	Actuarial Gain/(Loss) as of 9/30/2018	\$	2,982,044





			For the Plan Years 2019/2020 & 2020/2021	For the Plan Years 2017/2018 & 2018/2019		
A.	Nu	mber of Plan Participants as of September 30				
	a.	Retirees and beneficiaries receiving benefits	608	611		
	b.	DROP members	21	27		
	c.	Terminated plan participants entitled to but				
		not yet receiving benefits	58	60		
	d.	Active plan participants	108	136		
	e.	Total	795	834		

B. Development of Actuarially Determined Employer Contribution (ADEC) Payable on a bi-weekly basis

a. Employer normal cost:

	i. Total normal cost (with Interest and Expenses)	\$ 1,091,127	\$ 1,223,796
	ii. Expected employee contribution	307,986	 370,603
	iii. Employer normal cost	\$ 783,141	\$ 853,193
b.	Amortization of UAAL:		
	i. PV of future benefits	\$ 183,986,812	\$ 183,540,758
	ii. PV of future employer normal costs	2,315,187	2,800,381
	iii. PV of future employee contributions	 1,738,875	2,177,769
	iv. Actuarial accrued liability (AAL)	179,932,750	178,562,608
	v. Actuarial value of assets	 145,388,687	 137,831,800
	vi. Unfunded AAL (UAAL)	34,544,063	40,730,808
	vii. Amortization of UAAL	\$ 5,392,620	\$ 5,595,199
c.	ADEC	\$ 6,175,761	\$ 6,448,392
	(Item B.a.iii. plus item B.b.vii.)		



C. Schedule of Funding Progress (\$ in thousands)

Actuarial Valuation Date		(1) Actuarial Value of Assets	(2) Actuarial Accrued Liability (AAL)	(3) Unfunded AAL (UAAL) (2) – (1)	(4) Funded Ratio (1) ÷ (2)	(5) Covered Payroll	(6) UAAL as % of Covered Payroll (3) ÷ (5)
9/30/2005		\$104,435	\$157,913	\$53,478	66.1%	\$16,904	316.4%
9/30/2006		106,662	157,417	50,755	67.8%	17,598	288.4%
9/30/2007	(a)	113,372	163,684	50,312	69.3%	14,807	339.8%
9/30/2008	(a)	115,679	166,311	50,632	69.6%	13,546	373.8%
9/30/2009		117,544	169,052	51,508	69.5%	12,091	426.0%
9/30/2010	(b)	119,198	174,015	54,817	68.5%	11,280	486.0%
9/30/2012	(a)	115,254	172,305	57,051	66.9%	7,835	728.2%
9/30/2014	(b)	126,848	176,126	49,278	72.0%	6,902	714.0%
9/30/2016	(b)	137,832	178,563	40,731	77.2%	6,348	641.6%
9/30/2018	(b)	145,389	179,933	34,544	80.8%	5,600	616.9%

⁽a) Change in benefit provisions

⁽b) Change in actuarial assumptions



D. Additional Information

Valuation date September 30, 2018

Actuarial cost method Entry Age Normal

Amortization method Closed level dollar

Remaining amortization period 9 years

Asset valuation method 5-year smoothed market

Actuarial assumptions:

Investment rate of return* 7.40%

Projected salary increases* 4.50% - 9.50%

Cost-of-living adjustments 1.50% per year for retirements before October 1,

2012; 1.00% for retirements on or after October 1,

2012

*Includes inflation at: 3.00%



Shown below is the development of the Total Present value of Accrued Benefit for the Plan. The calculations were performed using the Plan's discount rate of 7.40%.

PRESENT VALUE OF ACCRUED BENEFITS

TABLE IV

1. Actuarial Present Value of Accrued Benefits

	As of	As of
	September 30, 2016	September 30, 2018
a. Vested Accrued Benefits:		
i. Inactive members and beneficiaries	\$153,727,645	\$158,663,142
ii. Active members	\$23,116,297	\$21,269,607
b. Total Benefits	\$176,843,942	\$179,932,749
c. Market Value of Assets	\$134,865,141	\$147,043,426
d. Percentage Funded	76.3%	81.7%

2. Statement of Changes in Total Actuarial Present Value of All Accrued Benefits

a. Actuarial Present Value as of September 30, 2016 (7.6% Interest): \$176,843,942

b. Increase (Decrease) During 2016/2017 & 2017/2018 Plan Years Attributable to:

i. Interest	\$25,768,287
ii. Benefits accumulated/experience	\$1,608,696
iii. Benefits paid	(\$27,548,197)
iv. Plan amendments	\$0
v. Changes in actuarial assumptions or methods	\$3,260,021
vi. Net increase (decrease)	\$3,088,807

c. Actuarial Present Value as of September 30, 2018 (7.4% Interest): \$179,932,749

3. Items Affecting Calculation of Actuarial Present Value of Accrued Benefits

- a. Plan provisions reflected in the accrued benefits (see Table X)
- b. Actuarial assumptions and methods used to determine present values (see Table IX)





		September 30, 2018 After Assumption Change		September 30, 2018 Prior to Assumption Change		Sept	sember 30, 2016
Par	rticipant Data						
1.	Active Members						
	a. Number		108		108		136
	b. Valuation payroll	\$	5,599,750	\$	5,599,750	\$	6,347,558
	c. Estimated payroll for next fiscal year	\$	5,599,750	\$	5,599,750	\$	6,347,558
2.	Retired Members						
	a. Number on service retirement		429		429		426
	b. Annual benefits	\$	10,751,125	\$	10,751,125	\$	10,259,523
	c. Number in DROP		21		21		27
	d. Annual benefits	\$	476,515	\$	476,515	\$	633,388
	e. Number on disability retirement		34		34		37
	f. Annual benefits	\$	363,209	\$	363,209	\$	357,718
	g. Number of beneficiaries of deceased members		145		145		148
	h. Annual benefits	\$	2,067,695	\$	2,067,695	\$	1,989,524
	i. Number of deferred vested members		58		58		60
	j. Annual benefits	\$	732,433	\$	732,433	\$	749,710
Ass	sets						
3.	a. Assets for valuation purposes	\$	145,388,687	\$	145,388,687	\$	137,831,800
	b. Market value of assets	\$	147,043,426	\$	147,043,426	\$	134,865,141



	September 30, 2018 After Assumption Change	September 30, 2018 Prior to Assumption Change	<u>September 30, 2016</u>	
Liabilities				
4. Present value of prospective benefits payable in respect of:a. Retired members and beneficiaries:i. Present retirees on service retirement drawing				
allowances	\$ 122,012,737	\$ 119,951,342	\$ 116,777,722	
ii. Present beneficiaries drawing allowances	18,400,770	18,143,880	17,837,591	
iii. Present retirees on disability retirement now	, ,	, ,	, ,	
drawing allowances	3,681,900	3,622,608	3,615,362	
iv. Subtotal	\$ 144,095,407	\$ 141,717,830	\$ 138,230,675	
b. DROP members	\$ 8,338,748	\$ 8,223,004	\$ 11,103,634	
c. Former active members eligible for deferred benefits	\$ 6,228,988	\$ 6,044,248	\$ 5,870,693	
d. Present active members:				
i. Service retirement benefits	\$ 23,338,470	\$ 22,611,990	\$ 26,082,216	
ii. Deferred vested benefits	1,557,031	1,489,353	1,725,289	
iii. Disability benefits	95,445	93,222	125,153	
iv. Death benefits	332,723	322,830	403,098	
v. Return of contributions	0	0	0	
vi. Subtotal	<u>\$ 25,323,669</u>	<u>\$ 24,517,395</u>	<u>\$ 28,335,756</u>	
e. Total present value of all prospective benefits payable	\$ 183,986,812	\$ 180,502,477	\$ 183,540,758	
5. Present Value of Accrued Benefits	\$ 179,932,750	\$ 176,672,729	\$ 178,562,608	
6. Unfunded Actuarial Accrued Liabilities	\$ 34,544,063	\$ 31,284,042	\$ 40,730,808	





Co	ntributions		nber 30, 2018 After aption Change	 mber 30, 2018 Prior to option Change	<u>Septe</u>	ember 30, 2016
7.	Normal Contribution Rate:					
	a. From City (including interest)		13.98%	13.16%		12.66%
	b. From Members		5.50%	5.50%		5.50%
8.	Required City Contributions as % of Payroll (including interest):					
	a. Normal		13.98%	13.16%		12.66%
	b. Unfunded Actuarial Accrued Liabilities		<u>96.30%</u>	<u>87.95%</u>		83.04%
	c. Total		110.28%	101.11%		95.70%
9.	Required City Contributions (including interest) Payable on a	bi-week	xly basis:			
	a. Normal	\$	783,141	\$ 736,367	\$	853,193
	b. Unfunded Actuarial Accrued Liabilities		5,392,620	 4,924,957		5,595,199
	c. Total	\$	6,175,761	\$ 5,661,324	\$	6,448,392
10	Percentage of Compensation to be Contributed by Members		5.50%	5.50%		5.50%

Information Req. by Florida Statute (Chapter 112)

Table Va

	 ember 30, 2018 After mption Change	 ember 30, 2018 Prior to mption Change	Sept	ember 30, 2016
11. Present Value of Active Members:				
a. Future salaries	\$ 31,615,901	\$ 31,339,122	\$	39,595,796
b. Future contributions	\$ 1,738,875	\$ 1,723,652	\$	2,177,769
12. Prior Fiscal Year's Contribution (cash basis):				
a. Required City (Payable in a Lump Sum)	\$ 6,195,375	\$ 6,195,375	\$	6,781,933
b. Actual City	6,200,956	6,200,956		6,788,559
c. Required member	370,603	370,603		379,586
d. Actual member	305,534	305,534		360,693
13. Accumulated Member Contributions	\$ 3,923,166	\$ 3,923,166	\$	4,557,641





Balance as of October 1	UAAL Beginning of Year	Amortization Payment	UAAL End of Year
2018	\$34,544,063	\$5,392,620	\$31,707,703
2019	31,707,703	5,392,620	28,661,453
2020	28,661,453	5,392,620	25,389,780
2021	25,389,780	5,392,620	21,876,003
2022	21,876,003	5,392,620	18,102,207
2023	18,102,207	5,392,620	14,049,150
2024	14,049,150	5,392,620	9,696,166
2025	9,696,166	5,392,620	5,021,062
2026	5,021,062	5,392,620	0



Asset Reconciliation Table VIa

Revenues and Expenditures

		Septe	As of ember 30, 2018	<u>Septe</u>	As of ember 30, 2016
Re	evenues:				
a.	Member contributions	\$	305,534	\$	360,693
b.	City contributions		6,200,956		6,788,559
c.	City contributions – Other		0		
d.	Investment Income and Realized Gains		10,393,405		3,381,144
e.	Increase in unrealized appreciation		1,675,033		8,639,194
f.	Other revenue		4,996		3,314
g.	Total revenues	\$	18,579,924	\$	19,172,904
Ex	penditures:				
a.	Refunds of member contributions	\$	14,721	\$	82,082
b.	Benefits payments		12,906,707		12,362,685
c.	Payment from DROP accounts		172,360		1,406,115
d.	Health care subsidy payments		120,036		133,280
e.	Administrative expenses		8,077		6,245
f.	Investment expenses		699,714		667,564
g.	Realized losses		0		0
h.	Decrease in unrealized appreciation		0		0
i.	Other expenditures		104,353		96,360
j.	Total expenditures	\$	14,025,968	\$	14,754,331
Ne	et Income:				
	Total revenues minus total expenditures	\$	4,553,956	\$	4,418,573



Asset Reconciliation Table VIa

Summary of Assets for Pension and Retiree Healthcare Benefits Combined

	<u>Sep</u>	tember 30, 2018 Market	September 30, 2016 Market		
Cash	\$	47,336	\$	89,687	
Debt Securities					
Short-term		3,190,265		2,092,626	
Bonds		8,420,870		9,353,733	
Equity Securities					
Common Stock		135,230,139		123,172,653	
Other					
Accounts receivable		6,200		6,928	
Accounts payable		(163,380)		(139,257)	
Accrued Interest		311,996		288,771	
Total Assets	\$	147,043,426	\$	134,865,141	



Derivation of Actuarial Value of Assets

Table VIb

	Valuation Date September 30:	2017	2018	2019	2020	2021	2022
A.	Actuarial Value Beginning of Year	\$137,831,800	\$141,763,084				
B.	Market Value End of Year	\$142,489,470	\$147,043,426				
C.	Market Value Beginning of Year	\$134,865,141	\$142,489,470				
D. D1. D2. D3. D4. D5. D6.	Benefit Payments Administrative Expenses	\$7,129,522 0 (14,334,373) (134,684) (704,920) \$(8,044,455)	\$6,506,490 0 (13,213,824) (112,430) (699,714) \$(7,519,478)				
E. E1. E2. E3. E4.	Investment Income Market Total: B – C – D6 Assumed Rate Amount for Immediate Recognition Amount for Phased-In Recognition	\$15,668,784 7.60% 10,675,768 4,993,016	\$12,073,434 7.60% 11,269,763 803,671				
F. F1. F2. F3. F4. F5. F6.	Phased-In Recognition of Investment Income Current Year: 0.20*E4 First Prior Year Second Prior Year Third Prior Year Fourth Prior Year Total Recognized Investment Gain	\$998,603 290,364 (2,564,727) 990,344 1,585,387 \$1,299,971	\$160,734 998,603 290,364 (2,564,727) 990,344 \$(124,682)	\$160,734 998,603 290,364 (2,564,727) \$(1,115,026)	0 \$160,734 998,603 <u>290,364</u> \$1,449,701	0 0 \$160,734 <u>998,603</u> \$1,159,337	0 0 0 \$160,734 \$160,734
G. H.	Preliminary Actuarial Value End of Year: Difference Between Market & Actuarial Values:	\$141,763,084 \$726,386	\$145,388,687 \$1,654,739	\$2,769,765	1,320,064	160,734	\$0

The actuarial value of assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased in over a closed 5 year period. During periods when investment performance exceeds the assumed rate, the actuarial value will tend to be less than market value. During periods when investment performance is less than assumed, the actuarial value will tend to be greater than the market value.



Net Pension Liability

Table VIIa

The material presented herein will follow the order presented in GASB 67. Paragraph numbers are provided for ease of reference.

Paragraphs 31(a) (1)-(4): The information is provided in the following table. As stated above, the NPL is equal to the TPL minus the FNP. That result as of September 30, 2018 is presented in the table below.

	Fiscal Year Ending September 30, 2018			
Total Pension Liability Fiduciary Net Position Net Pension Liability	\$ \$	179,932,750 147,043,426 32,889,324		
Ratio of Fiduciary Net Position to Total Pension Liability		81.72%		



Paragraph 31(b): This paragraph requires information regarding the actuarial assumptions used to measure the TPL. The actuarial assumptions utilized in developing the TPL are outlined in Schedule B. The total pension liability was determined by an actuarial valuation as of September 30, 2018, using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation 3.0 percent

Salary increases 4.50 - 9.50 percent, average, including inflation

Investment rate of return 7.40 percent, net of pension plan investment expense,

including inflation

Mortality **Pre-Retirement Healthy Mortality**

Female: RP2000 Generational, 100% Combined Healthy

White Collar, Scale BB

Male: RP2000 Generational, 50% Combined Healthy White Collar / 50% Combined Healthy Blue Collar, Scale BB

Post-Retirement Healthy Mortality

Female: RP2000 Generational, 100% Annuitant White

Collar, Scale BB

Male: RP2000 Generational, 50% Annuitant White Collar /

50% Annuitant Blue Collar, Scale BB **Post-Retirement Disabled Mortality**

Female: RP2000, 100% Disabled Female set forward two

years, no projection scale

Male: RP2000, 100% Disabled Male setback four years, no

projection scale



Asset Allocation Table VIIc

The actuarial assumptions used in the September 30, 2018 valuation were based on the results of the last actuarial experience study, dated January 7, 2011.

Paragraph 31.b.(1)

- (a) Discount rate: The discount rate used to measure the total pension liability was 7.40%.
- **(b) Projected cash flows:** The projection of cash flows used to determine the discount rate assumed the City would contribute the actuarial determined contribution.
- (c) Long term rate of return: The long-term expected rate of return on pension plan investments was determined using a log-normal distribution analysis in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation.
- (d) Municipal bond rate: the discount rate determination does not use a municipal bond rate
- **(e) Periods of projected benefit payments:** projected future benefit payments for all current plan members were projected through 2111.
- **(f) Assumed Asset Allocation:** The target asset allocation and best estimates of arithmetic rates of return for each major asset class are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Rate of Return
Domestic Equity	40%	11.1%
Bonds	25	7.6
International Equity	15	6.4
Private Real Estate	8	7.9
Convertibles	7	9.5
MLP's	5	16.9
Total	100%	



(g) Sensitivity analysis: this paragraph requires disclosure of the sensitivity of the net pension liability to changes in the discount rate. The following presents the net pension liability of the System, calculated using the discount rate of percent, as well as what the System's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate:

	1%	Current	1%
	Decrease	Discount Rate	Increase
	6.40%	7.40%	8.40%
System's net pension liability	\$50,922,255	\$32,889,324	\$17,589,163

Paragraph 31(c): September 30, 2018 is the actuarial valuation date upon which the TPL is based. No roll-forward procedures were used to determine the TPL.



Paragraph 34: In addition the following should be noted regarding the RSI:

Changes of benefit terms: None.

Changes of assumption: Since the previous valuation, the assumed rate of return was lowered from 7.60% to 7.40%. The assumed rate of return will be lowered by 0.2% to in 5 biennial steps for each valuation beginning September 30, 2014.

Method and assumptions used in calculations of actuarially determined contributions. The actuarially determined contribution rates are determined on an annual basis. The following actuarial methods and assumptions were used to determine contribution rates reported in that schedule:

Actuarial cost method Entry age

Amortization method Level dollar, closed

Remaining amortization period 11 years

Asset valuation method 5-year smoothed market

Inflation 3.00 percent

Salary increase 4.50-9.50 percent, including inflation

Investment rate of return 7.60 percent, net of pension plan investment

expense, including inflation



SCHEDULE OF CHANGES IN THE NET PENSION LIABILITY GASB 67 Paragraph 32(a)

	2018	2017	2016	2015	2014
Total pension liability					
Service Cost	\$ 806,853	\$ 806,853	\$ 960,937	\$ 875,872	\$ 875,872
Interest	13,096,503	13,087,373	13,265,393	13,080,194	13,039,418
Benefit changes				1,929,586	
Difference between expected and actual					
experience	(2,139,264)	-	(6,829,727)		
Changes of assumptions	3,260,021	-	8,088,948		
Benefit payments	(13,199,103)	(14,334,373)	(13,902,080)	(13,007,151)	(13,664,554)
Refunds of contributions	(14,721)	-	(82,082)	(31,304)	(82,048)
Net change in total pension liability	\$ 1,810,289	\$ (440,147)	\$ 1,501,389	\$ 2,847,197	\$ 168,688
Total pension liability - beginning	\$ 178,122,461	\$ 178,562,608	\$ 177,061,219	\$ 174,214,022	\$ 174,045,334
Total pension liability - ending (a)	\$ 179,932,750	\$ 178,122,461	\$ 178,562,608	\$ 177,061,219	\$ 174,214,022
Plan net position					
Contributions - employer	\$ 6,200,956	\$ 6,788,208	\$ 6,788,559	\$ 6,586,144	\$ 6,586,424
Contributions - member	305,534	341,314	360,693	375,026	388,789
Net investment income	11,373,720	14,963,864	11,356,088	(2,230,201)	14,895,032
Benefit payments	(13,199,103)	(14,334,373)	(13,902,080)	(13,007,151)	(13,664,554)
Administrative expense	(112,430)	(134,684)	(102,605)	(126,054)	(103,765)
Refunds of contributions	(14,721)	-	(82,082)	(31,304)	(82,048)
Other	_			2,149,812	
Net change in plan net position	\$ 4,553,956	\$ 7,624,329	\$ 4,418,573	\$ (6,283,728)	\$ 8,019,878
Plan net position - beginning	\$ 142,489,470	\$ 134,865,141	\$ 130,446,568	\$ 136,730,296	\$ 128,710,418
Plan net position - ending (b)	\$ 147,043,426	\$ 142,489,470	\$ 134,865,141	\$ 130,446,568	\$ 136,730,296
Net pension liability - ending (a) - (b)	\$ 32,889,324	\$ 35,632,991	\$ 43,697,467	\$ 46,614,651	\$ 37,483,726



SCHEDULE OF THE NET PENSION LIABILITY GASB 67 Paragraph 32(b)

	2018	2017	2016	2015	2014
Total pension liability	\$179,932,750	\$178,122,461	\$178,562,608	\$177,061,219	\$174,214,022
Plan net position	147,043,426	142,489,470	134,865,141	130,446,568	136,730,296
Net pension liability	\$ 32,889,324	\$ 35,632,991	\$ 43,697,467	\$ 46,614,651	\$ 37,483,726
Ratio of plan net position to total pension liability	81.72%	80.00%	75.53%	73.67%	78.48%
liaonity	01.7270	00.0070	73.3370	73.0770	70.4070
Covered-employee payroll	\$ 5,555,159	\$ 6,174,853	\$ 6,347,558	\$ 6,901,570	\$ 6,757,461
Net pension liability as a percentage of covered-employee payroll	592.05%	577.07%	688.41%	675.42%	554.70%



Table VIIh

SCHEDULE OF EMPLOYER CONTRIBUTIONS GASB 67 Paragraph 32(c)

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Actuarially determined employer contribution	\$ 6,200,956	\$ 6,788,559	\$ 6,788,559	\$ 7,515,167	\$ 7,448,089	\$ 7,157,167	\$ 7,157,167	\$ 7,162,033	\$ 7,094,735	\$ 6,942,271
Actual employer contributions	<u>6,200,956</u>	6,788,559	6,788,559	<u>7,515,167</u>	<u>7,448,089</u>	<u>7,157,167</u>	<u>7,157,167</u>	<u>7,162,033</u>	<u>7,094,735</u>	<u>6,942,271</u>
Annual contribution deficiency (excess)	-	-	-	-	-	-	-	-	-	-
Covered-employee payroll Actual contributions as a	\$ 5,555,159	\$ 6,174,853	\$ 6,347,558	\$ 6,901,570	\$ 6,757,461	\$ 6,961,827	\$ 7,834,617	\$11,280,207	\$12,090,613	\$13,546,116
percentage of covered- employee payroll	111.63%	109.94%	106.95%	108.89%	110.22%	102.81%	91.35%	63.49%	58.68%	51.25%



Active Data Table Table VIIIa

Tabulated by Attained Age and Years of Service as of September 30, 2018

	Years of Service to Valuation Date						7	Totals	
Attained Age	0-5	6-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20									
20-24									
25-29									
30-34			1					1	\$62,198
35-39			7	7				14	672,383
40-44			2 3	11	1			14	580,030
45-49			3	8	2	3		16	738,884
50-54			1	10	2 2	3 9 7	1	23	1,330,074
55-59			2	13	4	7	2	28	1,316,829
60					2	1		3	120,672
61				4				4	166,198
62			1	1	1			3	159,527
63			1					1	60,471
64					1			1	67,756
65									
66									
67									
68									
69									
70 & Over									
Totals	0	0	18	54	13	20	3	108	\$5,275,024

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 50.37 years Service: 19.08 years Annual Pay: \$51,850



Retiree Data Table Table VIIIb

Retiree and Beneficiary Information September 30, 2018 Tabulated by Attained Ages

	Service	Retirement		bility ement		ors and liciaries	To	otals
Attained Age	No.	Annual Benefits*	No.	Annual Benefits*	No.	Annual Benefits*	No.	Annual Benefits*
Under 20								
20-24								
25-29								
30-34								
35-39								
40-44			2	13,204			2	13,204
45-49			1	12,334	1	21,841	2	34,176
50-54	1	\$36,974	2	31,836	2	23,863	5	92,673
55-59	12	358,380			4	64,482	16	422,862
60-64	64	1,759,664	6	89,534	1	27,822	71	1,877,021
65-69	103	2,613,491	4	36,820	20	286,836	127	2,937,146
70-74	103	2,453,025	5	49,304	22	507,126	130	3,009,455
75-79	54	1,574,670	3	34,025	24	301,384	81	1,910,079
80-84	51	997,308	7	59,936	37	428,528	95	1,485,771
85-89	28	632,722	3	24,718	22	263,637	53	921,077
90-94	13	190,380	1	4,194	11	108,114	25	302,687
95								
96								
97								
98					1	6,947	1	\$6,947
99								
100 & Over								
Totals	429	\$10,616,613	34	\$355,904	145	\$2,040,580	608	\$13,013,097

^{*} Excluding amounts for the health subsidy

There were 58 vested members with annual deferred benefits of \$769,653 included in the valuation excluding amounts for the health subsidy.

In addition, there were 21 members who enrolled in the DROP. The accumulated benefits credited to the DROP are \$2,324,137.



Data Reconciliation Table VIIIc

		<u>Active</u>	Deferred <u>Vested</u>	Retired	<u>DROP</u>	<u>Total</u>
1.	Number of participants as of September 30, 2016	136	60	611	27	834
2.	Change in status during the plan year:	:				
	a. Actives who became inactive	(4)	4			
	b. Members who retired	(14)		14		
	c. Actives who enrolled in DROP	(9)			9	
	d. Vesteds who became active					
	e. Vesteds who retired		(6)	6		
	f. Retirees who became active					
	g. Transfer in					
3.	No longer participating due to:					
	a. Death			(53)	(1)	(54)
	b. Refund of contributions	(1)				(1)
	c. Receipt of lump sum payment					
	d. Expiration of certain period					
	e. No longer in DROP			14	(14)	
	f. Data change from last year					
	g. Transfer out					
4.	New participant due to:					
	a. Initial participation					
	b. Death of another participant			16		16
	c. Data change from last year					
5.	Number of participants as of September 30, 2018	108	58	608	21	795



Historical Data Table IX

Actuarial estimates regarding the inflation rate and real investment return rate were utilized in the valuation. These estimates are used, in combination with the other estimates, to (i) determine the present value of amounts expected to be paid in the future and (ii) establish rates of contribution which are expected to remain relatively level as a percent of total employee payroll.

Inflation

➤ Effective September, 30 2010, 3.00% per annum, compounded annually. This is the rate at which growth in the supply of money and credit is estimated to exceed growth in the supply of goods and services. It may be thought of as the rate of decline in the purchasing power of the dollar. There are a number of indices for measuring the inflation rate. The recent inflation rate as measured by the Consumer Price Index has been:

Year Ended:	9/30/2018	9/30/2017	9/30/2016	9/30/2015	9/30/2014	Average for Period
Actual	2.3%	2.2%	1.5%	0.0%	1.7%	1.5%
Assumed	3.0	3.0	3.0	3.0	3.0	3.0

Real Investment Return

➤ Effective October 1, 2018, 4.40% per annum. This is the rate of return estimated to be produced by investing a pool of assets in an inflation-free environment. Recent real rates of investment return on the actuarial value of assets have been:

Year Ended:	9/30/2018	9/30/2017	9/30/2016	9/30/2015	9/30/2014	Average for Period
Total Rate	7.6%	8.4%	9.7%	8.9%	11.4%	9.2%
Less Inflation Rate	2.3	2.2	1.5	0.0	1.7	1.5
Actual Real Rate	5.3	6.2	8.2	8.9	9.7	7.7
Projected Real Rate	4.6	4.6	4.8	4.8	5.0	4.8

➤ The total investment return rate was computed by dividing the investment earnings recognized in the actuarial value of assets, before the release of any reserve, by a weighted average of the value of assets during the year. The investment earnings are assumed to be net of any investment expenses.



Historical Data Table IX

> A schedule of recent salary change experience, as measured by average reported pay, follows:

Year Ended:	9/30/2018	9/30/2017	9/30/2016	9/30/2015	9/30/2014	Average for Period
% of Change: Actual Average*	4.2%	2.5%	3.9%	2.5%	5.0%	3.6%
Estimated	6.2	6.1	6.2	6.2	6.3	6.2
% Change in Total Payroll	(8.4)	(9.3)	(1.6)	(6.5)	(0.9)	(5.3)

^{*}Excluding terminations and new members.

Prior Contribution Rates

Valuation Date	Applicable Fiscal Year	Normal Cost	Expenses	Unfunded Actuarial Accrued Liability	Total City Contributions
9-30-96	1996-97	1.42%	1.04%	4.76%	7.22%
9-30-97	1997-98	(3.64)	1.04	15.17	12.57
9-30-98	1998-99	(3.96)	0.93	13.44	10.41
9-30-99	1999-00	(2.43)	1.05	13.89	12.51
9-30-00	2000-02	(2.88)	1.05	16.97	15.14
9-30-01	2002-03	4.38	1.05	15.75	21.18
9-30-02	2003-04	12.33	1.05	15.20	28.58
9-30-03	2004-05	11.31	1.05	22.50	34.86
9-30-04	2005-06	11.13	1.05	25.10	37.28
9-30-05	2006-07	12.91	1.05	21.86	35.82
9-30-06	2007-08	12.84	1.05	20.50	34.39
9-30-07	2008-09	13.92	1.05	34.61	49.58
9-30-08	2009-10	13.26	1.05	38.92	53.23
9-30-09	2010-11	13.65	0.80	45.45	59.90
9-30-10	2011-12	10.36	0.61	53.27	64.24
9-30-12	2013-14	9.61	1.26	85.07	95.99
9-30-14	2015-16	11.53	1.50	89.35	102.37
9-30-16	2017-18	12.17	1.62	83.04	95.70
9-30-18	2019-20	11.97	2.01	96.30	110.28



1. Actuarial Cost Method

> To Determine the Funded Status and the Actuarially Determined Employer Contribution

Entry Age Normal Cost Method on an individual basis.

> To Determine the Present Value of Accrued Benefits Unit Credit

2. Decrements

▶ Pre-Retirement Healthy Mortality

Female: RP2000 Generational, 100% Combined Healthy White Collar, Scale BB Male: RP2000 Generational, 50% Combined Healthy White Collar / 50% Combined Healthy Blue Collar, Scale BB

Representative percentages of deaths assumed to be non-service (ordinary) or service (accidental) related are listed below.

Age	ge Ordinary		Accide	ental
	Male	Female	Male	Female
20	90.91%	88.24%	9.09%	11.76%
25	90.24	90.91	9.76	9.09
30	90.57	90.00	9.43	10.00
35	89.47	90.48	10.53	9.52
40	89.81	89.66	10.19	10.34
45	90.05	89.89	9.95	10.11
50	90.06	90.28	9.94	9.72
55	89.94	90.09	10.06	9.91
60	90.01	90.03	9.99	9.97
64	90.02	89.98	9.98	10.02

▶ Post-Retirement Healthy Mortality

Female: RP2000 Generational, 100% Annuitant White Collar, Scale BB Male: RP2000 Generational, 50% Annuitant White Collar / 50% Annuitant Blue Collar, Scale BB

▶ Post-Retirement Disabled Mortality

Female: RP2000, 100% Disabled Female set forward two years, no projection scale Male: RP2000, 100% Disabled Male setback four years, no projection scale



> Disability

Representative values of the assumed annual rates of disability among members in active service are as follows:

Age	Ordinary Disability Rate	Accidental Disability Rate
20	0.0135%	0.0065%
25	0.0133	0.0067
30	0.0202	0.0098
35	0.0267	0.0133
40	0.0333	0.0167
45	0.0666	0.0334
50	0.1135	0.0565
55	0.1935	0.0965
60	0.3000	0.1500
64	0.3934	0.1966

> Withdrawal from Active Status

Representative values of the assumed annual rates of withdrawal among members in active service are as follows:

Age	Rate
20	15.00%
25	13.00
30	11.00
35	9.00
40	7.00
45	5.00
50	4.00
54	4.00



Retirement

Values of the assumed annual rates of retirement among members in active service are as follows:

Age	Rate
Under 45	5.00%
Onder 43	3.0070
45	5.00
46	5.00
47	5.00
48	7.00
49	10.00
50	12.00
51	15.00
52	15.00
53	15.00
54	15.00
55	20.00
56	20.00
57	20.00
58	20.00
59	20.00
60	25.00
61	30.00
62	40.00
63	40.00
64	50.00
65 & Over	100.00

An additional 20% are assumed to retire when first eligible for an unreduced retirement benefit. In addition, 100% are assumed to retire upon the attainment of age 60 and the completion of 30 years of service.



3. Interest Rates

➤ Used for Calculating All Liabilities

Effective October 1, 2018 the interest rate is assumed to be 7.40% net of investment expenses per annum, comprised of an inflation rate of 3.00% and a real rate of return of 4.4%.

4. Salary Increases

The following representative salary increases are assumed, which includes an inflation rate of 3.00%.

Age	Rate	Age	Rate	Age	Rate	Age	Rate
20	9.50%	30	7.50%	40	6.50%	50	6.50%
25	9.50%	35	6.50%	45	6.50%	55	5.50%

5. Marriage Assumptions

- > 80% of members are assumed married or entitled to dependent benefits.
- Male spouses are assumed to be three years older than female spouses.

6. Expenses

Administrative expenses for the year following the valuation date are assumed to be equal to the actual amount for the previous fiscal year.

7. Cost-of-Living Adjustments

For retirements before October 1, 2012, benefits are assumed to increase 1.50% annually after retirement. For retirements on or after October 1, 2012, cost-of-living adjustments are assumed to be 1.00%. No COLA is assumed for participants who enter the DROP on or after October 1, 2012 while currently participating in the DROP.



8. Assets

Actuarial value, as developed in Tables VIb and VIc. The actuarial value of assets is a market-related method that each year recognizes 20% of the unexpected investment return.

9. Participation in the Health Insurance Premium Assistance program

50%



1. Participation

Participation, which was closed to new members on October 1, 1979, was reopened to new members effective October 6, 1997. Effective June 17, 2007, participation is closed to new members.

2. Credited Service

All service from date of hire. For benefit calculations only, fractional service greater than one-half is rounded up to a whole year. Members entering the Fund for the first time on or after October 6, 1997 who had service with the City had the option of purchasing credit for any or all prior service.

3. Average Final Compensation

For retirements before October 1, 2012, the average annual compensation, excluding unused leave and overtime in excess of 300 hours per fiscal year, during the highest 2 years of his or her last 5 years of contributing service prior to retirement, termination or death.

For retirements on or after October 1, 2012, the average annual compensation, excluding unused leave and overtime in excess of 200 hours per fiscal year, during the last 5 years of contributing service prior to retirement, termination or death. Overtime pay will be based on non-overtime rates for over 40 hours per week.

4. Normal Retirement Benefit

Eligibility

Age 55 and 20 years of credited service

> Benefit Amount

An annual benefit equal to the greatest of:

(a) 2.1% of Average Final Compensation times years of service (maximum 63%) for service accrued before October 1, 2012. For service accrued on or after October 1, 2012, 1.75% of Average Final Compensation times years of service (maximum 52.5%).



(b) 75% of the first \$2,400 of Average Final Compensation, plus 50% of the next \$1,200 of Average Final Compensation, plus 40% of any additional amount.

(c) \$300 per year of service (maximum \$6,000).

5. Early Retirement Benefit

Eligibility

25 years of credited service, regardless of age.

> Benefit Amount

Computed as a normal retirement benefit, with a benefit reduction of the lesser of 3% for each year of age below age 55, or 3% for each year of credited service below 30 years. Such benefit shall not be less than \$300 per year of service (service not to exceed 20 years).

6. Postponed Retirement

Eligibility

Retirement after first eligible for normal retirement benefit.

> Benefit Amount

Computed as a normal retirement benefit plus, under formula (b) only, 1% of the normal retirement benefit for each year of service credited after normal retirement date, but before age 70.

7. Disability Benefit – Service-Connected

Eligibility

Total and permanent disability or partial disability incurred in the line of duty.



> Benefit Amount

Accrued retirement benefit at date of disability, with a benefit reduction for formulas (a) and (b) of 2% for each year by which service at date of disability is less than 20 years. For partial disability, the benefit is further reduced by a certain percentage determined by the Board. Such benefit shall not be less than \$300 per year of service (service not to exceed 20 years).

8. Disability Benefit – Not Service-Connected

Eligibility

Total and permanent disability or partial disability, and 6 years of credited service.

Benefit Amount

Accrued retirement benefit at date of disability, with a benefit reduction for formulas (a) and (b) of 5% for each of the first 5 years, and 3% for each of the next 5 years by which service at date of disability is less than 20 years. For partial disability, the benefit is further reduced by a certain percentage determined by the Board. Such benefit shall not be less than \$300 per year of service (service not to exceed 20 years).

9. Death Benefit – Service-Connected

> Eligibility

None.

Benefit Amount

Computed as 80% of service-connected disability benefit, payable to the widow until death. If there is no surviving spouse, any dependent child(ren) under the age of 18 shall receive a benefit in the amount that a surviving spouse would have been entitled to. The total of all children's benefits shall not exceed the amount payable to the widow.



10. Death Benefit – Not Service-Connected

Eligibility

6 years of credited service.

Benefit Amount

Same as service-connected death benefit, except widow's benefit is computed as a non-service connected disability benefit.

11. Vested Termination

Eligibility

6 years of credited service.

> Benefit Amount

The accrued retirement benefit, payable at age 60. If the member terminated with at least 20 years of credited service, the benefit is payable at age 55.

12. Non-Vested Termination

A member terminating for any cause, other than line of duty disability, with less than 6 years of credited service is entitled to a refund of all accumulated contributions.

13. Cost-of-Living Adjustments

For retirements before October 1, 2012, the cost of living adjustment (COLA) is based on the Consumer Price Index (CPI-U) from April 1 of the preceding year to March 31 of the year in which the increase is to be given, subject to a maximum increase of 1.50% per year.

For retirements on or after October 1, 2012, the COLA is also based on the Consumer Price Index (CPI-U), subject to a maximum increase of 1.00% per year.

For participants who enter the DROP on or after October 1, 2012, no COLA is granted while participating in the DROP.



14. Deferred Retirement Option Plan (DROP)

An active member eligible for normal retirement may continue employment with the City but elect to freeze the accrual of additional benefits as of the effective date of such election (as if the member had retired on such date). The member's normal retirement benefit payments will be credited to a DROP account. Member and City contributions to the Fund cease for the participant. A DROP participant's continued employment cannot normally exceed 60 months.

The DROP account will earn interest at 4% per annum for participants who entered the DROP prior to October 1, 2012 and 1.3% per year for participants who entered the DROP on or after to October 1, 2012. Cost-of-living adjustments are also credited to the benefits in the DROP account for participants who entered the DROP prior to October 1, 2012. Participants who entered the DROP on or after October 1, 2012 are not eligible for COLA payments while participating in the DROP.

Upon resignation, the participant then receives a distribution from the DROP account as well as regular monthly retirement benefits.

15. Retiree Health Insurance Premium Assistance

The Fund shall provide premium assistance for each covered retiree participating in the City group health insurance plan in the amount of \$56 per month (not indexed for inflation).

16. Normal Form of Benefit

For participants who retired prior to October 1, 2012, the normal form of benefit is a benefit payable for life. Upon death 80% of the benefit is continued for the lifetime of the beneficiary. For participants who retire on or after October 1, 2012, the normal form of benefit is a single life annuity. Upon death all benefit payments stop.



17. Annual Contributions

> Member

All members contribute 5.5% of compensation to the Fund.

> City

The City contributes an actuarially determined amount which, together with member contributions, equals the sum of the normal cost and payments for the amortization of the unfunded actuarial accrued liability over a period not exceeding 40 years (currently 11 years).