

AUSTIN POLICE  
RETIREMENT SYSTEM

ACTUARIAL VALUATION  
AS OF DECEMBER 31, 2016



July 26, 2017

Ms. Pattie Featherston, Executive Director  
Austin Police Retirement System  
2520 South IH 35, Suite 100  
Austin, TX 78704

Re: Austin Police Retirement System

Dear Ms. Featherston:

We are pleased to present to the Board this report of the annual actuarial valuation of the Austin Police Retirement System. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits and to develop the appropriate funding requirements for the applicable plan year(s). Please note that this valuation may not be applicable for any other purposes.

The valuation has been conducted in accordance with generally accepted actuarial principles and practices, including the applicable Actuarial Standards of Practice as issued by the Actuarial Standards Board, and reflects applicable laws and regulations issued to date at the state and federal level. In our opinion, the assumptions used in this valuation, as adopted by the Board of Trustees, represent reasonable expectations of anticipated plan experience. Future actuarial measurements may differ significantly from the current measurements presented in this report for a variety of reasons including: changes in applicable laws, changes in plan provisions, changes in assumptions, or plan experience differing from expectations.

In conducting the valuation, we have relied on personnel, plan design, financial reports, and asset information supplied by the System, and the actuarial assumptions and methods described in the Actuarial Assumptions section of this report. While we cannot verify the accuracy of all this information, the supplied information was reviewed for consistency and reasonableness. As a result of this review, we have no reason to doubt the substantial accuracy of the information and believe that it has produced appropriate results. This information, along with any adjustments or modifications, is summarized in various sections of this report.

The undersigned is familiar with the immediate and long-term aspects of pension valuations, and meets the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All of the sections of this report are considered an integral part of the actuarial opinions.

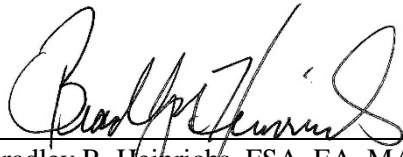
To our knowledge, no associate of Foster & Foster Inc. working on valuations of the program has any direct financial interest or indirect material interest in the City of Austin, nor does anyone at Foster & Foster Inc. act as a member of the Board of Trustees of the Austin Police Retirement System. Thus, there is no relationship existing that might affect our capacity to prepare and certify this actuarial report.

If there are any questions, concerns, or comments about any of the items contained in this report, please contact me at 239-433-5500.

Respectfully submitted,

Foster & Foster Inc.

By:

  
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Bradley R. Heinrichs, FSA, EA, MAAA  
Enrolled Actuary #17-6901

BRH/lke

Enclosures

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## SUMMARY OF REPORT

The annual actuarial valuation of the Austin Police Retirement System, performed as of December 31, 2016, has been completed and the results are presented in this Report. The pension costs, compared with those developed in the December 31, 2015 actuarial valuation report, are as follows:

<u>Valuation Date</u>	<u>New Assumptions</u> <u>12/31/2016</u>	<u>Old Assumptions</u> <u>12/31/2016</u>	<u>Old Assumptions</u> <u>12/31/2015</u>
Current Normal Cost Rate	21.724%	22.411%	22.430%
% of Payroll Under Assumed Ret. Age <i>Includes 0.017% of payroll for assumed additional administrative expenses for participation in the Proportionate Retirement Program</i>			
<hr/>			
Actuarial Accrued Liability (AAL)	\$1,106,505,413	\$1,099,742,044	\$1,036,118,138
Actuarial Value of Assets (AVA)	\$732,020,913	\$732,020,913	\$689,767,838
Unfunded Actuarial Accrued Liability (UAAL = AAL - AVA)	\$374,484,500	\$367,721,131	\$346,350,300
Funded Ratio (AVA / AAL)	66.2%	66.6%	66.6%
Amortization Period	27.3 years	32.7 years	31.3 years
<hr/>			
Expected City Contribution Rate	21.313%	21.313%	21.313%
Expected Member Contribution Rate	13%	13%	13%
Total Expected Contribution Rate	34.313%	34.313%	34.313%
<hr/>			
City 20-Year Funding Cost <sup>1</sup>	24.407%		
City 30-Year Funding Cost <sup>2</sup>	20.566%		
City 40-Year Funding Cost <sup>1</sup>	18.765%		

<sup>1</sup> The Texas Pension Review Board Guidelines for Actuarial Soundness state that funding should be adequate to amortize the UAAL over a period not to exceed 40 years, with 15-25 years being a more preferable target.

<sup>2</sup> Per Section 802.101(a) of the Texas Government Code, the actuarial valuation must include a recommended contribution rate needed for the system to achieve and maintain an amortization period that does not exceed 30 years.


During the past year, the plan has realized net unfavorable actuarial experience. The primary component of actuarial loss was attributable to a 5.33% investment return (Actuarial Asset basis) which fell short of the 7.80% assumption.

Additionally, the Board of Trustees approved a number of actuarial assumption changes, as discussed on the following page. As shown, this resulted in a 5.4 year reduction in the required amortization period. The specific details of the impact associated with implementing these changes are displayed in the comparative summary section of this report.

The balance of this Report presents additional details of the actuarial valuation and the general operation of the Fund. The undersigned would be pleased to meet with the Board of Trustees in order to discuss the Report and answer any pending questions concerning its contents.

Respectfully submitted,

FOSTER & FOSTER INC.

By:   
Bradley R. Heinrichs, FSA, EA, MAAA

By:   
Drew D. Ballard, EA, MAAA

## CHANGES SINCE PRIOR VALUATION

### 1. Benefit Provisions

There have been no changes in benefits since the prior valuation.

### 2. Actuarial Assumptions/Methods

As approved by the Board of Trustees, there have been multiple changes to the actuarial assumptions since the prior valuation, as detailed below.

- The investment return assumption has been decreased from 7.80% to 7.70% per year compounded annually, net of all expenses.
- The core inflation rate assumption has been decreased from 3.25% to 3.00% per year
- The general wage inflation rate assumption has been decreased from 3.50% to 3.25% per year
- The assumed rates of salary increase have been amended at most service points
- The payroll growth assumption has been increased from 3.50% to 4.00% per year

COMPARATIVE SUMMARY OF PRINCIPAL VALUATION RESULTS  
(Exclusive of Retiree Death Benefit Fund)

Valuation Date	New Assums <u>12/31/2016</u>	Old Assums <u>12/31/2016</u>	Old Assums <u>12/31/2015</u>
<b>A. Participant Data</b>			
Actives	1,837	1,837	1,761
Service Retirees + DROP	757	757	711
Beneficiaries	53	53	49
QDRO	37	37	38
Disability Retirees	2	2	3
Terminated Vested	36	36	41
 Total	 <u>2,722</u>	 <u>2,722</u>	 <u>2,603</u>
 Total Annual Payroll	 163,894,324	 163,894,324	 155,832,755
Payroll Under Assumed Ret. Age	158,538,425	158,538,425	151,566,341
 Annual Rate of Payments to:			
Service Retirees + DROP	50,142,738	50,142,738	46,036,724
Beneficiaries	2,271,558	2,271,558	2,109,280
QDRO	534,344	534,344	548,246
Disability Retirees	63,581	63,581	103,149
Terminated Vested	868,486	868,486	808,433
 <b>B. Assets</b>			
Actuarial Value	732,020,913	732,020,913	689,767,838
Market Value	686,020,262	686,020,262	644,174,137
 <b>C. Liabilities</b>			
Present Value of Benefits			
Active Members			
Retirement Benefits	829,471,098	847,314,962	812,353,446
Termination Benefits	12,568,306	12,619,581	12,215,439
Death Benefits	14,455,022	14,683,541	14,006,808
Disability Benefits	8,615,341	8,723,494	8,544,443
Service Retirees + DROP	558,941,001	554,644,179	508,374,160
Beneficiaries	19,051,612	18,922,651	17,580,394
QDRO	5,630,547	5,584,309	5,782,283
Disability Retirees	740,654	733,958	1,223,245
Terminated Vested	3,288,212	3,229,703	3,502,746
 Total	 <u>1,452,761,793</u>	 <u>1,466,456,378</u>	 <u>1,383,582,964</u>



Valuation Date	New Assums <u>12/31/2016</u>	Old Assums <u>12/31/2016</u>	Old Assums <u>12/31/2015</u>
C. Liabilities - (Continued)			
Present Value of Future Salaries	1,638,289,042	1,682,596,405	1,596,134,543
Normal Cost (Entry Age Normal)			
Retirement Benefits	30,882,157	31,889,987	30,493,633
Termination Benefits	982,924	987,914	955,257
Death Benefits	705,391	719,085	688,393
Disability Benefits	567,048	573,182	557,899
Total Normal Cost	<u>33,137,520</u>	<u>34,170,168</u>	<u>32,695,182</u>
Present Value of Future Normal Costs	346,256,380	366,714,334	347,464,826
Actuarial Accrued Liability			
Retirement Benefits	503,058,934	501,117,031	484,457,250
Vested Benefits	4,927,801	4,789,472	4,763,100
Death Benefits	7,436,512	7,359,681	7,052,252
Disability Benefits	3,430,140	3,361,060	3,382,708
Inactives	587,652,026	583,114,800	536,462,828
Total Actuarial Accrued Liability	<u>1,106,505,413</u>	<u>1,099,742,044</u>	<u>1,036,118,138</u>
Unfunded Actuarial Accrued Liability (UAAL)	374,484,500	367,721,131	346,350,300
Funded Ratio (AVA/AL)	66.2%	66.6%	66.6%
D. Actuarial Present Value of Accrued Benefits			
Vested Accrued Benefits			
Inactives	587,652,026	583,114,800	536,462,828
Actives	165,703,677	160,915,923	148,820,963
Member Contributions	<u>165,422,045</u>	<u>165,422,045</u>	<u>157,316,626</u>
Total	918,777,748	909,452,768	842,600,417
Non-vested Accrued Benefits	27,970,004	27,422,054	36,191,343
Total Present Value Accrued Benefits	<u>946,747,752</u>	<u>936,874,822</u>	<u>878,791,760</u>
Funded Ratio (MVA/PVAB)	72.5%	73.2%	73.3%

COMPARATIVE SUMMARY OF PRINCIPAL VALUATION RESULTS  
(Retiree Death Benefit Fund)

Valuation Date	New Assums <u>12/31/2016</u>	Old Assums <u>12/31/2016</u>	Old Assums <u>12/31/2015</u>
Present Value of Benefits			
Active Members	1,356,044	1,320,442	1,285,118
Retired and Terminated Vested Members	2,509,543	2,479,340	2,311,107
Total	<u>3,865,587</u>	<u>3,799,782</u>	<u>3,596,225</u>
Present Value of Future Normal Costs	508,863	505,050	485,114
Normal Cost	67,612	66,741	65,040
Actuarial Accrued Liability	3,356,724	3,294,732	3,111,111
Asset Value of Fund	1,084,516	1,084,516	929,148
Unfunded Actuarial Accrued Liability (UAAL)	2,272,208	2,210,216	2,181,963
Payment Required to Amortize Unfunded Actuarial Accrued Liability over 19 years (as of 12/31/2016)			
% of Total Annual Payroll	0.102	0.104	0.104
Normal Cost (with interest)			
% of Total Annual Payroll	0.043	0.042	0.043
Total Required City Contribution Rate Allocated to the Retiree Death Benefit Fund			
% of Total Annual Payroll	0.145	0.146	0.147

\* The Retiree Death Benefit Fund was established effective September 1, 2003. The Fund operates as a separate account within the system that is used to advance fund and to pay the \$10,000 post-retirement lump sum death benefits for retirees.

GAIN/LOSS ANALYSIS  
(Exclusive of Retiree Death Benefit Fund)

a. Total Gain/(Loss)

1. UAAL, Beginning of Year	346,350,300
2. Normal Cost Applicable for Year	32,695,182
3. Interest on (1) and (2)	29,565,548
4. Contributions During Year	55,879,173
5. Interest on (4)	2,138,372
6. Expected UAAL, End of Year: (1)+(2)+(3)-(4)-(5)	350,593,485
7. Actual UAAL, End of Year (Before Changes)	367,721,131
Total Actuarial Gain/(Loss)	(17,127,646)

b. Gain/(Loss) on Assets

1. Actuarial Value of Assets (AVA), Beginning of Year	689,767,838
2. Contributions Less Benefit Payments	5,121,672
3. Expected Investment Earnings	53,997,886
4. Expected AVA, End of Year: (1)+(2)+(3)	748,887,396
5. Actual Actuarial Value of Assets, End of Year	732,020,913
Gain/(Loss) on Assets	(16,866,483)

c. Gain/(Loss) on Liabilities

1. Expected Actuarial Accrued Liability: a(6)+b(4)	1,099,480,881
2. Actual Actuarial Accrued Liability (Before Changes)	1,099,742,044
Gain/(Loss) on Liabilities	(261,163)

ACTUARIAL ASSUMPTIONS AND METHODS  
(Effective December 31, 2016)

<u>Mortality Rates – All Lives</u>	RP-2000 Combined Healthy without projection – Sex Distinct. We believe this sufficiently accommodates expected mortality improvements.
<u>Interest Rate</u>	7.70% per year, compounded annually, net of all expenses. This is supported by the asset allocation of the trust and the long-term expected return by asset class.
<u>Core Inflation</u>	3.00% per year. This is reasonable based upon long-term expectations.
<u>Payroll Growth</u>	4.00% per year for amortization of the Unfunded Actuarial Accrued Liability. This was approved in conjunction with the 2017 review of actuarial assumptions and methods.
<u>Administrative Expenses (PRP)</u>	0.017% of payroll for assumed additional administrative expenses for participation in the Proportionate Retirement Program.
<u>DROP Election</u>	75% of those assumed to retire who are eligible for at least a 12-month DROP lump sum will make such an election (RETRO) or will have made such an election (FORWARD). See following tables for allocation between RETRO and FORWARD. This is reasonable based upon long-term expectations.
<u>DROP Period Election</u>	Members elect the maximum period eligible. This is reasonable based upon long-term expectations.
<u>PROP Investment Accounts</u>	75% retiring in DROP will elect to leave their lump sum in the System until age 60. Average annual rate credited to the PROP accounts will be 2.25%. This is reasonable based upon long-term expectations.
<u>Marital Status</u>	85% of actives are assumed to be married at time of benefit commencement. Females are assumed to be 3 years younger than Males. This is reasonable based upon long-term expectations.
<u>Funding Method</u>	Entry Age Normal Actuarial Cost Method

Actuarial Asset Method

All assets are valued at market value with an adjustment made to uniformly spread actuarial investment gains and losses (as measured by actual market value investment return against expected market value investment return) over a five-year period. The asset value of the Retiree Death Benefit Fund is then subtracted to determine the Actuarial Value of Assets.

Retirement Rates

See following tables. The assumed rates of retirement were approved in conjunction with the 2015 review of the actuarial assumptions and methods.

Termination Rates

See following tables. The assumed rates of termination were approved in conjunction with the 2016 review of the actuarial assumptions and methods.

Disability Rates

See following tables. 55% of disablements are assumed to be service related. The assumed rates of disablement were approved in conjunction with the 2015 review of the actuarial assumptions and methods.

Salary Increases

See following tables. The assumed rates of salary increase were approved in conjunction with the 2017 review of actuarial assumptions and methods.

Pre-Retirement Death Payment Form

Married: Joint and 100% to Survivor  
Single: 15-Year Certain and Life Annuity

Retirement Rates

APRS Service	For Entry Ages Under 32 <sup>1</sup>			For Entry Ages 33 and Above <sup>3</sup>			
	22 & Under	23-27	28-32	AGE	33-37	38-42	43 & Over
<b>0-22</b>	0.0625	0.125	0.125	<b>33-37</b>	0.05		
<b>23</b>	0.1875	0.1875	0.28125	<b>38-42</b>	0.05	0.10	
<b>24</b>	0.125	0.125	0.1875	<b>43-47</b>	0.05	0.10	0.10
<b>25</b>	0.125	0.125	0.1875	<b>48</b>	0.05	0.10	0.10
<b>26</b>	0.1875	0.1875	0.3125	<b>49</b>	0.05	0.10	0.10
<b>27</b>	0.1875	0.1875	0.3125	<b>50</b>	0.05	0.10	0.10
<b>28</b>	0.3125	0.3125	0.3125	<b>51</b>	0.05	0.10	0.10
<b>29</b>	0.3125	0.3125	0.375	<b>52</b>	0.20	0.10	0.10
<b>30</b>	0.375	0.375	0.50	<b>53</b>	0.35	0.10	0.10
<b>31</b>	0.375	0.375	0.625	<b>54</b>	0.75	0.10	0.10
<b>32</b>	0.375	0.375	1.00 <sup>2</sup>	<b>55</b>	0.20	0.10	0.10
<b>33</b>	0.375	0.375		<b>56</b>	0.25	0.10	0.10
<b>34</b>	0.50	0.50		<b>57</b>	0.30	0.10	0.10
<b>35</b>	0.50	0.625		<b>58</b>	0.35	0.10	0.10
<b>36</b>	0.50	0.625		<b>59</b>	0.50	0.10	0.10
<b>37</b>	0.625	1.00 <sup>2</sup>		<b>60</b>	1.00	0.50	0.10
<b>38</b>	0.625			<b>61</b>		0.35	0.10
<b>39</b>	0.625			<b>62</b>		0.35	0.80
<b>40</b>	0.625			<b>63</b>		0.35	0.40
<b>41</b>	0.625			<b>64</b>		0.35	0.40
<b>42</b>	1.00 <sup>2</sup>			<b>65</b>		1.00	1.00

<sup>1</sup> Rates are based on APRS service only and apply after a Member is eligible for retirement with combined APRS and Proportionate Retirement Program (PRP) service. Entry ages are determined based on APRS service only.

<sup>2</sup> 100% retirement rate will be effective at age 60, if earlier.

<sup>3</sup> Rates are based on age and apply after a Member is eligible for retirement with combined APRS and PRP service. Entry ages are determined based on APRS service only.

Termination Rates

<u>Combined Years of Service<sup>1</sup></u>	<u>Probability of Termination During Year</u>
0	0.075
1	0.030
2	0.030
3	0.015
4	0.015
5	0.010
6	0.010
7	0.005
8	0.005
9	0.005
10	0.010
11	0.010
12	0.010
13	0.010
14	0.005
15 & Above	0.005

<sup>1</sup> APRS service combined with Proportionate Retirement Program service.

Disability Rates

<u>Age</u>	<u>Probability of Disablement During Year</u>
20	0.000070
22	0.000080
24	0.000090
26	0.000105
28	0.000125
30	0.000155
32	0.000200
34	0.000245
36	0.000270
38	0.000310
40	0.000460
42	0.000660
44	0.000865
46	0.001275
48	0.001670
50	0.001895
52	0.002020
54	0.002280
56	0.002660
58	0.003300
60	0.004555
62 & Above	0

Salary Increases

<u>Years of Service</u>	<u>Increase in Salary<sup>1</sup></u>
0	22.5%
1	9.5
2	4.5
3	0.5
4	0.5
5	5.0
6	2.0
7	0.3
8	0.3
9	6.0
10	0.2
11	0.2
12	0.2
13	6.5
14	0.7
15	6.5
16+	0.0

<sup>1</sup> Expected increases in salary as shown above are in addition to 3.25% increase per year due to general wage increases.



Retirement Option Election

**(Members with 23+ years of APRS service on April 1, 2015)**

<u>Service at Termination of Employment</u>	<u>No DROP Elected</u> <sup>1</sup>	<u>RETRO DROP Elected</u>	<u>FORWARD DROP Elected</u>
23 or less	100%	0%	0%
24	25	75	0
25	25	65	10
26	25	60	15
27	25	55	20
28	25	55	20
29	25	55	20
30	25	55	20
31	25	55	20
32	25	55	20
33	25	60	15
34	25	65	10
35	25	75	0
36	25	75	0
37	25	75	0
38	25	75	0
39	25	75	0
40	25	75	0
41	25	75	0
42	25	75	0

<sup>1</sup> Police officers elect a type of service retirement benefit that does not include payment of a lump sum distribution.

Retirement Option Election

**(Members with less than 23 years of APRS service on April 1, 2015)**

<u>Service at Termination of Employment</u>	<u>No DROP Elected</u> <sup>1</sup>	<u>FORWARD DROP Elected</u>
23 or less	100%	0%
24	25	75
25	25	75
26	25	75
27	25	75
28	25	75
29	25	75
30	25	75
31	25	75
32	25	75
33	25	75
34	25	75
35	25	75
36	25	75
37	25	75
38	25	75
39	25	75
40	25	75
41	25	75
42	25	75

<sup>1</sup> Police officers elect a type of service retirement benefit that does not include payment of a lump sum distribution.

## VALUATION NOTES

Total Annual Payroll is the annual rate of pay as of the valuation date of all active and Forward-DROP participants.

Payroll under Assumed Retirement Age is the annual rate of pay as of the valuation date of all active participants who are not subject to a 100% probability of retirement on the valuation date.

Present Value of Benefits is the single sum value on the valuation date of all future benefits to be paid to current Members, Retirees, Beneficiaries, Disability Retirees and Vested Terminations.

Entry Age Normal Cost Method - Under this method, the normal cost is the sum of the individual normal costs for all active participants. For an active participant, the normal cost is the participant's normal cost accrual rate, multiplied by the participant's current compensation. The funding span utilized in determination of the normal cost rate for each benefit is to the last age at which that benefit is payable.

(a) The normal cost accrual rate equals:

(i) the present value of future benefits for the participant, determined as of the participant's entry age, divided by

(ii) the present value of the compensation expected to be paid to the participant for each year of the participant's anticipated future service, determined as of the participant's entry age .

(b) In calculating the present value of future compensation, the salary scale is applied both retrospectively and prospectively to estimate compensation in years prior to and subsequent to the valuation year based on the compensation used for the valuation.

(c) The accrued liability is the sum of the individual accrued liabilities for all participants and beneficiaries. A participant's accrued liability equals the present value, at the participant's attained age, of future benefits less the present value at the participant's attained age of the individual normal costs payable in the future. A beneficiary's accrued liability equals the present value, at the beneficiary's attained age, of future benefits. The unfunded accrued liability equals the total accrued liability less the actuarial value of assets.

(d) Under this method, the entry age used for each active participant is the participant's age at the time he or she would have commenced participation if the plan had always been in existence under current terms, or the age as of which he or she first earns service credits for purposes of benefit accrual under the current terms of the plan.

STATEMENT OF FIDUCIARY NET POSITION  
DECEMBER 31, 2016

<u>ASSETS</u>	MARKET VALUE
Cash and Cash Equivalents:	
Short Term Investments	23,014,505.90
Checking Account	2,233,501.25
Prepaid Expenses	7,664.67
Total Cash and Equivalents	25,255,671.82
Receivables:	
Member Contributions in Transit	408,847.22
Member Buy-Back Contributions	9,701.60
City Contributions	670,289.30
Investment Income	190,489.09
Total Receivable	1,279,327.21
Investments:	
Partnership Interests	46,928,956.00
Corporate Bonds	73,842,265.53
Corporate Stocks	379,721,794.22
International Government Securities	35,905,897.02
Real Estate Interests	91,458,472.98
Alternatives	33,282,424.13
Retiree Death Benefit Fund	1,084,516.46
Total Investments	662,224,326.34
Net Fixed Assets	740,036.59
Total Assets	689,499,361.96
<u>LIABILITIES</u>	
Payables:	
Refunds of Member Contributions	768,812.89
Other	2,710,287.07
Total Liabilities	3,479,099.96
NET POSITION RESTRICTED FOR PENSIONS	686,020,262.00

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION  
FOR THE YEAR ENDED DECEMBER 31, 2016  
Market Value Basis

ADDITIONS

Contributions:

Member	20,623,125.40
Buy-Back	1,668,173.71
City	33,092,668.17
City for Proportionate Retirement Program	495,205.45
City for Retiree Death Benefit	226,308.30

Total Contributions 56,105,481.03

Investment Income:

Miscellaneous Income	4,067,810.47
Net Realized Gain (Loss)	23,682,775.64
Unrealized Gain (Loss)	8,082,022.81
Net Increase in Fair Value of Investments	35,832,608.92
Interest & Dividends	3,888,744.03
Less Investment Expense <sup>1</sup>	(1,756,472.26)

Net Investment Income 37,964,880.69

Total Additions 94,070,361.72

DEDUCTIONS

Distributions to Members:

Benefit Payments	45,590,933.78
Lump Sum DROP Distributions	730,506.62
Lump Sum PROP Distributions	3,439,890.58
Retiree Death Benefits	70,000.00
Refunds of Member Contributions	996,170.22

Total Distributions 50,827,501.20

Administrative Expense 1,396,735.61

Total Deductions 52,224,236.81

Net Increase in Net Position 41,846,124.91

NET POSITION RESTRICTED FOR PENSIONS

Beginning of the Year 644,174,137.09

End of the Year 686,020,262.00

<sup>1</sup>Investment related expenses include investment advisory, custodial and performance monitoring fees.

ACTUARIAL ASSET VALUATION

December 31, 2016

Actuarial Assets for funding purposes are developed by recognizing the total actuarial investment gain or loss for each Plan Year over a five year period. In the first year, 20% of the gain or loss is recognized. In the second year 40%, in the third year 60%, in the fourth year 80%, and in the fifth year 100% of the gain or loss is recognized. The actuarial investment gain or loss is defined as the actual return on investments minus the actuarial assumed investment return. Actuarial Assets shall not be less than 80% nor greater than 120% of Market Value of Assets.

Plan Year Ending	Gain/(Loss)	<u>Gains/(Losses) Not Yet Recognized</u>				
		Amounts Not Yet Recognized by Valuation Year				
		2017	2018	2019	2020	2021
12/31/2012	8,502,880	0	0	0	0	0
12/31/2013	4,991,349	998,269	0	0	0	0
12/31/2014	(13,701,378)	(5,480,551)	(2,740,274)	0	0	0
12/31/2015	(52,498,923)	(31,499,354)	(20,999,569)	(10,499,783)	0	0
12/31/2016	(13,879,414)	(11,103,531)	(8,327,648)	(5,551,766)	(2,775,882)	0
Total		(47,085,167)	(32,067,491)	(16,051,549)	(2,775,882)	0

Development of Investment Gain/Loss

Market Value of Assets, including Retiree Death Benefit Fund, 12/31/2015	644,174,137
Contributions Less Benefit Payments	5,277,980
Expected Investment Earnings*	50,447,559
Actual Net Investment Earnings	36,568,145
2017 Actuarial Investment Gain/(Loss)	<u>(13,879,414)</u>

\*Expected Investment Earnings =  $0.078 * 644,174,137 + [(1 + 0.078)^{0.5} - 1] * 5,277,980$

Development of Actuarial Value of Assets

(1) Market Value of Assets, including Retiree Death Benefit Fund, 12/31/2016	686,020,262
(2) Gains/(Losses) Not Yet Recognized	<u>(47,085,167)</u>
(3) Actuarial Value of Assets, 12/31/2016, (1) - (2)	733,105,429

(A) 12/31/2015 Actuarial Assets, including Retiree Death Benefit Fund: 690,696,986

(I) Net Investment Income:

1. Interest, Dividends and Misc Income	7,956,555
2. Realized Gains (Losses)	23,682,776
3. Change in Actuarial Value	8,488,972
4. Investment and Administrative Expenses	<u>(3,153,208)</u>
Total	36,975,094

(B) 12/31/2016 Actuarial Assets, including Retiree Death Benefit Fund: 733,105,429

Actuarial Assets Rate of Return =  $2I/(A+B-I)$ : 5.33%

Market Value of Assets Rate of Return: 5.65%

12/31/2016 Limited Actuarial Assets, including Retiree Death Benefit Fund: 733,105,429

12/31/2016 Limited Net Actuarial Assets, excluding Retiree Death Benefit Fund: 732,020,913

CHANGES IN NET ASSETS AVAILABLE FOR BENEFITS  
 DECEMBER 31, 2016  
 Actuarial Asset Basis

REVENUES

Contributions:		
Member	20,623,125.40	
Buy-Back	1,668,173.71	
City	33,092,668.17	
City for Proportionate Retirement Program	495,205.45	
City for Retiree Death Benefit	226,308.30	
 Total Contributions		 56,105,481.03
Earnings from Investments:		
Interest & Dividends	3,888,744.03	
Miscellaneous Income	4,067,810.47	
Net Realized Gain (Loss)	23,682,775.64	
Change in Actuarial Value	8,488,972.18	
 Total Earnings and Investment Gains		 40,128,302.32

EXPENDITURES

Distributions to Members:		
Benefit Payments	45,590,933.78	
Lump Sum DROP Distributions	730,506.62	
Lump Sum PROP Distributions	3,439,890.58	
Retiree Death Benefits	70,000.00	
Refunds of Member Contributions	996,170.22	
 Total Distributions		 50,827,501.20
Expenses:		
Investment related <sup>1</sup>	1,756,472.26	
Administrative	1,396,735.61	
 Total Expenses		 3,153,207.87
 Change in Net Assets for the Year		 42,253,074.28
 Net Assets Beginning of the Year		 689,767,838.26
 Net Assets End of the Year <sup>2</sup>		 732,020,912.54

<sup>1</sup>Investment related expenses include investment advisory, custodial and performance monitoring fees.

<sup>2</sup>Net Assets may be limited for actuarial consideration.



## VALUATION PARTICIPANT RECONCILIATION

### 1. Active lives

a. Number in prior valuation 12/31/2015	1761
b. Terminations	
i. Vested (partial or full) with deferred benefits	5
ii. Non-vested or full lump sum distribution received	17
c. Deaths	2
d. Disabled	0
e. Retired	41
f. DROP	15
g. Continuing participants	1681
h. New entrants	156
i. Total active life participants in valuation	1837

### 2. Non-Active lives (including beneficiaries receiving benefits)

	<u>Service Retirees, DROP Participants</u>	<u>Receiving Death Benefits</u>	<u>Receiving Disability Benefits</u>	<u>Receiving QDRO Benefits</u>	<u>Vested Deferred</u>	<u>Total</u>
a. Number prior valuation	711	49	3	38	41	842
b. In	57	4	0	0	7	68
c. Out	11	0	1	1	12	25
d. Number current valuation	757	53	2	37	36	885

## STATISTICAL DATA

	<u>12/31/2014</u>	<u>12/31/2015</u>	<u>12/31/2016</u>
Actives	1,777	1,761	1,837
Average Current Age	40.0	40.1	39.8
Average Age at Employment	28.3	29.0	29.0
Average Past Service	11.7	11.1	10.8
Average Annual Salary	\$84,896	\$86,232	\$86,424

## AGE AND SERVICE DISTRIBUTION

### PAST SERVICE

AGE	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30+	Total
15 - 19	0	0	0	0	0	0	0	0	0	0	0	0
20 - 24	36	7	4	0	0	0	0	0	0	0	0	47
25 - 29	52	30	20	13	21	11	0	0	0	0	0	147
30 - 34	39	22	29	30	44	153	25	0	0	0	0	342
35 - 39	13	9	11	14	14	119	123	35	1	0	0	339
40 - 44	13	8	7	7	12	62	101	168	20	0	0	398
45 - 49	2	1	4	1	4	35	67	126	108	14	0	362
50 - 54	0	0	0	0	0	17	24	44	50	22	0	157
55 - 59	0	0	0	0	0	8	4	11	7	4	2	36
60 - 64	1	0	0	0	0	3	0	1	2	2	0	9
65+	0	0	0	0	0	0	0	0	0	0	0	0
Total	156	77	75	65	95	408	344	385	188	42	2	1,837

AUSTIN POLICE RETIREMENT SYSTEM  
SUMMARY OF BENEFIT PROVISIONS

<u>Creditable Service</u>	Total years and completed months (excluding a month in which service amount to fewer than 15 days) during which a Member makes contributions to the System.
<u>Earnings</u>	Base pay, plus longevity pay.
<u>Average Final Compensation</u>	Average Earnings for the highest 36 months over the last 120 months of service.
<u>Member Contributions</u>	13.0% of Earnings.
<u>City Contributions</u>	21.313%, effective October 1, 2015.
<u>Normal Retirement</u>	
Date	Earlier of age 62, age 55 and 20 years of Creditable Service, or 23 years of Creditable Service, regardless of age (excluding military service).
Benefit	3.20% of Average Final Compensation <u>times</u> Creditable Service.
Form of Benefit	Modified Cash Refund (options available).
<u>Vesting</u>	
Schedule	100% after 10 years of Creditable Service.
Benefit Amount	Member will receive his (her) accrued benefit payable at the Normal Retirement Date based upon actual Creditable Service prior to termination.  Non-vested members receive a refund of accumulated contributions.
<u>Disability</u>	
Eligibility	Total and permanent as determined by the Board. Members must have 10 years of Creditable Service if the disability was non-service related.
Benefit	Accrued benefit at date of disability, but not less than 64% of Average Final Compensation for service related disablements.
Form of Benefit	Modified Cash Refund (options available).

Death Benefits

Before Retirement Eligibility

Twice the amount of the Member's accumulated contributions, subject to a minimum of \$10,000.

After Retirement Eligibility

Member's accrued benefit as of the date of death, payable based on optional annuity selected either by Member or beneficiary. Additionally, a lump sum death benefit is payable in the amount of \$10,000.

Retiree Death Benefit Fund

Effective September 1, 2003, a separate fund (funded as a portion of the City's contribution rate) was established to pay post-retirement lump sum death benefits. Effective September 1, 2007, the amount of these benefits was increased to \$10,000.

Cost of Living Adjustment

Eligibility

Normal Retirement.

Amount

Determined by the actuary if providing a COLA (not to exceed 6.0% per year) will not impair financial stability of the System. Post-Retirement benefit increases will automatically be provided when the System's benefit accrual rate is increased.

Proportionate Retirement Program

Effective September 1, 2009, the System and the City began participating in the statewide Proportionate Retirement Program (PRP). Service in other participating public employee retirement systems can be combined with service in the System to satisfy the System's requirements for service retirement eligibility and for eligibility for vested benefits of a terminated Member. The participating systems, in addition to the System, are the six statewide systems, the City of Austin Employees' Retirement System, and the systems for the City of El Paso employees.

Forward DROP

Eligibility Completion of 23 years of Creditable Service, excluding military service.

Participation Period Not to exceed 60 months. For members with less than 23 years of APRS service as of February 17, 2016, the maximum participation period was extended to 84 months.

Rate of Return Effective August 1, 2015, equal to the PROP interest rate (currently 2.25%). Members with 23 years of APRS service as of July 31, 2015 will receive 5.00% interest credit per year. Additionally, members with less than 23 years of APRS service as of February 17, 2016 will not receive interest crediting while in DROP.

DROP Fee/Charge For members with less than 23 years of APRS service as of February 17, 2016, a charge for DROP participation will be applied as shown below. The charge will only apply during the period of DROP participation.

<u>Year of DROP Participation</u>	<u>Fee/Charge</u>
1	25%
2	20
3	15
4	10
5	5
6	5
7	5

Form of Distribution Cash lump sum (or rollover to PROP account) at termination of employment.

Miscellaneous For members with less than 23 years of APRS service as of February 17, 2016, member contributions will continue to be required during the DROP participation period, but these contributions will be retained by the System.

Retro DROP

Eligibility

Completion of 23 years of Creditable Service, excluding military service, as of April 1, 2015. Members with less than 23 years as of this date will not be eligible to participate in Retro DROP.

Participation Period

Upon election to retroactively enter DROP, the Retro DROP period will not exceed 36 months.

Rate of Return

5.0%, compounded annually.

Form of Distribution

Cash lump sum (or rollover to PROP account) at termination of employment.

STATEMENT OF FIDUCIARY NET POSITION  
DECEMBER 31, 2016

<u>ASSETS</u>	MARKET VALUE
Cash and Cash Equivalents:	
Short Term Investments	23,014,506
Checking Account	2,233,501
Prepaid Expenses	7,665
Total Cash and Equivalents	25,255,672
Receivables:	
Member Contributions in Transit	408,847
Member Buy-Back Contributions	9,702
City Contributions	670,289
Investment Income	190,489
Total Receivable	1,279,327
Investments:	
Partnership Interests	46,928,956
Corporate Bonds	73,842,266
Corporate Stocks	379,721,794
International Government Securities	35,905,897
Real Estate Interests	91,458,473
Alternatives	33,282,424
Retiree Death Benefit Fund	1,084,516
Total Investments	662,224,326
Net Fixed Assets	740,037
Total Assets	689,499,362
<u>LIABILITIES</u>	
Payables:	
Refunds of Member Contributions	768,813
Other	2,710,287
Total Liabilities	3,479,100
NET POSITION RESTRICTED FOR PENSIONS	686,020,262



STATEMENT OF CHANGES IN FIDUCIARY NET POSITION  
FOR THE YEAR ENDED DECEMBER 31, 2016  
Market Value Basis

ADDITIONS

## Contributions:

Member	20,623,125	
Buy-Back	1,668,174	
City	33,092,668	
City for Proportionate Retirement Program	495,206	
City for Retiree Death Benefit	226,308	
 Total Contributions		 56,105,481
 Investment Income:		
Miscellaneous Income	4,067,810	
Net Realized Gain (Loss)	23,682,776	
Unrealized Gain (Loss)	8,082,023	
Net Increase in Fair Value of Investments	35,832,609	
Interest & Dividends	3,888,744	
Less Investment Expense <sup>1</sup>	(1,756,472)	
 Net Investment Income		 37,964,881
 Total Additions		 94,070,362

DEDUCTIONS

## Distributions to Members:

Benefit Payments	45,590,934	
Lump Sum DROP Distributions	730,507	
Lump Sum PROP Distributions	3,439,890	
Retiree Death Benefits	70,000	
Refunds of Member Contributions	996,170	
 Total Distributions		 50,827,501
 Administrative Expense		 1,396,736
 Total Deductions		 52,224,237
 Net Increase in Net Position		 41,846,125
 NET POSITION RESTRICTED FOR PENSIONS		
Beginning of the Year		644,174,137
 End of the Year		 686,020,262

<sup>1</sup>Investment related expenses include investment advisory, custodial and performance monitoring fees.

**NOTES TO THE FINANCIAL STATEMENTS**  
(For the Year Ended December 31, 2016)

Plan Description

*Plan Administration*

The Plan is a single-employer defined benefit pension plan administered by the Plan's Board of Trustees comprised of:

- a. One council member designated by the city council;
- b. The city manager or the city manager's designee;
- c. The director of finance or the director's designee;
- d. Five police officer members elected by the police officer members of the system, each of whom serves for a term of four years;
- e. One legally qualified voter of the city, resident for the preceding five years, to be appointed by the police retirement board to serve for a term of four years and until the member's successor is duly selected and qualified.
- f. Two retired members to be elected by the retired members to serve for a term of four years, with the term of one member expiring each odd-numbered year.

*Plan Membership as of December 31, 2015:*

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	801
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	41
Active Plan Members	1,761
	2,603

*Benefits Provided*

The Plan provides retirement, termination, disability and death benefits.

Normal Retirement:

Date: Earlier of age 62, age 55 and 20 years of Creditable Service, or 23 years of Creditable Service, regardless of age (excluding military service).

Benefit: 3.20% of Average Final Compensation times Creditable Service.

Vesting:

Schedule: 100% after 10 years of Creditable Service.

Benefit Amount: Member will receive his (her) accrued benefit payable at the Normal Retirement Date based upon actual Creditable Service prior to termination.

Non-vested members receive a refund of accumulated contributions.

Disability:

Eligibility: Total and permanent as determined by the Board. Members must have 10 years of Creditable Service if the disability was non-service related.

Benefit accrued to date of disability but not less than 64% of Average Final Compensation for service related disablements.

Death Benefits:

Before Retirement Eligibility: Twice the amount of the Member's accumulated contributions, subject to a minimum of \$10,000.

After Retirement Eligibility: Member's accrued benefit as of the date of death, payable based on optional annuity selected either by Member or beneficiary. Additionally, a lump sum death benefit is payable in the amount of \$10,000.

Retiree Death Benefit Fund:

Effective September 1, 2003, a separate fund (funded as a portion of the City's contribution rate) was established to pay post-retirement lump sum death benefits. Effective September 1, 2007, the amount of these benefits was increased to \$10,000.

Cost of Living Adjustment:

Eligibility: Normal Retirement.

Amount: Determined by the actuary if providing a COLA (not to exceed 6.0% per year) will not impair financial stability of the System. Post-Retirement benefit increases will automatically be provided when the System's benefit accrual rate is increased.

Proportionate Retirement Program:

Effective September 1, 2009, the System and the City began participating in the statewide Proportionate Retirement Program (PRP). Service in other participating public employee retirement systems can be combined with service in the System to satisfy the System’s requirements for service retirement eligibility and for eligibility for vested benefits of a terminated Member. The participating systems, in addition to the System, are the six statewide systems, the City of Austin Employees’ Retirement System, and the systems for the City of El Paso employees.

*Contributions*

Member Contributions: 13.0% of Earnings.

City Contributions: 21.313%, effective October 1, 2015.

*Investments*

*Investment Policy:*

The following was the Board's adopted asset allocation policy as of December 31, 2016:

Asset Class	Target Allocation
Domestic Equity	40.00%
International Equity	15.00%
Fixed Income (Core)	5.00%
Non-US Fixed Income	5.00%
Real Estate	15.00%
Timber	2.50%
Private Equity	12.50%
Hedge Funds	5.00%
Total	100.00%

*Concentrations:*

The Plan did not hold investments in any one organization that represent 5 percent or more of the Pension Plan's Fiduciary Net Position.

*Rate of Return:*

For the year ended December 31, 2016, the annual money-weighted rate of return on Pension Plan investments, net of Pension Plan investment expense, was 5.88 percent.

The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

*Deferred Retirement Option Program*

Forward DROP:

Eligibility: Members with completion of 23 years of Creditable Service, excluding military service.

Participation Period: Not to exceed 60 months. For members with less than 23 years of APRS service as of February 17, 2016, the maximum participation period was extended to 84 months.

Rate of Return: Effective August 1, 2015, equal to the PROP interest rate (currently 2.25%). Members with 23 years of APRS service as of July 31, 2015 will receive 5.00% interest credit per year. Additionally, members with less than 23 years of APRS service as of February 17, 2016 will not receive interest crediting while in DROP.

DROP Fee/Charge: For members with less than 23 years of APRS service as of February 17, 2016, a charge for DROP participation will be applied as shown below. The charge will only apply during the period of DROP participation.

Year of DROP Participation	Fee/Charge
1	25%
2	20%
3	15%
4	10%
5	5%
6	5%
7	5%

Miscellaneous: For members with less than 23 years of APRS service as of February 17, 2016, member contributions will continue to be required during the DROP participation period, but these contributions will be retained by the System.

## GASB 67

### Retro DROP:

Eligibility: Completion of 23 years of Creditable Service, excluding military service, as of April 1, 2015. Members with less than 23 years as of this date will not be eligible to participate in Retro DROP.

Participation Period: Upon election to retroactively enter DROP, the Retro DROP period will not exceed 36 months.

Rate of Return 5.00%, compounded annually.

The PROP balance as December 31, 2016 is \$28,842,223.

The DROP balance as December 31, 2016 is \$7,530,342.

NET PENSION LIABILITY OF THE SPONSOR

The components of the Net Pension Liability of the Sponsor on December 31, 2016 were as follows:

Total Pension Liability	\$1,106,189,208
Plan Fiduciary Net Position	<u>\$ (686,020,262)</u>
Sponsor's Net Pension Liability	<u>\$ 420,168,946</u>
Plan Fiduciary Net Position as a percentage of Total Pension Liability	62.02%

*Actuarial Assumptions:*

The Total Pension Liability was determined by an actuarial valuation as of December 31, 2015 updated to December 31, 2016 using the following actuarial assumptions:

Inflation	3.00%
Salary Increases	Service based
Discount Rate	7.70%
Investment Rate of Return	7.70%

Mortality Rates - All lives : RP-2000 Combined Healthy without projection - Sex Distinct. We believe this sufficiently accommodates expected mortality improvements.

The most recent actuarial experience study used to review the other significant assumptions was dated July 10, 2017.

The Long-Term Expected Rate of Return on Pension Plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of Pension Plan investment expenses and inflation) are developed for each major asset class.

For 2016, the inflation rate assumption of the investment advisor was 2.50%.

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.

Best estimates of arithmetic real rates of return for each major asset class included in the Pension Plan's target asset allocation as of December 31, 2016 are summarized in the following table:

<u>Asset Class</u>	<u>Long Term Expected Real Rate of Return</u>
Domestic Equity	7.5%
International Equity	8.5%
Fixed Income (Core)	2.5%
Non-US Fixed Income	3.5%
Real Estate	4.5%
Timber	2.5%
Private Equity	7.5%
Hedge Funds	5.0%

## GASB 67

### Discount Rate:

The Discount Rate used to measure the Total Pension Liability was 7.70 percent.

The projection of cash flows used to determine the Discount Rate assumed that Plan Member contributions will be made at the current contribution rate and that Sponsor contributions will be made at rates equal to the difference between actuarially determined contribution rates and the Member rate. Based on those assumptions, the Pension Plan's Fiduciary Net Position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the Long-Term Expected Rate of Return on Pension Plan investments was applied to all periods of projected benefit payments to determine the Total Pension Liability.

For purpose of this valuation, the expected rate of return on pension plan investments is 7.70%; the municipal bond rate is 3.78% (based on the weekly rate closest to but not later than the measurement date of the Bond Buyer 20-Bond Index as published by the Bond Buyer); and the resulting single discount rate is 7.70%.

	1% Decrease 6.70%	Current Discount Rate 7.70%	1% Increase 8.70%
Sponsor's Net Pension Liability	\$ 543,431,167	\$ 420,168,946	\$ 315,660,849

**SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS**  
Last 10 Years

	12/31/2016	12/31/2015
Total Pension Liability		
Service Cost	32,989,949	32,138,760
Interest	80,845,879	76,999,651
Changes of benefit terms	-	(4,079,852)
Differences between Expected and Actual Experience	7,454,959	(6,318,435)
Changes of assumptions	5,148,318	3,903,538
Contributions - Buy Back	1,668,174	4,648,271
Benefit Payments, including Refunds of Employee Contributions	(50,827,501)	(50,005,439)
Net Change in Total Pension Liability	77,279,778	57,286,494
Total Pension Liability - Beginning	1,028,909,430	971,622,936
Total Pension Liability - Ending (a)	\$1,106,189,208	\$1,028,909,430
Plan Fiduciary Net Position		
Contributions - Employer	33,814,182	33,239,271
Contributions - Employee	20,623,125	20,060,610
Contributions - Buy Back	1,668,174	4,648,271
Net Investment Income	37,964,881	(321,704)
Benefit Payments, including Refunds of Employee Contributions	(50,827,501)	(50,005,439)
Administrative Expense	(1,396,736)	(1,465,939)
Net Change in Plan Fiduciary Net Position	41,846,125	6,155,070
Plan Fiduciary Net Position - Beginning	644,174,137	638,019,067
Plan Fiduciary Net Position - Ending (b)	\$ 686,020,262	\$ 644,174,137
Net Pension Liability - Ending (a) - (b)	\$ 420,168,946	\$ 384,735,293
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	62.02%	62.61%
Covered Employee Payroll	\$ 158,655,196	\$ 154,243,493
Net Pension Liability as a percentage of Covered Employee Payroll	264.83%	249.43%

**Notes to Schedule:**

*Changes of benefit terms:*

For measurement date 12/31/2015, amounts reported as changes of benefit terms resulted from approved changes by the Board to the design of the Forward-DROP program.

For members with less than 23 years of APRS service as of February 17, 2016, the following changes were made for future retirees who elect to utilize the Forward-DROP:

- Member contributions will continue to be required during the DROP participation period, but these contributions will be retained by the System.
- DROP balances will no longer receive interest crediting during the DROP participation period.
- A fee/charge will be applied on a graduated scale during the DROP participation period based on the schedule on the next page. Please note this fee/charge will no longer apply once the member exits the DROP.

<u>Year of DROP Participation</u>	<u>Fee/Charge Applied to Monthly Benefit in DROP</u>
1	25%
2	20%
3	15%
4	10%
5	5%
6	5%
7	5%

Please note members who had completed 23 or more years of APRS service as of February 17, 2016 and elect to utilize Forward-DROP will be allowed the option to choose the previous 5-year DROP (not subject to the changes described) or the 7-year DROP as described above.

*Changes of assumptions:*

For measurement date 12/31/2016, amounts reported as changes of assumptions resulted from:

- The investment return assumption has been decreased from 7.80% to 7.70% per year compounded annually, net of all expenses.
- The core inflation rate assumption has been decreased from 3.25% to 3.00% per year.
- The general wage inflation rate assumption has been decreased from 3.50% to 3.25% per year.
- The assumed rates of salary increase have been amended at most service points.
- The payroll growth assumption has been increased from 3.50% to 4.00% per year.

For measurement date 12/31/2015, amounts reported as changes of assumptions resulted from:

- The investment return assumption has been decreased from 7.90% to 7.80% per year compounded annually, net of all expenses.
- The withdrawal rate table was modified slightly.



**SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS**  
Last 10 Years

	<u>12/31/2014</u>	<u>12/31/2013</u>
Total Pension Liability		
Service Cost	30,253,628	28,769,060
Interest	72,442,934	68,919,471
Changes of benefit terms	(11,015,618)	-
Differences between Expected and Actual Experience	-	-
Changes of assumptions	14,137,496	-
Contributions - Buy Back	2,207,398	-
Benefit Payments, including Refunds of Employee Contributions	(45,403,126)	(42,825,265)
Net Change in Total Pension Liability	<u>62,622,712</u>	<u>54,863,266</u>
Total Pension Liability - Beginning	<u>909,000,224</u>	<u>854,136,958</u>
Total Pension Liability - Ending (a)	<u>\$971,622,936</u>	<u>\$909,000,224</u>
Plan Fiduciary Net Position		
Contributions - Employer	32,399,740	31,160,764
Contributions - Employee	19,457,407	19,467,960
Contributions - Buy Back	2,207,398	-
Net Investment Income	35,574,317	49,524,150
Benefit Payments, including Refunds of Employee Contributions	(45,403,126)	(42,825,265)
Administrative Expense	(1,327,071)	(1,114,856)
Net Change in Plan Fiduciary Net Position	<u>42,908,665</u>	<u>56,212,753</u>
Plan Fiduciary Net Position - Beginning	<u>595,110,402</u>	<u>538,897,649</u>
Plan Fiduciary Net Position - Ending (b)	<u>\$638,019,067</u>	<u>\$595,110,402</u>
Net Pension Liability - Ending (a) - (b)	<u>\$333,603,869</u>	<u>\$313,889,822</u>
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	65.67%	65.47%
Covered Employee Payroll	\$149,790,754	\$144,089,468
Net Pension Liability as a percentage of Covered Employee Payroll	222.71%	217.84%

**Notes to Schedule:***Changes of benefit terms:*

For measurement date 12/31/2014 amounts reported as changes of benefit terms resulted from:

- Effective February 18, 2015, eliminate the opportunity to purchase permissive service in conjunction with utilizing the Forward or Retro-DROP.
- Effective February 18, 2015, permissive service credit factors shall be determined based on an interest rate that is 50 basis points lower than the valuation assumption and generational mortality.
- Effective April 1, 2015, eliminate Retro-DROP for members with less than 23 years of APRS service.
- Effective August 1, 2015, the Forward DROP interest rate will be set annually in the same manner as the PROP interest rate, except for those with 23 years of APRS service as of July 31, 2015 who will not be affected.
- New hires beginning February 1, 2016 will be required to pay the full actuarial cost for purchase of military service. All others will continue to pay 25% of the actuarial cost, which will be based on an interest rate that is 50 basis points lower than the valuation assumption and generational mortality.

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### *Changes of assumptions:*

For measurement date 12/31/2014, amounts reported as changes of assumptions resulted from:

- The investment return assumption has been decreased from 8.00% to 7.90% per year compounded annually, net of all expenses.
- The expected increase in salary due to general wage increases has been lowered from 3.75% to 3.50% per year.
- For members that enter the system prior to age 33, the retirement rates have been increased by 25.0% above their current level. Additionally, some slight modifications have been made to the retirement rates due to anticipated future PRP usage (as described in our April 2015 analysis).
- The annual assumed interest rate credited to PROP accounts has been decreased from 4.00% to 2.25% per year.
- The disability rates have been reduced in half.

**SCHEDULE OF CONTRIBUTIONS**  
Last 10 Years

	12/31/2016	12/31/2015	12/31/2014	12/31/2013
Actuarially Determined Contribution Contributions in relation to the Actuarially Determined Contributions	N/A	N/A	N/A	N/A
Contribution Deficiency (Excess)	N/A	N/A	N/A	N/A
Covered Employee Payroll	\$158,655,196	\$154,243,493	\$ 149,790,754	\$144,089,468
Contributions as a percentage of Covered Employee Payroll	21.31%	21.55%	21.63%	21.63%

Notes to Schedule

Methods and assumptions used to determine liabilities:

Mortality Rates - All Lives:	RP-2000 Combined Healthy without projection – Sex Distinct. We believe this sufficiently accommodates expected mortality improvements.
Interest Rate:	7.80% per year, compounded annually, net of all expenses. This is supported by the asset allocation of the trust and the long-term expected return by asset class.
Core inflation:	3.25% per year. This is reasonable based upon long-term expectations.
Payroll Growth:	3.50% per year for amortization of the Unfunded Actuarial Accrued Liability. This is reasonable based upon long-term expectations.
Administrative Expenses (PRP):	0.017% of payroll for assumed additional administrative expenses for participation in the Proportionate Retirement Program.
DROP Election:	75% of those assumed to retire who are eligible for at least a 12-month DROP lump sum will make such an election (RETRO) or will have made such an election (FORWARD). See following tables for allocation between RETRO and FORWARD. This is reasonable based upon long-term expectations.
DROP Period Election:	Members elect the maximum period eligible. This is reasonable based upon long-term expectations.
PROP Investment Accounts:	75% retiring in DROP will elect to leave their lump sum in the System until age 60. Average annual rate credited to the PROP accounts will be 2.25%. This is reasonable based upon long-term expectations.
Marital Status:	85% of actives are assumed to be married at time of benefit commencement. Females are assumed to be 3 years younger than Males. This is reasonable based upon long-term expectations.
Funding Method:	Entry Age Normal Actuarial Cost Method.
Actuarial Asset Method:	All assets are valued at market value with an adjustment made to uniformly spread actuarial investment gains and losses (as measured by actual market value investment return against expected market value investment return) over a five-year period. The asset value of the Retiree Death Benefit Fund is then subtracted to determine the Actuarial Value of Assets.
Retirement Rates:	See table on next page. The assumed rates of retirement were approved in conjunction with the 2015 review of the actuarial assumptions and methods.
Termination Rates:	See table on next page. The assumed rates of termination were approved in conjunction with the 2016 review of the actuarial assumptions and methods.
Disability Rates:	See table on next page. 55% of disablements are assumed to be service related. The assumed rates of disablement were approved in conjunction with the 2015 review of the actuarial assumptions and methods.
Salary Increases:	See table on next page. These are reasonable based upon long-term expectations.
Pre-Retirement Death Payment Form:	Married: Joint and 100% to Survivor. Single: 15-Year Certain and Life Annuity.

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Retirement Rates:

For Entry Ages Under 32 <sup>1</sup>			
APRS Service	22 & Under	23-27	28-32
<b>0-22</b>	0.0625	0.1250	0.1250
<b>23</b>	0.1875	0.1875	0.28125
<b>24</b>	0.1250	0.1250	0.1875
<b>25</b>	0.1250	0.1250	0.1875
<b>26</b>	0.1875	0.1875	0.3125
<b>27</b>	0.1875	0.1875	0.3125
<b>28</b>	0.3125	0.3125	0.3125
<b>29</b>	0.3125	0.3125	0.3750
<b>30</b>	0.3750	0.3750	0.5000
<b>31</b>	0.3750	0.3750	0.6250
<b>32</b>	0.3750	0.3750	1.00 <sup>2</sup>
<b>33</b>	0.3750	0.3750	
<b>34</b>	0.5000	0.5000	
<b>35</b>	0.5000	0.6250	
<b>36</b>	0.5000	0.6250	
<b>37</b>	0.6250	1.00 <sup>2</sup>	
<b>38</b>	0.6250		
<b>39</b>	0.6250		
<b>40</b>	0.6250		
<b>41</b>	0.6250		
<b>42</b>	1.00 <sup>2</sup>		

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**Retirement Rates:**

For Entry Ages 33 and Above <sup>3</sup>			
Age	33-37	38-42	43 & Over
<b>33-37</b>	0.05		
<b>38-42</b>	0.05	0.10	
<b>43-47</b>	0.05	0.10	0.10
<b>48</b>	0.05	0.10	0.10
<b>49</b>	0.05	0.10	0.10
<b>50</b>	0.05	0.10	0.10
<b>51</b>	0.05	0.10	0.10
<b>52</b>	0.20	0.10	0.10
<b>53</b>	0.35	0.10	0.10
<b>54</b>	0.75	0.10	0.10
<b>55</b>	0.20	0.10	0.10
<b>56</b>	0.25	0.10	0.10
<b>57</b>	0.30	0.10	0.10
<b>58</b>	0.35	0.10	0.10
<b>59</b>	0.50	0.10	0.10
<b>60</b>	1.00	0.50	0.10
<b>61</b>		0.35	0.10
<b>62</b>		0.35	0.80
<b>63</b>		0.35	0.40
<b>64</b>		0.35	0.40
<b>65</b>		1.00	1.00

<sup>1</sup> Rates are based on APRS service only and apply after a Member is eligible for retirement with combined APRS and Proportionate Retirement Program (PRP) service. Entry ages are determined based on APRS service only.

<sup>2</sup> 100% retirement rate will be effective at age 60, if earlier.

<sup>3</sup> Rates are based on age and apply after a Member is eligible for retirement with combined APRS and PRP service. Entry ages are determined based on APRS service only.

**Termination Rates:**

Combined Years of Service <sup>1</sup>	Probability of Termination During Year
0	0.05
1	0.02
2	0.02
3	0.02
4	0.02
5	0.02
6	0.02
7	0.02
8	0.02
9	0.02
10	0.01
11	0.01
12	0.005
13	0.005
14	0.005
15 & Above	0

<sup>1</sup> APRS service combined with Proportionate Retirement Program service.

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Disability Rates:

Age	Probability of Disablement During Year
20	0.00007
22	0.00008
24	0.00009
26	0.000105
28	0.000125
30	0.000155
32	0.000200
34	0.000245
36	0.000270
38	0.000310
40	0.000460
42	0.000660
44	0.000865
46	0.001275
48	0.001670
50	0.001895
52	0.002020
54	0.002280
56	0.002660
58	0.003300
60	0.004555
62 & Above	0

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Salary Increases:

Years of Service	Increase in Salary <sup>1</sup>
0	18.0%
1	11.2%
2	5.8%
3	0.9%
4	0.9%
5	7.1%
6	0.5%
7	0.5%
8	0.5%
9	7.1%
10	0.3%
11	0.3%
12	0.3%
13	7.1%
14	0.2%
15	7.2%
16	0.2%
17	0.1%
18	0.1%
19	0.1%
20	0.1%
21	0.1%
22	0.1%
23	0.1%
24	0.1%
25 & Above	0.0%

<sup>1</sup> Expected increases in salary as shown above are in addition to 3.50% increase per year due to general wage increases.

Retirement Option Election:

**(Members with less than 23 years of APRS service on April 1, 2015)**

Service at Termination of Employment	No DROP Elected <sup>1</sup>	FORWARD DROP Elected
23 or less	100%	0%
24	25	75
25	25	75
26	25	75
27	25	75
28	25	75
29	25	75
30	25	75
31	25	75
32	25	75
33	25	75
34	25	75
35	25	75
36	25	75
37	25	75
38	25	75
39	25	75
40	25	75
41	25	75
42	25	75

<sup>1</sup> Police officers elect a type of service retirement benefit that does not include payment of a lump sum distribution



SCHEDULE OF INVESTMENT RETURNS  
Last 10 Years

	<u>12/31/2016</u>	<u>12/31/2015</u>	<u>12/31/2014</u>	<u>12/31/2013</u>
Annual Money-Weighted Rate of Return				
Net of Investment Expense	5.88%	-0.05%	5.71%	8.90%

NOTES TO THE FINANCIAL STATEMENTS  
(For the Year Ended September 30, 2017)

General Information about the Pension Plan

*Plan Description*

The Plan is a single-employer defined benefit pension plan administered by the Plan's Board of Trustees comprised of:

- a. One council member designated by the city council;
- b. The city manager or the city manager's designee;
- c. The director of finance or the director's designee;
- d. Five police officer members elected by the police officer members of the system, each of whom serves for a term of four years;
- e. One legally qualified voter of the city, resident for the preceding five years, to be appointed by the police retirement board to serve for a term of four years and until the member's successor is duly selected and qualified.
- f. Two retired members to be elected by the retired members to serve for a term of four years, with the term of one member expiring each odd-numbered year.

Any person who is a police officer of the city on the date the police retirement system becomes effective and was a member of the predecessor system on December 31, 1979, shall become a member as a condition of employment.

*Plan Membership as of December 31, 2015:*

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	801
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	41
Active Plan Members	1,761
	2,603

*Benefits Provided*

The Plan provides retirement, termination, disability and death benefits.

Normal Retirement:

Date: Earlier of age 62, age 55 and 20 years of Creditable Service, or 23 years of Creditable Service, regardless of age (excluding military service).

Benefit: 3.20% of Average Final Compensation times Creditable Service.

Vesting:

Schedule: 100% after 10 years of Creditable Service.

Benefit Amount: Member will receive his (her) accrued benefit payable at the Normal Retirement Date based upon actual Creditable Service prior to termination.

Non-vested members receive a refund of accumulated contributions.

Disability:

Eligibility: Total and permanent as determined by the Board. Members must have 10 years of Creditable Service if the disability was non-service related.

Benefit accrued to date of disability but not less than 64% of Average Final Compensation for service related disablements.

Death Benefits:

Before Retirement Eligibility: Twice the amount of the Member's accumulated contributions, subject to a minimum of \$10,000.

After Retirement Eligibility: Member's accrued benefit as of the date of death, payable based on optional annuity selected either by Member or beneficiary. Additionally, a lump sum death benefit is payable in the amount of \$10,000.

Retiree Death Benefit Fund:

Effective September 1, 2003, a separate fund (funded as a portion of the City's contribution rate) was established to pay post-retirement lump sum death benefits. Effective September 1, 2007, the amount of these benefits was increased to \$10,000.

Cost of Living Adjustment:

Eligibility: Normal Retirement.

Amount: Determined by the actuary if providing a COLA (not to exceed 6.0% per year) will not impair financial stability of the System. Post-Retirement benefit increases will automatically be provided when the System's benefit accrual rate is increased.

Proportionate Retirement Program:

Effective September 1, 2009, the System and the City began participating in the statewide Proportionate Retirement Program (PRP). Service in other participating public employee retirement systems can be combined with service in the System to satisfy the System’s requirements for service retirement eligibility and for eligibility for vested benefits of a terminated Member. The participating systems, in addition to the System, are the six statewide systems, the City of Austin Employees’ Retirement System, and the systems for the City of El Paso employees.

*Contributions*

Member Contributions: 13.0% of Earnings.

City Contributions: 21.313%, effective October 1, 2015.

Net Pension Liability

The measurement date is December 31, 2016.

The measurement period for the pension expense was December 31, 2015 to December 31, 2016.

The reporting period is September 30, 2016 through September 30, 2017.

The Sponsor's Net Pension Liability was measured as of December 31, 2016.

The Total Pension Liability used to calculate the Net Pension Liability was determined as of that date.

*Actuarial Assumptions:*

The Total Pension Liability was determined by an actuarial valuation as of December 31, 2015 updated to December 31, 2016 using the following actuarial assumptions:

Inflation	3.00%
Salary Increases	Service based
Discount Rate	7.70%
Investment Rate of Return	7.70%

Mortality Rates - All lives : RP-2000 Combined Healthy without projection - Sex Distinct. We believe this sufficiently accommodates expected mortality improvements.

The most recent actuarial experience study used to review the other significant assumptions was dated July 10, 2017.

The Long-Term Expected Rate of Return on Pension Plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, Net of Pension Plan investment expenses and inflation) are developed for each major asset class.

For 2016, the inflation rate assumption of the investment advisor was 2.50%.

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.

Best estimates of arithmetic real rates of return for each major asset class included in the Pension Plan's target asset allocation as of December 31, 2016 are summarized in the following table:

<u>Asset Class</u>	<u>Target Allocation</u>	<u>Long Term Expected Real Rate of Return</u>
Domestic Equity	40.00%	7.5%
International Equity	15.00%	8.5%
Fixed Income (Core)	5.00%	2.5%
Non-US Fixed Income	5.00%	3.5%
Real Estate	15.00%	4.5%
Timber	2.50%	2.5%
Private Equity	12.50%	7.5%
Hedge Funds	5.00%	5.0%
<u>Total</u>	<u>100.00%</u>	

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### Discount Rate:

The Discount Rate used to measure the Total Pension Liability was 7.70 percent.

The projection of cash flows used to determine the Discount Rate assumed that Plan Member contributions will be made at the current contribution rate and that Sponsor contributions will be made at rates equal to the difference between actuarially determined contribution rates and the Member rate. Based on those assumptions, the Pension Plan's Fiduciary Net Position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the Long-Term Expected Rate of Return on Pension Plan investments was applied to all periods of projected benefit payments to determine the Total Pension Liability.

For purpose of this valuation, the expected rate of return on pension plan investments is 7.70%; the municipal bond rate is 3.78% (based on the weekly rate closest to but not later than the measurement date of the Bond Buyer 20-Bond Index as published by the Bond Buyer); and the resulting single discount rate is 7.70%.

CHANGES IN NET PENSION LIABILITY

	Increase (Decrease)		
	Total Pension Liability	Plan Fiduciary Net Position	Net Pension Liability
	(a)	(b)	(a)-(b)
Reporting Period Ending September 30, 2016	\$1,028,909,430	\$ 644,174,137	\$ 384,735,293
Changes for a Year:			
Service Cost	32,989,949	-	32,989,949
Interest	80,845,879	-	80,845,879
Differences between Expected and Actual Experience	7,454,959	-	7,454,959
Changes of assumptions	5,148,318	-	5,148,318
Changes of benefit terms	-	-	-
Contributions - Employer	-	33,814,182	(33,814,182)
Contributions - Employee	-	20,623,125	(20,623,125)
Contributions - Buy Back	1,668,174	1,668,174	-
Net Investment Income	-	37,964,881	(37,964,881)
Benefit Payments, including Refunds of Employee Contributions	(50,827,501)	(50,827,501)	-
Administrative Expense	-	(1,396,736)	1,396,736
Net Changes	77,279,778	41,846,125	35,433,653
Reporting Period Ending September 30, 2017	\$1,106,189,208	\$ 686,020,262	\$ 420,168,946

*Sensitivity of the Net Pension Liability to changes in the Discount Rate.*

	Current Discount		
	1% Decrease	Rate	1% Increase
	6.70%	7.70%	8.70%
Sponsor's Net Pension Liability	\$ 543,431,167	\$ 420,168,946	\$ 315,660,849

*Pension Plan Fiduciary Net Position.*

Detailed information about the pension Plan's Fiduciary Net Position is available in a separately issued Plan financial report.

**FINAL PENSION EXPENSE AND DEFERRED OUTFLOWS OF RESOURCES AND  
DEFERRED INFLOWS OF RESOURCES RELATED TO PENSIONS  
FISCAL YEAR SEPTEMBER 30, 2016**

For the year ended September 30, 2016, the Sponsor has recognized a Pension Expense of \$49,518,839.

On September 30, 2016, the Sponsor reported Deferred Outflows of Resources and Deferred Inflows of Resources related to pensions from the following sources:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between Expected and Actual Experience	-	5,686,592
Changes of assumptions	14,823,183	-
Net difference between Projected and Actual Earnings on Pension Plan investments	47,822,301	-
Employer contributions subsequent to the measurement date	24,299,349	-
<b>Total</b>	<b>\$ 86,944,833</b>	<b>\$ 5,686,592</b>

The outcome of the Deferred Outflows of resources related to pensions resulting from Employer contributions subsequent to the measurement date has been recognized as a reduction of the Net Pension Liability in the year ended September 30, 2016.

Other amounts reported as Deferred Outflows of Resources and Deferred Inflows of Resources related to pensions will be recognized in Pension Expense as follows:

Year ended September 30:		
2017		\$ 13,714,289
2018		\$ 13,714,291
2019		\$ 13,714,292
2020		\$ 11,368,470
2021		\$ 1,172,260
Thereafter		\$ 3,275,290

**Payable to the Pension Plan**

On December 31, 2015, the Sponsor reported a payable of \$452,253 for the outstanding amount of contributions of the Pension Plan required for the year ended December 31, 2015.

**PRELIMINARY PENSION EXPENSE AND DEFERRED OUTFLOWS OF RESOURCES AND  
DEFERRED INFLOWS OF RESOURCES RELATED TO PENSIONS  
FISCAL YEAR SEPTEMBER 30, 2017**

For the year ended September 30, 2017, the Sponsor will recognize a Pension Expense of \$61,673,516.

On September 30, 2017, the Sponsor reported Deferred Outflows of Resources and Deferred Inflows of Resources related to pensions from the following sources:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between Expected and Actual Experience	6,709,464	5,054,749
Changes of assumptions	17,652,569	-
Net difference between Projected and Actual Earnings on Pension Plan investments	45,225,927	-
Employer contributions subsequent to the measurement date	TBD	-
<b>Total</b>	<b>TBD</b>	<b>\$ 5,054,749</b>

The outcome of the Deferred Outflows of resources related to pensions resulting from Employer contributions subsequent to the measurement date will be recognized as a reduction of the Net Pension Liability in the year ended September 30, 2017.

Other amounts reported as Deferred Outflows of Resources and Deferred Inflows of Resources related to pensions will be recognized in Pension Expense as follows:

Year ended September 30:	
2018	\$ 17,461,033
2019	\$ 17,461,034
2020	\$ 15,115,212
2021	\$ 4,919,002
2022	\$ 2,432,588
Thereafter	\$ 7,144,342

**Payable to the Pension Plan**

On December 31, 2016, the Sponsor reported a payable of \$670,289 for the outstanding amount of contributions of the Pension Plan required for the year ended December 31, 2016.

**SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS**  
Last 10 Fiscal Years

Reporting Period Ending	09/30/2017	09/30/2016
Measurement Date	<u>12/31/2016</u>	<u>12/31/2015</u>
Total Pension Liability		
Service Cost	32,989,949	32,138,760
Interest	80,845,879	76,999,651
Changes of benefit terms	-	(4,079,852)
Differences between Expected and Actual Experience	7,454,959	(6,318,435)
Changes of assumptions	5,148,318	3,903,538
Contributions - Buy Back	1,668,174	4,648,271
Benefit Payments, including Refunds of Employee Contributions	<u>(50,827,501)</u>	<u>(50,005,439)</u>
Net Change in Total Pension Liability	77,279,778	57,286,494
Total Pension Liability - Beginning	<u>1,028,909,430</u>	<u>971,622,936</u>
Total Pension Liability - Ending (a)	<u><u>\$1,106,189,208</u></u>	<u><u>\$1,028,909,430</u></u>
Plan Fiduciary Net Position		
Contributions - Employer	33,814,182	33,239,271
Contributions - Employee	20,623,125	20,060,610
Contributions - Buy Back	1,668,174	4,648,271
Net Investment Income	37,964,881	(321,704)
Benefit Payments, including Refunds of Employee Contributions	(50,827,501)	(50,005,439)
Administrative Expense	<u>(1,396,736)</u>	<u>(1,465,939)</u>
Net Change in Plan Fiduciary Net Position	41,846,125	6,155,070
Plan Fiduciary Net Position - Beginning	<u>644,174,137</u>	<u>638,019,067</u>
Plan Fiduciary Net Position - Ending (b)	<u><u>\$ 686,020,262</u></u>	<u><u>\$ 644,174,137</u></u>
Net Pension Liability - Ending (a) - (b)	<u><u>\$ 420,168,946</u></u>	<u><u>\$ 384,735,293</u></u>
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	62.02%	62.61%
Covered Employee Payroll	\$ 158,655,196	\$ 154,243,493
Net Pension Liability as a percentage of Covered Employee Payroll	264.83%	249.43%

**Notes to Schedule:**

*Changes of benefit terms:*

For measurement date 12/31/2015, amounts reported as changes of benefit terms resulted from approved changes by the Board to the design of the Forward-DROP program.

For members with less than 23 years of APRS service as of February 17, 2016, the following changes were made for future retirees who elect to utilize the Forward-DROP:

- Member contributions will continue to be required during the DROP participation period, but these contributions will be retained by the System.
- DROP balances will no longer receive interest crediting during the DROP participation period.
- A fee/charge will be applied on a graduated scale during the DROP participation period based on the schedule on the next page. Please note this fee/charge will no longer apply once the member exits the DROP.



<u>Year of DROP Participation</u>	<u>Fee/Charge Applied to Monthly Benefit in DROP</u>
1	25%
2	20%
3	15%
4	10%
5	5%
6	5%
7	5%

Please note members who had completed 23 or more years of APRS service as of February 17, 2016 and elect to utilize Forward-DROP will be allowed the option to choose the previous 5-year DROP (not subject to the changes described) or the 7-year DROP as described above.

*Changes of assumptions:*

For measurement date 12/31/2016, amounts reported as changes of assumptions resulted from:

- The investment return assumption has been decreased from 7.80% to 7.70% per year compounded annually, net of all expenses.
- The core inflation rate assumption has been decreased from 3.25% to 3.00% per year.
- The general wage inflation rate assumption has been decreased from 3.50% to 3.25% per year.
- The assumed rates of salary increase have been amended at most service points.
- The payroll growth assumption has been increased from 3.50% to 4.00% per year.

For measurement date 12/31/2015, amounts reported as changes of assumptions resulted from:

- The investment return assumption has been decreased from 7.90% to 7.80% per year compounded annually, net of all expenses.
- The withdrawal rate table was modified slightly.

## SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS

Last 10 Fiscal Years

Reporting Period Ending	09/30/2015	09/30/2014
Measurement Date	12/31/2014	12/31/2013
Total Pension Liability		
Service Cost	30,253,628	28,769,060
Interest	72,442,934	68,919,471
Changes of benefit terms	(11,015,618)	-
Differences between Expected and Actual Experience	-	-
Changes of assumptions	14,137,496	-
Contributions - Buy Back	2,207,398	-
Benefit Payments, including Refunds of Employee Contributions	(45,403,126)	(42,825,265)
Net Change in Total Pension Liability	62,622,712	54,863,266
Total Pension Liability - Beginning	909,000,224	854,136,958
Total Pension Liability - Ending (a)	<u>\$971,622,936</u>	<u>\$909,000,224</u>
Plan Fiduciary Net Position		
Contributions - Employer	32,399,740	31,160,764
Contributions - Employee	19,457,407	19,467,960
Contributions - Buy Back	2,207,398	-
Net Investment Income	35,574,317	49,524,150
Benefit Payments, including Refunds of Employee Contributions	(45,403,126)	(42,825,265)
Administrative Expense	(1,327,071)	(1,114,856)
Net Change in Plan Fiduciary Net Position	42,908,665	56,212,753
Plan Fiduciary Net Position - Beginning	595,110,402	538,897,649
Plan Fiduciary Net Position - Ending (b)	<u>\$638,019,067</u>	<u>\$595,110,402</u>
Net Pension Liability - Ending (a) - (b)	<u>\$333,603,869</u>	<u>\$313,889,822</u>
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	65.67%	65.47%
Covered Employee Payroll	\$149,790,754	\$144,089,468
Net Pension Liability as a percentage of Covered Employee Payroll	222.71%	217.84%

**Notes to Schedule:***Changes of benefit terms:*

For measurement date 12/31/2014 amounts reported as changes of benefit terms resulted from:

- Effective February 18, 2015, eliminate the opportunity to purchase permissive service in conjunction with utilizing the Forward or Retro-DROP.
- Effective February 18, 2015, permissive service credit factors shall be determined based on an interest rate that is 50 basis points lower than the valuation assumption and generational mortality.
- Effective April 1, 2015, eliminate Retro-DROP for members with less than 23 years of APRS service.
- Effective August 1, 2015, the Forward DROP interest rate will be set annually in the same manner as the PROP interest rate, except for those with 23 years of APRS service as of July 31, 2015 who will not be affected.
- New hires beginning February 1, 2016 will be required to pay the full actuarial cost for purchase of military service. All others will continue to pay 25% of the actuarial cost, which will be based on an interest rate that is 50 basis points lower than the valuation assumption and generational mortality.

*Changes of assumptions:*

For measurement date 12/31/2014, amounts reported as changes of assumptions resulted from:

- The investment return assumption has been decreased from 8.00% to 7.90% per year compounded annually, net of all expenses.
- The expected increase in salary due to general wage increases has been lowered from 3.75% to 3.50% per year.
- For members that enter the system prior to age 33, the retirement rates have been increased by 25.0% above their current level. Additionally, some slight modifications have been made to the retirement rates due to anticipated future PRP usage (as described in our April 2015 analysis).
- The annual assumed interest rate credited to PROP accounts has been decreased from 4.00% to 2.25% per year.
- The disability rates have been reduced in half.

**SCHEDULE OF CONTRIBUTIONS**  
Last 10 Fiscal Years

Reporting Period Ending	09/30/2017	09/30/2016	09/30/2015	09/30/2014
Measurement Date	12/31/2016	12/31/2015	12/31/2014	12/31/2013
Actuarially Determined Contribution	N/A	N/A	N/A	N/A
Contributions in relation to the Actuarially Determined Contributions	N/A	N/A	N/A	N/A
Contribution Deficiency (Excess)	N/A	N/A	N/A	N/A
Covered Employee Payroll	TBD by City	TBD by City	TBD by City	TBD by City
Contributions as a percentage of Covered Employee Payroll	21.31%	21.63%	21.63%	21.63%

Notes to Schedule

Methods and assumptions used to determine liabilities:

Mortality Rates - All Lives:	RP-2000 Combined Healthy without projection – Sex Distinct. We believe this sufficiently accommodates expected mortality improvements.
Interest Rate:	7.80% per year, compounded annually, net of all expenses. This is supported by the asset allocation of the trust and the long-term expected return by asset class.
Core inflation:	3.25% per year. This is reasonable based upon long-term expectations.
Payroll Growth:	3.50% per year for amortization of the Unfunded Actuarial Accrued Liability. This is reasonable based upon long-term expectations.
Administrative Expenses (PRP):	0.017% of payroll for assumed additional administrative expenses for participation in the Proportionate Retirement Program.
DROP Election:	75% of those assumed to retire who are eligible for at least a 12-month DROP lump sum will make such an election (RETRO) or will have made such an election (FORWARD). See following tables for allocation between RETRO and FORWARD. This is reasonable based upon long-term expectations.
DROP Period Election:	Members elect the maximum period eligible. This is reasonable based upon long-term expectations.
PROP Investment Accounts:	75% retiring in DROP will elect to leave their lump sum in the System until age 60. Average annual rate credited to the PROP accounts will be 2.25%. This is reasonable based upon long-term expectations.
Marital Status:	85% of actives are assumed to be married at time of benefit commencement. Females
Funding Method:	Entry Age Normal Actuarial Cost Method.
Actuarial Asset Method:	All assets are valued at market value with an adjustment made to uniformly spread actuarial investment gains and losses (as measured by actual market value investment return against expected market value investment return) over a five-year period. The asset value of the Retiree Death Benefit Fund is then subtracted to determine the Actuarial Value of Assets.
Retirement Rates:	See table on next page. The assumed rates of retirement were approved in conjunction with the 2015 review of the actuarial assumptions and methods.
Termination Rates:	See table on next page. The assumed rates of termination were approved in conjunction with the 2016 review of the actuarial assumptions and methods.
Disability Rates:	See table on next page. 55% of disablements are assumed to be service related. The assumed rates of disablement were approved in conjunction with the 2015 review of the actuarial assumptions and methods.
Salary Increases:	See table on next page. These are reasonable based upon long-term expectations.
Pre-Retirement Death Payment Form:	Married: Joint and 100% to Survivor. Single: 15-Year Certain and Life Annuity.

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Retirement Rates:

APRS Service	For Entry Ages Under 32 <sup>1</sup>		
	22 & Under	23-27	28-32
<b>0-22</b>	0.0625	0.1250	0.1250
<b>23</b>	0.1875	0.1875	0.28125
<b>24</b>	0.1250	0.1250	0.1875
<b>25</b>	0.1250	0.1250	0.1875
<b>26</b>	0.1875	0.1875	0.3125
<b>27</b>	0.1875	0.1875	0.3125
<b>28</b>	0.3125	0.3125	0.3125
<b>29</b>	0.3125	0.3125	0.3750
<b>30</b>	0.3750	0.3750	0.5000
<b>31</b>	0.3750	0.3750	0.6250
<b>32</b>	0.3750	0.3750	1.00 <sup>2</sup>
<b>33</b>	0.3750	0.3750	0.0%
<b>34</b>	0.5000	0.5000	0.0%
<b>35</b>	0.5000	0.6250	0.0%
<b>36</b>	0.5000	0.6250	0.0%
<b>37</b>	0.6250	1.00 <sup>2</sup>	0.0%
<b>38</b>	0.6250	0.0%	0.0%
<b>39</b>	0.6250	0.0%	0.0%
<b>40</b>	0.6250	0.0%	0.0%
<b>41</b>	0.6250	0.0%	0.0%
<b>42</b>	1.00 <sup>2</sup>	0.0%	0.0%

Retirement Rates:

For Entry Ages 33 and Above <sup>3</sup>			
Age	33-37	38-42	43 & Over
<b>33-37</b>	0.05	0.0%	0.0%
<b>38-42</b>	0.05	0.10	0.0%
<b>43-47</b>	0.05	0.10	0.10
<b>48</b>	0.05	0.10	0.10
<b>49</b>	0.05	0.10	0.10
<b>50</b>	0.05	0.10	0.10
<b>51</b>	0.05	0.10	0.10
<b>52</b>	0.20	0.10	0.10
<b>53</b>	0.35	0.10	0.10
<b>54</b>	0.75	0.10	0.10
<b>55</b>	0.20	0.10	0.10
<b>56</b>	0.25	0.10	0.10
<b>57</b>	0.30	0.10	0.10
<b>58</b>	0.35	0.10	0.10
<b>59</b>	0.50	0.10	0.10
<b>60</b>	1.00	0.50	0.10
<b>61</b>	0.00	0.35	0.10
<b>62</b>	0.00	0.35	0.80
<b>63</b>	0.00	0.35	0.40
<b>64</b>	0.00	0.35	0.40
<b>65</b>	0.00	1.00	1.00

<sup>1</sup> Rates are based on APRS service only and apply after a Member is eligible for retirement with combined APRS and Proportionate Retirement Program (PRP) service. Entry ages are determined based on APRS service only.

<sup>2</sup> 100% retirement rate will be effective at age 60, if earlier.

<sup>3</sup> Rates are based on age and apply after a Member is eligible for retirement with combined APRS and PRP service. Entry ages are determined based on APRS service only.

Termination Rates:

Combined Years of Service <sup>1</sup>	Probability of Termination During Year
0	0.05
1	0.02
2	0.02
3	0.02
4	0.02
5	0.02
6	0.02
7	0.02
8	0.02
9	0.02
10	0.01
11	0.01
12	0.005
13	0.005
14	0.005
15 & Above	

<sup>1</sup> APRS service combined with Proportionate Retirement Program service.

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Disability Rates:

Age	Probability of Disablement During Year
20	0.00007
22	0.00008
24	0.00009
26	0.000105
28	0.000125
30	0.000155
32	0.000200
34	0.000245
36	0.000270
38	0.000310
40	0.000460
42	0.000660
44	0.000865
46	0.001275
48	0.001670
50	0.001895
52	0.002020
54	0.002280
56	0.002660
58	0.003300
60	0.004555
62 & Above	0

Salary Increases:

Years of Service	Increase in Salary <sup>1</sup>
0	18.0%
1	11.2%
2	5.8%
3	0.9%
4	0.9%
5	7.1%
6	0.5%
7	0.5%
8	0.5%
9	7.1%
10	0.3%
11	0.3%
12	0.3%
13	7.1%
14	0.2%
15	7.2%
16	0.2%
17	0.1%
18	0.1%
19	0.1%
20	0.1%
21	0.1%
22	0.1%
23	0.1%
24	0.1%
25 & Above	0.0%

<sup>1</sup> Expected increases in salary as shown above are in addition to 3.50% increase per year due to general wage increases.

Retirement Option Election:

**(Members with less than 23 years of APRS service on April 1, 2015)**

Service at Termination of Employment	No DROP Elected <sup>1</sup>	FORWARD DROP Elected
23 or less	100%	0%
24	25	75
25	25	75
26	25	75
27	25	75
28	25	75
29	25	75
30	25	75
31	25	75
32	25	75
33	25	75
34	25	75
35	25	75
36	25	75
37	25	75
38	25	75
39	25	75
40	25	75
41	25	75
42	25	75

<sup>1</sup> Police officers elect a type of service retirement benefit that does not include



FINAL COMPONENTS OF PENSION EXPENSE  
FISCAL YEAR SEPTEMBER 30, 2016

	Net Pension Liability	Deferred Inflows	Deferred Outflows	Pension Expense
Beginning balance	\$ 333,603,869	\$ -	\$ 46,162,515	\$ -
Employer Contributions made after 12/31/2015	-	-	24,299,349	-
Total Pension Liability Factors:				
Service Cost	32,138,760	-	-	32,138,760
Interest	76,999,651	-	-	76,999,651
Changes in benefit terms	(4,079,852)	-	-	(4,079,852)
Contributions - Buy Back	4,648,271	-	-	4,648,271
Differences between Expected and Actual Experience with regard to economic or demographic assumptions	(6,318,435)	6,318,435	-	-
Current year amortization of experience difference	-	(631,843)	-	(631,843)
Change in assumptions about future economic or demographic factors or other inputs	3,903,538	-	3,903,538	-
Current year amortization of change in assumptions	-	-	(1,804,102)	1,804,102
Benefit Payments	(50,005,439)	-	-	(50,005,439)
Net change	<u>57,286,494</u>	<u>5,686,592</u>	<u>26,398,785</u>	<u>60,873,650</u>
Plan Fiduciary Net Position:				
Contributions - Employer	33,239,271	-	(24,055,479)	-
Contributions - Employee	20,060,610	-	-	(20,060,610)
Contributions - Buy Back	4,648,271	-	-	(4,648,271)
Projected Net Investment Income	50,659,339	-	-	(50,659,339)
Difference between projected and actual earnings on Pension Plan investments	(50,981,043)	-	50,981,043	-
Current year amortization	-	-	(12,542,031)	12,542,031
Benefit Payments	(50,005,439)	-	-	50,005,439
Administrative Expenses	(1,465,939)	-	-	1,465,939
Net change	<u>6,155,070</u>	<u>-</u>	<u>14,383,533</u>	<u>(11,354,811)</u>
Ending Balance	<u>\$ 384,735,293</u>	<u>\$ 5,686,592</u>	<u>\$ 86,944,833</u>	<u>\$ 49,518,839</u>

**PRELIMINARY COMPONENTS OF PENSION EXPENSE**  
**FISCAL YEAR SEPTEMBER 30, 2017**

	Net Pension Liability	Deferred Inflows	Deferred Outflows	Pension Expense
Beginning balance	\$ 384,735,293	\$ 5,686,592	\$ 86,944,833	\$ -
Employer Contributions made after 12/31/2016	-	-	TBD*	-
Total Pension Liability Factors:				
Service Cost	32,989,949	-	-	32,989,949
Interest	80,845,879	-	-	80,845,879
Changes in benefit terms	-	-	-	-
Contributions - Buy Back	1,668,174	-	-	1,668,174
Differences between Expected and Actual Experience with regard to economic or demographic assumptions	7,454,959	-	7,454,959	-
Current year amortization of experience difference	-	(631,843)	(745,495)	113,652
Change in assumptions about future economic or demographic factors or other inputs	5,148,318	-	5,148,318	-
Current year amortization of change in assumptions	-	-	(2,318,932)	2,318,932
Benefit Payments	(50,827,501)	-	-	(50,827,501)
Net change	<u>77,279,778</u>	<u>(631,843)</u>	<u>9,538,850</u>	<u>67,109,085</u>
Plan Fiduciary Net Position:				
Contributions - Employer	33,814,182	-	(24,299,349)	-
Contributions - Employee	20,623,125	-	-	(20,623,125)
Contributions - Buy Back	1,668,174	-	-	(1,668,174)
Projected Net Investment Income	50,396,951	-	-	(50,396,951)
Difference between projected and actual earnings on Pension Plan investments	(12,432,070)	-	12,432,070	-
Current year amortization	-	-	(15,028,444)	15,028,444
Benefit Payments	(50,827,501)	-	-	50,827,501
Administrative Expenses	(1,396,736)	-	-	1,396,736
Net change	<u>41,846,125</u>	<u>-</u>	<u>(26,895,723)</u>	<u>(5,435,569)</u>
Ending Balance	<u>\$ 420,168,946</u>	<u>\$ 5,054,749</u>	<u>TBD</u>	<u>\$ 61,673,516</u>

\* Employer Contributions subsequent to the measurement date made after December 31, 2016 but made on or before September 30, 2017 need to be added.

AMORTIZATION SCHEDULE - INVESTMENTS

Increase (Decrease) in Pension Expense Arising from the Recognition of the of Differences Between Projected and Actual Earnings on Pension Plan Investments

Plan Year Ending	Differences Between Projected and Actual Earnings	Recognition Period (Years)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
2014	\$ 11,729,112	5	\$ 2,345,822	\$ 2,345,822	\$ 2,345,822	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2015	\$ 50,981,043	5	\$10,196,208	\$10,196,209	\$10,196,209	\$10,196,209	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2016	\$ 12,432,070	5	\$ 2,486,414	\$ 2,486,414	\$ 2,486,414	\$ 2,486,414	\$ 2,486,414	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Net Increase (Decrease) in Pension Expense			<u>\$15,028,444</u>	<u>\$15,028,445</u>	<u>\$15,028,445</u>	<u>\$12,682,623</u>	<u>\$ 2,486,414</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>

AMORTIZATION SCHEDULE - CHANGES OF ASSUMPTIONS

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of Changes of Assumptions

Plan Year Ending	Changes of Assumptions	Recognition Period (Years)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
2014	\$ 14,137,496	10	\$ 1,413,749	\$ 1,413,749	\$ 1,413,750	\$ 1,413,750	\$ 1,413,750	\$ 1,413,750	\$ 1,413,750	\$ 1,413,750	\$ -	\$ -	\$ -
2015	\$ 3,903,538	10	\$ 390,353	\$ 390,354	\$ 390,354	\$ 390,354	\$ 390,354	\$ 390,354	\$ 390,354	\$ 390,354	\$ 390,354	\$ -	\$ -
2016	\$ 5,148,318	10	\$ 514,830	\$ 514,832	\$ 514,832	\$ 514,832	\$ 514,832	\$ 514,832	\$ 514,832	\$ 514,832	\$ 514,832	\$ 514,832	\$ -
Net Increase (Decrease) in Pension Expense			\$ 2,318,932	\$ 2,318,935	\$ 2,318,936	\$ 2,318,936	\$ 2,318,936	\$ 2,318,936	\$ 2,318,936	\$ 2,318,936	\$ 905,186	\$ 514,832	\$ -

AMORTIZATION SCHEDULE - EXPERIENCE

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of Differences between Expected and Actual Experience

Plan Year Ending	Differences Between Expected and Actual Experience	Recognition Period (Years)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
2015	\$ (6,318,435)	10	\$ (631,843)	\$ (631,843)	\$ (631,843)	\$ (631,843)	\$ (631,844)	\$ (631,844)	\$ (631,844)	\$ (631,844)	\$ (631,844)	\$ -
2016	\$ 7,454,959	10	\$ 745,495	\$ 745,496	\$ 745,496	\$ 745,496	\$ 745,496	\$ 745,496	\$ 745,496	\$ 745,496	\$ 745,496	\$ 745,496
Net Increase (Decrease) in Pension Expense			\$ 113,652	\$ 113,653	\$ 113,653	\$ 113,653	\$ 113,652	\$ 113,652	\$ 113,652	\$ 113,652	\$ 113,652	\$ 745,496