

**FORT LUPTON FIRE PROTECTION DISTRICT**

***ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017***

July 21, 2017

**Fort Lupton Fire Protection District**  
1121 Denver Avenue  
Fort Lupton, CO 80621

**Subject:** Actuarial Valuation Results as of January 1, 2017

This report contains the actuarial valuation results as of January 1, 2017 as determined by Gabriel, Roeder, Smith & Company (GRS), actuary for the Fort Lupton Fire Protection District Volunteer Firefighter's Pension Plan. Questions about this report should be directed to Gabriel, Roeder, Smith & Company. This is the first year GRS has performed the valuation for the district.

### **Financing Results**

This valuation was prepared to determine if the current annual level dollar contribution of \$939,926 is adequate for funding the current benefits provided by the department. Contributions into the pension fund can come from two sources: contributions directly from the department and contributions from the State based on assessed property values and other formulas. The "Assumed Contribution" referred to throughout this report is the sum of the contributions from the aforementioned two sources. The total annual required contribution is \$136,004, thus the assumed \$939,926 contribution will be sufficient to fund the plan in 3 years.

The calculated contribution shown in Table 3 is the sum of the normal cost, an amount available to amortize the Unfunded Actuarial Accrued Liability (UAAL), and any ongoing miscellaneous expenses that are paid out of the pension fund.

The unfunded accrued liability is \$1,736,250. The funded ratio (the ratio of assets to liabilities) is 75.4%.

### **Benefit Provisions**

This actuarial valuation reflects the provisions that were applicable to the Fort Lupton Fire Protection District Pension Fund as of the valuation date. The details of the actuarial calculations, based on the current benefit provisions, are described in this report. Results are also reported on Table 1 for two proposed plan benefit provisions, plus for a "State Match" plan which is a hypothetical benefit level required to determine state matching contributions

This actuarial valuation is based upon coverage data given in the checklist, which was completed by the department and supplied to GRS. Any changes in coverage adopted but not included in the checklist are not reflected in the current results. Once the adopted coverage data is provided, subsequent valuation results will be reflective of the change in coverage.

### **Actuarial Assumptions and Methods**

This actuarial valuation uses the assumptions and methods applicable for volunteer fire plans that were adopted as a result of the 2015 Experience Study as used for the Fire and Police Pension Association of Colorado (FPPA). A summary of those assumptions and methods can be found in Table 7. The primary assumption change was to update the mortality assumption to reflect increased longevity. Based on the allocation of assets, the assumed rate of return on investments is 5.00%. Liabilities in all scenarios were determined under the Entry Age Normal actuarial cost method.

The calculated employer contribution consists of the sum of three pieces: the normal cost, the amortization of the Unfunded Actuarial Accrued Liability (UAAL), and any expenses to be paid out of the pension fund (e.g. insurance contracts). The calculated contribution is shown in Table 3, Item 9. The normal cost (shown in detail in Table 3, Item 1) can be viewed as the regular, ongoing cost of the plan. The UAAL is the amount by which the actuarial value of assets falls short of, or exceeds, the actuarial accrued liability for this plan. The required payment to amortize the UAAL in 20 years is shown in Table 3, Item 7.

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution and funding periods. The actuarial calculations are intended to provide information for rational decision-making.

This report does not include a detailed assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment. We encourage a review and assessment of investment and other significant risks that may have a material effect on the plan's financial condition.

### **Member Data**

Member data as of January 1, 2017 was supplied by the Fort Lupton Fire Protection District. GRS reviewed the data and tested it for reasonableness and consistency but did not subject it to any auditing procedures. The member counts are shown in Table 6.

### **Tables**

This report includes one executive summary and seven tables.

- The executive summary includes a condensed summary of the demographic, financial, and actuarial data.
- Table 1 is a comparison of the actuarial results of the report based on the alternative benefit provisions or assumptions requested, if any.
- Table 2 is a summary of the alternative benefit provisions requested.
- Table 3 provides the details of the development of the required contribution.
- Table 4 shows the actuarial present value of future benefits, broken down by membership category and type of benefit.
- Table 5 shows the summary of the financial information.

- Table 6 shows the demographic data for the department.
- Table 7 shows the actuarial assumptions and methods used to calculate the liabilities.

The contribution amount shown Table 1 may be considered as a minimum contribution amount that complies with the funding policy. Users of this report should be aware that contributions made at that rate do not guarantee benefit security. Given the importance of benefit security to any retirement system, it is suggested that contributions to the Plan in excess of those presented in this report be considered.

The contribution rate in this report is determined using the actuarial assumptions and methods disclosed in Table 8 of this report. This report does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Assessment of risks was outside the scope of this assignment. It is encouraged that a review and assessment of investment and other significant risks that may have a material effect on the plan's financial condition.

#### **Certification**

We certify that the information included herein and contained in the 2017 Actuarial Valuation Report is accurate and fairly presents the actuarial position of the Fort Lupton Fire Protection District Pension Fund as of January 1, 2017.

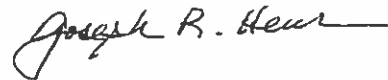
All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, the results presented comply with the requirements of the State of Colorado statutes and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board. Ms. Thompson is an Enrolled Actuary. Ms. Thompson is a member of the American Academy of Actuaries and is experienced in performing valuations for public retirement systems.

Respectfully submitted.

Gabriel, Roeder, Smith & Company



Leslie L. Thompson, FSA, FCA, EA, MAAA  
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**SECTION A**  
**EXECUTIVE SUMMARY**

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**EXECUTIVE SUMMARY**

Item	Valuation as of January 1, 2017	Valuation as of January 1, 2015
<b>Membership</b>		
• Number of		
- Active members	9	14
- Retired members	39	39
- Disabled members	0	0
- Beneficiaries	10	9
- Terminated vested members	11	10
- Total	69	72
<b>Assets</b>		
• Market value	\$ 5,325,690	\$ 4,494,862
• Actuarial value	5,325,690	4,494,862
• Employer contribution for prior year	822,775	340,644
• Employer contribution for prior year minus 1	499,412	N/A
<b>Actuarial Information</b>		
• Employer normal cost	\$ 29,556	\$ 35,048
• Normal cost per active member	3,284	2,503
• Unfunded actuarial accrued liability / (Surplus)	1,736,250	2,415,481
• Calculated contribution	165,560	219,643
• Assumed contribution from department	882,244	499,692
• Assumed contribution from state	57,682	57,682
• Funding period based on assumed contributions	3	7
• Funded ratio	75.4%	65.0%
• Is current level of contributions adequate?	Yes	Yes

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**SECTION B**

**TABLES**

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**Fort Lupton Fire Protection District  
Actuarial Valuation as January 1, 2017**

**Table 1**

**COMPARISON OF ACTUARIAL RESULTS BASED ON ALTERNATE BENEFIT LEVELS OR ASSUMPTIONS**

	Current Plan		Plan A		Plan B		State Match	
1. Normal Retirement Benefit	\$	1,000	\$	1,050	\$	1,100	\$	300
2. Normal Cost		29,556		31,033		32,512		8,470
3. Present Value of Future Benefits		7,261,225		7,624,286		7,987,348		2,661,536
4. Actuarial Accrued Liability		7,061,940		7,415,037		7,768,135		2,605,734
5. Unfunded Accrued Liability / (Surplus)		1,736,250		2,089,347		2,442,445		(2,719,956)
6. Total Annual Calculated Contribution		165,560		194,696		223,834		(204,590)
7. Assumed Contribution		939,926		939,926		939,926		939,926
8. Funding Period Based on Assumed Contribution		3 years		3 years		3 years		0 years
9. Is current assumed contribution adequate to support the prospective benefit levels on an actuarially sound basis?		Yes		Yes		Yes		Yes

The Fort Lupton volunteer firefighter plan has been funded by one mill levy. In 2017 one mill was worth about \$820,000. At that rate the unfunded accrued liability will be paid off in 3 years based on the benefits under the Current Plan, proposed benefits under Plan A, or proposed benefits under Plan B. At that time the actuarial required contribution will be for only the normal costs related to the active members, which is currently \$29,556 per year based on the Current Plan. Thus the Board will want to reexamine the need to continue funding at that level.

**ACTUARIAL VALUATION INFORMATION CHECKLIST**

	Current Plan	Plan A	Plan B	State Match	Maximum Per State Statute
1. Normal Retirement Benefit (monthly):					
a. Regular	\$1,000.00	\$1,050.00	\$1,100.00	\$300.00	None
b. Extended Service Amount Per Year of Service	\$50.00	\$52.50	\$55.00	\$0.00	5% of Regular, for 10 Additional years
2. Vested Retirement Benefit (monthly):					
a. With 20 or More Years of Service not yet age 50, but payable at age 50	\$1,000.00	\$1,050.00	\$1,100.00	\$300.00	None
b. With 10 to 20 Years of Service Amount Per Year of Service	\$50.00	\$52.50	\$55.00	\$15.00	Pro rata Share of Regular
c. Minimum Vesting Years	10	10	10	10	20 Years
3. Disability Retirement Benefit (monthly)					
a. Short Term Disability Amount payable for not more than 1 year	\$0.00	\$0.00	\$0.00	\$150.00	½ of Regular or \$225, whichever greater
b. Long Term Disability Lifetime Benefit	\$0.00	\$0.00	\$0.00	\$300.00	Regular or \$450, whichever is greater
4. Survivor Benefits (monthly):					
a. Following Death before Retirement Due to death in line of duty as a volunteer firefighter	\$500.00	\$525.00	\$550.00	\$150.00	½ of Regular or \$225, whichever greater
b. Optional Survivor Benefit Following Death before Retirement Due to death in line of duty as a volunteer firefighter	\$0.00	\$0.00	\$0.00	\$0.00	Up to 100% of Regular
c. Following Death after Normal Retirement	\$500.00	\$525.00	\$550.00	\$150.00	Up to 50% of Regular
d. Following Death after Normal Retirement with Extended Service Amount Per Year of Service	\$25.00	\$0.00	\$0.00	\$0.00	50% of Extended
e. Following Death after Vested Retirement with 20 or More Years of Service	\$500.00	\$525.00	\$550.00	\$150.00	50% of Vested
f. Following Death after Vested Retirement with 10 to 20 Years of Service Amount Per Year of Service	\$25.00	\$26.25	\$27.50	\$7.50	50% of Vested
g. Following Death after Disability Retirement	\$0.00	\$0.00	\$0.00	\$0.00	50% of Disability
5. Funeral Benefits (Required Benefit):					
a. Funeral Benefit Lump Sum, one time only	\$2,000.00	\$2,000.00	\$2,000.00	\$100.00	2 * Regular, Not less than \$100

**DEVELOPMENT OF ANNUAL REQUIRED CONTRIBUTION**

	Valuation as of 1/1/2017	Valuation as of 1/1/2015
1. Total Normal Cost	\$ 29,556	\$ 35,048
2. Actuarial accrued liability for active members		
a. Present value of future benefits for active members	\$ 801,100	\$ 810,480
b. Less: present value of future normal costs	<u>(199,285)</u>	<u>(164,078)</u>
c. Actuarial accrued liability	\$ 601,815	\$ 646,402
3. Total actuarial accrued liability for:		
a. Retirees and beneficiaries members	\$ 5,467,820	\$ 5,518,085
b. Inactive members	992,305	745,856
c. Active members (Item 2c)	<u>601,815</u>	<u>646,402</u>
d. Total	\$ 7,061,940	\$ 6,910,343
4. Actuarial value of assets	\$ 5,325,690	\$ 4,494,862
5. Unfunded actuarial accrued liability / (Surplus) (Item 3 - Item 4)	\$ 1,736,250	\$ 2,415,481
6. Funded Ratio	75.4%	65.0%
7. Required Payment to amortize the UAAL over the next 20 years	\$ 136,004	\$ 184,595
8. Annual miscellaneous ongoing expenses	\$ 0	\$ 0
9. Calculated contribution (Item 1 + Item 7 + Item 8)	\$ 165,560	\$ 219,643
10. Assumed Contribution		
a. Budgeted department contribution	\$ 882,244	\$ 499,692
b. Expected state contribution	<u>57,682</u>	<u>57,682</u>
c. Total assumed contribution	\$ 939,926	\$ 557,374
11. Funding period based on assumed contribution	3	7

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ACTUARIAL PRESENT VALUE OF FUTURE BENEFITS

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	Valuation as of 1/1/2017	Valuation as of 1/1/2015
1. Active members		
a. Retirement benefits	\$ 613,921	\$ -
b. Vested retirement benefits	183,160	-
c. Death benefits	4,019	-
d. Disability benefits	-	-
e. Total	<u>\$ 801,100</u>	<u>\$ 810,480</u>
2. Retired members		
a. Service retirements	\$ 4,989,987	\$ 5,080,869
b. Disability retirements	-	-
c. Beneficiaries	477,833	437,216
d. Total	<u>\$ 5,467,820</u>	<u>\$ 5,518,085</u>
3. Terminated vested members	\$ 992,305	\$ 745,856
4. Total actuarial present value of future benefits	\$ 7,261,225	\$ 7,074,421

**RECONCILIATION OF NET PLAN ASSETS**

	Year Ending	
	12/31/2016	12/31/2015
1. Market value of assets at beginning of year	\$ 4,644,680	\$ 4,494,862
2. Revenue for the year		
a) Contributions		
i) Department contributions	\$ 822,775	\$ 499,412
ii) State contributions	57,682	57,682
iii) Other Income	0	0
iv) Total	\$ 880,457	\$ 557,094
b) Net investment income	\$ 292,513	\$ 62,251
c) Total revenue (2.a. + 2.b.)	\$ 1,172,970	\$ 619,345
3. Expenditures for the year		
a) Benefit payments	\$ 451,775	\$ 432,388
b) Administrative expenses and fees	40,185	37,139
c) Total expenditures	\$ 491,960	\$ 469,527
4. Unrealized gain (loss) on investments	\$ -	\$ -
5. Change in plan net assets (2.c. - 3.c. + 4.)	\$ 681,010	\$ 149,818
6. Market value of assets at end of year (1. + 5.)	\$ 5,325,690	\$ 4,644,680

**MEMBERSHIP DATA**

	<u>1/1/2017</u>	<u>1/1/2015</u>
1. Active members		
a. Number	9	14
b. Average age	37.6	36.7
c. Average service	8.8	7.6
2. Service Retirees		
a. Number	39	39
b. Total annual benefits	\$ 391,800	\$ 295,800
c. Average annual benefit	10,046	7,585
d. Average age	66.0	65.0
3. Disabled Retirees		
a. Number	0	0
b. Total annual benefits	\$ 0	\$ 0
c. Average annual benefit	0	0
d. Average age	0.0	0.0
4. Beneficiaries		
a. Number	10	9
b. Total annual benefits	\$ 57,600	\$ 44,112
c. Average annual benefit	5,760	4,901
d. Average age	78.9	76.7
5. Terminated vested members		
a. Number	11	10
b. Average age	43.3	41.7
6. Total number of members	69	72

**SUMMARY OF ACTUARIAL ASSUMPTIONS, METHODS, AND CHANGES**

The calculations set forth in this report are based on the following assumptions:

1. Investment Return Rate                      5.00% per annum (net of operating expenses),  
 compounded annually

2. Rates of Decrement due to:

a) Retirement                                      Age 50 and 20 years of service

<u>Age</u>	<u>Annual Rate Per 100</u>
50-64	50.00
65	100.00

b) Disability

<u>Age</u>	<u>Annual Rate Per 1,000</u>
20	0.10
25	0.16
30	0.26
35	0.45
40	0.97
45	3.50
50	6.50
55	8.10

c) Pre-Retirement Mortality

RP-2014 Mortality Tables for Blue Collar Employees,  
 projected with Scale BB, with 55% multiplier for off-duty  
 mortality.

<u>Age</u>	<u>Annual Rate Per 1,000</u> <u>(as of 2017)</u>	
	<u>Males</u>	<u>Females</u>
20	0.286	0.099
25	0.341	0.106
30	0.319	0.133
35	0.369	0.175
40	0.443	0.242
45	0.686	0.402
50	1.189	0.674

**SUMMARY OF ACTUARIAL ASSUMPTIONS, METHODS, AND CHANGES  
(CONTINUED)**

d) Withdrawal (any reason other than retirement, death, or disability)

Annual Rate Per 1,000 Withdrawals			
<u>Service</u>	<u>Rates</u>	<u>Service</u>	<u>Rates</u>
1	165.79	11	76.33
2	154.54	12	70.21
3	143.79	13	64.60
4	133.56	14	59.50
5	123.85	15	54.92
6	114.65	16	50.85
7	105.96	17	47.29
8	97.78	18	44.25
9	90.12	19	41.72
10	82.97		

Twenty percent (20%) of members age 50 and eligible for a terminated vested benefit which would commence immediately are assumed to withdraw each year.

3. Post-Retirement Mortality (All mortality tables are generationally projected with Scale BB)

a) Healthy Retirees and Beneficiaries For ages less than 55, RP-2014 Mortality Tables for Blue Collar Employees. For ages 65 and older, RP-2014 Mortality Tables for Blue Collar Healthy Annuitants. For ages 55 through 64, a blend of the previous tables.

<u>Age</u>	<u>Annual Rate Per 1,000 (for 2017)</u>	
	<u>Males</u>	<u>Females</u>
50	2.162	1.225
55	3.666	1.963
60	7.185	4.573
65	12.166	8.415
70	18.814	13.469
75	30.110	22.154
80	49.560	36.807

b) Disabled Retirees

RP-2014 Disabled Mortality Table with a minimum 3% rate for males and 2% rate for females.

<u>Age</u>	<u>Annual Rate Per 1,000 (for 2017)</u>	
	<u>Males</u>	<u>Females</u>
50	30.000	20.000
55	30.000	20.000
60	30.000	20.000
65	30.558	20.118
70	38.558	27.200
75	51.881	39.585
80	73.220	58.865



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**SUMMARY OF ACTUARIAL ASSUMPTIONS, METHODS, AND CHANGES  
(CONTINUED)**

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4. Marital Status

- |                    |  |
|--------------------|--|
| a) Percent married | 90% of members assumed married                       |
| b) Age difference  | Males are assumed to be two years older than females |

5. Changes in Actuarial Assumptions

Several demographic assumptions have been updated since the prior actuarial valuation, including mortality, termination, and disability. The assumptions are similar to the assumption set used to value volunteer fire districts in Colorado that are associated with Fire and Police Pension Association of Colorado.

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**SUMMARY OF ACTUARIAL ASSUMPTIONS, METHODS, AND CHANGES  
(CONTINUED)**

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7. Actuarial Cost Method

Under the entry age actuarial cost method, the Normal Cost is computed as the level dollar amount which, if paid from the earliest time each member would have been eligible to join the plan if it then existed (thus, entry age) until his retirement or termination, would accumulate with interest at the rate assumed in the valuation to a fund sufficient to pay all benefits under the plan. The normal cost for the plan is determined by summing the normal cost of all members.

The Actuarial Accrued Liability under this method at any point in time is the theoretical amount of the fund that should have been accumulated had annual contributions been made in prior years equaling to the normal cost. The Unfunded Actuarial Accrued Liability/(Surplus) is the excess of the actuarial accrued liability over the actuarial value of the plan assets as of the valuation date.

Under this method, experience gains and losses (i.e. decreases or increases in accrued liabilities), attributable to deviations in experience from the actuarial assumptions, adjust the unfunded actuarial accrued liability.