

FIRE AND POLICE PENSION ASSOCIATION
STATEWIDE DEATH AND DISABILITY FUND
ACTUARIAL VALUATION REPORT
FOR THE YEAR BEGINNING JANUARY 1, 2016

June 30, 2016

Board of Directors
Fire and Police Pension Association
5290 DTC Parkway, Suite 100
Greenwood Village, Colorado 80111

**Re: Actuarial Valuation of the FPPA Death & Disability Fund (the Plan) as of
January 1, 2016**

Dear Members of the Board:

We are pleased to present our Report on the actuarial valuation of the Statewide Death & Disability Fund for the Fire and Police Pension Association (FPPA) as of January 1, 2016.

We certify that the information included herein and contained in our 2016 Actuarial Valuation Report is accurate and fairly presents the actuarial position of the FPPA Death & Disability Fund as of January 1, 2016.

Our Report presents the results of the January 1, 2016 actuarial valuation of the FPPA Statewide Death & Disability Fund (D&D). The report describes the current actuarial condition of the D&D, determines the appropriateness of the contribution rate for certain members, and analyzes changes since the last valuation. The results presented herein may not be applicable for other purposes. In addition, the report provides information required in connection with Governmental Accounting Standards Board Statement No. 43, Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans, (GASB 43) and No. 45, Accounting and Financial Reporting by Employers for Post-Employment Benefits Other Than Pensions, (GASB 45), and it provides various summaries of the data.

Valuations are prepared annually, as of January 1st, the first day of the FPPA plan year.

Financing Objectives

Contribution rates are established by law as a percentage of payroll. The contributions are intended to finance the future benefits payable from the Plan using a modified version of the aggregate actuarial cost method.

Progress toward Realization of Financing Objectives

The unfunded actuarial accrued liability and the funded ratio (ratio of the actuarial value of assets to the net present value of benefits) illustrate the progress toward the realization of certain financing objectives. Based on our actuarial valuation as of January 1, 2016, the Plan has a surplus of \$16 million assuming no allowance for future discretionary benefit adjustments for non-totally disabled benefit recipients.

The annual contribution rate for members hired on or after January 1, 1997 is 2.6%. The contribution rate for these members can only be adjusted every two (2) years. Based on smoothed assets, the cost of providing benefits is 2.37%, therefore, the current 2.60% contribution rate is adequate to provide some level of future discretionary benefit adjustments. However, based on market assets, the cost is 2.50%, much closer to the current 2.60% and thus not much margin exists against adverse deviation and to provide for future discretionary benefit adjustment. We recommend the Board increase the contribution rate to 2.70% effective January 1, 2017.

Benefit provisions

All of the benefit provisions reflected in this valuation are those which were in effect on January 1, 2016. There were no changes in provisions since the prior valuation. The benefit provisions are summarized in Appendix B of our Report.

Assumptions and methods

Since the prior valuation, new actuarial methods and assumptions have been selected by the Board of Directors of FPPA based upon the actuary's analysis and recommendations from the 2015 Experience Study.

The main actuarial factor changes effective January 1, 2016 were:

- Reduce the inflation assumption from 3.0% to 2.5%. It was determined that the current 3.0% assumption is higher than the long term historical average, the recent historical average, and most sources of future expectations. The decision to lower the assumption to 2.5% places the assumption closer to the levels expected in the bond market.
- The real return on investments was increased to 5.0% for an overall nominal investment return of 7.50%. The productivity component of the salary increases was increased from 1.0% to 1.5%. The aggregate effect of these changes (inflation, real return, and the productivity component of the salary increase) on the actuarial results was minimal.
- Add an explicit charge for administrative expenses in the actuarial contribution calculation. Although the nominal investment return was not changed from 7.50%, adding an explicit administrative expense effectively reduces the return that must be earned by the plans in order to meet the actuarial assumption since the investment return

is no longer net of administrative expenses. This does not alter the accrued liability, but it does increase the actuarially calculated contribution.

- Revise the base mortality tables and the explicit assumption for increasing longevity in the future to reflect current mortality studies. This had the effect of increasing longevity expectations, and in turn, increasing expected costs and liabilities.
- Increase the expected incidence of Total Disability for members of FPPA's defined benefit plans. Disability incidence is an important assumption for FPPA plans because a disability occurrence shifts all liability from the Defined Benefit System plans (Statewide Defined Benefit Plan, Statewide Hybrid – DB Component Plan, Colorado Springs New Hire Plan) to the Statewide Death & Disability Plan. Increasing the expected incidence of Total Disability creates a large increase in projected benefits from the Statewide Death & Disability Plan and reduces projected benefits from the Defined Benefit System retirement plans.

The actuarial assumptions implemented in January 1, 2016 are more reflective of future expectations as the Plan proceeds forward. As always, the assumptions will be reviewed against actual experience each year and gains or losses recognized in accordance with Governmental Accounting Standards Board standards and our actuarial methods and policies.

For a complete list of assumption changes as well as the detailed rationale for the changes, please see the experience study report dated June 1, 2015.

The assumptions and methods are detailed in Appendix A of our Report. The Board of Directors has sole authority to determine the actuarial assumptions used for the Plan. The assumptions that are based upon the actuary's recommendations are internally consistent and are reasonably based on the actual past experience of the Plan. These assumptions are also in full compliance with all of the parameters established by GASB No. 43 and No. 45.

The actuarial assumptions represent estimates of future experience and are not market measures. The results of any actuarial valuation are dependent upon the actuarial assumptions used. Actual results (and future measures) 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 rates and funding periods. The actuarial calculations presented in this Report are intended to provide information for rational decision making.

Data

FPPA supplied data for active and disabled members as of January 1, 2016. We did not audit this data, but we did apply a number of tests to the data, and we have concluded that the data is reasonable and consistent with the prior year's data. FPPA also supplied asset data as of January 1, 2016.

Projected Actuarial Results

The following table shows the Funded Ratio (FR) and Annual Required Contribution (ARC) projected over the next five years given alternative investment returns on the market value of assets. With the exception of the market value investment returns, the projections beyond 2016 are based on the same assumptions, methods and provisions used for the January 1, 2016 valuation.

5-Year Deterministic Projection						
January 1,	Market Value Investment Return					
	3.50%		7.50%		11.50%	
	FR	ARC	FR	ARC	FR	ARC
2016	104.7%	2.37%	104.7%	2.37%	104.7%	2.37%
2017	103.3%	2.45%	104.1%	2.42%	105.0%	2.38%
2018	101.3%	2.54%	103.6%	2.44%	106.1%	2.32%
2019	98.6%	2.66%	103.1%	2.46%	108.1%	2.23%
2020	95.4%	2.81%	102.6%	2.48%	110.8%	2.10%
2021	91.9%	2.98%	102.8%	2.47%	114.4%	1.92%

Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future actuarial measurements other than that shown above.

Certification

All of our work conforms with generally accepted actuarial principles and practices, and to the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of Colorado state law and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board.


The undersigned are independent actuaries and consultants. Joseph Newton and Dana Woolfrey are Enrolled Actuaries and all are Members of the American Academy of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries. Finally, all of the undersigned are experienced in performing valuations for large public retirement systems.

Respectfully submitted,

Gabriel, Roeder, Smith & Company



Joseph P. Newton, FSA, EA, MAAA
Senior Consultant



Dana Woolfrey, FSA, EA, MAAA
Consultant



Linna Ye, ASA, MAAA
Actuary

klb

K:\2626\2016\SWDD\VAL\2016 DD Valuation Report.DOC

	<u>PAGE</u>
Section I	Executive Summary..... 2
Section II	Discussion 5
Section III	Tables
	1 – Development of Unfunded Actuarial Accrued Liability..... 15
	2 – Actuarial Present Value of Future Benefits 16
	3 – Actuarial Gain/(Loss) on UAAL 17
	4 – Summary of Historical Valuation Results 18
	5 – Allocation of Plan Assets at Fair Value..... 19
	6 – Reconciliation of Plan Net Assets..... 20
	7 – Development of Actuarial Value of Assets 21
	8 – Investment Yields 22
	9 – Gain/(Loss) on Actuarial Value of Assets 23
	10 – History of Investment Return Rates..... 24
	11 – Schedule of Funding Progress (As required by GASB #43) 26
	12 – History of Employer Contributions 27
	13 – Solvency Test 28
	14 – Cash Flow Analysis..... 29
	15 – Annual Required Contribution..... 30
	16 – Notes to Required Supplementary Information (As required by GASB #43)..... 31
	17 – Membership Data 32
	18 – Historical Summary of Active Member Data..... 33
	19 – Distribution of Active Members by Age and by Years of Service as of December 31, 2015 34
	20 – Schedule of Retirants & Annuitants Added to & Removed from Rolls 35
	21 – Summary of Members and Adjusted Payroll by Employer 36
	22 – Summary of Inactive Members..... 45
Section IV	Appendix A – Summary of Actuarial Methods and Assumptions 47
	Appendix B – Summary of Benefit Provisions 56
Section V	Supplemental Studies 61

SECTION I

EXECUTIVE SUMMARY

Executive Summary

Item	January 1, 2016	January 1, 2015
Membership <ul style="list-style-type: none"> • Number of: <ul style="list-style-type: none"> - Active members - Total disabled members & beneficiaries - Occupational disabled members & beneficiaries - Survivors of deceased active members - Total • Annualized payroll supplied by FPPA 	11,681 135 809 119 12,744 \$ 863,106	11,391 131 773 116 12,411 \$ 827,633
Recommended contribution rates for members hired on or after January 1, 1997 and members covered by Social Security	2.70%	2.60%
Assets <ul style="list-style-type: none"> • Market value • Actuarial value • Rate of return on market value • Rate of return on actuarial value • Contribution for prior year • Ratio of actuarial value to market value 	\$ 351,520 361,070 1.4% 6.8% \$ 16,938 102.7%	\$ 353,776 345,009 6.5% 8.4% \$ 15,509 97.5%
Actuarial Information <ul style="list-style-type: none"> • Unfunded actuarial accrued liability/(surplus) • GASB funded ratio 	\$ (16,288) 104.7%	\$ (46,880) 115.7%

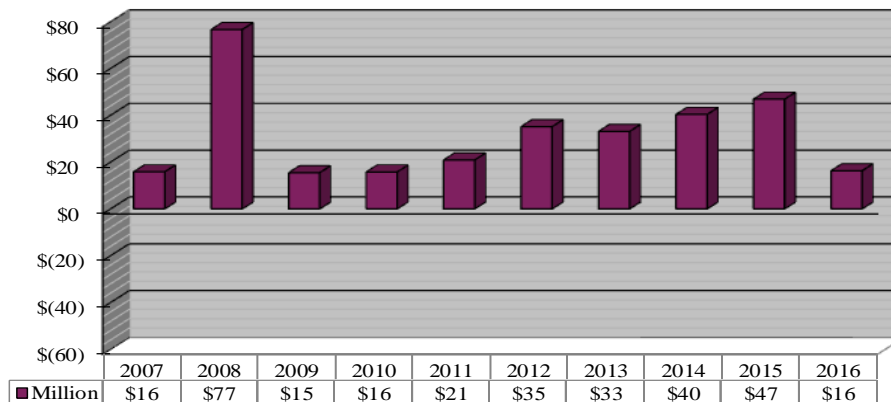
Note: Dollar amounts in \$000

Executive Summary

1. The annual contribution rate for members hired on or after January 1, 1997 and for members covered by Social Security is 2.6% as of January 1, 2016.
2. This rate was last increased from 2.5% to 2.6% as of January 1, 2007. Based on the January 1, 2014 valuation, the Board elected to leave the contribution rate unchanged at 2.60% for the two year period beginning January 1, 2015. We recommend the Board increase the contribution rate to 2.70% for the two year period beginning January 1, 2017 to protect the Plan against adverse deviation and to provide for future discretionary benefit adjustments.
3. The number of total members increased from 12,411 in 2015 to 12,744 in 2016, an increase of 2.7%.
4. Current plan benefits provide an automatic 3.0% benefit adjustment to totally disabled members and their beneficiaries but assume no future benefit adjustments for other members. Based on actuarial estimations, the current 2.6% contribution rate could sustain a 0.30% permanent annual benefit adjustment.
5. The plan assets at the valuation date are in excess of the net present value of benefits by \$16 million. This surplus position compares to the \$47 million surplus position last year. The Plan is “fully funded” assuming no future discretionary benefit adjustments for non-totally disabled benefit recipients.
6. Assets earned 1.4% on a market basis and 6.8% on an actuarial basis in 2015, producing an actuarial loss of \$2.4 million.
7. The funded ratio decreased from 115.7% to 104.7% as of January 1, 2016.

The following chart shows the history of the (Unfunded Actuarial Accrued Liability)/Surplus as of past historical valuation dates. The dollar values are in millions.

Historical (UAAL)/Surplus

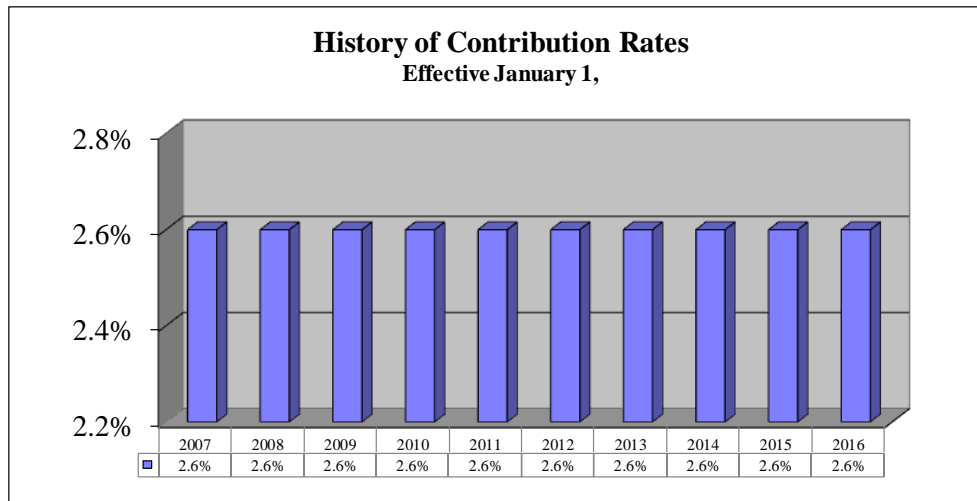


SECTION II
DISCUSSION

Contribution Requirements

The valuation of the Fire and Police Pension Association Statewide Death & Disability Fund (D&D) as of January 1, 2016, reflects a current employee contribution rate of 2.6% for members hired on or after January 1, 1997. By statute, this rate can change only every two years.

The following graph shows the historical contribution rates for employees hired on or after January 1, 1997 and for members covered by Social Security.



The cost of providing benefits is 2.37% (with no future benefit adjustments for non-totally disabled benefit recipients), therefore, the current 2.60% contribution rate is adequate to provide some level of future benefit adjustments. However, based on market assets, the cost is 2.50%, much closer to the current 2.60% and thus not much margin exists against adverse deviation and to provide for future discretionary benefit adjustment. We recommend the Board increase the contribution rate to 2.70% and take a conservative policy towards providing discretionary benefit adjustments over the short term.

Discretionary Benefit Adjustments

On October 1st of each year, annuitants may receive a benefit increase at the discretion of the Board of Directors. Totally disabled members and their beneficiaries receive an automatic increase each year of 3%. For other annuitants, the increase may reflect CPI, but in no case may be higher than 3%. Because the increases are purely discretionary, the valuation results in the report are shown assuming no discretionary benefit adjustments are granted to annuitants other than total disability retirees. The current 2.60% contribution could sustain a 0.30% permanent annual benefit adjustment. The cost of a one-year 0.30% benefit adjustment for current annuitants (excluding totally disabled) is \$0.7 million. The \$0.7 million cost represents the present value of additional benefits that would be payable for the remaining lifetime of the current annuitants due to the one-time increase.

Financial Data and Experience

This section provides an analysis of the change in Plan Net Assets during the year and an estimate of the yield on mean assets of D&D. FPPA provided GRS with a summary of plan assets as of January 1, 2016. The market value of assets reported was \$351.5 million as of January 1, 2016, as compared to \$353.8 million as of January 1, 2015. Table 6 shows data from some of the tables included in the annual financial statements of the Plan. Table 8 shows the estimated yield on a market value basis and on the actuarial asset valuation method.

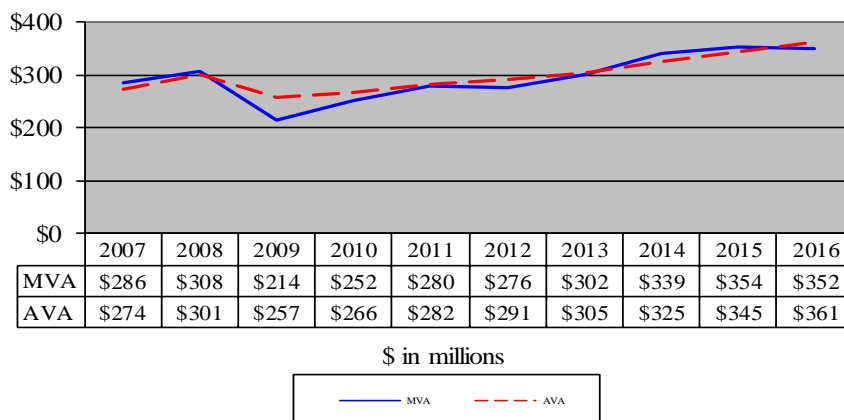
The asset valuation method uses a five-year phase in of the excess (shortfall) between expected investment return and actual income. Expected earnings used to project the actuarial value are determined using the assumed investment return rate and the beginning of year actuarial value of assets (adjusted for receipts and disbursements during the year). The returns are computed net of administrative and investment expenses.

Table 7 shows the development of the actuarial value of assets. The actuarial value of assets increased from \$345.0 million to \$361.1 million since the prior valuation. This increase was less than expected and produced a loss of approximately \$2.4 million.

Effective January 1, 2012, the valuation assumed investment return was reduced from 8.0% to 7.5% per year. As indicated by item 6b of Table 8, the estimated return on mean market value was 1.40% in 2015; lower than the assumed 7.5% return. The actuarial asset value returned 6.80%, compared to 8.41% in 2014. This difference in the estimated return on market value and actuarial value illustrates the smoothing effect of the asset valuation method. We recommend the Board increase the contribution rate from 2.6% to 2.7% for the two year period beginning January 1, 2017 to protect the Plan against adverse deviation and to provide for future discretionary benefit adjustments.

History of MVA vs AVA

As of the valuation date January 1,



AVA: Actuarial (Smoothed) Value of Assets
 MVA: Market Value of Assets

Demographic Experience

During the year, the plan had less disablements than expected (41 actual vs. 44.4 expected) and less active member deaths than expected (4 actual vs. 7.9 expected). The plan had less annuitant deaths than expected (9 actual vs. 12.4 expected) which created liability losses for the plan.

Member Data

FPPA supplied member data as of January 1, 2016. While we did not audit this data, we did perform various tests to ensure that it was internally consistent, consistent with the prior year’s data, and was reasonable overall. Information provided for active members includes: name, member ID, sex, a code indicating whether the member was active or inactive, date of birth, service, salary, accumulated member contribution, and the accumulated stabilization reserve account. For retired members, data includes: name, member ID, sex, date of birth, date of retirement, amount of benefit, a code indicating the option elected and the type of retiree (total disability retirees, occupational disability retirees, beneficiary), and if applicable, the joint pensioner’s date of birth and sex.

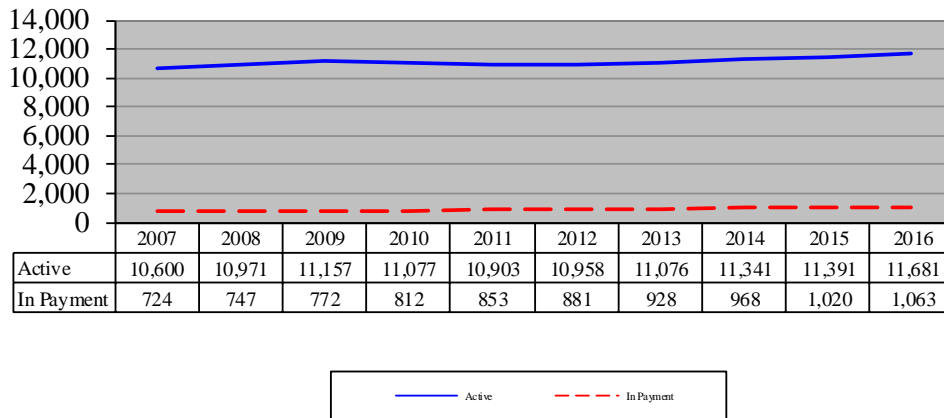
For local Money Purchase members, an array based on service was used to estimate each member’s Money Purchase balance. For missing salary in the data, an array of salaries based on service was used to estimate the salary.

Table 17 shows the number of members by category (active, inactive, retired, etc.). Table 18 shows a historical summary of active member statistics, and Table 19 shows the distribution of active members by age and service.

The total payroll shown on the statistical tables is the amount that was supplied by FPPA. For the cost calculations, the pays were adjusted in accordance with the actuarial assumptions to reflect one year’s salary increase.

History of Counts: Active vs In Payment

As of the valuation date January 1,



Benefit Provisions

Appendix B in Section IV includes a summary of the benefit provisions for FPPA. Highlights include:

- Pre-Retirement Death Benefits:
 - Off-duty: 40% of the base salary paid to the member prior to death, with an additional 10% of base salary if a surviving spouse has two or more dependent children.
 - On-duty: 70% of the base salary paid to the member prior to death.
- Disability Benefits:
 - Total Disability: 70% of the base salary preceding disability.
 - Permanent Occupational Disability: 50% of the base salary preceding disability.
 - Temporary Occupational Disability: 40% of the base salary preceding disability for up to 5 years.
- Contributions: Members hired after January 1, 1997 and members covered by Social Security currently contribute 2.6% of pay.
- Benefit adjustments are granted periodically at the discretion of the FPPA Board. Total disability retirees receive an automatic increase of 3%. For other annuitants, the increase may reflect CPI, but in no case may be higher than 3%.

There are no ancillary benefits—e.g., cost of living benefits—that are currently provided by a source independent of FPPA but that might be deemed an FPPA liability if continued beyond the availability of funding by the current funding source.

Actuarial Methods and Assumptions

The valuation was prepared using the Aggregate Method. This is the same funding method that has been used in prior years. The asset valuation method uses a five-year phase in of the excess (shortfall) between expected investment return and actual income. See Appendix A for a complete description of this method.

The actuarial value of future benefits from the Plan is based on several economic and non-economic assumptions. These are summarized in Appendix A as well. The economic assumptions include investment return and salary increases. Non-economic assumptions include rates of mortality, disability, and separation.

Since the prior valuation, the Board adopted new assumptions based on the 2015 Experience Study. The changes from the prior assumption set are summarized below:

Economic Assumptions

1. Reduce the inflation assumption from 3.00% to 2.50%.
2. Increase the real rate of return assumption from 4.50% to 5.00%, resulting in no overall change to the nominal return assumption of 7.50%.
3. Add an explicit assumption for administrative expenses in the contribution determination.
4. Increase the productivity component of the salary scale assumption from 1.00% to 1.50%. Combining with the inflation rate of 2.50% creates ultimate salary scale assumption of 4.00%, which is unchanged from the current assumption.
5. Slightly modify the service-based promotional/longevity component of the salary scale.

Mortality Assumptions

6. Update the post-retirement mortality tables for non-disabled retirees to a table based on the RP-2014 generational mortality tables with blue collar adjustment. In addition, update the projected rate of improvement in longevity from Scale AA to the more recently published Scale BB.
7. Update the occupationally disabled post-retirement mortality assumption to be the same table as used for the healthy annuitants, except with a three year set-forward.
8. Update the totally disabled post-retirement mortality assumption to the RP 2014 generational mortality tables for disabled annuitants, except add an additional provision to apply a minimum 3% mortality probability to males and 2% mortality probability to females to reflect substantial impairment for this population.
9. Update the pre-retirement non-duty mortality tables to 55% of the RP-2014 mortality tables for active employees. Make no adjustment to the current duty mortality rate of 0.00020.

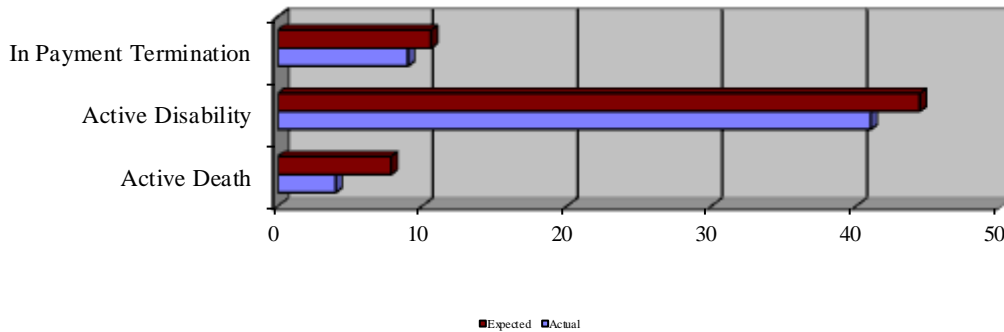
Other Demographic Assumptions

- 10. Combine the termination assumption for police and fire.
- 11. Increase the rates of both occupational and total disability to reflect higher incidence of disability observed during the study period than expected.

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.

For FY2015, the actual salary increases were 98.7% of expected. The following charts provide a comparison of the actual experience versus the expected experience for selected assumptions.

Demographic Experience - FY2015



The In Payment Terminations above include deaths and benefits that were canceled for other reasons such as recovery.

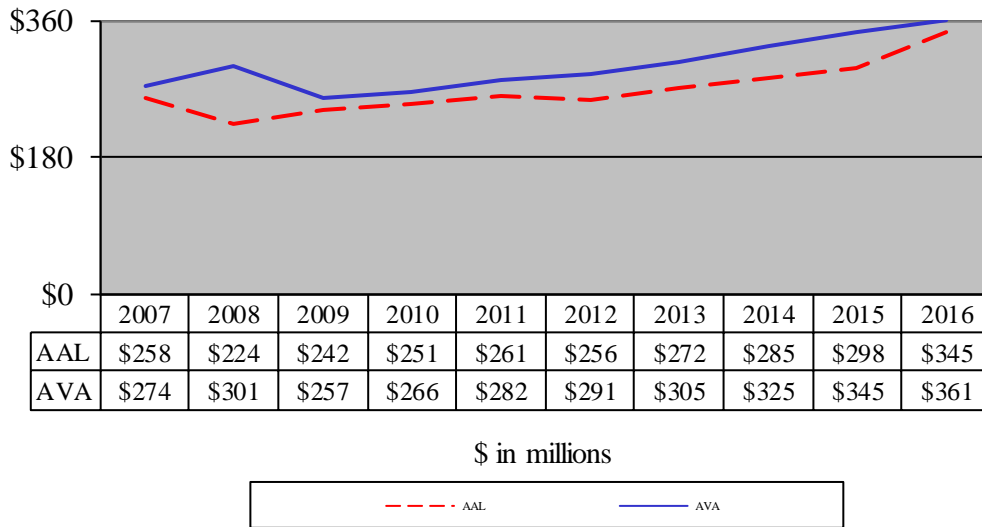
GASB 43, GASB 45, and Funding Progress

Accounting requirements for FPPA are set by Governmental Accounting Standards Board Statement No. 43, *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans* (GASB 43) and No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pension* (GASB 45). Table 11a shows a historical summary of the funded ratios and other information for FPPA. In addition, we have included a Schedule of Funding Progress in Table 11b based on the Entry Age Normal cost method as required for plans using the Aggregate Cost Method. Table 16 shows other information needed in connection with disclosure under GASB 43. GASB Statement No. 45 governs reporting by the employers of government-sponsored retirement plans. Table 15 shows the development of the net Other Postemployment Benefits (OPEB) obligation.

For FPPA, the employer Annual Required Contribution for 2015 is 0%. For members hired on or after 1/1/97 and for members covered by Social Security the member contribution rate is 2.6% of pay. The 2.60% became effective January 1, 2007, was extended for the two year period beginning January 1, 2009, January 1, 2011 and January 1, 2013, and has again been extended for the two year period beginning January 1, 2015.

History of AAL vs AVA

As of the valuation date January 1,



The AAL referenced in the chart is the Actuarial Accrued Liability as referenced throughout the report.

Significant Factors Affecting Trends in Actuarial Information

Investment returns during 2015 and assumption changes following an experience study created actuarial losses for the Plan. Outstanding deferred investment losses will put downward pressure on the funded ratio in future valuations if not offset by future gains.

Risk Metrics

The Statewide Death and Disability Plan provides death and disability benefits to members covered under the Statewide Defined Benefit Plan, Statewide Hybrid Plan, Colorado Springs New Hire Plans, the Statewide Money Purchase Plan and Local Money Purchase and Defined Benefit Plans. The Plan is funded through payroll contributions on active member payroll for members hired on or after January 1, 1997. Benefits for members hired before 1997 were previously funded by the State. The contributions made for this group were considered to fulfill the State’s funding obligation, and no further contributions are anticipated. Accordingly, the Calculated Contribution is calculated as a percentage of contributory (post-1996 hire) payroll. As pre-1997 hires terminate and are replaced by contributory members, the contributory portion of the active population grows. This results in the contributory payroll growing faster than the liabilities and assets. This deleveraging can be observed in the historical data. Although the Plan’s contributory payroll is growing, because the Plan is funded through employee contributions, there is less tolerance for contribution rate volatility. Eventually the active population will become largely contributory and the contributory payroll will not grow at the same rate. At that point (expected to be about 10 years out), the trend will reverse and the Plan will start to become more leveraged.

Valuation Year	AVA as % of Contributory Payroll	AAL (EAN) as % of Contributory Payroll	Calculated Contribution % of Contributory Payroll	Increase in ARC if Assets Decrease 10%	Funded Ratio (EAN)	Change in Funded Ratio if Assets Decrease 10%
2007	86%	61%	2.20%	0.69%	141.2%	-14.1%
2008	79%	48%	0.98%	0.69%	164.5%	-16.4%
2009	61%	48%	2.31%	0.63%	126.3%	-12.6%
2010	58%	47%	2.32%	0.47%	123.3%	-12.3%
2011	60%	49%	2.23%	0.48%	122.4%	-12.2%
2012	59%	52%	1.98%	0.50%	114.6%	-11.5%
2013	58%	52%	2.05%	0.51%	111.5%	-11.1%
2014	58%	52%	1.97%	0.51%	112.3%	-11.2%
2015	58%	52%	1.89%	0.52%	110.8%	-11.1%
2016	55%	53%	2.37%	0.51%	104.0%	-10.4%

SECTION III

TABLES

Development of Unfunded Actuarial Accrued Liability

	January 1, 2016	January 1, 2015	
		Post-Experience Study	Pre-Experience Study
1. Covered payroll for upcoming year	\$ 886,801,928	\$ 844,535,935	\$ 844,535,935
2. Present value of future pay	\$ 7,785,913,663	\$ 7,514,345,538	\$ 7,450,495,873
3. Present value of benefits for active members			
a. Future occupational disabilities	\$ 152,345,427	\$ 152,870,951	\$ 145,149,639
b. Future total disabilities	38,905,158	37,496,935	30,400,148
c. Future active deaths	33,761,290	32,558,219	26,160,798
d. Total for actives	\$ 225,011,875	\$ 222,926,105	\$ 201,710,585
4. Total present value of benefits			
a. Current disabled members	\$ 265,786,156	\$ 245,247,767	\$ 243,179,179
b. Current beneficiaries of deceased members	30,430,242	26,401,229	25,703,346
c. Active members (Item 4d)	225,011,875	222,926,105	201,710,585
d. Total	\$ 521,228,273	\$ 494,575,101	\$ 470,593,110
5. Unfunded actuarial accrued liability (UAAL)/(surplus)			
a. Present value of benefits	\$ 521,228,273	\$ 494,575,101	\$ 470,593,110
b. Present value of administrative costs*	7,794,816	6,029,190	N/A
c. Less present value of future contributions (2.6%)	(184,241,095)	(174,176,595)	(172,464,180)
d. Less actuarial value of assets	(361,070,410)	(345,009,408)	(345,009,408)
e. UAAL/(surplus)	\$ (16,288,416)	\$ (18,581,712)	\$ (46,880,478)
6. a. Current Contribution	2.60%	2.60%	2.60%
b. Calculated Contribution (Aggregate Funding)	2.37%	2.32%	1.89%
c. Difference (a. - b.)	0.23%	0.28%	0.71%

*As of January 1, 2016, this is a method change to explicitly include administrative expenses.

Actuarial Present Value of Future Benefits

	<u>January 1, 2016</u>	<u>January 1, 2015</u>
1. Active members		
a. Total disability	\$ 38,905,158	\$ 30,400,148
b. Occupational disability	152,345,427	145,149,639
c. Off-duty death	23,336,774	16,194,354
d. On-duty death	10,424,516	9,966,444
e. Total	<u>\$ 225,011,875</u>	<u>\$ 201,710,585</u>
2. Members in pay status		
a. Total disabled	\$ 69,648,686	\$ 62,256,102
b. Occupationally disabled	196,137,470	180,923,077
c. Survivors	30,430,242	25,703,346
d. Total	<u>\$ 296,216,398</u>	<u>\$ 268,882,525</u>
3. Total actuarial present value of future benefits	\$ 521,228,273	\$ 470,593,110

Actuarial Gain/(Loss) on UAAL

For the year ending December 31,	2015	2014
1. Unfunded actuarial accrued liability (UAAL) as of January 1	\$ (46,880,478)	\$ (40,360,520)
2. Interest on UAAL for one year	(3,516,036)	(3,027,039)
3. Expected UAAL as of December 31 (1 + 2)	(50,396,514)	(43,387,559)
4. Change in Unfunded Liability due to:		
a. Benefit Changes	0	0
b. Provision or Assumption Changes	31,734,610	(3,720,792)
5. Expected UAAL as of December 31 after changes in assumption, methods and plan provisions	(18,661,904)	(47,108,351)
6. Actual UAAL as of December 31	(16,288,416)	(46,880,478)
7. Actuarial gain/(loss) for the period (5 - 6)	(2,373,488)	(227,873)
 <u>SOURCE OF GAINS/(LOSSES)</u>		
8. Asset gain/(loss) (See Table 9)	(2,387,649)	2,922,275
9. Salary liability gain/(loss) for the period	804,572	1,512,358
10. Benefit adjustment granted as of October 1 (0.96% in 2015, 0.86% in 2014)	(1,983,614)	(1,644,172)
11. Net liability gain/(loss) for the period (7- 8 - 9 - 10)	1,193,202	(3,018,334)

**Summary of Historical Valuation Results
 As of the Valuation Date January 1,**

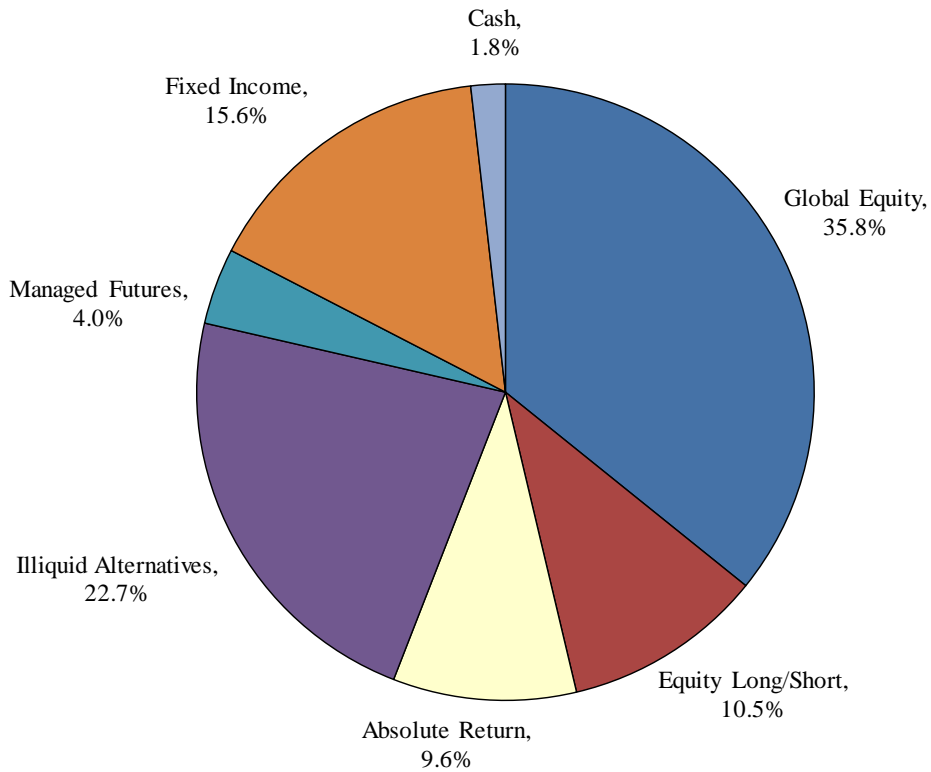
	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>2013</u>	<u>2012</u>	<u>2011</u>	<u>2010</u>	<u>2009</u>	<u>2008</u>	<u>2007</u>
1. Number of members										
a. Active	11,681	11,391	11,341	11,076	10,958	10,903	11,077	11,157	10,971	10,600
b. Disabled	944	904	851	814	774	747	706	673	647	619
c. Survivor	119	116	117	114	107	106	106	99	100	105
d. Total	<u>12,744</u>	<u>12,411</u>	<u>12,309</u>	<u>12,004</u>	<u>11,839</u>	<u>11,756</u>	<u>11,889</u>	<u>11,929</u>	<u>11,718</u>	<u>11,324</u>
2. Covered payroll (prior year)	\$ 863,106	\$ 827,633	\$ 810,578	\$ 787,010	\$ 755,952	\$ 750,497	\$ 751,781	\$ 729,724	\$ 668,502	\$ 623,700
3. Average compensation	\$ 73,890	\$ 72,657	\$ 71,473	\$ 71,055	\$ 68,986	\$ 68,834	\$ 67,869	\$ 65,405	\$ 60,934	\$ 58,840
4. Covered payroll for upcoming year	\$ 886,802	\$ 844,536	\$ 834,268	\$ 833,177	\$ 801,017	\$ 802,802	\$ 806,605	\$ 785,321	\$ 719,402	\$ 667,059
5. Actuarial value of assets	\$ 361,070	\$ 345,009	\$ 325,181	\$ 305,455	\$ 290,988	\$ 281,577	\$ 266,478	\$ 257,279	\$ 300,643	\$ 274,092
6. Market value of assets	\$ 351,520	\$ 353,776	\$ 339,347	\$ 301,653	\$ 275,873	\$ 279,882	\$ 251,923	\$ 214,400	\$ 308,170	\$ 286,240
7. Present value of benefits										
a. Actives	\$ 225,012	\$ 201,711	\$ 203,254	\$ 198,232	\$ 192,101	\$ 214,708	\$ 218,346	\$ 217,161	\$ 192,594	\$ 217,408
b. Disabled	265,786	243,179	221,357	204,847	189,203	169,063	155,625	144,846	134,985	124,076
c. Survivors	30,430	25,703	26,290	25,700	23,036	22,180	22,413	20,894	19,629	19,630
d. Total	<u>\$ 521,228</u>	<u>\$ 470,593</u>	<u>\$ 450,900</u>	<u>\$ 428,778</u>	<u>\$ 404,340</u>	<u>\$ 405,952</u>	<u>\$ 396,385</u>	<u>\$ 382,901</u>	<u>\$ 347,208</u>	<u>\$ 361,114</u>
8. Calculated Contribution	2.37%	1.89%	1.97%	2.05%	1.98%	2.23%	2.32%	2.31%	0.98%	2.20%

\$ amounts in '000s

**Allocation of Plan Assets
 at Fair Value**

	<u>Actual Allocation</u> January 1, 2016	<u>Target</u> <u>Allocation</u>
1. Global Equity	35.8%	37.0%
2. Equity Long/Short	10.5%	10.0%
3. Absolute Return	9.6%	11.0%
4. Illiquid Alternatives	22.7%	20.0%
5. Managed Futures	4.0%	4.0%
6. Fixed Income	15.6%	16.0%
7. Cash	<u>1.8%</u>	<u>2.0%</u>
	100.0%	100.0%

Asset Allocation as of January 1, 2016



Reconciliation of Plan Net Assets

	Year Ending	
	December 31, 2015	December 31, 2014
1. Market value of assets at January 1	\$ 353,776,233	\$ 339,346,840
2. Revenue for the year		
a. Contributions		
i. Member contributions	\$ 2,980,748	\$ 2,873,719
ii. Employer contributions	13,957,159	12,635,018
iii. SWDD roll to normal contributions	0	0
b. Net investment income		
i. Interest	\$ 872,152	\$ 770,462
ii. Dividends	3,018,614	3,469,505
iii. Net change in accrued income	77,784	(58,178)
iv. Unrealized gain/(loss)	(8,846,261)	5,413,615
v. Realized gain/(loss)	11,175,986	13,052,257
vi. Investment expense	(3,540,154)	(3,068,655)
vii. Other Income	2,850,975	2,784,354
c. Total revenue	\$ 22,547,003	\$ 37,872,097
3. Expenditures for the year		
a. Benefit payments and refunds	\$ (24,096,515)	\$ (22,720,490)
b. Administrative expense	(706,904)	(722,215)
c. Total expenditures	\$ (24,803,419)	\$ (23,442,705)
4. Increase in net assets (Item 2c + Item 3c)	\$ (2,256,417)	\$ 14,429,393
5. Market value of assets at December 31 (Item 1 + Item 4)	\$ 351,519,816	\$ 353,776,233

Development of Actuarial Value of Assets

For the year ending December 31,	<u>2015</u>
1. Actuarial value of assets at beginning of year	\$ 345,009,408
2. Net new investments	
a. Contributions	\$ 16,937,907
b. Benefits paid	(24,096,515)
c. Net cash flow	<u>(7,158,608)</u>
3. Assumed investment return rate for fiscal year	7.5%
4. Assumed investment return for fiscal year	\$ 25,607,259
5. Expected Actuarial Value at end of year	\$ 363,458,059
6. Market value of assets at end of year	\$ 351,519,816
7. Excess return (6-5)	\$ (11,938,243)
8. Development of amounts to be recognized as of December 31, 2015:	

Fiscal Year End	Remaining Deferrals of		Net Deferrals Remaining	Years Remaining	Recognized for this valuation	Remaining after this valuation
	Excess (Shortfall) of Investment Income	Offsetting of Gains/(Losses)				
	(1)	(2)	(3) = (1) + (2)	(4)	(5) = (3) / (4)	(6) = (3) - (5)
2011	\$ 0	\$ 0	\$ 0	1	\$ 0	\$ 0
2012	0	0	0	2	0	0
2013	8,766,825	(8,766,825)	0	3	0	0
2014	0	0	0	4	0	0
2015	<u>(20,705,068)</u>	<u>8,766,825</u>	<u>(11,938,243)</u>	5	<u>(2,387,649)</u>	<u>(9,550,594)</u>
Total	\$ (11,938,243)	\$ 0	\$ (11,938,243)		\$ (2,387,649)	\$ (9,550,594)

9. Actuarial value of assets as of December 31, 2015 (Item 6 - Item 8)	\$ 361,070,410
10. Ratio of actuarial value to market value	102.7%

Amounts in column (1) for fiscal years ending 2011 through 2014 are from the prior valuation. The column (1) amount for fiscal year 2015 is developed using item 7 less the total of column (1) for fiscal years ending 2011 through 2014. To the extent possible, the 2015 excess or shortfall is used to reduce prior bases. In this case, a portion of the 2015 base is used to offset the remaining 2013 base, and then the net remaining 2015 base is amortized over five years. The first base was established in fiscal year 2013, and prior bases for fiscal years 2011 and 2012 were not established. The fiscal year 2014 base is \$0 because the entire base was used to offset the 2013 loss in a prior valuation.

Investment Yields

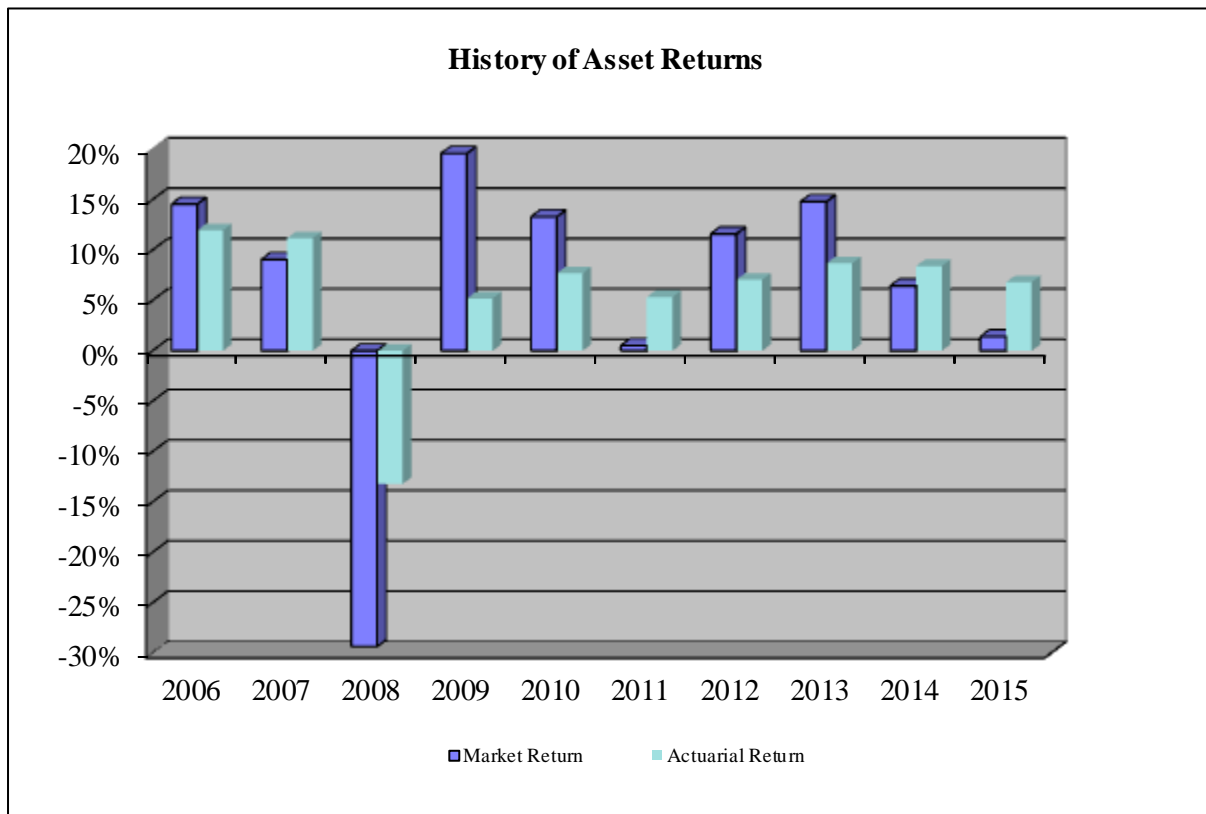
Item	Market Value	Actuarial Value
1. Assets as of January 1, 2015 (A)	\$ 353,776,233	\$ 345,009,408
2. Contributions during FY15	16,937,907	16,937,907
3. Benefit payments made during FY15	(24,096,515)	(24,096,515)
4. Investment return during FY15	4,902,191	23,219,610
5. Assets as of January 1, 2016 (B): (1 + 2 - 3 + 4)	351,519,816	361,070,410
6. Approximate rate of return on average invested assets		
a. Net investment income (I)	4,902,191	23,219,610
b. Estimated return based on $(2I / (A + B - I))$	1.40%	6.80%

Gain/(Loss) on Actuarial Value of Assets

Item	Valuation as of January 1, 2016	Valuation as of January 1, 2015
1. Actuarial assets, prior valuation	\$ 345,009,408	\$ 325,180,768
2. Total contributions since prior valuation	\$ 16,937,907	\$ 15,508,737
3. Benefits since prior valuation	\$ (24,096,515)	\$ (22,720,490)
4. Assumed net investment income at 7.5%		
a. Beginning assets	\$ 25,875,706	\$ 24,388,558
b. Contributions	635,172	581,578
c. Benefits paid	(903,619)	(852,018)
d. Total	<u>\$ 25,607,259</u>	<u>\$ 24,118,118</u>
5. Expected actuarial assets (1 + 2 + 3 + 4d)	\$ 363,458,059	\$ 342,087,133
6. Actual actuarial assets, this valuation	\$ 361,070,410	\$ 345,009,408
7. Asset gain (loss) since prior valuation (6 - 5)	\$ (2,387,649) Loss	\$ 2,922,275 Gain

History of Investment Return Rates

For Fiscal Year Ending	Market Value	Actuarial Value
December 31, 2006	14.56%	11.95%
December 31, 2007	9.06%	11.17%
December 31, 2008	(29.34%)	(13.20%)
December 31, 2009	19.58%	5.19%
December 31, 2010	13.29%	7.68%
December 31, 2011	0.52%	5.33%
December 31, 2012	11.60%	7.06%
December 31, 2013	14.80%	8.67%
December 31, 2014	6.45%	8.41%
December 31, 2015	1.40%	6.80%
Average Compound Returns		
Last 5 Years	6.81%	7.25%
Last 10 Years	5.21%	5.67%



Schedule of Funding Progress
Based on the Aggregate Funding Method
(As required by GASB #43)

Date	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL) (3) - (2)	Funded Ratio (2)/(3)	Annual Payroll	UAAL as % of Payroll (4)/(6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
January 1, 2005	\$ 223,389,097	\$ 231,252,507	\$ 7,863,410	96.6%	\$ 567,949,536	1.4%
January 1, 2006	249,299,172	258,726,894	9,427,721	96.4%	610,620,208	1.5%
January 1, 2007	274,091,581	258,243,478	(15,848,104)	106.1%	631,667,107	(2.5%)
January 1, 2008	300,642,721	223,999,678	(76,643,044)	134.2%	679,223,009	(11.3%)
January 1, 2009	257,279,496	241,813,411	(15,466,086)	106.4%	740,172,854	(2.1%)
January 1, 2010	266,477,875	250,709,436	(15,768,440)	106.3%	758,113,476	(2.1%)
January 1, 2011	281,577,454	260,688,472	(20,888,983)	108.0%	750,497,200	(2.8%)
January 1, 2012	290,988,339	255,841,269	(35,147,071)	113.7%	755,952,497	(4.6%)
January 1, 2013	305,454,945	272,350,253	(33,104,693)	112.2%	787,009,650	(4.2%)
January 1, 2014	325,180,768	284,820,249	(40,360,519)	114.2%	810,578,220	(5.0%)
January 1, 2015	345,009,408	298,128,930	(46,880,478)	115.7%	827,633,440	(5.7%)
January 1, 2016	361,070,410	344,781,994	(16,288,416)	104.7%	863,105,687	(1.9%)

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets. With regard to any funded status measurements presented in this report:

- (1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.
- (2) The measurement alone is inappropriate for assessing the need for or the amount of future employer contributions.
- (3) The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets, unless the market value of assets is used in the measurement.

Schedule of Funding Progress
Based on the Entry Age Normal Funding Method

Date	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL) (3) - (2)	Funded Ratio (2)/(3)	Annual Payroll	UAAL as % of Payroll (4)/(6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
January 1, 2007	274,091,581	194,159,323	(79,932,258)	141.2%	631,667,107	(12.7%)
January 1, 2008	300,642,721	182,814,659	(117,828,062)	164.5%	679,223,009	(17.3%)
January 1, 2009	257,279,496	203,673,786	(53,605,710)	126.3%	740,172,854	(7.2%)
January 1, 2010	266,477,875	216,103,895	(50,373,980)	123.3%	758,113,476	(6.6%)
January 1, 2011	281,577,454	229,959,016	(51,618,438)	122.4%	750,497,200	(6.9%)
January 1, 2012	290,988,339	253,869,640	(37,118,699)	114.6%	755,952,497	(4.9%)
January 1, 2013	305,454,945	274,068,253	(31,386,692)	111.5%	787,009,650	(4.0%)
January 1, 2014	325,180,768	289,577,412	(35,603,356)	112.3%	810,578,220	(4.4%)
January 1, 2015	345,009,408	311,334,019	(33,675,389)	110.8%	827,633,440	(4.1%)
January 1, 2016	361,070,410	347,242,942	(13,827,468)	104.0%	863,105,687	(1.6%)

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets. With regard to any funded status measurements presented in this report:

- (1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.
- (2) The measurement alone is inappropriate for assessing the need for or the amount of future employer contributions.
- (3) The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets, unless the market value of assets is used in the measurement.

History of Employer Contributions

<u>Valuation Date</u>	<u>Annual Required Contribution Rate</u>	<u>Actual Contribution Made *</u>	<u>Percentage Contributed</u>
January 1, 2004	0%	0%	100%
January 1, 2005	0%	0%	100%
January 1, 2006	0%	0%	100%
January 1, 2007	0%	0%	100%
January 1, 2008	0%	0%	100%
January 1, 2009	0%	0%	100%
January 1, 2010	0%	0%	100%
January 1, 2011	0%	0%	100%
January 1, 2012	0%	0%	100%
January 1, 2013	0%	0%	100%
January 1, 2014	0%	0%	100%
January 1, 2015	0%	0%	100%
January 1, 2016	0%	0%	100%

* All contributions are made by employees or on behalf of employees

Solvency Test

Valuation Date	Aggregated Accrued Liabilities for			Actuarial Value of Assets	Portion of Accrued Liabilities Covered by Reported Assets		
	Active Members Contributions	Retirees	Members (Employer Financed Portion)		(5)/(2)	[(5)-(2)]/(3)	[(5)-(2)-(3)]/(4)
		Beneficiaries and Vested Terminations					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
January 1, 2004	\$ 0	\$ 118,710	\$ 123,256	\$ 212,273	100%	100%	76%
January 1, 2005	0	125,741	105,512	223,389	100%	100%	93%
January 1, 2006	0	135,159	123,568	249,299	100%	100%	92%
January 1, 2007	0	143,706	114,537	274,092	100%	100%	100%
January 1, 2008	0	154,614	69,386	300,643	100%	100%	100%
January 1, 2009	0	165,740	76,074	257,279	100%	100%	100%
January 1, 2010	0	178,039	72,671	266,478	100%	100%	100%
January 1, 2011	0	191,243	69,445	281,577	100%	100%	100%
January 1, 2012	0	212,239	43,602	290,988	100%	100%	100%
January 1, 2013	0	230,546	41,804	305,455	100%	100%	100%
January 1, 2014	0	247,646	37,174	325,181	100%	100%	100%
January 1, 2015	0	268,883	29,246	345,009	100%	100%	100%
January 1, 2016	0	296,216	48,566	361,070	100%	100%	100%

\$ amounts in '000s

Cash Flow Analysis

Year Ending December 31,	Contributions for the Year	Expenditures During the Year				External Cash Flow for the Year	Market Value of Assets	External Cash Flow as Percent of Market Value
		Benefit Payments	Refund of Contributions	Expenses	Total			
2004	\$ 5,866	\$ (11,116)	\$ 0	\$ (856)	\$ (11,972)	\$ (6,105)	\$ 236,899	(2.6%)
2005	7,093	(11,856)	0	(1,584)	(13,440)	(6,347)	254,275	(2.5%)
2006	8,285	(13,007)	0	(1,796)	(14,803)	(6,518)	286,240	(2.3%)
2007	9,902	(13,742)	0	(2,102)	(15,844)	(5,942)	308,170	(1.9%)
2008	10,963	(14,887)	0	(2,192)	(17,079)	(6,116)	214,400	(2.9%)
2009	11,957	(16,010)	0	(1,756)	(17,766)	(5,809)	251,923	(2.3%)
2010	12,259	(17,435)	0	(1,963)	(19,398)	(7,139)	279,882	(2.6%)
2011	12,813	(18,265)	0	(2,175)	(20,439)	(7,627)	275,873	(2.8%)
2012	13,612	(19,482)	0	(2,616)	(22,098)	(8,486)	301,653	(2.8%)
2013	14,570	(21,052)	0	(3,669)	(24,721)	(10,151)	339,347	(3.0%)
2014	15,509	(22,720)	0	(3,791)	(26,511)	(11,003)	353,776	(3.1%)
2015	16,938	(24,097)	0	(4,247)	(28,344)	(11,406)	351,520	(3.2%)
2016*	18,474	(25,748)	0	(4,396)	(30,143)	(11,669)	365,777	(3.2%)
2017*	19,589	(27,479)	0	(4,550)	(32,028)	(12,439)	380,304	(3.3%)
2018*	20,495	(29,239)	0	(4,709)	(33,947)	(13,452)	394,870	(3.4%)

Results for 2016, 2017, & 2018 are based on expected contributions, expected benefit payments, and assumed investment return of 7.5%
 Expected contributions are based on applicable employee rate of 2.6% for 2016, 2.7% for 2017 and 2018, and 3.5% annual payroll growth
 Expected benefit payments are based on the current plan benefits and expected retirements, terminations, and mortality
 Assets are assumed to increase at the annual return of 7.5% with all cash flow occurring in the middle of the year
 \$ amounts in '000s

**Annual Required Contribution
GASB #45**

Estimated Employer Annual Required Contribution (ARC)	\$	0
Net OPEB Obligation		
1. Net OPEB obligation as of January 1, 2016	\$	0
2. Estimated employer annual required contribution		0
3. Estimated employer contribution for 2016 plan year		0
4. Estimated net OPEB obligation as of December 31, 2016	\$	<u>0</u>

**Notes to Required Supplementary Information
 (As required by GASB #43)**

Valuation date	January 1, 2016
Actuarial cost method	Aggregate
Amortization method	N/A
Remaining amortization period ¹	N/A
Asset valuation method	5-year smoothed fair value
Actuarial assumptions:	
Investment rate of return	7.50%
Projected salary increase	4.00% - 14%
Includes inflation at:	2.50%
Post-retirement benefit adjustments	0.00% - 3.00%

¹ Per GASB #43, Plans using the aggregate method must disclose a funding schedule and an equivalent single amortization period using the Entry Age Normal cost method. Per the Entry Age Normal method, the single amortization period as of January 1, 2016 is 2.6 years

Membership Data

	<u>January 1, 2016</u>	<u>January 1, 2015</u>	<u>January 1, 2014</u>
1. Active members			
a. Number	11,681	11,391	11,341
b. Total payroll	\$ 863,105,687	\$ 827,633,440	\$ 810,578,220
c. Average annual salary	\$ 73,890	\$ 72,657	\$ 71,473
d. Average age	41.7	41.8	41.7
e. Average service	11.3	11.5	11.5
2. Disabled members and beneficiaries			
a. Number	944	904	851
b. Total annual benefits	\$ 22,002,243	\$ 20,521,235	\$ 18,791,255
c. Average annual benefit	\$ 23,307	\$ 22,700	\$ 22,081
d. Average age	57.6	57.1	57.1
3. Survivors of deceased active members			
a. Number	119	116	117
b. Total annual benefits	\$ 2,892,842	\$ 2,760,729	\$ 2,707,029
c. Average annual benefit	\$ 24,310	\$ 23,799	\$ 23,137
d. Average age	55.0	54.3	53.8

Historical Summary of Active Member Data

<u>Valuation Date</u>	<u>Active Count</u>	<u>Average Age</u>	<u>Average Service</u>	<u>Covered Payroll</u>	<u>Average Annual Salary</u>	<u>Percent Change in Average Salary</u>
January 1, 2004	9,669	39.5	10.2	\$ 528,556,615	\$54,665	3.65%
January 1, 2005	10,031	39.6	10.1	560,172,994	55,844	2.16%
January 1, 2006	10,338	39.7	10.1	596,231,150	57,674	3.28%
January 1, 2007	10,600	39.9	10.2	623,699,534	58,840	2.02%
January 1, 2008	10,971	40.0	10.1	668,502,284	60,934	3.56%
January 1, 2009	11,157	40.3	10.4	729,723,656	65,405	7.34%
January 1, 2010	11,077	40.8	10.9	751,781,464	67,869	3.77%
January 1, 2011	10,903	41.4	11.3	750,497,200	68,834	1.42%
January 1, 2012	10,958	41.6	11.5	755,952,497	68,986	0.22%
January 1, 2013	11,076	41.8	11.7	787,009,650	71,055	3.00%
January 1, 2014	11,341	41.7	11.5	810,578,220	71,473	0.59%
January 1, 2015	11,391	41.8	11.5	827,633,440	72,657	1.66%
January 1, 2016	11,681	41.7	11.3	863,105,687	73,890	1.70%

**Distribution of Active Members by Age and by Years of Service
As of December 31, 2015**

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	Less than 1 Count & Avg. Comp.	1-2 Count & Avg. Comp.	2-3 Count & Avg. Comp.	3-4 Count & Avg. Comp.	4-5 Count & Avg. Comp.	5-9 Count & Avg. Comp.	10-14 Count & Avg. Comp.	15-19 Count & Avg. Comp.	20-24 Count & Avg. Comp.	25-29 Count & Avg. Comp.	30-34 Count & Avg. Comp.	35 & Over Count & Avg. Comp.	
Under 25	153 \$42,037	71 \$47,893	23 \$53,082	4 \$56,031									251 \$45,064
25-29	355 \$46,804	237 \$52,444	195 \$56,150	122 \$60,486	91 \$65,772	53 \$64,585							1,053 \$53,924
30-34	308 \$48,906	226 \$54,532	221 \$59,126	169 \$64,370	154 \$68,552	568 \$71,741	134 \$77,050						1,780 \$63,462
35-39	143 \$50,273	130 \$58,779	139 \$61,373	88 \$62,040	102 \$68,333	600 \$73,427	598 \$78,531	113 \$85,724					1,913 \$71,351
40-44	88 \$52,525	76 \$55,958	62 \$59,422	76 \$61,750	44 \$66,549	382 \$73,141	676 \$78,451	570 \$84,741	61 \$93,975				2,035 \$76,259
45-49	56 \$55,864	45 \$54,835	44 \$70,904	43 \$67,817	39 \$68,400	235 \$72,522	505 \$78,996	652 \$84,366	381 \$91,905	62 \$94,739			2,062 \$81,053
50-54	24 \$63,141	25 \$62,932	21 \$72,711	22 \$71,387	19 \$70,388	109 \$73,390	199 \$78,835	297 \$84,676	379 \$91,835	281 \$95,260	52 \$99,563		1,428 \$86,212
55-59	18 \$62,262	14 \$77,145	14 \$82,243	11 \$64,967	5 \$102,734	51 \$75,325	83 \$77,816	112 \$82,510	148 \$88,064	174 \$92,199	132 \$92,924	31 \$96,463	793 \$86,323
60-64	8 \$75,877	6 \$52,145	5 \$82,094	7 \$57,580	4 \$90,855	18 \$77,364	31 \$78,178	39 \$86,335	39 \$87,966	31 \$89,294	48 \$91,356	72 \$94,677	308 \$86,625
65 & Over	2 \$43,352	4 \$92,962	2 \$72,482	1 \$53,854	1 \$136,350	6 \$73,478	8 \$76,580	6 \$99,285	3 \$68,066	3 \$86,773	6 \$87,230	16 \$99,574	58 \$86,621
Total	1,155 \$48,814	834 \$54,980	726 \$60,338	543 \$63,154	459 \$68,538	2,022 \$72,643	2,234 \$78,512	1,789 \$84,599	1,011 \$91,219	551 \$93,853	238 \$93,915	119 \$95,801	11,681 \$73,890
Average:		Age: Service:	41.7 11.3					Number of participants:				Males: Females:	10,611 1,070

Schedule of Retirants & Annuitants Added to & Removed from Rolls

Year Ended	Added to Rolls*		Removed from Rolls		Rolls-End of Year		% Increase in Annual Benefit	Average Annual Benefit
	Number	Annual Benefit	Number	Annual Benefit	Number	Annual Benefit		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
December 31, 2003	45	\$ 837,778	14	\$ 204,551	616	\$ 10,807,344	5.95%	\$ 17,544
December 31, 2004	50	752,870	9	123,720	657	11,436,494	5.82%	17,407
December 31, 2005	49	1,349,934	17	270,411	689	12,516,017	9.44%	18,165
December 31, 2006	78	2,061,528	11	223,439	724	13,274,583	6.06%	18,335
December 31, 2007	39	1,264,925	16	258,356	747	14,281,152	7.58%	19,118
December 31, 2008	45	1,259,221	20	339,442	772	15,200,931	6.44%	19,690
December 31, 2009	54	1,537,193	14	312,334	812	16,425,790	8.06%	20,229
December 31, 2010	50	1,366,173	9	185,774	853	17,606,189	7.19%	20,640
December 31, 2011	46	1,239,908	18	414,489	881	18,431,608	4.69%	20,921
December 31, 2012	56	1,721,508	9	166,231	928	19,986,885	8.44%	21,538
December 31, 2013	56	1,853,252	16	341,854	968	21,498,284	7.56%	22,209
December 31, 2014	67	2,082,872	15	299,192	1,020	23,281,964	8.30%	22,825
December 31, 2015	52	1,797,136	9	184,015	1,063	24,895,085	6.93%	23,420

*Includes benefit adjustments

Summary of Members and Adjusted Payroll by Employer

City Code	City Name	Police		Fire		Total	
		No.	Earnings	No.	Earnings	No.	Earnings
1	AGUILAR	1	\$ 32,000	0	\$ 0	1	\$ 32,000
3	ALAMOSA	24	1,227,888	0	0	24	1,227,888
4	ALMA	2	87,000	0	0	2	87,000
5	ANTONITO	2	52,750	0	0	2	52,750
7	ARVADA	168	13,379,483	0	0	168	13,379,483
8	ASPEN	22	1,561,997	0	0	22	1,561,997
9	AULT	5	228,526	0	0	5	228,526
10	AURORA	669	53,621,882	307	24,018,936	976	77,640,819
11	AVON	18	1,263,350	0	0	18	1,263,350
12	BASALT	10	762,395	0	0	10	762,395
13	BAYFIELD	8	419,044	0	0	8	419,044
18	BLANCA	1	35,784	0	0	1	35,784
22	BOULDER	178	14,196,751	110	9,595,922	288	23,792,673
26	BRIGHTON (GREATER) FPD	0	0	61	4,072,839	61	4,072,839
27	BROOMFIELD	146	12,492,897	0	0	146	12,492,897
28	BRUSH	11	514,065	0	0	11	514,065
29	BUENA VISTA	8	407,948	0	0	8	407,948
33	CANON CITY	33	1,540,399	0	0	33	1,540,399
35	CASTLE ROCK	0	0	74	5,879,585	74	5,879,585
36	CEDAREEDGE	6	282,956	0	0	6	282,956
37	CENTER	7	267,261	0	0	7	267,261
38	CENTRAL CITY	6	362,724	1	72,913	7	435,637
40	CHERRY HILLS VILLAGE	23	1,819,719	0	0	23	1,819,719
44	COLLBRAN MARSHALS	2	83,997	0	0	2	83,997
45	COLORADO SPRINGS	652	46,374,864	387	29,850,311	1,039	76,225,175
46	COLUMBINE VALLEY	6	316,673	0	0	6	316,673
47	COMMERCE CITY	92	7,097,630	0	0	92	7,097,630
48	CORTEZ	32	1,535,760	0	0	32	1,535,760
57	DACONO	11	586,552	0	0	11	586,552
58	DEBEQUE POLICE	4	196,573	0	0	4	196,573

**Fire and Police Pension Association
Statewide Death & Disability Fund
Actuarial Valuation – January 1, 2016**

*Section III
Table 21*

City Code	City Name	Police		Fire		Total	
		No.	Earnings	No.	Earnings	No.	Earnings
60	DEL NORTE	2	\$ 119,356	0	\$ 0	2	\$ 119,356
61	DELTA	16	856,186	0	0	16	856,186
62	DENVER	1,372	114,022,314	873	72,831,143	2,245	186,853,457
63	DILLON	9	557,595	0	0	9	557,595
67	DURANGO	53	3,266,745	0	0	53	3,266,745
73	EDGEWATER	16	877,151	0	0	16	877,151
74	ELIZABETH	5	354,590	0	0	5	354,590
76	ENGLEWOOD	70	5,490,093	1	74,971	71	5,565,064
77	ERIE	23	1,742,325	0	0	23	1,742,325
78	ESTES PARK	19	1,423,109	0	0	19	1,423,109
79	EVANS	33	2,206,969	0	0	33	2,206,969
80	FAIRPLAY MARSHALLS	3	137,891	0	0	3	137,891
81	FEDERAL HEIGHTS	21	1,371,251	15	902,985	36	2,274,236
82	STONE MARSHALLS	19	1,225,754	0	0	19	1,225,754
85	FLORENCE	11	436,555	0	0	11	436,555
86	FORT COLLINS	231	18,460,990	1	78,602	232	18,539,592
87	FORT LUPTON	15	910,718	0	0	15	910,718
88	FORT MORGAN	26	1,457,469	0	0	26	1,457,469
89	FOUNTAIN	46	2,508,663	27	1,459,417	73	3,968,079
90	FOWLER	2	64,093	0	0	2	64,093
93	FRISCO	12	743,220	0	0	12	743,220
94	FRUITA	17	966,499	0	0	17	966,499
97	GEORGETOWN	2	130,705	0	0	2	130,705
99	GLENDALE	25	1,596,993	0	0	25	1,596,993
100	GLENWOOD SPRINGS	23	1,566,450	22	1,460,425	45	3,026,876
101	GOLDEN	44	3,356,596	8	580,726	52	3,937,321
102	GRANADA	1	29,664	0	0	1	29,664
104	GRAND JUNCTION	112	8,487,902	113	8,104,892	225	16,592,794
106	PARACHUTE	4	216,378	0	0	4	216,378
107	GREELEY	145	11,246,884	95	7,192,952	240	18,439,836

City Code	City Name	Police		Fire		Total	
		No.	Earnings	No.	Earnings	No.	Earnings
109	GREENWOOD VILLAGE	64	\$ 4,831,173	0	\$ 0	64	\$ 4,831,173
115	HAXTUN POLICE	3	116,445	0	0	3	116,445
119	HOLYOKE	4	156,557	0	0	4	156,557
124	HUGO	2	72,400	0	0	2	72,400
125	IDAHO SPRINGS	7	383,345	0	0	7	383,345
126	IGNACIO	6	359,601	0	0	6	359,601
129	JOHNSTOWN	17	973,365	0	0	17	973,365
137	LAFAYETTE	38	2,689,843	22	1,366,853	60	4,056,696
138	LA JARA	4	147,333	0	0	4	147,333
139	LA JUNTA	12	545,172	6	234,751	18	779,923
141	LARKSPUR FPD	0	0	17	936,833	17	936,833
143	LAMAR	20	858,994	6	247,655	26	1,106,649
144	LA SALLE	7	390,557	0	0	7	390,557
146	LA VETA	2	67,944	0	0	2	67,944
147	LEADVILLE	7	238,618	11	510,152	18	748,770
149	LITTLETON	72	5,726,037	142	11,965,757	214	17,691,795
150	LOCHBUIE	8	435,677	0	0	8	435,677
151	LONGMONT	139	10,957,381	88	7,007,838	227	17,965,218
153	LOVELAND	99	7,887,443	0	0	99	7,887,443
157	MANITOU SPRINGS	13	658,846	6	313,643	19	972,489
163	MILLIKEN	8	379,622	0	0	8	379,622
166	MONTE VISTA	14	527,582	0	0	14	527,582
167	MONTROSE	36	2,094,906	0	0	36	2,094,906
168	MONUMENT	1	45,000	0	0	1	45,000
170	MOUNTAIN VIEW	6	262,080	0	0	6	262,080
175	NORTHGLENN	67	4,565,124	0	0	67	4,565,124
179	OAK CREEK	2	96,694	0	0	2	96,694
180	OLATHE	4	145,407	0	0	4	145,407
188	PAGOSA SPRINGS	7	319,390	0	0	7	319,390
189	PALISADE	8	390,084	2	119,323	10	509,408

City Code	City Name	Police		Fire		Total	
		No.	Earnings	No.	Earnings	No.	Earnings
190	PALMER LAKE	2	\$ 85,030	0	\$ 0	2	\$ 85,030
191	PARKER	67	5,095,158	0	0	67	5,095,158
192	PAONIA	2	74,418	0	0	2	74,418
196	PLATTEVILLE	9	409,295	0	0	9	409,295
199	PUEBLO	182	12,324,753	124	8,161,390	306	20,486,144
201	RANGELY	4	297,331	0	0	4	297,331
206	RIFLE	20	1,259,307	0	0	20	1,259,307
208	ROCKY FORD	9	274,789	5	172,876	14	447,665
213	SALIDA	12	613,127	9	485,868	21	1,098,994
214	LOG LANE VILLAGE	3	121,855	0	0	3	121,855
215	SANFORD	1	33,405	0	0	1	33,405
220	SHERIDAN	28	1,780,167	0	0	28	1,780,167
222	SILT	6	327,867	0	0	6	327,867
228	SNOWMASS VILLAGE	10	707,720	0	0	10	707,720
229	SPRINGFIELD	4	151,265	0	0	4	151,265
231	STEAMBOAT SPRINGS	22	1,468,968	27	1,526,060	49	2,995,028
232	STERLING	21	1,010,377	22	933,294	43	1,943,670
233	STRATTON	1	42,475	0	0	1	42,475
237	TELLURIDE	10	590,023	0	0	10	590,023
238	THORNTON	0	0	101	7,697,032	101	7,697,032
240	TRINIDAD	24	1,116,608	15	762,442	39	1,879,050
242	VAIL	27	2,074,701	29	2,037,893	56	4,112,593
247	WALSENBURG	7	294,646	0	0	7	294,646
252	WESTMINSTER	0	0	124	9,566,623	124	9,566,623
253	WHEAT RIDGE	77	5,607,273	0	0	77	5,607,273
254	WIGGINS	2	74,701	0	0	2	74,701
259	WOODLAND PARK	20	1,048,329	0	0	20	1,048,329
260	WRAY	6	288,064	0	0	6	288,064
262	YUMA	7	313,371	0	0	7	313,371
263	LAKESIDE	5	249,600	0	0	5	249,600

City Code	City Name	Police		Fire		Total	
		No.	Earnings	No.	Earnings	No.	Earnings
266	MOUNTAIN VILLAGE	5	\$ 303,208	0	\$ 0	5	\$ 303,208
268	LONE TREE	49	3,574,800	0	0	49	3,574,800
269	CUSTER COUNTY SHERIFFS	10	431,855	0	0	10	431,855
326	BRIGHTON	55	3,571,991	0	0	55	3,571,991
330	CANON CITY POLICE - DB SELECTION	1	52,324	0	0	1	52,324
338	THORNTON	177	13,682,224	0	0	177	13,682,224
501	ARVADA FPD	0	0	147	11,730,340	147	11,730,340
503	BERTHOUD FPD	0	0	21	1,102,283	21	1,102,283
504	BROADMOOR FPD	0	0	4	310,685	4	310,685
505	CHERRY HILLS FPD	0	0	5	463,814	5	463,814
506	CUNNINGHAM FPD	0	0	55	4,282,908	55	4,282,908
507	EAST GRAND FPD #4	0	0	5	287,443	5	287,443
509	CLIFTON FPD	0	0	13	832,146	13	832,146
510	FAIRMOUNT FPD	0	0	24	1,347,759	24	1,347,759
511	FRANKTOWN FPD	0	0	19	1,049,990	19	1,049,990
512	GREEN MTN FALLS/CHIPITA	0	0	1	49,123	1	49,123
513	PLATTEVILLE/GILCREST FPD	0	0	19	1,163,754	19	1,163,754
515	ELIZABETH FPD	0	0	17	966,849	17	966,849
516	MOUNTAIN VIEW FPD	0	0	73	5,700,877	73	5,700,877
518	POUDRE AUTHORITY	0	0	173	14,245,755	173	14,245,755
519	PUEBLO RURAL FPD	0	0	28	1,346,884	28	1,346,884
521	RED WHITE & BLUE FPD	0	0	46	3,283,492	46	3,283,492
522	EAGLE RIVER FPD	0	0	65	3,978,112	65	3,978,112
523	ESTES VALLEY FPD	0	0	3	232,133	3	232,133
524	SNOWMASS WILDCAT FPD	0	0	17	1,154,432	17	1,154,432
525	SOUTH ADAMS COUNTY FPD	0	0	38	1,966,213	38	1,966,213
531	COLORADO RIVER FIRE RESCUE AUTHORITY	0	0	56	3,153,854	56	3,153,854
532	NORTH METRO RESCUE	0	0	112	8,907,469	112	8,907,469
533	CANON CITY AREA FPD	0	0	29	1,821,175	29	1,821,175
534	WEST METRO FPD	0	0	257	21,694,612	257	21,694,612

City Code	City Name	Police		Fire		Total	
		No.	Earnings	No.	Earnings	No.	Earnings
537	MONTROSE FPD	0	\$ 0	32	\$ 2,301,839	32	\$ 2,301,839
538	BEULAH FIRE PROTECTION & AMBULANCE DISTRICT	0	0	1	54,600	1	54,600
540	SOUTH METRO RESCUE	0	0	307	26,522,040	307	26,522,040
542	SABLE-ALTURA FPD	0	0	7	210,740	7	210,740
543	SECURITY FPD	0	0	34	1,442,860	34	1,442,860
545	TELLURIDE FPD	0	0	7	505,175	7	505,175
548	SOUTHERN PARK COUNTY FPD	0	0	1	44,040	1	44,040
550	ADAMS COUNTY FPD	0	0	92	7,418,172	92	7,418,172
566	DONALD WESCOTT FPD	0	0	17	943,446	17	943,446
567	DURANGO & RESCUE AUTH	0	0	65	4,119,381	65	4,119,381
574	LEFTHAND FPD	0	0	3	159,200	3	159,200
578	LOS PINOS FPD	0	0	18	968,283	18	968,283
579	EVANS	0	0	14	808,992	14	808,992
580	BLACK FOREST RESCUE	0	0	11	584,591	11	584,591
588	PAGOSA FPD	0	0	8	440,325	8	440,325
592	FREDERICK STONE FPD	0	0	41	2,461,725	41	2,461,725
593	LAKE DILLON FPD	0	0	48	3,446,285	48	3,446,285
595	UPPER PINE RIVER FPD	0	0	31	1,407,373	31	1,407,373
711	ASPEN FPD	0	0	2	237,750	2	237,750
718	BENNETT FPD #7	0	0	10	506,691	10	506,691
719	BASALT & RURAL FPD	0	0	8	654,221	8	654,221
723	BLACK HAWK	0	0	19	1,566,818	19	1,566,818
726	BOULDER MOUNTAIN AUTH	0	0	2	127,824	2	127,824
730	BOULDER RURAL FPD	0	0	15	1,226,431	15	1,226,431
735	BYERS FPD #9	0	0	1	40,000	1	40,000
740	CARBONDALE AND RURAL FPD	0	0	15	1,015,715	15	1,015,715
749	CHAFFEE COUNTY FPD	0	0	4	188,855	4	188,855
752	ROCKY MOUNTAIN FPD	0	0	38	2,597,676	38	2,597,676
754	CIMARRON HILLS FPD	0	0	12	630,605	12	630,605
764	COPPER MOUNTAIN	0	0	14	836,804	14	836,804

**Fire and Police Pension Association
Statewide Death & Disability Fund
Actuarial Valuation – January 1, 2016**

*Section III
Table 21*

City Code	City Name	Police		Fire		Total	
		No.	Earnings	No.	Earnings	No.	Earnings
765	CORTEZ FPD	0	\$ 0	11	\$ 405,846	11	\$ 405,846
772	CRESTED BUTTE	0	0	8	423,580	8	423,580
774	CRIPPLE CREEK	0	0	13	704,871	13	704,871
779	DEBEQUE FPD	0	0	7	463,846	7	463,846
795	EATON FPD	0	0	14	681,033	14	681,033
810	FEDERAL HEIGHTS FIRE	0	0	1	99,515	1	99,515
811	FEDERAL HEIGHTS POLICE - DB SELECTION	1	50,955	0	0	1	50,955
1790	OAK CREEK POLICE CHIEF @ SWDB RATES	1	66,087	0	0	1	66,087
2153	LOVELAND FRA	0	0	78	5,331,369	78	5,331,369
2400	TRINIDAD FIRE - DB SELECTION	0	0	1	32,932	1	32,932
2520	WESTMINSTER FIRE - DB SELECTION	0	0	2	110,274	2	110,274
2557	TRI-LAKES MONUMENT FPD	0	0	43	2,433,279	43	2,433,279
3260	BRIGHTON POLICE - DB SELECTION	2	149,386	0	0	2	149,386
5030	BERTHOUD FPD	0	0	2	196,652	2	196,652
5136	KREMMLING FPD	0	0	1	60,840	1	60,840
5339	SOUTH FORK	0	0	2	85,000	2	85,000
5340	WEST METRO FPD - DB SELECTION	0	0	42	2,874,316	42	2,874,316
7102	ELK CREEK FPD	0	0	11	575,443	11	575,443
7109	EVERGREEN FPD	0	0	1	83,968	1	83,968
7112	FALCON FPD	0	0	19	1,112,037	19	1,112,037
7118	FLORISSANT FPD	0	0	1	23,500	1	23,500
7122	FORT LEWIS-MESA FPD	0	0	2	117,691	2	117,691
7123	FORT LUPTON FPD	0	0	23	1,178,304	23	1,178,304
7125	CLEAR CREEK AUTHORITY	0	0	2	135,779	2	135,779
7131	FRONT RANGE FRA	0	0	23	1,230,712	23	1,230,712
7136	GENESEE	0	0	2	125,184	2	125,184
7147	GRAND FPD #1	0	0	3	166,223	3	166,223
7149	GRAND LAKE FPD	0	0	4	210,660	4	210,660
7150	GRAND VALLEY FPD	0	0	25	1,631,463	25	1,631,463
7153	GREATER EAGLE FPD	0	0	14	746,400	14	746,400

City Code	City Name	Police		Fire		Total	
		No.	Earnings	No.	Earnings	No.	Earnings
7156	GYPSUM FPD	0	\$ 0	3	\$ 206,613	3	\$ 206,613
7158	HARTSEL FPD	0	0	1	49,955	1	49,955
7176	HUDSON FPD	0	0	19	764,389	19	764,389
7179	HYGIENE FPD	0	0	1	61,038	1	61,038
7185	INDIAN HILLS FPD	0	0	1	42,315	1	42,315
7187	INTER-CANYON FPD	0	0	1	78,000	1	78,000
7191	JEFFERSON-COMO FPD	0	0	5	202,290	5	202,290
7198	KIOWA FPD	0	0	3	126,000	3	126,000
7206	LAKE GEORGE FPD	0	0	1	51,054	1	51,054
7211	LA SALLE FPD	0	0	10	602,668	10	602,668
7222	FOOTHILLS & RESCUE	0	0	3	165,087	3	165,087
7226	LOWER VALLEY FPD	0	0	9	522,927	9	522,927
7227	LYONS FPD	0	0	1	62,930	1	62,930
7246	NEDERLAND FPD	0	0	4	218,434	4	218,434
7251	NORTH FORK FPD	0	0	1	61,600	1	61,600
7253	NORTH ROUTT COUNTY	0	0	1	60,622	1	60,622
7255	NORTHEAST TELLER COUNTY	0	0	14	812,778	14	812,778
7259	NORTH-WEST FPD	0	0	10	489,058	10	489,058
7263	OAK CREEK FPD	0	0	4	193,108	4	193,108
7285	PLATTE CANYON FPD	0	0	13	794,940	13	794,940
7287	PLATTE VALLEY FPD	0	0	18	1,012,990	18	1,012,990
7289	PLEASANT VIEW METRO	0	0	4	212,408	4	212,408
7294	PUEBLO W. METRO	0	0	21	975,318	21	975,318
7298	RATTLESNAKE FPD	0	0	3	168,043	3	168,043
7314	RYE FPD	0	0	6	225,026	6	225,026
7331	BIG SANDY FPD	0	0	1	32,565	1	32,565
7339	SOUTH FORK	2	96,255	0	0	2	96,255
7340	SOUTHEAST WELD FPD	0	0	14	630,640	14	630,640
7348	STRASBURG FPD #8	0	0	3	122,020	3	122,020
7349	STRATMOOR HILLS FPD	0	0	6	283,691	6	283,691

**Fire and Police Pension Association
 Statewide Death & Disability Fund
 Actuarial Valuation – January 1, 2016**

*Section III
 Table 21*

City Code	City Name	Police		Fire		Total	
		No.	Earnings	No.	Earnings	No.	Earnings
7353	TIMBERLINE FPD FIRE CHIEF @ SWDB RATE	0	0	1	65,000	1	65,000
7369	WELLINGTON	0	0	9	575,831	9	575,831
7373	WEST DOUGLAS COUNTY	0	0	1	86,000	1	86,000
7375	WEST ROUTT FPD	0	0	9	258,268	9	258,268
7381	WHEAT RIDGE FPD	0	0	33	1,857,115	33	1,857,115
7384	WINDSOR SEVERANCE FPD	0	0	41	2,151,944	41	2,151,944
7481	PLATEAU VALLEY FPD	0	0	4	267,941	4	267,941
Totals		6,092	\$ 452,616,304	5,589	\$ 410,494,790	11,681	\$ 863,105,687

Summary of Inactive Members

	<u>Count</u>	<u>Average Age</u>	<u>Average Monthly Benefit</u>
Totally Disabled Members*	135	57.5	\$2,955
Occupationally Disabled Members*	809	57.6	\$1,773
Beneficiaries of Deceased Active Members	119	55.0	\$2,026

* including beneficiaries of deceased retirees

SECTION IV
APPENDICES

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

I. Valuation Date

The valuation date is January 1st of each plan year. This is the date as of which the actuarial present value of future benefits and the actuarial value of assets are determined.

II. Actuarial Cost Method

The actuarial valuation uses the Aggregate Funding Method. Under this method, the contribution rate is calculated to fully fund the present value of all benefits over the remaining working career of the active employees. The contribution rate is determined as a percentage of increasing payroll.

1. The valuation is prepared on the projected benefit basis. The present value of each participant's expected benefit payable at retirement or termination is determined, based on age, service, sex, compensation, and the interest rate assumed to be earned in the future (7.5%). The calculations take into account the probability of a participant's death or termination of employment prior to becoming eligible for a benefit, as well as the possibility of his terminating with a service benefit. Future salary increases are also anticipated. The present value of the expected benefits payable on account of the active participants is added to the present value of the expected future payments to retired participants and beneficiaries to obtain the present value of all expected benefits payable from the Plan on account of the present group of participants and beneficiaries.
2. The actuarial value of assets is subtracted from the present value of all expected benefits to determine the present value of future normal costs. The future normal costs are spread across the future value of salaries to be paid to the current active population to determine a contribution rate.

III. Actuarial Value of Assets

Effective January 1, 2013, the actuarial value of assets is equal to the market value of assets less a five-year phase in of the excess (shortfall) between expected investment return and actual income. The actual calculation is based on the difference between actual earnings and expected earnings each year, and recognizes the cumulative excess return (or shortfall) over at a minimum rate of 20% per year. The speed of the recognition will increase if the Plan continues to be in the same net deferred position (net gain or net loss) from one year to the next. This is intended to ensure the smoothed value of assets will converge towards the market value in a reasonable amount of time. In addition, a gain or loss that is in the opposite direction of the current net position will be immediately recognized.

Expected earnings are determined using the assumed investment return rate and the beginning of year actuarial value of assets (adjusted for receipts and disbursements during the year). The returns are computed net of administrative and investment expenses.

IV. Actuarial Assumptions

The current assumptions were adopted by the Board in 2015 for first use in this valuation following a regularly scheduled experience study. The rationale for all of the current assumptions is included in that report, dated June 1, 2015.

A. Economic Assumptions

1. Investment return: 7.50% per annum, compounded annually, composed of an assumed 2.50% inflation rate and a 5.00% real rate of return. This rate represents the assumed return, net of investment expenses.

2. Salary rate: Inflation rate of 2.50%, plus productivity component of 1.50%, plus step-rate/ promotional component as shown:

Years of Service	Annual Step-rate/ Promotional Rate	Total Annual Rate of Increase Including 2.50% Inflation Component and 1.50% Productivity Component
(1)	(2)	(4)
1	10.00%	14.00%
2	8.50%	12.50%
3	8.00%	12.00%
4	7.50%	11.50%
5	2.50%	6.50%
6	1.50%	5.50%
7	1.50%	5.50%
8	1.00%	5.00%
9	0.75%	4.75%
10	0.50%	4.50%
11	0.50%	4.50%
12	0.50%	4.50%
13	0.25%	4.25%
14	0.25%	4.25%
15	0.00%	4.00%

Salary increases are assumed to occur once a year, on January 1. Therefore the pay used for the period between the valuation date and the first anniversary of the valuation date is equal to the reported pay for the prior year, annualized if necessary, and then increased by the salary increase assumption.

3. Payroll growth rate: In the amortization of the unfunded actuarial accrued liability, payroll is assumed to increase 3.50% per year. This increase rate is primarily due to the effect of inflation on salaries, with no allowance for future membership growth.

B. Demographic Assumptions

1. Mortality rates (members in payment status) –

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. All tables are projected with Scale BB.

Annual Rate per 1,000 Members					
Attained Age in 2016	Males	Females	Attained Age in 2016 (cont.)	Males	Females
(1)	(2)	(3)	(4)	(5)	(6)
50	2.17	1.23	70	19.10	13.63
55	3.68	1.97	75	30.57	22.42
60	7.24	4.62	80	50.31	37.25
65	12.31	8.52	85	84.25	63.46

The following table provides the life expectancy for an individual age 55 at retirement in a given year based on the assumption with full generational projection:

Year of Retirement				
Gender	2016	2021	2026	2031
Male	30.2	30.7	31.3	31.9
Female	32.8	33.3	33.7	34.2

b. Occupationally disabled retirees: Healthy retiree tables set forward three years.

Annual Rate per 1,000 Members					
Attained Age in 2016	Males	Females	Attained Age in 2016 (cont.)	Males	Females
(1)	(2)	(3)	(4)	(5)	(6)
50	2.94	1.59	70	25.23	18.36
55	5.56	3.33	75	41.11	30.33
60	10.18	6.89	80	68.46	51.15
65	15.95	11.24	85	115.68	87.88

c. Totally disabled retirees: RP-2014 Disabled Mortality Tables, projected with Scale BB, with minimum probability of 3% for males and 2% for females.

Annual Rate per 1,000 Members					
Attained Age in 2016	Males	Females	Attained Age in 2016 (cont.)	Males	Females
(1)	(2)	(3)	(4)	(5)	(6)
50	30.00	20.00	70	39.14	27.53
55	30.00	20.00	75	52.67	40.07
60	30.00	20.00	80	74.33	59.58
65	30.93	20.36	85	109.93	88.26

2. Mortality rates (active members) – RP-2014 Mortality Tables for Blue Collar Employees, projected with Scale BB, 55% multiplier for off-duty mortality. Increased by 0.00020 for on-duty related Fire and Police experience. Sample rates are shown below:

Annual Rate per 1,000 Members					
Attained Age in 2016	Males	Females	Attained Age in 2016 (cont.)	Males	Females
(1)	(2)	(3)	(4)	(5)	(6)
20	0.49	0.30	40	0.64	0.44
25	0.54	0.31	45	0.89	0.60
30	0.52	0.33	50	1.39	0.88
35	0.57	0.38	55	2.17	1.22

3. Disability rates: Sample rates are shown below.

Annual Rate per 1,000 Members				
Age	Occupational Disability Rates (MP)	Occupational Disability Rates (SWDB)	Total Disability Rates (MP)	Total Disability Rates (SWDB)
(1)	(2)	(3)	(4)	(5)
25	0.25	0.29	0.01	0.02
30	1.18	1.35	0.11	0.17
35	1.60	1.82	0.23	0.34
40	2.35	2.67	0.35	0.52
45	4.09	3.29	0.48	0.72
50	8.86	4.89	0.63	0.94
55	15.53	6.88	0.78	1.17

4. Termination rates (for causes other than death, disability or retirement):
 Termination rates are based on service. Termination rates are not applied after a member becomes eligible for a retirement benefit. Rates at selected ages are shown:

Annual Rate per 1,000 Members					
Service	Rates	Service (cont.)	Rates	Service (cont.)	Rates
0	98.5	8	25.5	16	9.4
1	84.6	9	21.3	17	9.1
2	72.3	10	17.9	18	8.8
3	61.4	11	15.3	19	8.5
4	51.9	12	13.3	20	8.1
5	43.6	13	11.7	21	7.5
6	36.5	14	10.7	22	6.5
7	30.5	15	9.9	23	5.2

5. Retirement rates: Members are assumed to retire at the time of attaining:
- a. Statewide Defined Benefit Plan Members and other New Hire Plan Members: Age 55 with 5 years of service or current age, if greater.
 - b. Money Purchase Plan Members: The earliest of Age 65 or 55 and 25 years of service; or current age, if greater. For members age 55 with less than 25 years of service, graded retirement rates from 7% at age 55 to 16% at age 64, increasing by 1% per year.
 - c. All Other Plan members: Age 52 or current age, if greater.

C. Other Assumptions

1. Percent married: 85% of employees are assumed to be married or in a civil union.
2. Age difference: Male members are assumed to be two years older than their spouses, and female members are assumed to be two years younger than their spouses.
3. Post-retirement benefit adjustments: Totally disabled 3.0%; All others 0.0%.
4. Percent electing annuity on death (when eligible): All of the spouses of vested, married participants are assumed to elect an annuity.
5. There will be no recoveries once disabled.
6. No surviving spouse will remarry.
7. Earned income: It is assumed that there are no offsets for Worker's Compensation or other current income.
8. Dependent children: Dependency status assumed to terminate at age 21.
9. Combined spouse/dependent records: In cases, where an annuitant record includes benefits for both a spouse and a dependent child, the total benefit was assumed to be payable for the life of the spouse.
10. Administrative expenses: Based on actual administrative expenses paid in the prior year, adjusted by wage inflation.
11. Money Purchase Offset: For members where no data is available, the current money purchase balance is estimated using current pay, estimated pay histories, actual plan investment returns, and the current money purchase contribution rate specific by employer. The balance is projected forward using 7.50% investment returns, and the current money purchase contribution rate specific by employer. The money purchase account used for offset is limited based on the specific money purchase contribution rate by employer and the contribution rate requirements for the Statewide Defined Benefit Plan. At decrement, the limited account is converted to an annuity using current actuarial equivalence factors.
12. SRA Offset: The SRA balances are projected forward using 7.50% investment returns. For reentry members, the assumed annual contribution to the account is 4% less the surcharge determined as of the prior valuation. At decrement, the account is converted to an annuity using current actuarial equivalence factors.
13. Decrement timing: Decrements of all types are assumed to occur mid-year.

14. Eligibility testing: Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
15. Decrement relativity: Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
16. Incidence of Contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.

D. Participant Data

Participant data was supplied on electronic files in the form of spreadsheets. There were separate tabs for (i) active and non-vested inactive members, and (ii) members and beneficiaries receiving benefits or vested inactives.

The data for an active members included birthdate, sex, service, salary and employee contribution account balance. For retired members and beneficiaries, the data included date of birth, sex, spouse's date of birth (where applicable), amount of monthly benefit, date of retirement, and a form of payment code.

Salary supplied for the current year was based on the following:

- If the YTD service credit is at least 12, then use the earnings for the year preceding the valuation date
- If the YTD service credit is less than 12, then use the greater of the earnings for the year preceding the valuation date or the annual salary.
- If the YTD service credit is less than 12, greater than 0 and the Member DD Flag is N, then use the annualized earnings for the year preceding the valuation date.
- If both Salary YTD and Annual Salary are zero, an array of salaries based on service will be used to estimate the salary.
- Finally, the prior salaries are used to prevent the valuation salary from decreasing.

Assumptions were made to correct for missing, bad, or inconsistent data. These had no material impact on the results presented.

E. Changes to the assumptions:

Since the prior valuation, the Board adopted new assumptions based on the 2015 Experience Study. The changes from the prior assumption set are summarized below:

Economic Assumptions

1. Reduce the inflation assumption from 3.00% to 2.50%.
2. Increase the real rate of return assumption from 4.50% to 5.00%, resulting in no overall change to the nominal return assumption of 7.50%.
3. Add an explicit assumption for administrative expenses in the contribution determination.
4. Increase the productivity component of the salary scale assumption from 1.00% to 1.50%. Combining with the inflation rate of 2.50% creates ultimate salary scale assumption of 4.00%, which is unchanged from the current assumption.
5. Slightly modify the service-based promotional/longevity component of the salary scale.

Mortality Assumptions

6. Update the post-retirement mortality tables for non-disabled retirees to a table based on the RP-2014 generational mortality tables with blue collar adjustment. In addition, update the projected rate of improvement in longevity from Scale AA to the more recently published Scale BB.
7. Update the occupationally disabled post-retirement mortality assumption to be the same table as used for the healthy annuitants, except with a three year set-forward.
8. Update the totally disabled post-retirement mortality assumption to the RP 2014 generational mortality tables for disabled annuitants, except add an additional provision to apply a minimum 3% mortality probability to males and 2% mortality probability to females to reflect substantial impairment for this population.
9. Update the pre-retirement non-duty mortality tables to 55% of the RP-2014 mortality tables for active employees. Make no adjustment to the current duty mortality rate of 0.00020.

Other Demographic Assumptions

10. Combine the termination assumption for police and fire.
11. Increase the rates of both occupational and total disability to reflect higher incidence of disability observed during the study period than expected.

SUMMARY OF BENEFIT PROVISIONS

Plan Description

The Fire & Police Pension Association Statewide Death & Disability Plan (“Plan”) is a cost-sharing multiple-employer defined benefit death and disability plan covering full-time employees of substantially all fire and police departments in Colorado. As of August 1, 2003, the Plan may include part-time police and fire employees. Contributions to the Plan are used solely for the payment of death and disability benefits. Employers who are covered by Social Security may elect supplementary coverage by the Plan. The Plan was established in 1980 pursuant to Colorado Revised Statutes. The Plan assets are included in the Fire & Police Members’ Benefit Investment Fund.

Plan benefits provide 24-hour coverage, both on and off duty and are available for members not eligible for normal retirement under a defined benefit plan, or members who have not met 25 years of accumulated service and age 55 under a money purchase plan.

In the case of an on-duty death, benefits may be payable to the surviving spouse and/or dependent children of active members who were eligible to retire, but were still working. On-duty death and disability benefits are free from state and federal taxes in the event that a member’s disability is determined to be the result of an on-duty injury or an occupational disease.

Plan Year

A twelve-month period ending December 31.

Members Included

Members included are active employees who are full-time salaried employees of a participating municipality or fire protection district normally serving at least 1,600 hours in a calendar year and whose duties are directly involved with the provision of police or fire protection. As of August 1, 2003, the Plan may include part-time police and fire employees. A department chief who elects to be exempted from the Fire & Police Pension Association Defined Benefit System and covered under Social Security or Colorado Public Employees Retirement Association shall not be covered by the Plan.

Compensation Considered (Base Salary)

Base salary means the total base rate of pay including Member Contributions to the Statewide Defined Benefit Plan or Statewide Money Purchase Plan (or contributions to any alternate retirement plan) which are “picked up” by the employer:

- 1) And shall also include longevity pay, sick leave pay taken in the normal course of employment, vacation leave pay taken in the normal course of employment, shift differential, and mandatory overtime that is part of the Member's fixed, periodic compensation.
- 2) Accumulated vacation leave pay will also be included if a Member completes his/her service requirement for purposes of Normal retirement while exhausting accumulated vacation leave.
- 3) Base salary shall not include overtime pay (except as noted in the preceding sentence), step-up pay or other pay for temporarily acting in a higher rank, uniform allowances, accumulated sick leave pay, accumulated vacation leave pay (except as noted in the preceding sentence), and other forms of extra pay (including Member Contributions which are paid by the employer and not deducted from the Member's salary).
- 4) In the event an employer has established or does establish a Deferred Compensation Plan, the amount of the Member's salary that is deferred shall be included in the Member's base salary.
- 5) Any amounts voluntarily contributed to an Internal Revenue Code Section 125 "Cafeteria Plan" shall be included in the Member's base salary. A Member is deemed temporarily acting in a higher rank if the appointment to the rank is anticipated to last less than six months.
- 6) The base salary under the Plan for each Member of the Colorado Springs New Hire Pension Plan shall be the same as the basic salary as defined in the Colorado Springs New Hire Pension Plan.

Contribution Rates

Prior to 1997, the Plan was primarily funded by the State of Colorado, whose contributions were established by Colorado statute. In 1997 the State made a one-time contribution of \$39,000,000 to fund past and future service costs for all firefighters and police officers hired prior to January 1, 1997. No further State contributions are anticipated.

Members hired on or after January 1, 1997 and members covered by Social Security, began contributing 2.4 percent of base salary to this Plan as of January 1, 1997. The contribution increased to 2.6 percent of base salary as of January 1, 2007. This percentage can vary depending on actuarial experience. All contributions are made by members or on behalf of members. The 2.6 percent contribution may be paid entirely by the employer or member, or it may be split between the employer and the member.

Pre-Retirement Death Benefits

If a member dies prior to normal retirement eligibility while off-duty, the surviving spouse shall receive a benefit equal to 40 percent of the monthly base salary paid to the member prior to death. An additional 10 percent of base salary is payable if a surviving spouse has two or more dependent children. If there is no surviving spouse, but the member had one or two dependent children, the benefit payable is 40 percent of the member's monthly base salary. If there is no spouse but three or more dependent children, the benefit equals 50 percent of the member's monthly base salary.

As of October 15, 2002, if a member dies prior to retirement while on-duty; the surviving spouse shall receive a benefit equal to 70 percent of the member's monthly base salary regardless of the number of dependent children. If there is no spouse but one or more dependent children living in the member's household the benefit equals 70 percent of the member's monthly base salary. If there are dependent children without a surviving spouse, and they do not live in the household, the benefit is 40 percent for the first child and 15 percent for each additional child, but not greater than 70 percent in total. Benefits will be paid to the spouse until death and to dependent children until, death, marriage or other termination of dependency.

For purposes of this Plan, a spouse includes a partner in a civil union. These benefits are offset by Money Purchase account balances, Stabilization Reserve Accounts ("SRA") and Deferred Retirement Option Plan ("DROP") accounts, converted to annuities.

Disability Benefits

The Plan provides the members with two types of disability: occupational and total.

Occupational Disability means a member is unable to perform his/her assigned duties due to a medical condition that is expected to last at least 1 year. Assigned duties are those specific tasks or job duties that a member is required to regularly perform. Within the Occupational Disability category, there are two sub-categories: Temporary Occupational Disability and Permanent Occupational Disability.

Temporary Occupational Disability is an occupational disability for which there is prognosis for improvement or recovery through surgical treatment, counseling, medication, therapy or other means.

Permanent Occupational Disability is an occupational disability caused by a condition that is permanent or degenerative and for which there is no prognosis for improvement or recovery through surgical treatment, counseling, medication, therapy or other means.

Total Disability means the member is unable to engage in any substantial gainful activity due to a medically determined physical or mental impairment that may be expected to result in death or that has lasted or is expected to last at least 1 year.

A member who becomes disabled prior to normal retirement eligibility shall be eligible for disability benefits.

If the member is totally disabled, he shall receive 70 percent of his base salary preceding disability.

If the member is occupationally disabled and his disability is determined to be a permanent occupational disability, he shall receive 50 percent of his base salary preceding disability regardless of his family status. If the member is occupationally disabled and his disability is determined to be a temporary occupational disability, he shall receive 40 percent of his base salary preceding disability regardless of his family status for up to five years.

Total disability and permanent occupational disability benefits are offset by the Money Purchase, DROP or SRA balances, converted to annuities. For member's who also participate in Social Security, disability benefits are reduced by Social Security disability benefits derived from employment as a member, if applicable.

Temporary Occupational Disability benefits are payable for a maximum of five years. Permanent Occupational and Total Disability benefits are payable as long as the member remains disabled.

Offsets for SRA, Money Purchase Balances, and DROP

Plan benefits are reduced by the actuarially equivalent annuities of the SRA, Money Purchase, and DROP account balances. A maximum of 16 percent (or 20 percent for re-entry members) of the annual Money Purchase contributions apply for this purpose. Benefits provided by the Plan are also offset by any defined benefit that the member may have received due to work as a Colorado firefighter or police officer.

Spousal income, IRAs, insurance benefits, legal awards, and other investment incomes are not subject to any offset. Deferred compensation accounts are generally not subject to an offset. However, if a department chief has contributions directed to a deferred compensation plan in lieu of a pension plan, the benefit award is offset based on the amount in the deferred compensation account. The amount of the offset is calculated in the same manner as the money purchase offset.

Actuarial equivalence is based on tables adopted by the Fire & Police Pension Association Board of Directors.

Optional Forms of Payment

In addition to a monthly life annuity, the Plan offers disabled members these optional forms of payment on an actuarially equivalent basis:

Option 1 (Joint and 100% Survivor) - A life annuity payable while either the participant or his beneficiary is alive.

Option 2 (Joint and 50% Survivor) - A life annuity payable to the member while the member is alive, reducing to 50 percent of this amount and payable to the beneficiary upon the member's death.

Option 3 (Family Benefit) - A life annuity payable to the member while the member is alive. If the member dies, the survivor annuity will continue until the surviving spouse dies, until the youngest child reaches 23, or until death of any incapacitated child, whichever is later.

Actuarial equivalence is based on tables adopted by the Fire & Police Pension Association Board of Directors.

Benefit Adjustments for Benefits in Pay Status

A benefit adjustment of up to 3 percent may be granted to members and spouses by the Fire & Police Pension Association Board of Directors annually. Totally disabled members and their beneficiaries receive an automatic benefit adjustment each year of 3 percent. The benefit adjustment is effective October 1st. A benefit adjustment may begin after receiving benefits for at least 12 calendar months prior to October 1.

SUPPLEMENTAL STUDIES

1. Impact of changing “off-duty” active member death survivor benefits to 70%
 - a. Apply change to future survivors of active members only

If a member dies prior to normal retirement eligibility while off-duty, the survivor shall receive a benefit (including payments made from local defined contribution plans) equal to 70 percent of the monthly base salary paid to the member prior to death.

Currently the “off-duty” active member death benefit ranges from 40% to 50% depending on the number of dependent children. Increasing the death benefit to 70% base salary for future survivors increases the Statewide Death and Disability Plan Calculated Contribution from 2.37 to 2.65 percent of payroll.

Item	1/1/2016 Valuation	Study 1a	Difference
(1)	(2)	(3)	(4)
a. Unfunded Actuarial Accrued Liability	\$ (16,288,416)	\$ 3,556,462	\$ 19,844,878
b. GASB funded ratio	104.72%	99.02%	(5.70%)
Calculated Contribution			
c. (Aggregate Funding)	2.37%	2.65%	0.28%

b. Apply change to current survivors of active members who are receiving “off duty” benefits and future survivors of active members.

If a member dies prior to normal retirement eligibility while off-duty, the surviving spouse shall receive a benefit (including payments made from local defined contribution plans) equal to 70 percent of the monthly base salary paid to the member prior to death.

Increase current survivors of active members who are receiving “off duty” benefits to 70 percent of the monthly base salary paid to the member prior to death.

Currently the “off-duty” active member death benefit ranges from 40% to 50% depending on the number of dependent children. Increasing the death benefit to 70% base salary for current and future survivors increases the Statewide Death and Disability Plan Calculated Contribution from 2.37 to 2.87 percent of payroll.

Item	1/1/2016 Valuation	Study 1b	Difference
(1)	(2)	(3)	(4)
a. Accrued Liability	(16,288,416)	19,058,842	35,347,258
b. GASB funded ratio	104.72%	94.99%	(9.74%)
Calculated Contribution			
c. (Aggregate Funding)	2.37%	2.87%	0.50%

c. Currently, members working past normal retirement are not eligible for benefits under the Statewide Death and Disability Plan. Under the proposal, the Statewide Death and Disability Plan would supplement the retirement benefits for those working after normal retirement and who die to bring the total combined retirement and death benefit up to 70% of base salary, if not already at that level.

Increasing the benefit increases the Statewide Death and Disability Plan Calculated Contribution from 2.37 to 2.39 percent of payroll.

Item	1/1/2016 Valuation	Study 1c	Difference
(1)	(2)	(3)	(4)
a. Accrued Liability	(16,288,416)	(14,812,771)	1,475,645
b. GASB funded ratio	104.72%	104.28%	(0.45%)
Calculated Contribution			
c. (Aggregate Funding)	2.37%	2.39%	0.02%

2. a. Impact if members paid into the Statewide Death and Disability Plan to age 60, regardless of pension eligibility, but without extending the disability coverage beyond 25 years of service and age 55. In addition, once a member elects DROP they are no longer eligible for disability benefits.

This increases the present value of future employee contribution by \$5,237,701, thus it decreases the UAAL by the same amount, giving a small cost saving to the plan. This decreases the Statewide Death and Disability Plan Calculated Contribution from 2.37 to 2.30 percent of payroll.

Item	1/1/2016 Valuation	Study 2a	Difference
(1)	(2)	(3)	(4)
a. Unfunded Actuarial Accrued Liability	\$ (16,288,416)	\$ (21,526,117)	\$ (5,237,701)
b. GASB funded ratio	104.72%	106.34%	1.62%
Calculated Contribution			
c. (Aggregate Funding)	2.37%	2.30%	(0.07%)

- b. Impact to the SWD&D plan if FPPA collects member contributions and provides benefits (except disability benefits when a member elects DROP) for the member's entire career.

In order to cost the impact we assume 10% anti-selection rate under the Occupational Disability and 5% anti-selection rate under the Total Disability for the Money Purchase Plan members beyond 25 years of service and age 55.

The additional benefits combined with the offsetting contributions increase the Statewide Death and Disability Plan Calculated Contribution from 2.37 to 2.62 percent of payroll.

Item	1/1/2016 Valuation	Study 2b	Difference
(1)	(2)	(3)	(4)
a. Unfunded Actuarial Accrued Liability	\$ (16,288,416)	\$ 1,610,616	\$ 17,899,032
b. GASB funded ratio	104.72%	99.56%	(5.17%)
Calculated Contribution			
c. (Aggregate Funding)	2.37%	2.62%	0.25%