Conduent Human Resource Services

# El Paso County

## Retirement Plan

## Actuarial Valuation Report

Prepared as of January 1, 2017

June 2017

CONDUENT
5690 DTC Boulevard, Suite 400
Greenwood Village, CO 80111

June 2, 2017

Board of Retirement
El Paso County Retirement Plan
105 E. Vermijo, Suite 200
Colorado Springs, CO 80903-2007

**Re: Certification of January 1, 2017 Actuarial Valuation**

Ladies and Gentlemen:

This report summarizes the actuarial valuation results of the El Paso County Retirement Plan (Plan) as of January 1, 2017 performed by Conduent HR Services (Conduent), formerly known as Buck Consultants.

The actuarial valuation is based on draft assets as of December 31, 2016 provided by Stockman Kast Ryan & Co, LLP and member data provided by the Retirement Plan Administrator and summarized in this report. The benefits considered are those delineated in the Plan as amended and restated effective January 1, 2013.

All costs, liabilities and other factors under the Plan were determined in accordance with the Actuarial Standards of Practice. An actuarial cost method which we believe is reasonable is used to measure the actuarial liabilities as of the valuation date. This report fully and fairly discloses the actuarial position of the Plan as of January 1, 2017.

Unless otherwise noted, where presented, references to “funded ratio” and “unfunded accrued liability” are measured on an actuarial value of assets basis. It should be noted that the same measurements using market value of assets would result in different funded ratios and unfunded accrued liabilities. Moreover, the funded ratio presented is appropriate for evaluating the need and level of future contributions but makes no assessment regarding the funded status of the Plan if the Plan were to settle (i.e. purchase annuities) for a portion or all of its liabilities.

The actuarial assumptions used in the January 1, 2017 actuarial valuation are based on the results of an actuarial experience study for the period January 1, 2008 to December 31, 2012, which resulted in changes in actuarial assumptions adopted by the El Paso County Retirement Board to better reflect expected future experience. In my opinion, the actuarial assumptions used are reasonable, taking into account the experience of the Plan and reasonable long-term expectations, and represent the best estimate of the anticipated long-term experience under the Plan. A summary of the actuarial assumptions and methods used in this actuarial valuation is shown in Section 4.3.

Use of this report for any other purposes or by anyone other than the Board members and staff may not be appropriate and may results in mistaken conclusions because of failure to understand applicable assumptions, methods, or inapplicability of this report for that purpose. Because of the risk of misinterpretation of actuarial results, you should ask Conduent to review any statement you wish to make regarding the results contained in this report. Conduent will not accept any liability for any such statement made without prior review by Conduent.

Future actuarial measurements may differ significantly from current measurements due to Plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in Plan provisions or applicable law. An analysis of the potential range of such differences is beyond the scope of this valuation.

The undersigned is a Fellow of the Society of Actuaries, an Enrolled Actuary, a Member of the American Academy of Actuaries and a Fellow of the Conference of Consulting Actuaries. He meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. This report has been prepared in accordance with all applicable Actuarial Standards of Practice.

I am available to answer any questions on the material contained in the report, or to provide explanations or further details as may be appropriate.

Respectfully submitted,

David J. Kershner, FSA, EA, MAAA, FCA
Principal
Conduent HR Services

# Table of Contents

# Purpose and Highlights

The main purposes of the actuarial valuation detailed in this report are:

1. To determine if the Board's funding policy for the Plan is being met considering current assets and liabilities, and the current employer and member contribution rates;
2. To review the current funded status of the Plan; and
3. To compare actual and expected experience under the Plan during the prior year.

The January 1, 2017 actuarial valuation is based upon the current plan provisions which are described in Section 4.2, and the actuarial methods and assumptions which are described in Section 4.3. There were no changes in plan provisions, actuarial methods or assumptions since the last valuation.

Highlights from the current and prior valuations are:

1. A contribution rate of 8.0% of salary by both the participating employers and members (16% of salary in total) in 2017 will **not** be sufficient to meet the Retirement Board's funding policy of paying the normal cost and amortizing the unfunded actuarial accrued liability over 30 years from the valuation date. The total actuarially required contribution necessary to fund the Plan's benefits under the Board's funding policy for 2017 is 16.4% of salary.
2. Actuarial losses of $1,070,734 were experienced in 2016 from asset sources, and actuarial losses of $2,661,883 were experienced in 2016 from liability sources. These losses increased the unfunded actuarial accrued liability by $3,732,617.

   The net loss from liability sources was primarily due to new entrants, turnover experience less than expected, and service purchases.
3. The funded ratio based on Actuarial Value of Assets is 70.2% (vs. 70.0% in 2016). The funded ratio based on Market Value of Assets is 67.9% (vs. 66.8% in 2016). The rate of return on Actuarial Value of Assets in 2016 was 7.7%; the rate of return on Market Value of Assets in 2016 was 9.2%.

# Summary of Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in actuarial assumptions, methods or plan provisions between the two valuations are described in the section titled "Effects of Changes."

| | Actuarial Valuation as of | | Change Between Years | |
|---|---|---|---|---|
| | **January 1, 2016** | **January 1, 2017** | **Amount** | **Percent** |
| **Summary of Costs** | | | | |
| Actuarial Contribution Requirement | $ 22,723,122 | $ 23,969,743 | $ 1,246,621 | 5.5% |
| Estimated Contributions | $ 22,188,794 | $ 23,419,636 | $ 1,230,842 | 5.5% |
| Actuarial Contribution Requirement as a Percentage of Pay | 16.4% | 16.4% | n/a | n/a |
| **Funded Status** | | | | |
| Actuarial Accrued Liability | $ 484,640,011 | $ 509,493,916 | $ 24,853,905 | 5.1% |
| Actuarial Value of Assets | $ 339,106,141 | $ 357,495,370 | $ 18,389,229 | 5.4% |
| Unfunded Actuarial Accrued Liability/(Surplus) | $ 145,533,870 | $ 151,998,546 | $ 6,464,676 | 4.4% |
| **Market Value of Assets and Additional Liabilities** | | | | |
| Market Value of Assets | $ 323,737,776 | $ 345,764,555 | $ 22,026,779 | 6.8% |
| Present Value of Projected Benefits | $ 576,982,909 | $ 608,076,691 | $ 31,093,782 | 5.4% |
| **Summary of Participant Data** | | | | |
| Number of Members in Valuation: | | | | |
| Active Members | 2,585[1] | 2,669[2] | 84 | 3.2% |
| Members with Deferred Benefits | 365 | 398 | 33 | 9.0% |
| Retired Members | 1,358 | 1,455 | 97 | 7.1% |
| Beneficiaries | 108 | 109 | 1 | 0.9% |
| **Total** | 4,416 | 4,631 | 215 | 4.9% |
| **Active Member Statistics** | | | | |
| Total Annual Compensation | $ 140,059,100[1] | $ 147,175,842[2] | $ 7,116,742 | 5.1% |
| Average Compensation | $ 54,224[3] | $ 55,181[4] | $ 957 | 1.8% |
| Average Age | 44.7[3] | 44.5[4] | (0.2) | (0.4%) |
| Average Service | 8.2[3] | 7.8[4] | (0.4) | (4.9%) |

[1] Includes 24 members on leave of absence.
[2] Includes 12 members on leave of absence.
[3] Excludes 24 members on leave of absence.
[4] Excludes 12 members on leave of absence.

# Effects of Changes

### Changes in Actuarial Assumptions

There were no changes in the actuarial assumptions since the prior valuation.

### Changes in Plan Provisions

There were no changes in plan provisions since the prior valuation.

### Changes in Actuarial Methods

There were no changes in actuarial methods since the prior valuation.

# Section 1: Funding Results

**Section 1.1** A comparative summary of valuation results.

**Section 1.2** The actuarially required contribution.

**Section 1.3** The actuarial gain/(loss) during the preceding year.

**Section 1.4** The normal cost and unfunded actuarial accrued liability as of the current and prior valuation dates.

**Section 1.5** The present value of projected plan benefits.

**Section 1.6** A ten-year projection of retirement benefit payments.

## Section 1.1: Comparative Summary of Principal Valuation Results

| A. Summary of Data | Actuarial Valuation as of January 1, 2016 | Actuarial Valuation as of January 1, 2017 | Percent Change |
|---|---|---|---|
| **1. Active Members** | | | |
| **a. Number**[1] | 2,585 | 2,669 | 3.2% |
| **b. Annual Compensation**[1] | $ 140,059,100 | $ 147,175,842 | 5.1% |
| **c. Average Annual Compensation**[2] | $ 54,224 | $ 55,181 | 1.8% |
| **d. Average Age**[2] | 44.7 | 44.5 | (0.4%) |
| **e. Average Service**[2] | 8.2 | 7.8 | (4.9%) |
| **f. Accumulated Member Contributions**[2] | | | |
| **i. With Interest** | $ 79,349,323 | $ 82,350,792 | 3.8% |
| **ii. Without Interest** | $ 63,618,046 | $ 66,818,162 | 5.0% |
| **2. Refund of Employee Contributions due** | | | |
| **a. Number** | 56 | 92 | 64.3% |
| **b. Amount of Refunds Due** | $ 279,503 | $ 429,057 | 53.5% |
| **3. Vested Terminated Members** | | | |
| **a. Number**[3] | 309 | 306 | (1.0%) |
| **b. Annual Deferred Benefits** | $ 2,832,557 | $ 2,703,422 | (4.6%) |
| **c. Average Annual Deferred Benefit** | $ 9,167 | $ 8,835 | (3.6%) |
| **4. Retired and Disabled Members** | | | |
| **a. Number** | 1,358 | 1,455 | 7.1% |
| **b. Annual Retirement Benefits** | $ 24,723,896 | $ 27,144,086 | 9.8% |
| **c. Average Annual Retirement Benefit** | $ 18,206 | $ 18,656 | 2.5% |
| **5. Beneficiaries** | | | |
| **a. Number** | 108 | 109 | 0.9% |
| **b. Annual Retirement Benefits** | $ 1,213,556 | $ 1,250,403 | 3.0% |
| **c. Average Annual Retirement Benefit** | $ 11,237 | $ 11,472 | 2.1% |
| **6. Total Members Included in Valuation** | **4,416** | **4,631** | **4.9%** |

[1] Includes 24 members on leave of absence in 2016, and 12 members on leave of absence in 2017.
[2] Excludes 24 members on leave of absence in 2016, and 12 members on leave of absence in 2017.
[3] Includes 13 deferred disableds and 3 deferred beneficiaries in 2016, and 14 deferred disableds and 3 deferred beneficiaries in 2017.

## Section 1.1: Comparative Summary of Principal Valuation Results (continued)

| B. Summary of Assets, Liabilities and Funded Status | Actuarial Valuation as of January 1, 2016 | Actuarial Valuation as of January 1, 2017 | Percent Change |
|---|---|---|---|
| 1. Plan Assets on Valuation Date | | | |
| a. Actuarial Value | $ 339,106,141 | $ 357,495,370 | 5.4% |
| b. Market Value | $ 323,737,776 | $ 345,764,555 | 6.8% |
| 2. Actuarial Accrued Liability | $ 484,640,011 | $ 509,493,916 | 5.1% |
| a. Funded Ratio - Actuarial Value | 70.0% | 70.2% | 0.3% |
| b. Funded Ratio - Market Value | 66.8% | 67.9% | 1.6% |
| 3. Unfunded Actuarial Accrued Liability (Based on Actuarial Value of Assets) | $ 145,533,870 | $ 151,998,546 | 4.4% |
| 4. Present Value of Projected Benefits | $ 576,982,909 | $ 608,076,691 | 5.4% |

| C. Summary of Contribution Requirements | January 1, 2016 Amount | January 1, 2016 % of Comp. | January 1, 2017 Amount | January 1, 2017 % of Comp. | Percent Change in Amount |
|---|---|---|---|---|---|
| 1. Normal Cost Compensation | $138,679,959 | N/A | $146,372,726 | N/A | 5.5% |
| 2. Total Normal Cost Beginning of Year | $ 13,323,018 | 9.61% | $ 14,137,051 | 9.66% | 6.1% |
| 3. Amortization of Unfunded Actuarial Accrued Liability over 30 years from the valuation date | $ 8,755,404 | 6.31% | $ 9,144,322 | 6.25% | 4.4% |
| 4. Administrative Expenses | $ 644,700 | 0.46% | $ 688,370 | 0.47% | 6.8% |
| 5. Total Actuarially Required Contribution (2. + 3. + 4.) | $ 22,723,122 | 16.39% | $ 23,969,743 | 16.38% | 5.5% |
| 6. Estimated Member Contribution[1] | $ 11,094,397 | 8.00% | $ 11,709,818 | 8.00% | 5.5% |
| 7. Recommended Employer Contribution (5. - 6.) | $ 11,628,725 | 8.39% | $ 12,259,925 | 8.38% | 5.4% |

[1] 8.00% of normal cost compensation.

## Section 1.2: Actuarially Required Contribution

| | | January 1, 2016 | January 1, 2017 |
|---|---|---|---|
| 1. | Normal Cost | $ 13,323,018 | $ 14,137,051 |
| 2. | Amortization of Unfunded Actuarial Accrued Liability | $ 8,755,404 | $ 9,144,322 |
| 3. | Administrative Expenses | $ 644,700 | $ 688,370 |
| 4. | Total Actuarially Required Contribution | | |
| | a. Amount (1. + 2. + 3.) | $ 22,723,122 | $ 23,969,743 |
| | b. Percent of Normal Cost Payroll | 16.39% | 16.38% |
| 5. | Estimated Member Contribution[1] | $ 11,094,397 | $ 11,709,818 |
| 6. | Recommended Employer Contribution | | |
| | a. Amount (4.a. - 5.) | $ 11,628,725 | $ 12,259,925 |
| | b. Percent of Normal Cost Payroll | 8.39% | 8.38% |
| 7. | Estimated Employer Contribution | $ 11,094,397 | $ 11,709,818 |
| 8. | Amount of Total Employer Contribution in Excess of Actuarially Required Contribution/(Deficit) (7. - 6.a.) | $ (534,328) | $ (550,107) |

[1] 8.00% of normal cost compensation.

## Section 1.3: Actuarial Gain/(Loss)

The actuarial gain/(loss) is comprised of both the liability gain/(loss) and the actuarial asset gain/(loss). Each of these represents the difference between the expected and actual values as of January 1, 2017.

| | | | |
|---|---|---|---|
| 1. | Expected Actuarial Accrued Liability | | |
| | a. Actuarial Accrued Liability at January 1, 2016 | $ | 484,640,011 |
| | b. Normal Cost and expected Administrative Expenses at January 1, 2016 | | 13,967,718 |
| | c. Interest on a. + b. to End of Year | | 39,888,618 |
| | d. Benefit Payments and Administrative Expenses for Plan Year Ending December 31, 2016, with Interest to End of Year Excluding Supplemental Payment | | 31,664,314 |
| | e. Expected Actuarial Accrued Liability Before Changes (a. + b. + c. - d.) | | 506,832,033 |
| | f. Change in Actuarial Accrued Liability at January 1, 2017, Due to Change in Actuarial Assumptions | | 0 |
| | g. Change in Actuarial Accrued Liability at January 1, 2017, Due to Change in Plan Provisions | | 0 |
| | h. Expected Actuarial Accrued Liability at January 1, 2017 (e. + f. + g.) | $ | 506,832,033 |
| 2. | Actuarial Accrued Liability at January 1, 2017 | $ | 509,493,916 |
| **3.** | **Liability Gain/(Loss) (1.h. - 2.)** | **$** | **(2,661,883)** |
| 4. | Expected Actuarial Value of Assets | | |
| | a. Actuarial Value of Assets at January 1, 2016 | $ | 339,106,141 |
| | b. Interest on a. to End of Year | | 27,128,491 |
| | c. Contributions Made for Plan Year Ending December 31, 2016 | | 23,072,871 |
| | d. Interest on c. to End of Year | | 922,915 |
| | e. Benefit Payments and Administrative Expenses for Plan Year Ending December 31, 2016, with Interest to End of Year Excluding Supplemental Payment | | 31,664,314 |
| | f. Change in Actuarial Value of Assets at January 1, 2017 due to supplemental pension payment | | 0 |
| | g. Expected Actuarial Value of Assets at January 1, 2017 (a. + b. + c. + d. – e. – f.) | $ | 358,566,104 |
| 5. | Actuarial Value of Assets as of January 1, 2017 | $ | 357,495,370 |
| **6.** | **Actuarial Asset Gain/(Loss) (5. - 4.g.)** | **$** | **(1,070,734)** |
| **7.** | **Actuarial Gain/(Loss) (3. + 6.)** | **$** | **(3,732,617)** |

## Section 1.4: Normal Cost and Unfunded Actuarial Accrued Liability

### A. Normal Cost

| Component | January 1, 2016 | January 1, 2017 |
|---|---|---|
| Retirement Benefits | $ 9,157,312 | $ 9,660,544 |
| Withdrawal Benefits | 3,633,580 | 3,877,420 |
| Disability Benefits | 291,830 | 307,532 |
| Death Benefits | 240,296 | 291,555 |
| **Total Normal Cost** | **$ 13,323,018** | **$ 14,137,051** |

### B. Unfunded Actuarial Accrued Liability

The Actuarial Accrued Liability is the present value of projected plan benefits allocated to past service by the actuarial funding method being used. The Unfunded Actuarial Accrued Liability is the excess of the Actuarial Accrued Liability over the Actuarial Value of Assets.

| Development of Unfunded Actuarial Accrued Liability | January 1, 2016 | January 1, 2017 |
|---|---|---|
| 1. Actuarial Accrued Liability | | |
| a. Active Participants | | |
| Retirement Benefits | $ 199,089,055 | $ 199,692,324 |
| Withdrawal Benefits | 3,577,258 | 3,777,286 |
| Disability Benefits | 2,863,155 | 2,911,938 |
| Death Benefits | 3,306,385 | 4,355,628 |
| Total | $ 208,835,853 | $ 210,737,176 |
| b. Participants with Deferred Benefits | 20,364,089 | 19,388,395 |
| c. Participants Receiving Benefits | 255,440,069 | 279,368,345 |
| d. Total (a. + b. + c.) | $ 484,640,011 | $ 509,493,916 |
| 2. Actuarial Value of Assets | $ 339,106,141 | $ 357,495,370 |
| **3. Unfunded Actuarial Accrued Liability (1.d. - 2.)** | **$ 145,533,870** | **$ 151,998,546** |

## Section 1.5: Present Value of Projected Plan Benefits

The present value of projected benefits is the value of plan benefits reflecting future expected earnings and service.

| Present Value of Projected Benefits | January 1, 2016 | January 1, 2017 |
|---|---|---|
| 1. Active Participants | | |
| Retirement Benefits | $ 261,551,125 | $ 265,968,577 |
| Withdrawal Benefits | 29,981,873 | 32,183,571 |
| Disability Benefits | 4,791,010 | 4,947,794 |
| Death Benefits | 4,854,743 | 6,220,009 |
| Total | $ 301,178,751 | $ 309,319,951 |
| 2. Participants with Deferred Benefits | 20,364,089 | 19,388,395 |
| 3. Participants Receiving Benefits | 255,440,069 | 279,368,345 |
| **4. Present Value of Projected Plan Benefits (1. + 2. + 3.)** | **$ 576,982,909** | **$ 608,076,691** |

## Section 1.6: Ten-Year Projected Cash Flow (Retirement Benefit Payments)

| Plan Year Ending | Actives | Inactives[1] | Total |
|---|---|---|---|
| 12/31/2017 | $ 3,235,692 | $ 28,729,594 | $ 31,965,286 |
| 12/31/2018 | 5,509,575 | 28,508,314 | 34,017,889 |
| 12/31/2019 | 7,672,650 | 28,303,105 | 35,975,755 |
| 12/31/2020 | 9,688,103 | 28,123,146 | 37,811,249 |
| 12/31/2021 | 11,447,268 | 27,891,451 | 39,338,719 |
| 12/31/2022 | $ 13,452,935 | $ 27,682,461 | $ 41,135,396 |
| 12/31/2023 | 15,502,815 | 27,389,006 | 42,891,821 |
| 12/31/2024 | 17,532,040 | 27,064,790 | 44,596,830 |
| 12/31/2025 | 19,953,436 | 26,741,754 | 46,695,190 |
| 12/31/2026 | 22,393,917 | 26,299,621 | 48,693,538 |

| History of Refunds | |
|---|---|
| Year | Refund Amount |
| 1994 | $ 544,504 |
| 1995 | 976,233 |
| 1996 | 1,003,922 |
| 1997 | 1,037,519 |
| 1998 | 1,132,847 |
| 1999 | 1,292,444 |
| 2000 | 1,407,960 |
| 2001 | 1,597,686 |
| 2002 | 998,709 |
| 2003 | 1,414,807 |
| 2004 | 1,634,848 |
| 2005 | 1,755,564 |
| 2006 | 1,545,738 |
| 2007 | 1,841,048 |
| 2008 | 1,997,056 |
| 2009 | 1,912,000 |
| 2010 | 1,775,640 |
| 2011 | 2,222,415 |
| 2012 | 1,548,635 |
| 2013 | 2,152,586 |
| 2014 | 1,812,170 |
| 2015 | 2,669,776 |
| 2016 | 2,750,891 |

[1] Includes Retirees, Disabled Members, Beneficiaries, and Deferred Vested Members.

# Section 2: Accounting Results

## Section 2.1: Historical Exhibits

### Supplementary Schedules

Governmental Accounting Standards Board (GASB) Statement No. 25 (GASB 25) - Financial Reporting for Defined Benefit and Note Disclosures for Defined Contribution Plans was effective for periods between June 15, 1996 and June 15, 2013. GASB No. 25 was replaced by GASB No. 67 (GASB 67) – Financial Reporting for Pension Plans effective for fiscal years beginning after June 15, 2013. GASB 67 information for the Plan is provided in a separate report.

### A. Schedule of Funding Progress

GASB 25 liabilities and assets for years ending in 2004 through 2013 are shown below.

| Actuarial Valuation Date | Actuarial Value of Assets (a) | Actuarial Accrued Liability (AAL) Entry Age (b) | Unfunded AAL (UAAL) (b-a) | Funded Ratio (a/b) | Covered Payroll (c) | UAAL as a Percentage of Covered Payroll [(b-a)/c] |
|---|---|---|---|---|---|---|
| 01/01/2005 | $ 219,697,172 | $ 249,693,945 | $ 29,996,773 | 88.0% | $ 92,757,865 | 32.3% |
| 01/01/2006 | $ 234,660,873 | $ 270,180,072 | $ 35,519,199 | 86.9% | $ 98,915,975 | 35.9% |
| 01/01/2007 | $ 257,214,257 | $ 293,358,174 | $ 36,143,917 | 87.7% | $ 103,402,651 | 35.0% |
| 01/01/2008 | $ 285,740,434 | $ 312,549,096 | $ 26,808,662 | 91.4% | $ 105,140,088 | 25.5% |
| 01/01/2009 | $ 249,776,755 | $ 331,357,842 | $ 81,581,037 | 75.4% | $ 102,703,108 | 79.4% |
| 01/01/2010 | $ 282,841,807 | $ 354,376,983 | $ 71,535,176 | 79.8% | $ 106,956,655 | 66.9% |
| 01/01/2011 | $ 285,036,737 | $ 375,801,894 | $ 90,765,157 | 75.8% | $ 112,232,244 | 80.9% |
| 01/01/2012 | $ 280,213,871 | $ 393,086,243 | $ 112,872,372 | 71.3% | $ 116,611,366 | 96.8% |
| 01/01/2013 | $ 278,031,207 | $ 414,530,914 | $ 135,899,707 | 67.2% | $ 115,762,200 | 117.4% |
| 01/01/2014 | $ 301,765,407 | $ 434,464,401 | $ 132,698,994 | 69.5% | $ 124,039,614 | 107.0% |

## B. Schedule of Employer Contributions

GASB 25 required contributions and actual contribution percentages for years ending in 2004 through 2013 are shown below.

| Year Ended December 31 | Annual Required Contribution[1] | Percentage Contributed |
|---|---|---|
| 2004 | $ 5,951,443 | 92% |
| 2005 | $ 6,551,304 | 87% |
| 2006 | $ 7,387,051 | 83% |
| 2007 | $ 8,158,839 | 77% |
| 2008 | $ 7,724,074 | 82% |
| 2009 | $ 10,945,353 | 56% |
| 2010 | $ 9,603,845 | 75% |
| 2011 | $ 10,733,979 | 74% |
| 2012 | $ 11,299,311 | 77% |
| 2013 | $ 13,574,900 | 66% |

[1] Beginning of year.

# Section 3: Plan Assets

This section presents information regarding plan assets as reported by the plan administrator and/or the auditor. The plan assets represent the portion of total plan liabilities which has been funded as of the valuation date.

**Section 3.1** A summary of the Market Value of Assets.

**Section 3.2** A reconciliation of the Market Value of Assets.

**Section 3.3** The Actuarial Value of Plan Assets as of January 1, 2017.

**Section 3.4** A history of the average annual rates of investment return.

## Section 3.1: Summary of Assets

| Asset Category | Market Value as of December 31, 2015 Amount | % | Market Value as of December 31, 2016 Amount | % |
|---|---|---|---|---|
| **1. Cash and Short-Term Investments** | $ 3,696,710 | 1.1 | $ 4,230,851 | 1.2 |
| **2. Receivables** | | | | |
| a. Investment Distributions | $ 0 | 0.0 | $ 0 | 0.0 |
| b. Interest and Dividends | - | 0.0 | 0 | 0.0 |
| c. Investments Sold | 10,731 | 0.0 | 115,426 | 0.0 |
| d. Other Receivables | 71,803 | 0.0 | 154,208 | 0.0 |
| e. Total | $ 82,534 | - | $ 269,634 | 0.0 |
| **3. Investments at Fair Value** | | | | |
| a. U.S. Treasury Notes | $ 0 | 0.0 | $ 0 | 0.0 |
| b. Fixed Income | 52,347,698 | 16.2 | 47,213,983 | 13.7 |
| c. Domestic Stocks and Equity | 131,184,324 | 40.6 | 141,774,314 | 41.1 |
| d. International Equity | 58,321,610 | 18.0 | 60,259,571 | 17.4 |
| e. Real Estate | 61,471,141 | 19.0 | 75,444,194 | 21.8 |
| f. Fund of Hedge Funds | 16,546,660 | 5.1 | 16,915,414 | 4.9 |
| g. Total | $ 319,871,433 | 98.9 | $ 341,607,476 | 98.9 |
| **4. Fixed Assets** | $ 468,766 | 0.1 | $ 423,261 | 0.1 |
| **5. Total Assets** | $ 324,119,443 | 100.1 | $ 346,531,222 | 100.2 |
| **6. Liabilities** | | | | |
| a. Payable for Investments Purchased | $ 51,568 | 0.0 | $ 286,137 | 0.1 |
| b. Securities Lending Obligation in Excess of Collateral | 0 | 0.0 | 0 | 0.0 |
| c. Accounts Payable and Accrued Liabilities | 330,099 | 0.1 | 480,530 | 0.1 |
| d. Total | $ 381,667 | 0.1 | $ 766,667 | 0.2 |
| **7. Net Assets for Pension Benefits [5. – 6.d.]** | **$ 323,737,776** | **100.0** | **$ 345,764,555** | **100.0** |

## Section 3.2: Reconciliation of Assets

| | | 2015 Plan Year | 2016 Plan Year |
|---|---|---|---|
| **1.** | **Contributions** | | |
| a. | Contributions from Employers | $ 10,638,797 | $ 11,315,200 |
| b. | Contributions from Plan Members | 11,620,764 | 11,757,671 |
| c. | Total | $ 22,259,561 | $ 23,072,871 |
| **2.** | **Net Investment Income** | | |
| a. | Interest and Dividends | $ 3,027,206 | $ 3,432,955 |
| b. | Net Appreciation (Depreciation) | (3,938,048) | 27,028,478 |
| c. | Miscellaneous | 28,420 | 7,438 |
| d. | Total | $ (882,422) | $ 30,468,871 |
| e. | Investment Expense | $ (1,120,238) | $ (1,068,507) |
| f. | Net Investment Income | $ (2,002,660) | $ 29,400,364 |
| **3.** | **One-Time Adjustment**[1] | $ (160,000) | $ 0 |
| **4.** | **Benefits and Expenses** | | |
| a. | Retirement Benefits | $ 23,582,687 | $ 26,159,836 |
| b. | Refund of Contributions | 2,669,776 | 2,750,891 |
| c. | Death | 1,080,902 | 850,174 |
| d. | Supplemental Payment | N/A | N/A |
| e. | Administrative Expenses | 667,752 | 685,555 |
| f. | Total | $ 28,001,117 | $ 30,446,456 |
| **5.** | **Net Increase/(Decrease) [1c. + 2f. + 3. - 4f.]** | **$ (7,904,216)** | **$ 22,026,779** |
| **6.** | **Net Assets Held in Trust for Pension Benefits** | | |
| a. | Beginning of Year | **$ 331,641,992** | **$ 323,737,776** |
| b. | End of Year | **$ 323,737,776** | **$ 345,764,555** |

[1] One-time adjustment due to the finalization of assets as of 12/31/2014.

## Section 3.3: Actuarial Value of Assets

| Schedule of Investment Gains/(Losses) | | | | |
|---|---|---|---|---|
| Year Ending December 31 | Original Amount | Recognized in Prior Years | Recognized This Year | Recognized in Future Years |
| 2012 | $ 10,836,183 | $ 8,668,948 | $ 2,167,235 | $ 0 |
| 2013 | 17,857,284 | 10,714,371 | 3,571,457 | 3,571,456 |
| 2014 | (3,391,713) | (1,356,686) | (678,343) | (1,356,684) |
| 2015 | (28,304,357) | (5,660,871) | (5,660,871) | (16,982,615) |
| 2016 | 3,796,285 | 0 | 759,257 | 3,037,028 |
| **Total** | **$ 793,682** | **$ 12,365,762** | **$ 158,735** | **$ (11,730,815)** |

| Development of Actuarial Value of Assets | | |
|---|---|---|
| 1. | Market Value of Assets as of January 1,2017 | $ 345,764,555 |
| 2. | Deferred Investment Gain/(Loss) | (11,730,815) |
| 3. | Initial Actuarial Value of Assets as of January 1, 2017 (1. - 2.) | $ 357,495,370 |
| 4. | Constraining Values: | |
| | a. 80% of Market Value (1. x .8) | $ 276,611,644 |
| | b. 120% of Market Value (1. x 1.2) | $ 414,917,466 |
| **5.** | **Actuarial Value of Assets as of January 1, 2017 (3.), but not less than (4.a.), nor greater than (4.b.)** | **$ 357,495,370** |

## Section 3.4: Average Annual Rates of Investment Return

| Year Ending | Actuarial Value | | Market Value | |
|---|---|---|---|---|
| December 31 | Annual | Cumulative | Annual | Cumulative |
| 1995 | 11.2% | 11.2% | 21.4% | 21.4% |
| 1996 | 12.0% | 11.6% | 16.4% | 18.9% |
| 1997 | 12.4% | 11.9% | 16.5% | 18.1% |
| 1998 | 14.0% | 12.4% | 11.4% | 16.4% |
| 1999 | 13.7%[1] | 12.7% | 4.8% | 14.0% |
| 2000 | 9.5% | 12.1% | 0.8% | 11.7% |
| 2001 | 5.7% | 11.2% | (2.5%) | 9.5% |
| 2002 | (2.4%) | 9.4% | (8.0%) | 7.2% |
| 2003 | 3.0% | 8.7% | 26.3% | 9.1% |
| 2004 | 5.7% | 8.4% | 10.9% | 9.3% |
| 2005 | 6.9% | 8.2% | 5.9% | 9.0% |
| 2006 | 9.9% | 8.4% | 14.8% | 9.5% |
| 2007 | 12.1% | 8.6% | 7.3% | 9.3% |
| 2008 | (11.5%) | 7.1% | (28.1%) | 6.1% |
| 2009 | 15.6% | 7.6% | 16.1% | 6.7% |
| 2010 | 2.3% | 7.3% | 13.4% | 7.1% |
| 2011 | 0.0% | 6.8% | (2.0%) | 6.6% |
| 2012 | 0.7% | 6.5% | 12.3% | 6.9% |
| 2013 | 10.4% | 6.7% | 14.4% | 7.3% |
| 2014 | 9.1% | 6.8% | 6.9% | 7.2% |
| 2015 | 6.3% | 6.8% | (0.7%) | 6.8% |
| 2016 | 7.7% | 6.6% | 9.2% | 6.3% |

[1] Includes change in asset valuation method.

# Section 4: Basis of Valuation

This section describes the basis of the valuation. The participant data, plan provisions and actuarial basis are the foundation of the valuation, since these are the present facts on which the projection of benefit payments will depend. The valuation is based on the premise that the Plan will continue in existence with no future changes.

**Section 4.1** The participant data used for the actuarial valuation.

**Section 4.2** The plan provisions reflected in the actuarial valuation.

**Section 4.3** The actuarial funding method, procedures and actuarial assumptions.

## Section 4.1: Plan Participants

### A. Participant Data Reconciliation

| | | Inactive Members[1] | | | | |
|---|---|---|---|---|---|---|
| | Active Members | Deferred Benefits[2] | Retired Members | Disabled Members | Beneficiaries | Total |
| **As of January 1, 2016** | **2,585** | **309** | **1,341** | **17** | **108** | **4,360** |
| Age Retirements | (94) | (25) | 119 | - | - | - |
| Disability Retirements | - | (1) | - | 1 | - | - |
| Deaths Without Beneficiary | (2) | - | (16) | (1) | (4) | (23) |
| Deaths With Beneficiary | - | (1) | (5) | (1) | 6 | (1) |
| Non vested Terminations | (34) | - | - | - | - | (34) |
| Vested Terminations | (36) | 36 | - | - | - | - |
| Rehires | 3 | (3) | - | - | - | - |
| Cash-outs | (167) | (9) | - | - | (1) | (177) |
| Expiration of Benefits | - | - | - | - | - | - |
| Data Corrections | - | - | 1 | (1) | - | - |
| **Net Change** | **(330)** | **(3)** | **99** | **(2)** | **1** | **(235)** |
| New Entrants During the Year | 414 | - | - | - | - | 414 |
| **As of January 1, 2017** | **2,669** | **306** | **1,440** | **15** | **109** | **4,539** |

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[1] Excludes non vested terminated members who are due a refund of member contributions as of the valuation date.
[2] Includes 13 deferred disableds and 3 deferred beneficiaries in 2016, and 14 deferred disableds and 3 deferred beneficiaries in 2017.

## B. Count of Active Members

| | Years of Service[1] | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Age[2] | 0-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | Over 30 | Total |
| Under 20 | 6 | - | - | - | - | - | - | 6 |
| 20-24 | 79 | 1 | - | - | | - | - | 80 |
| 25-29 | 280 | 28 | - | - | - | - | - | 308 |
| 30-34 | 217 | 92 | 21 | - | - | - | - | 330 |
| 35-39 | 175 | 70 | 45 | 7 | 1 | - | - | 298 |
| 40-44 | 123 | 83 | 55 | 38 | 5 | 1 | - | 305 |
| 45-49 | 142 | 72 | 65 | 43 | 28 | 3 | - | 353 |
| 50-54 | 115 | 85 | 68 | 41 | 37 | 24 | 9 | 379 |
| 55-59 | 78 | 63 | 54 | 55 | 28 | 23 | 6 | 307 |
| 60-64 | 53 | 50 | 33 | 31 | 19 | 11 | 12 | 209 |
| Over 65 | 14 | 22 | 18 | 16 | 5 | 5 | 2 | 82 |
| Total | 1,282 | 566 | 359 | 231 | 123 | 67 | 29 | 2,657 |

## C. Average Compensation

| | Years of Service[3] | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Age[2] | 0-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | Over 30 | Total |
| Under 20 | $ 38,321 | - | - | - | - | - | - | $ 38,321 |
| 20-24 | $ 43,779 | - | - | - | - | - | - | $ 44,081 |
| 25-29 | $ 48,637 | $ 52,821 | - | - | - | - | - | $ 49,018 |
| 30-34 | $ 49,761 | $ 57,250 | $ 64,475 | - | - | - | - | $ 52,785 |
| 35-39 | $ 50,976 | $ 62,435 | $ 65,370 | $ 69,180 | - | - | - | $ 56,365 |
| 40-44 | $ 51,067 | $ 56,840 | $ 65,988 | $ 71,030 | $ 83,568 | - | - | $ 58,442 |
| 45-49 | $ 50,540 | $ 53,935 | $ 62,429 | $ 69,116 | $ 72,453 | $ 60,215 | - | $ 57,505 |
| 50-54 | $ 49,100 | $ 56,385 | $ 60,375 | $ 62,044 | $ 70,109 | $ 68,159 | $ 58,630 | $ 57,641 |
| 55-59 | $ 49,301 | $ 48,966 | $ 61,166 | $ 59,477 | $ 67,252 | $ 72,345 | $ 79,880 | $ 57,104 |
| 60-64 | $ 51,624 | $ 49,904 | $ 54,367 | $ 57,054 | $ 67,454 | $ 50,887 | $ 70,158 | $ 54,915 |
| Over 65 | $ 45,953 | $ 49,989 | $ 72,291 | $ 49,120 | $ 44,590 | $ 76,874 | - | $ 55,705 |
| Total | $ 49,419 | $ 55,226 | $ 62,637 | $ 62,879 | $ 69,169 | $ 67,225 | $ 68,244 | $ 55,181 |

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[1] Attained service at valuation date. Excludes 12 members on leave of absence.
[2] Attained age last birthday.
[3] Average Compensation is not shown for groupings of less than 3 members.

## Section 4.1: Plan Participants (continued)

### D. Inactive Members - Annual Benefits

| Attained Age | Members With Deferred Benefits[1] | | Retired Members[2] | | Beneficiaries | |
|---|---|---|---|---|---|---|
| | No. | Benefit | No. | Benefit | No. | Benefit |
| Under 50 | 140 | $ 1,152,101 | 4 | $ 114,040 | 2 | $ 16,793 |
| 50 - 54 | 77 | 760,927 | 45 | 1,663,970 | 3 | 62,833 |
| 55 - 59 | 66 | 615,282 | 160 | 4,195,688 | 6 | 119,210 |
| 60 – 64 | 21 | 152,887 | 307 | 6,480,300 | 7 | 97,659 |
| 65 - 69 | 2 | 22,225 | 371 | 6,827,462 | 20 | 179,906 |
| 70 - 74 | - | - | 258 | 3,961,393 | 19 | 207,541 |
| 75 - 79 | - | - | 146 | 2,006,428 | 21 | 291,489 |
| 80 - 84 | - | - | 90 | 1,123,349 | 11 | 118,166 |
| Over 84 | - | - | 74 | 771,456 | 20 | 156,806 |
| **Total** | **306** | **$ 2,703,422** | **1,455** | **$ 27,144,086** | **109** | **$ 1,250,403** |

[1] Includes 14 deferred disabled participants and 3 deferred beneficiaries.
[2] Includes 15 disabled participants.

## E. Participant Statistics

| Inactive Participants as of January 1, 2017 | No. | Amount of Annual Benefit |
|---|---|---|
| **Participants Receiving Benefits** | | |
| • Retired | 1,455 | $ 27,144,086 |
| • Beneficiaries | 109 | 1,250,403 |
| **Total** | **1,564** | **$ 28,394,489** |
| **Participants with Deferred Benefits** | | |
| • Vested Terminated | 289 | $ 2,455,222 |
| • Beneficiaries | 3 | 27,912 |
| • Disabled | 14 | 220,288 |
| **Total** | **306** | **$ 2,703,422** |

| Statistics for Active Participants As of January 1, 2016 | No. | Average Age | Average Service[1] | Average Earnings |
|---|---|---|---|---|
| • Continuing[2] | 2,196 | 45.8 | 9.2 | $ 55,801 |
| • New[3] | 365 | 38.4 | 1.3 | 44,737 |
| **Total** | **2,561** | **44.7** | **8.2** | **$ 54,224** |
| **As of January 1, 2017[2]** | | | | |
| • Continuing | 2,226 | 45.8 | 9.1 | $ 56,864 |
| • New[3] | 431 | 37.8 | 0.9 | 46,487 |
| **Total** | **2,657** | **44.5** | **7.8** | **$ 55,181** |

[1] Service since date of hire.
[2] Excludes 24 members on leave of absence in 2016, and 12 members on leave of absence in 2017.
[3] Includes rehires.

## Section 4.2: Summary of Plan Provisions

### Effective Date and Plan Year

Originally effective September 1, 1967; the plan was last amended and restated effective January 1, 2013. The plan year is January 1, through December 31.

### Administration

The plan is administered by the El Paso County Board of Retirement which consists of five voting members and two Associate members. The five voting members include the Treasurer of El Paso County, two non-elected employees of participating employers, and two registered electors of El Paso County appointed by the Board of County Commissioners.

### Type of Plan

A self-administered defined benefit pension plan.

### Employers Included

El Paso County, Colorado, El Paso County Health Department, Pikes Peak Library District, Office of the 4th Judicial District, El Paso County Board of Retirement.

### Employees Included

A Covered Employee is any elected or appointed officer or any person employed by the employer who is defined as a full-time employee or a job-share employee by the employer. A Covered Employee participates in the plan on the first date of employment.

### Service

Credited Service is the sum of Past Service, Membership Service and Purchased Service and is used in determining the amount of pension benefits and benefit eligibility. Past Service and Membership Service are periods of employment before and after September 1, 1967, respectively, and are measured in years and months. Past Service is limited to five years, and Purchased Service is also limited to 5 years and is subject to additional conditions.

### Compensation

Total regular compensation excluding bonuses, extra pay, overtime, etc., but including any deferred compensation. The amount of compensation for plan purposes for any participant, who first became a participant on or after January 1, 1996, is limited in any year to a maximum of $260,000 (as indexed).

### Final Average Monthly Compensation

The average compensation of the highest paid 36 consecutive calendar months within the last 120 calendar months of Credited Service.

### Employer Contributions

The Employer will contribute an amount that along with member contributions will be sufficient to provide benefits provided by the plan and pay all administrative expenses of the plan. Such Employer contributions cannot exceed member contribution amounts. Under CO statute, members must contribute at least as much as their employer.

## Section 4.2: Summary of Plan Provisions (continued)

**Member Contributions**

Effective January 1, 1986, members are required to make monthly contributions equal to 6% of earnings. This was increased to 6.5% effective January 1, 2010, 7.0% effective January 1, 2011, 7.5% effective January 1, 2012, and 8.0% effective January 1, 2014. The rate of interest credited on member contributions after July 1, 2005 is 3% per year monthly compounded annually, or such other rate as established by the Retirement Board.

**Normal Form of Benefit**

The Normal Form of Benefit provided by the plan is a 10-year certain and life annuity payable monthly.

**Accrued Benefit**

The benefit determined as for normal retirement payable at the member's normal retirement date considering current earnings and service.

**Normal Retirement Benefit**

Normal retirement date for a member hired before January 1, 2010 is the first of the month on or after attainment of age 62. Normal retirement date for a member hired between January 1, 2010 and December 31, 2012 is the first of the month on or after attainment of age 62, but not before the completion of 60 months of continuous service. Normal retirement date for a member hired after December 31, 2012 is the first of the month on or after attainment of age 62, but not before the completion of 96 months of continuous service.

If hired before January 1, 2010, the monthly benefit payable at normal retirement is equal to 2.22% times final average monthly compensation, times years of Credited Service earned through December 31, 2012 plus 2.00% times final average monthly compensation, times years of Credited Service earned on or after January 1, 2013.

If hired after December 31, 2009, the monthly benefit payable at normal retirement is equal to 2.00% times final average monthly compensation, times years of Credited Service.

If hired before January 1, 2013, such benefit will not be greater than 75% of the member's final average monthly compensation. If hired after December 31, 2012, such benefit will not be greater than 60% of the member's final average monthly compensation.

**Late Retirement Benefit**

The benefit is equal to the Normal Retirement Benefit, recognizing Credited Service and increased compensation to postponed retirement date.

**Special Early Retirement Benefit**

A member may elect to retire with a special early benefit if the sum of his age and years of employment equals at least 75 upon termination of employment. If hired between January 1, 2010 and December 31, 2012, the member must have five or more years of Credited Service. If hired after December 31, 2012, the member must have eight or more years of Credited Service. The benefit will be equal to his accrued benefit unreduced for early payment.

**Regular Early Retirement Benefit**

An active or vested terminated member may elect to retire on the first of any month after the attainment of age 55. If hired before January 1, 2013, the member must have five or more years of Credited Service. If hired after December 31, 2012, the member must have eight or more years of Credited Service. The benefit will be equal to his accrued benefit reduced by .25% per month for each month by which his early retirement date precedes age 62.

## Section 4.2: Summary of Plan Provisions (continued)

### Terminated Vested Benefit

A member who terminates employment with five or more years of Credited Service if hired before January 1, 2013, or 8 years if hired after December 31, 2012, before he is eligible to receive immediate retirement benefits may elect to receive either his accumulated contributions, in lieu of all other benefits, or his vested accrued benefit payable at his normal retirement date. The member may also elect to receive a reduced benefit at an earlier commencement date.

A member who terminates employment before becoming vested is entitled to a refund of his accumulated contributions with interest.

### Disability Benefit

An active member who becomes permanently and totally disabled under their employer’s long-term disability insurance program, or Social Security disability, is entitled to receive a benefit payable at his normal retirement date. This benefit is based on his average monthly compensation for the calendar year prior to the calendar year in which disablement occurred and the Credited Service he would have accumulated to such retirement date. Payments will be made for ten years certain and life thereafter.

### Death Benefit

#### Death of a Member Prior to Benefit Commencement

In the event a member, either actively accruing service, disabled or terminated vested, dies before payments commence, the following benefits shall be paid:

If such member is not vested at his death, there shall be paid the Beneficiary the member’s accumulated contributions at the date of death.

If such member is vested at his death, one of the following death benefits shall be payable to his spouse, at her sole option:

Two times the member’s accumulated contributions at the date of death; or

A monthly benefit, payable for life, in an amount equal to 60% of the member’s Accrued Benefit on his date of death, reduced if the spouse is more than five years younger than the member. Such death benefit shall commence on the first day of the month coincident with or following the later of the date the member would have attained age 55 or date of death. If the member dies while in active service, on or after attainment of age 62 or attainment of eligibility for immediate retirement under the rule of 75, the surviving spouse is eligible to receive a monthly benefit payable for life as if the member retired the day before death and elected the 100% joint and survivor annuity.

#### Death after Retirement

A lump sum death benefit of $3,000 is payable to the member’s designated beneficiary. In addition, applicable benefits will be paid if the member has elected an option providing for payments to a beneficiary, or has elected the normal form of benefit and dies prior to having received benefits for 120 months, or prior to having received benefits equal to his total accumulated contributions as of the date of his retirement.

### Optional Retirement Benefits

In lieu of the Normal Form of Benefit (10-year certain and life), a member may elect to receive an adjusted amount, payable for life only, or an amount payable as a 100% or 50% joint and survivor benefit. 100% and 50% joint and survivor benefits with benefits increases if beneficiary dies first are also available options.

## Section 4.3: Summary of Actuarial Methods, Procedures and Assumptions

### A. Actuarial Cost Method

Liabilities and contributions shown in this report are computed using the **Entry Age Normal Actuarial Cost Method**.

Under this method, the **Normal Cost** is computed as the level percentage of pay which, if paid from the earliest time each Member would have been eligible to join the Plan if it then existed (thus, entry age) until his retirement or termination, would accumulate with interest at the rate assumed in the valuation to pay all benefits under the Plan.

The Normal Cost for the Plan is determined by summing individual results for each active Member and determining an average normal cost rate by dividing the summed individual normal costs by the total payroll of Members before assumed retirement age.

The **Actuarial Accrued Liability** at any point in time is the theoretical amount of the fund that would have accumulated had annual contributions equal to the Normal Cost been made in prior years (it does not represent the liability for benefits accrued to the valuation date.) The **Unfunded Actuarial Accrued Liability** is the excess of the Actuarial Accrued Liability over the Actuarial Value of Plan Assets measured on the valuation date. The Unfunded Actuarial Accrued Liability is amortized over a 30-year period from the valuation date as a level percentage of pay.

Under this method experience gains or losses, i.e. decreases or increases in accrued liabilities attributable to deviations in experience from the actuarial assumptions, adjust the Unfunded Actuarial Accrued Liability (UAAL). Absent the emergence of actuarial gains or contributions in excess of the determined amount, the UAAL will not be fully amortized due to the use of the open amortization period.

### B. Asset Valuation Method

The asset valuation method recognizes 20% of the market investment gain/loss each year, for a period of 5 years. The Actuarial Value of Assets must be within 20% plus/minus of the Market Value of Assets.

### C. Valuation Procedures

No actuarial liability is included for members who terminated non-vested prior to the valuation date, except those due a refund of contributions.

The compensation amounts used in the projection of benefits and liabilities were January 1, 2017 rates of pay.

In computing accrued benefits, average earnings were determined using actual historical earnings supplied by the Plan Administrator.

Termination and retirement benefits were projected to be no greater than the dollar limitation required by Internal Revenue Code Section 415 for governmental plans

## D. Actuarial Assumptions

### Interest

8.0% per annum, compounded annually, net of investment expenses.

### Mortality

RP-2000 Mortality Table Projected Generationally with Scale AA Setback 1 Year for Females.
Sample rates for 2017 only are shown below:

| | Per 100 Members | |
|---|---|---|
| Age | Male | Female |
| 20 | 0.02 | 0.01 |
| 25 | 0.03 | 0.02 |
| 30 | 0.04 | 0.02 |
| 35 | 0.07 | 0.04 |
| 40 | 0.09 | 0.05 |
| 45 | 0.12 | 0.08 |
| 50 | 0.16 | 0.11 |
| 55 | 0.26 | 0.20 |
| 60 | 0.51 | 0.41 |
| 64 | 0.89 | 0.70 |

### Withdrawal

| | Per 100 Members | |
|---|---|---|
| Svc | Male | Female |
| 0 | 20.00 | 20.00 |
| 1 | 17.50 | 17.50 |
| 2 | 12.50 | 17.00 |
| 3 | 12.50 | 13.00 |
| 4 | 10.00 | 12.50 |
| 5 | 9.00 | 11.00 |
| 6 | 7.90 | 9.90 |
| 7 | 6.80 | 8.80 |
| 8 | 6.25 | 8.25 |
| 9 | 5.40 | 7.40 |
| 10 | 4.90 | 6.50 |
| 11 | 4.50 | 5.50 |
| 12 | 4.20 | 5.20 |
| 13 | 3.85 | 4.85 |
| 14 | 3.65 | 4.55 |
| 15 | 3.15 | 4.15 |
| 16+ | 3.00 | 4.00 |

Withdrawal rates are assumed to be zero after a member becomes eligible for retirement benefits.

## Section 4.3: Summary of Actuarial Methods, Procedures and Assumptions (continued)

**Disability**

Sample rates are as follows:

| Per 100 Members | |
|---|---|
| Age | Disablement |
| 20 | 0.02 |
| 25 | 0.03 |
| 30 | 0.04 |
| 35 | 0.06 |
| 40 | 0.09 |
| 45 | 0.13 |
| 50 | 0.20 |
| 55+ | 0.35 |

**Post-Disability Mortality**

The disability mortality is based on the RP-2000 Disabled Mortality Table. Sample rates are as follows:

| Per 100 Members | | |
|---|---|---|
| Age | Male | Female |
| 20 | 2.26 | 0.75 |
| 25 | 2.26 | 0.75 |
| 30 | 2.26 | 0.75 |
| 35 | 2.26 | 0.75 |
| 40 | 2.26 | 0.75 |
| 45 | 2.26 | 0.75 |
| 50 | 2.90 | 1.15 |
| 55 | 3.54 | 1.65 |
| 60 | 4.20 | 2.18 |
| 64 | 4.83 | 2.66 |

**Salary Increases**

Anticipated salary increases include both inflationary and merit increases. Merit increases are anticipated to be greater earlier in a member's career. Sample rates are as follows:

| | Percentage Increase at Attained Service | | |
|---|---|---|---|
| Service | Merit | Inflation | Total |
| 0 | 4.12% | 3.50% | 7.76% |
| 5 | 1.99 | 3.50 | 5.55 |
| 10 | 1.21 | 3.50 | 4.75 |
| 15 | 0.89 | 3.50 | 4.42 |
| 20 | 0.56 | 3.50 | 4.08 |
| 25+ | 0.24 | 3.50 | 3.75 |

**Salary Limit Increases**

3.50% per year.

## Section 4.3: Summary of Actuarial Methods, Procedures and Assumptions (continued)

**Refund Assumption for Active Members Who Withdraw:**

| Service | Percent Electing Refund |
|---|---|
| 0-4 | 100% |
| 5 | 40% |
| 6 | 35% |
| 7 | 30% |
| 8 | 25% |
| 9 | 25% |
| 10+ | 25% |

**Retirement Rates**

According to the following table based on eligibility for reduced or unreduced retirement benefits.

| | Per 100 Members | |
|---|---|---|
| Attained Age | Unreduced | Reduced |
| 49 & Before | 30 | - |
| 50 | 35 | - |
| 51 | 20 | - |
| 52 | 20 | - |
| 53 | 20 | - |
| 54 | 20 | - |
| 55 | 25 | 15 |
| 56 | 15 | 5 |
| 57 | 15 | 5 |
| 58 | 15 | 10 |
| 59 | 15 | 10 |
| 60 | 20 | 10 |
| 61 | 25 | 10 |
| 62 | 30 | - |
| 63 | 20 | - |
| 64 | 20 | - |
| 65 | 25 | - |
| 66 | 25 | - |
| 67-69 | 20 | - |
| 70-74 | 40 | - |
| 75+ | 100 | - |

**Expense Loading**

Loading for administrative expenses is based on an estimate for the year, provided by the Retirement Board. For 2017, the administrative expense loading is $688,370.

**Percent Married**

85% of all members are assumed to have eligible spouses.

**Age Difference**

A husband is assumed to be three years older than his wife.

## Section 4.3: Summary of Actuarial Methods, Procedures and Assumptions (continued)

### Age for Commencement of Deferred Vested Benefits

Active Members

55

Terminated Members

57, or earlier if eligible for Rule of 75 before age 57

### Amortization of the Unfunded Actuarial Accrued Liability

The unfunded actuarial accrued liability is amortized as a level percent of payroll over an open amortization period of 30 years. Payroll is assumed to increase 3.5% per year for this purpose.

# Glossary of Terms

**Actuarial Accrued Liability**

Total accumulated cost to fund pension benefits arising from service in all prior years.

**Actuarial Cost Method**

Technique used to assign or allocate, in a systematic and consistent manner, the expected cost of a pension plan for a group of plan members to the years of service that give rise to that cost.

**Actuarial Present Value of Projected Benefits**

Amount which, together with future interest, is expected to be sufficient to pay all future benefits.

**Actuarial Valuation**

Study of probable amounts of future pension benefits and the necessary amount of contributions to fund those benefits.

**GASB 25**

Governmental Accounting Standards Board Statement Number 25, which specifies how the Annual Required Contribution (ARC) is to be calculated for fiscal years prior to June 15, 2013.

**GASB 67**

Governmental Accounting Standards Board Statement Number 67 amends Number 25 effective for the fiscal year beginning after June 15, 2013, and defines new financial reporting requirements for public pension plans.

**Normal Cost**

That portion of the actuarial present value of benefits assigned to a particular year in respect to an individual participant or the plan as a whole.

**Unfunded Actuarial Accrued Liability (UAAL)**

The portion of the actuarial accrued liability not offset by plan assets.

**Vested Benefits**

Benefits which are unconditionally guaranteed regardless of employment.