

## **SECTION D**

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### **STATISTICAL TABLES**

The Statistical Section provides additional historical perspective, context, and detail to assist the reader in using the information in the financial statements and note disclosures to understand and assess the economic condition of the City of Austin Employees' Retirement System (COAERS). In compliance with *GASB Statement No. 44, Economic Condition Reporting: The Statistical Section*, schedules are classified into the following categories: Demographic and Economic Information, Operating Information, and Financial Trends.

## Statistical Tables

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**Sources:** Schedules and data are provided by the consulting actuary, GRS Retirement Consulting, unless otherwise noted.

**Table 12A**  
**Distribution of All Active Participants by Age and Length of Service**  
**As of December 31, 2017**

| Attained Age | 0   | 1   | 2   | 3   | 4   | 5-9   | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35+ | Number of Employees | Average Annual Salary |
|--------------|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-------|-----|---------------------|-----------------------|
| Under 25     | 80  | 49  | 19  | 15  | 3   | 2     | 0     | 0     | 0     | 0     | 0     | 0   | 168                 | \$ 38,380             |
| 25-29        | 187 | 186 | 98  | 80  | 73  | 57    | 0     | 0     | 0     | 0     | 0     | 0   | 681                 | 45,759                |
| 30-34        | 194 | 177 | 140 | 137 | 120 | 256   | 95    | 1     | 0     | 0     | 0     | 0   | 1,120               | 53,759                |
| 35-39        | 160 | 153 | 106 | 160 | 87  | 325   | 280   | 88    | 5     | 0     | 0     | 0   | 1,364               | 61,011                |
| 40-44        | 103 | 93  | 74  | 109 | 91  | 295   | 292   | 253   | 47    | 1     | 0     | 0   | 1,358               | 68,631                |
| 45-49        | 95  | 86  | 57  | 91  | 77  | 293   | 277   | 303   | 146   | 28    | 0     | 0   | 1,453               | 70,905                |
| 50-54        | 41  | 51  | 36  | 83  | 47  | 246   | 232   | 274   | 195   | 74    | 17    | 0   | 1,296               | 72,165                |
| 55-59        | 56  | 38  | 40  | 57  | 49  | 191   | 212   | 273   | 144   | 73    | 27    | 2   | 1,162               | 72,981                |
| 60-64        | 19  | 27  | 22  | 38  | 37  | 133   | 154   | 151   | 72    | 57    | 20    | 7   | 737                 | 73,581                |
| 65 & Over    | 3   | 7   | 6   | 9   | 12  | 60    | 55    | 67    | 27    | 12    | 9     | 6   | 273                 | 73,696                |
| All Ages     | 938 | 867 | 598 | 779 | 596 | 1,858 | 1,597 | 1,410 | 636   | 245   | 73    | 15  | 9,612               | \$ 65,537             |

**Table 12B**

**Distribution of Group A Active Participants by Age and Length of Service  
as of December 31, 2017**

| Attained<br>Age | 0 | 1 | 2 | 3 | 4 | 5-9   | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35+ | Number of<br>Employees | Average<br>Annual<br>Salary |
|-----------------|---|---|---|---|---|-------|-------|-------|-------|-------|-------|-----|------------------------|-----------------------------|
| Under 25        | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 0     | 0     | 0     | 0     | 0   | 0                      | \$ 0                        |
| 25-29           | 0 | 0 | 0 | 0 | 0 | 28    | 0     | 0     | 0     | 0     | 0     | 0   | 28                     | 52,316                      |
| 30-34           | 1 | 0 | 1 | 1 | 0 | 184   | 95    | 1     | 0     | 0     | 0     | 0   | 283                    | 58,847                      |
| 35-39           | 0 | 0 | 1 | 2 | 0 | 242   | 280   | 88    | 5     | 0     | 0     | 0   | 618                    | 65,346                      |
| 40-44           | 0 | 0 | 1 | 2 | 6 | 221   | 292   | 253   | 47    | 1     | 0     | 0   | 823                    | 72,861                      |
| 45-49           | 0 | 1 | 0 | 0 | 0 | 228   | 277   | 303   | 146   | 28    | 0     | 0   | 983                    | 73,989                      |
| 50-54           | 0 | 1 | 1 | 1 | 1 | 185   | 232   | 274   | 195   | 74    | 17    | 0   | 981                    | 74,705                      |
| 55-59           | 0 | 0 | 1 | 1 | 1 | 162   | 210   | 273   | 144   | 73    | 27    | 2   | 894                    | 75,568                      |
| 60-64           | 0 | 0 | 1 | 0 | 0 | 108   | 154   | 150   | 72    | 57    | 20    | 7   | 569                    | 74,789                      |
| 65 & Over       | 0 | 0 | 0 | 0 | 0 | 50    | 55    | 67    | 26    | 12    | 9     | 6   | 225                    | 76,125                      |
| All Ages        | 1 | 2 | 6 | 7 | 8 | 1,408 | 1,595 | 1,409 | 635   | 245   | 73    | 15  | 5,404                  | \$ 72,488                   |

**Table 12C**  
**Distribution of Group B Active Participants by Age and Length of Service**  
**as of December 31, 2017**

| Attained<br>Age | 0   | 1   | 2   | 3   | 4   | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35+ | Number of<br>Employees | Average<br>Annual<br>Salary |
|-----------------|-----|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-----|------------------------|-----------------------------|
| Under 25        | 80  | 49  | 19  | 15  | 3   | 2   | 0     | 0     | 0     | 0     | 0     | 0   | 168                    | \$ 38,380                   |
| 25-29           | 187 | 186 | 98  | 80  | 73  | 29  | 0     | 0     | 0     | 0     | 0     | 0   | 653                    | 45,477                      |
| 30-34           | 193 | 177 | 139 | 136 | 120 | 72  | 0     | 0     | 0     | 0     | 0     | 0   | 837                    | 52,039                      |
| 35-39           | 160 | 153 | 105 | 158 | 87  | 83  | 0     | 0     | 0     | 0     | 0     | 0   | 746                    | 57,420                      |
| 40-44           | 103 | 93  | 73  | 107 | 85  | 74  | 0     | 0     | 0     | 0     | 0     | 0   | 535                    | 62,126                      |
| 45-49           | 95  | 85  | 57  | 91  | 77  | 65  | 0     | 0     | 0     | 0     | 0     | 0   | 470                    | 64,454                      |
| 50-54           | 41  | 50  | 35  | 82  | 46  | 61  | 0     | 0     | 0     | 0     | 0     | 0   | 315                    | 64,255                      |
| 55-59           | 56  | 38  | 39  | 56  | 48  | 30  | 1     | 0     | 0     | 0     | 0     | 0   | 268                    | 64,349                      |
| 60-64           | 19  | 27  | 21  | 38  | 37  | 26  | 0     | 0     | 0     | 0     | 0     | 0   | 168                    | 69,489                      |
| 65 & Over       | 3   | 7   | 6   | 9   | 12  | 11  | 0     | 0     | 0     | 0     | 0     | 0   | 48                     | 62,312                      |
| All Ages        | 937 | 865 | 592 | 772 | 588 | 450 | 2     | 1     | 1     | 0     | 0     | 0   | 4,208                  | \$ 56,611                   |

**Table 13**  
**Distribution of All Active Participants by Service and  
Current Rate of Pay as of December 31, 2017**

| Completed<br>Years of Service | Number of<br>Employees | Total Average<br>Salary |
|-------------------------------|------------------------|-------------------------|
| 0                             | 938                    | \$ 51,307               |
| 1                             | 867                    | 53,451                  |
| 2                             | 598                    | 55,617                  |
| 3                             | 779                    | 59,784                  |
| 4                             | 596                    | 62,172                  |
| 5-9                           | 1,858                  | 66,505                  |
| 10-14                         | 1,597                  | 69,121                  |
| 15-19                         | 1,410                  | 74,999                  |
| 20-24                         | 636                    | 78,654                  |
| 25-29                         | 245                    | 85,726                  |
| 30-34                         | 73                     | 91,250                  |
| 35+                           | <u>15</u>              | <u>80,012</u>           |
| All Years                     | 9,612                  | \$ 65,537               |

**Table 14**  
**Schedule of Average Benefit Payments**

| Retirement Effective Dates<br>January 1, 2012 to December 31, 2017 | Years Creditable Service |          |          |          |          |          |          |
|--------------------------------------------------------------------|--------------------------|----------|----------|----------|----------|----------|----------|
|                                                                    | 0-4                      | 5-9      | 10-14    | 15-19    | 20-24    | 25-29    | 30+      |
| Period 01/01/2012 to 12/31/2012                                    |                          |          |          |          |          |          |          |
| Average Monthly Benefit                                            | \$263                    | \$890    | \$1,591  | \$2,366  | \$3,158  | \$4,669  | \$4,490  |
| Average Final Salary                                               | \$41,271                 | \$50,472 | \$55,358 | \$57,742 | \$61,017 | \$74,302 | \$60,811 |
| Number of Active Retirees                                          | 12                       | 46       | 52       | 33       | 109      | 73       | 17       |
| Period 01/01/2013 to 12/31/2013                                    |                          |          |          |          |          |          |          |
| Average Monthly Benefit                                            | \$249                    | \$701    | \$1,541  | \$2,325  | \$3,330  | \$4,714  | \$5,418  |
| Average Final Salary                                               | \$38,808                 | \$43,790 | \$54,621 | \$57,891 | \$64,170 | \$76,055 | \$71,320 |
| Number of Active Retirees                                          | 19                       | 43       | 43       | 47       | 140      | 46       | 17       |
| Period 01/01/2014 to 12/31/2014                                    |                          |          |          |          |          |          |          |
| Average Monthly Benefit                                            | \$304                    | \$934    | \$1,748  | \$2,059  | \$3,457  | \$4,653  | \$5,142  |
| Average Final Salary                                               | \$41,458                 | \$54,808 | \$61,215 | \$55,462 | \$66,771 | \$74,120 | \$70,799 |
| Number of Active Retirees                                          | 23                       | 51       | 50       | 39       | 115      | 56       | 22       |
| Period 01/01/2015 to 12/31/2015                                    |                          |          |          |          |          |          |          |
| Average Monthly Benefit                                            | \$342                    | \$826    | \$1,856  | \$2,469  | \$3,650  | \$4,597  | \$5,533  |
| Average Final Salary                                               | \$45,450                 | \$49,458 | \$65,657 | \$66,219 | \$71,037 | \$70,821 | \$76,571 |
| Number of Active Retirees                                          | 30                       | 44       | 49       | 51       | 112      | 54       | 25       |
| Period 01/01/2016 to 12/31/2016                                    |                          |          |          |          |          |          |          |
| Average Monthly Benefit                                            | \$205                    | \$1,072  | \$1,801  | \$2,320  | \$3,592  | \$4,801  | \$6,625  |
| Average Final Salary                                               | \$35,701                 | \$66,456 | \$64,162 | \$60,699 | \$69,051 | \$75,365 | \$85,827 |
| Number of Active Retirees                                          | 22                       | 43       | 50       | 44       | 108      | 49       | 21       |
| Period 01/01/2017 to 12/31/2017                                    |                          |          |          |          |          |          |          |
| Average Monthly Benefit                                            | \$371                    | \$925    | \$1,788  | \$3,032  | \$3,871  | \$4,630  | \$6,037  |
| Average Final Salary                                               | \$50,749                 | \$54,135 | \$61,636 | \$71,751 | \$73,301 | \$74,520 | \$80,261 |
| Number of Active Retirees                                          | 21                       | 43       | 63       | 61       | 114      | 43       | 28       |

**Table 15**  
**Retired Members by Type of Benefit (as of December 31, 2017)**

| Amount of<br>Monthly Benefit | Number of<br>Retired<br>Members | Type of Retirement <sup>a</sup> |     |     |    | Option Selected <sup>b</sup> |       |     |     |    |     |     |     |    |     |
|------------------------------|---------------------------------|---------------------------------|-----|-----|----|------------------------------|-------|-----|-----|----|-----|-----|-----|----|-----|
|                              |                                 | 1                               | 2   | 3   | 4  | Unmod.                       | 1     | 2   | 3   | 4  | 5   | 6   | 7   | 8  | 9   |
| Deferred                     |                                 |                                 |     |     |    | 964                          |       |     |     |    |     |     |     |    |     |
| \$1-250                      | 204                             | 175                             | 9   | 2   | 18 | 121                          | 61    | 7   | 4   |    |     |     | 11  |    |     |
| 251-500                      | 287                             | 230                             | 31  | 12  | 14 | 133                          | 103   | 20  | 9   | 4  |     | 1   | 15  | 2  |     |
| 501-750                      | 327                             | 259                             | 42  | 12  | 14 | 151                          | 115   | 23  | 16  | 5  | 4   | 2   | 9   |    | 2   |
| 751-1,000                    | 357                             | 271                             | 56  | 14  | 16 | 146                          | 120   | 30  | 24  | 6  | 3   | 13  | 11  | 1  | 3   |
| 1,001-1,250                  | 339                             | 261                             | 57  | 13  | 8  | 109                          | 123   | 26  | 15  | 9  | 11  | 19  | 10  | 1  | 16  |
| 1,251-1,500                  | 393                             | 318                             | 57  | 15  | 3  | 111                          | 155   | 32  | 23  | 6  | 18  | 22  | 12  | 1  | 13  |
| 1,501-1,750                  | 403                             | 350                             | 44  | 9   | 0  | 113                          | 148   | 37  | 31  | 5  | 17  | 24  | 16  | 1  | 11  |
| 1,751-2,000                  | 440                             | 383                             | 43  | 11  | 3  | 124                          | 168   | 49  | 27  | 4  | 23  | 19  | 8   |    | 18  |
| Over \$2,000                 | 3,475                           | 3,293                           | 152 | 21  | 9  | 1,072                        | 1,425 | 319 | 231 | 38 | 85  | 86  | 95  | 24 | 100 |
| Total                        | 6,225                           | 5,540                           | 491 | 109 | 85 | 3,044                        | 2,418 | 543 | 380 | 77 | 161 | 186 | 187 | 30 | 163 |

**Notes:**

<sup>a</sup> Type of Retirement

1. Normal retirement for age and service
2. Beneficiary payment, normal retirement or death in service
3. Disability retirement
4. QDRO - alternate payee

<sup>b</sup> Option Selected:

Unmodified Plan: life annuity

The following options reduce the retired member's monthly benefit:

- Option 1 - Beneficiary receives 100 percent of member's reduced monthly benefit
- Option 2 - Beneficiary receives 50 percent of member's reduced monthly benefit
- Option 3 - Beneficiary receives 66-2/3 percent of member's reduced monthly benefit
- Option 4 - Survivor receives 66-2/3 percent of member's reduced monthly benefit upon first death
- Option 5 - Level income option payable for life of retiree
- Option 6 - Level income option, beneficiary receives 66-2/3 percent of member's monthly benefit
- Option 7 - Life annuity with 15 years guaranteed
- Option 8 - Other participant created actuarial equivalent forms of payment
- Option 9 - Level income option, beneficiary receives 100 percent of member's monthly benefit

\*The number of Retired Members and the number of options selected are not equal due to the inclusion of 964 deferred vested members in the Unmodified option selection.



**Table 16**  
**Schedule of Participating Employers**

The City of Austin and the City of Austin Employees' Retirement System are the only participating employers in the plan.

**Table 17**  
**Change in Net Position, Last Ten Fiscal Years**

|                                              | Fiscal Year        |                  |                  |                   |                  |                  |                  |                   |                  |                  |
|----------------------------------------------|--------------------|------------------|------------------|-------------------|------------------|------------------|------------------|-------------------|------------------|------------------|
|                                              | 2008               | 2009             | 2010             | 2011              | 2012             | 2013             | 2014             | 2015              | 2016             | 2017             |
| <b>Additions</b>                             |                    |                  |                  |                   |                  |                  |                  |                   |                  |                  |
| Member Contributions                         | \$41,263           | \$38,752         | \$40,629         | \$41,503          | \$43,922         | \$47,449         | \$50,489         | \$54,066          | \$60,801         | \$56,194         |
| Employer Contributions                       | 40,786             | 45,263           | 53,576           | 66,718            | 76,217           | 86,713           | 93,470           | 100,637           | 104,488          | 111,058          |
| Investment Income (net of expenses)          | (435,867)          | 310,844          | 230,102          | (21,964)          | 220,199          | 287,075          | 99,704           | (47,608)          | 171,641          | 376,819          |
| <b>Total additions to plan net assets</b>    | <b>(353,818)</b>   | <b>394,859</b>   | <b>324,307</b>   | <b>\$86,257</b>   | <b>\$340,338</b> | <b>\$421,237</b> | <b>\$243,663</b> | <b>\$107,095</b>  | <b>\$336,930</b> | <b>\$544,071</b> |
| <b>Deductions</b>                            |                    |                  |                  |                   |                  |                  |                  |                   |                  |                  |
| Benefit Payments                             | 100,707            | 108,090          | 115,665          | 123,558           | 131,606          | 141,923          | 152,664          | 162,085           | 171,736          | 183,344          |
| Refunds                                      | 4,285              | 4,858            | 4,205            | 3,801             | 4,916            | 4,738            | 4,154            | 4,052             | 3,911            | 4,045            |
| Administrative Expenses                      | 1,883              | 2,032            | 2,113            | 2,218             | 2,280            | 2,561            | 2,631            | 2,421             | 2,701            | 2,778            |
| Lump-sum Payments                            | 3,022              | 3,095            | 2,013            | 2,483             | 3,843            | 4,858            | 5,039            | 3,532             | 3,697            | 3,154            |
| <b>Total deductions from plan net assets</b> | <b>109,897</b>     | <b>118,075</b>   | <b>123,996</b>   | <b>132,060</b>    | <b>142,645</b>   | <b>154,080</b>   | <b>164,488</b>   | <b>172,090</b>    | <b>182,045</b>   | <b>193,321</b>   |
| <b>Change in net assets</b>                  | <b>(\$463,715)</b> | <b>\$276,784</b> | <b>\$200,311</b> | <b>(\$45,803)</b> | <b>\$197,693</b> | <b>\$267,157</b> | <b>\$79,175</b>  | <b>(\$64,995)</b> | <b>\$154,884</b> | <b>\$350,750</b> |

Notes: Dollar amounts in thousands

Columns may not add due to rounding

Includes contributions to and benefit payments from 415 Restoration Plan

**Table 18**  
**Benefit and Refund Deductions from Net Position by Type, Last Ten Fiscal Years**

|                                         | 2008      | 2009      | 2010      | 2011      | 2012      | 2013      | 2014      | 2015      | 2016      | 2017      |
|-----------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| <b>Type of Benefit</b>                  |           |           |           |           |           |           |           |           |           |           |
| Age and service benefits:               |           |           |           |           |           |           |           |           |           |           |
| Retirees <sup>a</sup>                   | \$99,219  | \$106,148 | \$114,244 | \$121,366 | \$130,019 | \$139,667 | \$150,335 | \$160,219 | \$170,031 | \$181,270 |
| Beneficiaries <sup>a</sup>              |           |           |           |           |           |           |           |           |           |           |
| Lump-sum payments                       | \$3,022   | \$3,095   | \$2,011   | \$2,483   | \$3,843   | \$4,858   | \$5,039   | \$3,532   | \$3,697   | \$3,154   |
| In service death benefits: <sup>b</sup> | \$1,489   | \$1,942   | \$1,421   | \$2,192   | \$1,587   | \$2,256   | \$2,329   | \$1,866   | \$1,705   | \$2,074   |
| Disability benefits: <sup>c</sup>       |           |           |           |           |           |           |           |           |           |           |
| Total benefits                          | \$103,730 | \$111,185 | \$117,676 | \$126,041 | \$135,449 | \$146,781 | \$157,703 | \$165,617 | \$175,433 | \$186,498 |
| <b>Type of Refund</b>                   |           |           |           |           |           |           |           |           |           |           |
| Death <sup>b</sup>                      |           |           |           |           |           |           |           |           |           |           |
| Separation                              | \$4,285   | \$4,858   | \$4,205   | \$3,801   | \$4,916   | \$4,738   | \$4,154   | \$4,052   | \$3,911   | \$4,045   |
| Total refunds                           | \$4,285   | \$4,858   | \$4,205   | \$3,801   | \$4,916   | \$4,738   | \$4,154   | \$4,052   | \$3,911   | \$4,045   |

Notes: Dollar amounts in thousands

<sup>a</sup> Segregation of age benefits for beneficiaries not currently available

<sup>b</sup> Segregation of death benefits between refunds and in service death benefits not currently available

<sup>c</sup> Segregation of disability benefits from age and service benefits not currently available

Includes benefit payments from 415 Restoration Plan

Excludes administrative expenses

## **SECTION E**

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### **STATEMENT OF ACTUARIAL METHODS AND ASSUMPTIONS**

## Statement of Actuarial Methods and Assumptions (Effective as of December 31, 2017)

The most recent experience study was completed in conjunction with the December 31, 2015 actuarial valuation. Please see our Experience Study report dated May 2016 to see more detail of the rationale for the current assumptions. As authorized under Article 6243n of the Vernon's Civil Statutes of the State of Texas, actuarial assumptions and methods are set by the Board of Trustees, based upon recommendations made by the plan's actuary.

### A. ACTUARIAL ASSUMPTIONS

#### 1. Investment Return Rate (adopted effective December 31, 2015)

7.50% per annum, compounded annually, composed of an assumed inflation rate of 2.75% and a real rate of return of 4.75%, net of investment expenses.

#### 2. Mortality

##### a. Nondisabled annuitants (adopted effective December 31, 2015)

Healthy retirees and beneficiaries – The RP-2014 Combined Healthy Mortality Tables with Blue Collar Adjustments. Generational mortality improvements in accordance with Scale BB from the table's base year of 2014 (see Item 21 for further discussion of mortality improvement).

##### b. Disabled annuitants (adopted effective December 31, 2015)

Disabled annuitants – The RP-2014 Combined Healthy Mortality Tables with Blue Collar Adjustments, set forward three years. Generational mortality improvements in accordance with Scale BB from the table's base year of 2014; minimum 3% rate of mortality at all ages (see Item 21 for further discussion of mortality improvement).

##### c. Active members (adopted effective December 31, 2015)

Active employees – The RP-2014 Employee Mortality Tables with Blue Collar Adjustments. Generational mortality improvements in accordance with Scale BB from the table's base year of 2014 (see Item 21 for further discussion).

# Statement of Actuarial Methods and Assumptions (Effective as of December 31, 2017) (Continued)

## 3. Retirement Rates: (adopted effective December 31, 2015)

The following rates of retirement are assumed for members eligible for normal retirement.

| Age        | Rates of Retirement |                |
|------------|---------------------|----------------|
|            | <u>Males</u>        | <u>Females</u> |
| 44 & under | 22.0%               | 25.0%          |
| 45         | 22.0%               | 23.0%          |
| 46         | 22.0%               | 23.0%          |
| 47         | 22.0%               | 23.0%          |
| 48         | 22.0%               | 23.0%          |
| 49         | 22.0%               | 23.0%          |
| 50         | 22.0%               | 26.0%          |
| 51         | 22.0%               | 26.0%          |
| 52         | 22.0%               | 26.0%          |
| 53         | 22.0%               | 26.0%          |
| 54         | 22.0%               | 26.0%          |
| 55         | 22.0%               | 26.0%          |
| 56         | 22.0%               | 26.0%          |
| 57         | 22.0%               | 26.0%          |
| 58         | 22.0%               | 26.0%          |
| 59         | 22.0%               | 26.0%          |
| 60         | 22.0%               | 21.0%          |
| 61         | 22.0%               | 21.0%          |
| 62         | 27.0%               | 24.0%          |
| 63         | 22.0%               | 21.0%          |
| 64         | 22.0%               | 21.0%          |
| 65         | 22.0%               | 24.0%          |
| 66         | 30.0%               | 24.0%          |
| 67         | 30.0%               | 24.0%          |
| 68         | 22.0%               | 21.0%          |
| 69         | 22.0%               | 21.0%          |
| 70         | 22.0%               | 20.0%          |
| 71         | 22.0%               | 20.0%          |
| 72         | 22.0%               | 20.0%          |
| 73         | 22.0%               | 20.0%          |
| 74 & older | 100.0%              | 100.0%         |

Group B members are assumed to retire at twice the applicable rate upon the first year they attain eligibility for normal retirement. Early retirement rates (of 1% at age 55 increasing by 1% every two years to 5% at ages 63 and 64) apply for Group B members.

## Statement of Actuarial Methods and Assumptions (Effective as of December 31, 2017) (Continued)

4. Rates of Decrement Due to Withdrawal (adopted effective December 31, 2015)

Rates of withdrawal are comprised of a select period for the first 3 years of employment and ultimate rates based on years of service from retirement after the end of the select period. The following rates during the select period apply at all ages during the applicable year of employment:

| <u>Years of<br/>Employment</u> | <u>Males</u> | <u>Females</u> |
|--------------------------------|--------------|----------------|
| 1                              | 0.125        | 0.175          |
| 2                              | 0.115        | 0.160          |
| 3                              | 0.090        | 0.140          |

# Statement of Actuarial Methods and Assumptions (Effective as of December 31, 2017) (Continued)

After the select period ends, rates of withdrawal are based on the number of years from retirement. The rates are shown below for males and females

| Years from Eligibility for<br>Unreduced Retirement | Rates of Withdrawal<br>After Select Period |         |
|----------------------------------------------------|--------------------------------------------|---------|
|                                                    | Males                                      | Females |
| 1                                                  | 0.0090                                     | 0.0086  |
| 2                                                  | 0.0122                                     | 0.0160  |
| 3                                                  | 0.0146                                     | 0.0201  |
| 4                                                  | 0.0166                                     | 0.0237  |
| 5                                                  | 0.0182                                     | 0.0238  |
| 6                                                  | 0.0198                                     | 0.0239  |
| 7                                                  | 0.0212                                     | 0.0261  |
| 8                                                  | 0.0225                                     | 0.0282  |
| 9                                                  | 0.0237                                     | 0.0302  |
| 10                                                 | 0.0248                                     | 0.0320  |
| 11                                                 | 0.0323                                     | 0.0422  |
| 12                                                 | 0.0348                                     | 0.0444  |
| 13                                                 | 0.0399                                     | 0.0465  |
| 14                                                 | 0.0401                                     | 0.0525  |
| 15                                                 | 0.0430                                     | 0.0575  |
| 16                                                 | 0.0430                                     | 0.0575  |
| 17                                                 | 0.0430                                     | 0.0575  |
| 18                                                 | 0.0430                                     | 0.0575  |
| 19                                                 | 0.0430                                     | 0.0575  |
| 20                                                 | 0.0430                                     | 0.0575  |
| 21                                                 | 0.0450                                     | 0.0600  |
| 22                                                 | 0.0450                                     | 0.0600  |
| 23                                                 | 0.0450                                     | 0.0600  |
| 24                                                 | 0.0450                                     | 0.0600  |
| 25                                                 | 0.0450                                     | 0.0600  |
| 26                                                 | 0.0470                                     | 0.0650  |
| 27                                                 | 0.0470                                     | 0.0650  |
| 28                                                 | 0.0470                                     | 0.0650  |
| 29                                                 | 0.0470                                     | 0.0650  |
| 30                                                 | 0.0470                                     | 0.0650  |
| 31+                                                | 0.0500                                     | 0.0700  |



## Statement of Actuarial Methods and Assumptions (Effective as of December 31, 2017) (Continued)

5. Disability Rates\* (adopted effective December 31, 2015)

Sample rates are shown below:

| Age | Rates of Decrement<br>Due to Disability |
|-----|-----------------------------------------|
|     | Males and Females                       |
| 20  | 0.000004                                |
| 25  | 0.000025                                |
| 30  | 0.000099                                |
| 35  | 0.000259                                |
| 40  | 0.000494                                |
| 45  | 0.000804                                |
| 50  | 0.001188                                |
| 55  | 0.001647                                |
| 60  | 0.002180                                |

\* Rates are for disability due to all causes, occupational disability rates are assumed to be 10% of all causes.

6. Rates of Salary Increase (adopted effective December 31, 2015)

| Years<br>of<br>Service | Promotional<br>Rate of<br>Increase | Total Annual Rate of Increase<br>Including 2.75% Inflation Component<br>and 1.25% Productivity Component |
|------------------------|------------------------------------|----------------------------------------------------------------------------------------------------------|
| 1 – 7                  | 2.25%                              | 6.25%                                                                                                    |
| 8                      | 2.00%                              | 6.00%                                                                                                    |
| 9                      | 1.50%                              | 5.50%                                                                                                    |
| 10                     | 1.25%                              | 5.25%                                                                                                    |
| 11 - 15                | 1.00%                              | 5.00%                                                                                                    |
| 16 - 19                | 0.75%                              | 4.75%                                                                                                    |
| 20 or more             | 0.00%                              | 4.00%                                                                                                    |

7. DROP Participation: (adopted effective December 31, 2015)

It was assumed that 20% of retiring active members with at least 20 years of service would elect a "Backward" DROP. It is assumed that all members who Back Drop will elect to DROP back to the date that would provide the greatest actuarial value to the member.

## Statement of Actuarial Methods and Assumptions (Effective as of December 31, 2017) (Continued)

8. Married Percentage: (adopted effective December 31, 1997)

100% of the active members are assumed to be married.

9. There will be no recoveries once disabled: (adopted effective December 31, 1997)

10. Spousal Age Difference: (adopted effective December 31, 2012)

Males are assumed to be three years older than their spouses.

11. Normal Form of Payment: (adopted effective December 31, 1997)

It is assumed that all retiring members will elect the Life only form of payment with a guaranteed return of accumulated employee contributions.

12. Crediting Rate on Employee Contributions: (adopted effective December 31, 2002)

It is assumed that the interest credit rate on employee contributions will be 6.0%.

13. Individual salaries used to project benefits: (adopted effective December 31, 1997)

Rates of pay as of the valuation date are reported for all employees.

14. Pay increase timing: (adopted effective December 31, 1997)

Middle of calendar year.

15. Decrement timing: (adopted effective December 31, 1997)

Decrements of all types are assumed to occur mid-year.

16. Eligibility testing: (adopted effective December 31, 2002)

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.

## Statement of Actuarial Methods and Assumptions (Effective as of December 31, 2017) (Continued)

17. Decrement relativity: (adopted effective December 31, 2002)

Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.

18. Incidence of Contributions: (adopted effective December 31, 2002)

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.

19. Benefit Service: (adopted December 31, 1997)

All members are assumed to accrue one year of eligibility service each year.

20. Mortality Improvement:

The base mortality tables are anchored at the year 2014. To account for future mortality improvement, the base mortality rates shown in Item 2 are projected forward using scale BB for all future years.

21. Service Purchases (military, permissive, and sick leave conversion):

No service purchases of any type are assumed. Any gains or losses due to these purchases are recognized in the valuation following the purchase.

22. Cost of Living Adjustments:

No future cost of living adjustments are assumed.

### ACTUARIAL VALUE OF ASSETS

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 expected investment return each year is calculated based on the actuarial value of assets with the difference from actual income smoothed in over five years in 20% increments. If the current year's difference is opposite sign of the prior years' deferred Excesses/(Shortfalls), then the prior years' bases (starting with the oldest) are reduced dollar for dollar along with the current year's base. Any remaining bases are then recognized over five years (20% per year) from their initial creation.

## Statement of Actuarial Methods and Assumptions (Effective as of December 31, 2017) (Continued)

If the resulting preliminary asset value is less than 80% or more than 120% of the market value of assets, then 1/3 of the amount outside of the 80%-120% corridor is recognized in the final actuarial value of assets.

### B. ACTUARIAL FUNDING METHOD

The actuarial accrued liability is determined using the Entry Age Normal actuarial cost method. This method assigns the System's total actuarial present value of future benefits to various periods. The actuarial accrued liability is assigned to years prior to the valuation and the normal cost is assigned to the year following the valuation. The remaining costs are assigned to future years.

The normal cost is determined on an individual basis using the Individual Entry Age Normal Cost method. The actuarial accrued liability is the difference between the total present value of future benefits and the actuarial present value of future normal costs where future normal costs are based on the benefit provisions that are applicable to each individual member. The unfunded actuarial accrued liability is the excess of the actuarial accrued liability over the actuarial value of assets.

### C. FUNDING PERIOD

The funding period is determined using an open group projection. In the open group projection, the demographic assumptions are applied to the current active employees and any employees that are assumed to leave employment are replaced one for one with a new employee. Over time this results in the change of the employee group from mostly Group A members to Group B members. The projection is built to assume no gains or losses on the actuarial accrued liability or the actuarial value of assets. The funding period is the length of time it takes in the open group projection for the actuarial value of assets to exceed the actuarial accrued liability.

In the projection, new members' pay are assumed to increase at 4.00% year over year (i.e. a new employee in 2015 is assumed to be hired at a salary that is 4.00% greater than a new employee hired in 2014. The 4.00% growth rate is equal to our wage inflation assumption of 4.00% (ultimate salary increase assumption showing in Item A.6.)

### D. CHANGES IN ASSUMPTIONS AND METHODS

No changes in the actuarial assumptions and methods since the prior valuation.

## **SECTION F**

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### **SUMMARY OF BENEFIT PROVISIONS**

## Summary of Benefit Provisions of the Retirement Plan as of December 31, 2017

### A. EFFECTIVE DATE

January 1, 1941.

### B. ELIGIBILITY AND PARTICIPATION

Any regular and permanent employee of the City of Austin, excluding all civil service commissioned police officers and firefighters, the Mayor and members of the City Council and all part-time employees who work less than 75 percent of a normal work week.

Members originally hired prior to January 1, 2012 are classified as Group A members and members hired on or after January 1, 2012 are classified as Group B members.

Unless noted otherwise, the provisions for Group A and Group B are the same.

### C. MEMBERSHIP SERVICE

The period of time during which an eligible employee pays into and keeps on deposit the contribution prescribed to be paid by the employee into the System.

### D. AVERAGE FINAL COMPENSATION

The average of the monthly compensation for the 36 calendar months of highest compensation during the last 120 months prior to termination. The monthly compensation used in the determination of benefits cannot exceed the compensation limits of Internal Revenue Code §401(a)(17) for the applicable period. The limit for 2011 is up to \$20,416.67 for persons who first become members after 1995 (members hired prior to 1996 have no limit on their compensation).

### E. CITY AND MEMBER CONTRIBUTION RATES

The City currently contributes a base rate of 8.00% of pay for each active member. Under the Amended Supplemental Funding Plan, the City is providing an additional contribution for each active member. Beginning October 1, 2012, this additional contribution became 10% of pay, for a total city contribution of 18%. Each active member contributes 8.00% of pay. These employee contributions are made under a pre-tax 401(h) pick-up arrangement.

## Summary of Benefit Provisions of the Retirement Plan as of December 31, 2017 (Continued)

### F. RETIREMENT BENEFITS

#### 1. Normal Retirement

##### a. Eligibility:

Group A – A participant may retire upon attaining age 62, or any age with 23 years of service, or attaining age 55 with 20 years of service.

Group B – A participant may retire upon attaining age 62 with 30 years of service, or at age 65 with 5 years of service.

##### b. Monthly Benefit:

Group A – 3.00% of average final compensation times years of service.

Group B – 2.50% of average final compensation times years of service.

- c. Payment Form: Benefits are paid as a monthly life annuity to the participant, with a provision that should the participant die prior to receiving monthly payments whose sum is greater than or equal to the participant's accumulated employee contributions, then the participant's beneficiary shall receive a lump-sum equal to the excess of the participant's accumulated employee contributions with interest over the sum of the monthly payments received.

##### d. Optional Forms of Payment:

- i) Joint and contingent annuity with either 100%, 66 2/3%, or 50% of the reduced retirement income payable for the life of the contingent annuitant upon the death of the retiring participant, with the provision that, should the contingent annuitant predecease the participant, the monthly annuity will revert to the amount that would have been payable under the normal form of payment,
- ii) Joint and 66 2/3% last survivor provides a reduced retirement income payable as long as both the member and the joint annuitant are alive, and upon the death of either the member or the joint annuitant, the benefit reduces to 2/3 of such amount for the remainder of the life of the last survivor,
- iii) Period certain and life annuity with 15 years of payments guaranteed, or

## Summary of Benefit Provisions of the Retirement Plan as of December 31, 2017 (Continued)

- e. Deferred Retirement Option Program (DROP): A member may elect to retroactively participate in the System's DROP (i.e. a Backward DROP). The member would receive a lump-sum payment equal to 90% of the sum of the monthly annuities the participant would have received if the member had retired at the DROP entry date. No COLAs are included but changes in the benefit multiplier are reflected. The maximum period a member may retroactively elect under the DROP is 60 months.

### 2. Early Retirement:

#### a. Eligibility:

Group A – Currently there are no reduced retirement benefits under the plan.

Group B – A participant may retire with a reduced benefit upon attaining age 55 with 10 years of service.

#### b. Monthly Benefit:

Group A – Not applicable.

Group B – the same formula benefit as determined under normal retirement multiplied by an actuarial equivalent early retirement reduction factor.

### G. DISABILITY RETIREMENT

- 1. Eligibility: If the employee is terminated by reason of a total and permanent disability which prevents the employee from engaging in any employment duties. If the employee has less than five years of service, the disability must be job related.
- 2. Monthly Benefit: Same as Normal Retirement benefit using pay and service at date of disability.
- 3. Form of Payment: The normal form of payment that is available to a member taking normal retirement and the optional forms of payments described in F.1.d.i) and F.1.d.ii) above.



## Summary of Benefit Provisions of the Retirement Plan as of December 31, 2017 (Continued)

### H. VESTING OF BENEFITS

#### 1. Vesting

An employee is vested according to the following schedule:

| <u>Years of<br/>Vesting Service</u> | <u>Vested<br/>Percentage</u> |
|-------------------------------------|------------------------------|
| Less than 5                         | 0%                           |
| 5 or more                           | 100%                         |

#### Benefits Upon Vesting

A vested participant is entitled to the retirement benefit payable at normal retirement earned to the date of participant's termination multiplied by his/her vested percentage, or a refund of the employee's accumulated employee contributions with interest.

### I. DEATH IN SERVICE

1. Eligibility: All active members.
2. Benefit: The amount of the benefit payable to the beneficiary is:

#### a. Employee eligible for retirement at date of death:

The surviving spouse if any may elect to receive an annuity equal to the monthly benefit as if the member had retired under any retirement option that would have been available to the member at the end of the month in which the member died. If there is no surviving spouse, then the beneficiary may elect to receive a 15 years certain and life annuity. The surviving spouse or beneficiary instead of electing the annuity may elect to receive a death benefit equal to twice the member's accumulated employee contributions with interest.

#### b. Employee not eligible for retirement at date of death:

A refund of the member's accumulated deposits (with interest) plus a death benefit from COAERS equal to the member's accumulated deposits (with interest), but excluding any purchases for Non-contributory time, prior military service purchases, or Supplementary Service Credit.

## Summary of Benefit Provisions of the Retirement Plan as of December 31, 2017 (Continued)

### J. RETIREE LUMP-SUM DEATH BENEFIT

Upon death of a retired member, a \$10,000 lump-sum death benefit is payable. This benefit is also payable upon the death of an active member eligible for retirement whose surviving spouse or beneficiary elects to receive an annuity.

### K. COST-OF-LIVING ADJUSTMENT (COLA)

On January 1 of each year the Board may approve a cost-of-living adjustment for those retirees who retired on or before December 31 of the previous year. The maximum adjustment which can be approved is 6%. The amount of the adjustment is set by the Board upon recommendation by the System's actuary that such an adjustment will not make the Fund financially unsound, and the adjustment is not inconsistent with the Code. The adjustment is prorated for any benefit which has been in effect for less than a year, with the proration being 1/12 for each monthly payment received during the prior year.

### L. LUMP-SUM ADDITIONAL BENEFIT PAYMENT

Once each year the Board may approve a lump-sum additional benefit payment to be paid to those members and beneficiaries currently in payment status. The additional payment would be equal to a percentage of the member's monthly annuity with a maximum percentage of 100%.

### M. LEGISLATED PLAN CHANGES ENACTED BY 1995 LEGISLATURE

#### 1. 2.3% Multiplier

The benefit multiplier was increased from 2.2% per year of service to 2.3% per year of service effective October 1995.

#### 2. 2.3% Retiree Gross-up

Effective October 1995, current retirees received an increase in their benefit amount to bring their retirement benefit amount up to what it would be currently if they had retired under the 2.3% multiplier.

## Summary of Benefit Provisions of the Retirement Plan as of December 31, 2017 (Continued)

3. \$10,000 Retiree Lump-Sum Death Benefit

The lump-sum death benefit payable upon the death of a retiree was increased from \$2,000 to \$10,000.

4. Plan Participation Begins at Date of Hire

The six-month service requirement for participation was eliminated. Current active members were granted service for the period between their date of hire and their date of participation, up to six months.

N. LEGISLATED PLAN CHANGES ENACTED BY 1997 LEGISLATURE

1. 2.6% Multiplier

The benefit multiplier was increased from 2.3% per year of service to 2.6% per year of service effective October 1997.

2. 2.6% Retiree Gross-up

Effective October 1997, current retirees received an increase in their benefit amount to bring their retirement benefit amount up to what it would be currently if they had retired under the 2.6% multiplier.

3. Military Service Purchase

Increased the number of months of military service that may be purchased from 24 to 48.

4. Noncontributory Service Purchase

Allowed an employee to purchase noncontributory service for the following periods of time: (1) while employee was on workers' compensation leave, (2) while employee was on an authorized leave of absence, and (3) while employee performed service for the employer in a position for which the service was not otherwise creditable. The employee pays the full actuarial cost of the service purchase.

## Summary of Benefit Provisions of the Retirement Plan as of December 31, 2017 (Continued)

### 5. Employer Purchase of Creditable Service

Allowed the employer to purchase the amount of service required to qualify an employee for an unreduced retirement benefit at age 55. To be eligible for the purchase, the employee must never have been a highly compensated employee within the meaning of IRC Section 414(q). The cost of the service purchase is the full actuarial cost of both the benefit and the retirement eligibility.

### O. LEGISLATED PLAN CHANGES ENACTED BY 1999 LEGISLATURE

#### 1. 2.7% Multiplier

The benefit multiplier was increased from 2.6% per year of service to 2.7% per year of service effective October 1999.

#### 2. 2.7% Retiree Gross-up

Effective October 1999, current retirees received an increase in their benefit amount to bring their retirement benefit amount up to what it would be currently if they had retired under the 2.7% multiplier.

#### 3. 23 & Out Provision

The service requirement at which a participant may retire with an unreduced retirement benefit was decreased from 25 years of Creditable Service to 23 years of Creditable Service.

#### 4. Pop-Up Provisions for Certain Joint and Survivor Payment Options

Certain optional forms of payment which extend coverage to a joint annuitant (Options I, II, and III) were amended so that, should the contingent annuitant predecease the participant, the monthly annuity will revert to the amount that would have been payable under the normal form of payment.

#### 5. LUMP-SUM ADDITIONAL BENEFIT PAYMENT

The Board was given the ability to make an additional payment to members and beneficiaries in payment status in the form of a lump-sum additional benefit payment. The additional payment would be a percentage of the current monthly payment with a maximum percentage of 100%.

## Summary of Benefit Provisions of the Retirement Plan as of December 31, 2017 (Continued)

6. EMPLOYER PURCHASE OF CREDITABLE SERVICE

*Limitations on employer purchases of Creditable Service for a Member before actual retirement were removed.*

P. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2000

1. "415 Restoration of Retirement Income Plan"

Certain highly compensated members may have their retirement annuity limited because of Section 415(b)(1) of the Internal Revenue Code. A plan amendment effective January 1, 2000, provides for COAERS to pay a benefit payment that exceeds the maximum benefit limitation imposed by the Internal Revenue Code from a separate, non-qualified, pay-as-you-go "Restoration of Retirement Income Plan."

2. 2.98% Multiplier

The benefit multiplier was increased from 2.7% per year of service to 2.98% per year of service effective April 2000.

3. 2.98% Retiree Gross-up

Effective April 2000, current retirees received an increase in their benefit amount to bring their retirement benefit amount up to what it would be currently if they had retired under the 2.98% multiplier.

4. "Pop-up" Benefit Amendment

The "pop-up" benefit is extended to retirees who selected the actuarial equivalent of Life Annuity option with underlying options of I, II, or III.

Q. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2001

None

## Summary of Benefit Provisions of the Retirement Plan as of December 31, 2017 (Continued)

### R. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2002

#### 1. 3.00% Multiplier

Benefit multiplier was increased from 2.98% per year of service to 3.00% per year of service effective January 2002.

#### 2. 3.00% Retiree Gross-up

Effective January 2002, current retirees received an increase in their benefit amount to bring their retirement benefit amount up to what it would be currently if they had retired under the 3.00% multiplier.

#### 3. Deferred Retirement Option Program

A "Backward" DROP was added as an optional benefit effective in 2002. The retiring member may elect to retroactively participate in a DROP. The member would receive a lump-sum payment equal to 90% of the sum of the monthly annuities the participant would have received if the member had retired at the DROP entry date. No COLAs are included but changes in the benefit multiplier are reflected.

#### 4. Purchase of Permissive Time

A member may purchase up to five years of Permissive Time. The purchase price charged to the member is the anticipated actuarial cost to the System for the additional service. Minimum purchase is one month with a maximum of 60 months (5 years) or the number of months needed to reach first eligibility for retirement whichever is less.

#### 5. Conversion of Unused Sick Leave

At retirement an employee may elect to purchase Creditable Service for unused sick leave. The Board requires payment by the Member, and then by the City of the equivalent amount of retirement contributions that would have been made had the sick hours been exercised as sick hours. An employee must already be eligible for retirement to purchase the service.

## Summary of Benefit Provisions of the Retirement Plan as of December 31, 2017 (Continued)

S. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2003

1. "Pop-up" Benefit Amendment

"Pop-up" benefit was extended to any Joint and Survivor option (including level income options), other than Joint and Last Survivor.

2. Permissive Time Amendment

Permissive Time resolution was amended removing the provision that restricts members from purchasing Permissive Time in excess of the amount needed to reach first retirement eligibility.

T. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2004

None

U. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2005

None

V. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2006

None

W. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2007

None

X. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2008

None

Y. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2009

None

Z. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2010

None



## **Summary of Benefit Provisions of the Retirement Plan as of December 31, 2017 (Continued)**

### **AA. LEGISLATED PLAN CHANGES ENACTED BY THE 2011 LEGISLATURE**

#### **1. Retirement Provisions**

For members hired on after January 1, 2012 (Group B members), changed the eligibility for normal retirement to age 65 with 5 years of service, or age 62 with 30 years of service. Also for members hired on or after January 1, 2012, added an eligibility for early retirement upon age 55 with 10 years of service.

#### **2. Benefit Multiplier**

For members hired on after January 1, 2012, the benefit multiplier was changed to 2.5% per year of service. Early retirement benefits would be reduced on an actuarially equivalent basis.

### **BB. BENEFIT ENHANCEMENTS ENACTED IN 2012-2017**

There have been no changes to the benefit provisions of the Plan since January 1, 2012.



## **SECTION G**

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### **DEFINITION OF TERMS**

## Definition of Terms

1. ***Actuarial Cost Method***

A method for determining the actuarial present value of future benefits and allocating such value to time periods in the form of a normal cost and an actuarial accrued liability.

2. ***Present Value of Future Benefits***

This is computed by projecting the total future benefit cash flow from the System, using actuarial assumptions, and then discounting the cash flow to the valuation date.

3. ***Normal Cost***

Computed differently under different actuarial cost methods, the normal cost generally represents the value of the portion of the participant's anticipated retirement, termination, and/or death and disability benefits accrued during a year.

4. ***Actuarial Accrued Liability***

Computed differently under different actuarial cost methods. Generally actuarial accrued liability represents the value of the portion of the participant's anticipated retirement, termination, and/or death and disability benefits accrued as of the valuation date.

5. ***Entry Age Actuarial Cost Method***

A method under which a participant's actuarial present value of future benefits is allocated on a level basis over the earnings of the participant between his/her entry into the System and his/her assumed exit.

6. ***Unfunded Actuarial Accrued Liability***

The difference between total actuarial present value of future benefits over the sum of the tangible assets of the System and the actuarial present value of the members' future normal costs. The System is underfunded if the difference is positive and overfunded if the difference is negative.

7. ***Actuarial Value of Assets***

The value of cash, investments, and other property belonging to the System, as valued by the actuary for purposes of the actuarial valuation.

## Definition of Terms (Continued)

### 8. *Actuarial Gain or Loss*

From one valuation to the next, if the experience of the plan differs from that anticipated by the actuarial assumptions, an actuarial gain or loss occurs. For example, an actuarial gain would occur if the assets in the trust had a yield of 12% based on actuarial value, while the assumed yield on the actuarial value of assets was 7.50%.

Exhibit D

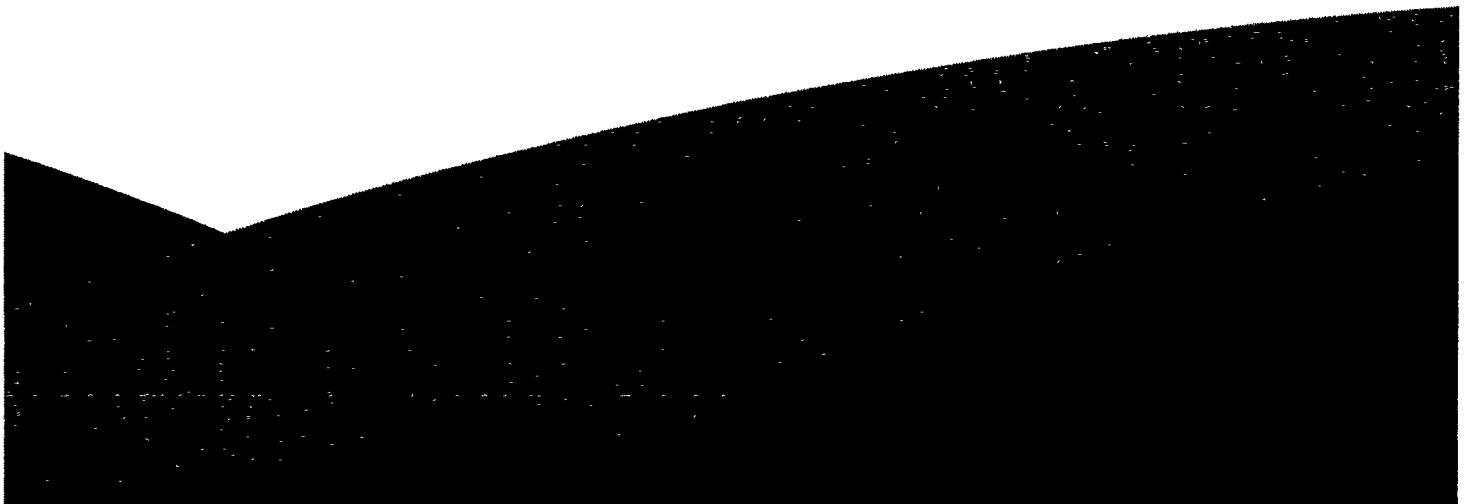
City of Austin

Employee Retirement System

GASB Statement No. 68

Accounting and Financial Reporting for Pensions

December 31, 2017





April 24, 2018

Ms. Diana Thomas  
Controller  
City of Austin  
124 West 8<sup>th</sup> St., Suite 140  
Austin, TX 78701

Dear Ms. Thomas:

This report and the information provided herein contain certain information for the City of Austin (the City) in connection with the Governmental Accounting Standards Board (GASB) Statement No. 68 "Accounting and Financial Reporting for Pensions" as it pertains to the City of Austin Employee Retirement System ("COAERS") for the City's fiscal year ended September 30, 2018.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of satisfying the requirements of GASB No. 68. The Net Pension Liability is not an appropriate measure for measuring the sufficiency of plan assets to cover the estimated cost of settling the employer's benefit obligation. The Net Pension Liability is also not an appropriate measure for assessing the need for or amount of future employer contributions. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB No. 68 may produce significantly different results. This report may be provided to parties other than the City of Austin, only in its entirety and only with the permission from the City of Austin.

The total pension liability, net pension liability, and certain sensitivity information shown in this report are based on an actuarial valuation performed as of December 31, 2017. The total pension liability as of December 31, 2017 is based on the actuarial valuation performed as of that date and disclosed in our report for GASB Statement No. 67, dated April 12, 2018.

As required under GASB Statement No. 68, it is intended that the City will report COAERS' Net Pension Liability (NPL) as of the end of COAERS' fiscal year. In other words, there will be no adjustment to the NPL to reflect the difference between COAERS' fiscal year end (at which the NPL was determined) and the City's fiscal year end September 30, 2018 at which it is being reported.

Certain tables included in the Required Supplementary Information should include a 10-year history of information. As provided for in GASB Statement No. 68, this historical information is only presented for the years in which the information was measured in conformity with the requirements of GASB Statement No. 68. The historical information in this report will begin with the information presented for the plan year ending December 31, 2014.

Diana Thomas  
April 12, 2018  
Page 2

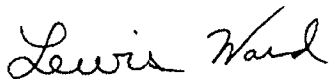
This report compliments the actuarial valuation report as of December 31, 2017, provided for plan funding purposes. Please see the actuarial valuation report as of December 31, 2017, dated April 12, 2018, for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

**Paragraph 57 of GASB Statement No. 68 indicates that contributions to the pension plan subsequent to the measurement date of the Net Pension Liability and prior to the end of the employer's reporting period can be reported by the employer as a deferred outflow of resources related to pensions. The information contained in this report does not incorporate any contributions made by the City subsequent to December 31, 2017 and on or before September 30, 2018.**

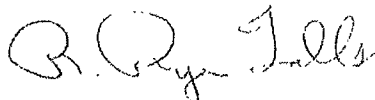
This report is based upon information, furnished to us by COAERS, which includes benefit provisions, membership information, and financial data. We did not audit this data and information, but we did apply a number of tests and concluded that it was reasonable and consistent. GRS is not responsible for the accuracy or completeness of the information provided to us by COAERS.

To the best of our knowledge, this report is complete and accurate and is in accordance with generally recognized actuarial practices and methods. The undersigned are independent actuaries and consultants. Mr. Falls is an Enrolled Actuary and a member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. Both consultants are experienced in performing valuations for public retirement systems.

Respectfully submitted,



Lewis Ward  
Consultant



R. Ryan Falls, FSA, EA, MAAA  
Senior Consultant



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## **SECTION A**

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### **FINANCIAL REPORTING INFORMATION FOR THE EMPLOYER DETERMINED IN ACCORDANCE WITH GASB No. 68**



## Discussion

### Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 68 establishes standards of financial reporting for employers who maintain a pension plan.

The following discussion provides a summary of the information that was disclosed in our report titled GASB Statement No. 67, "Financial Reporting for Pension Plans". A number of the required disclosure items under this standard, such as the Total Pension Liability, are also used in the required disclosure for GASB Statement No. 68. However, certain information, such as notes regarding accounting policies and investments, are not included in this report and the City of Austin will be responsible for preparing and disclosing that information to comply with this accounting standard.

### Summary of Membership Information

The table below provides a summary of the number of participants with a benefit in the plan as of the last actuarial valuation date, December 31, 2017.

|                                                                     |              |
|---------------------------------------------------------------------|--------------|
| Inactive Plan Members or Beneficiaries Currently Receiving Benefits | 6,225        |
| Inactive Plan Members Entitled to But Not Yet Receiving Benefits*   | 2,657        |
| Active Plan Members                                                 | <u>9,612</u> |
| Total Plan Members                                                  | 18,494       |

\*Includes non-vested members entitled to a refund of their contributions

### Measurement of the Net Pension Liability/(Asset)

The Net Pension Liability/(Asset) is measured as the Total Pension Liability, less the amount of the plan's Fiduciary Net Position. In actuarial terms, this is the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations based on COAERS's adopted assumptions and methods for funding purposes).

A single discount rate of 7.50% was used to measure the total pension liability for the plan year ending December 31, 2017. This single discount rate was based on the expected rate of return on pension plan investments of 7.50%. Based on the stated assumptions and the projection of cash flows as of each plan year ending December 31, the pension plan's fiduciary net position and future contributions were sufficient to finance all the future benefit payments of the current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of the projected benefit payments to determine the total pension liability. (The GASB Statement No. 67 report for COAERS dated April 12, 2018 contains a demonstration of the discount rate determination if this information is requested by your auditors).

The projection of cash flows used to determine the single discount rate for the plan assumed that COAERS would continue to receive supplemental contributions (from the City) of 10.0% of covered payroll, in addition to the statutory 8.0%, until the plan is 100% funded, after which contributions

## Discussion (Continued)

are assumed to level off at the statutory rate of 8.0% of covered payroll.

Other significant assumptions (including the mortality assumption and salary increase assumption) used in the determination of the Net Pension Liability are described in our actuarial valuation report dated April 12, 2018.

### Sensitivity of the Net Pension Liability/(Asset) to Changes in the Discount Rate

As of December 31, 2017, the Net Pension Liability/(Asset) is \$1,147,385,187. Below is a table providing the sensitivity of the Net Pension Liability to changes in the discount rate. In particular, the table shows the plan's Net Pension Liability/(Asset) if it were calculated using a single discount rate that is one-percentage point lower or one-percentage point higher than the single discount rate:

| 1% Decrease     | Current Single<br>Rate Assumption | 1% Increase   |
|-----------------|-----------------------------------|---------------|
| 6.50%           | 7.50%                             | 8.50%         |
| \$1,608,628,290 | \$1,147,385,187                   | \$762,471,091 |

### Additional Financial Reporting Information

The following tables provide additional financial reporting information under this accounting standard. Tables that were also included in our report for GASB Statement No. 67 include: (1) Schedule of Changes in the Employer's Net Pension Liability and Related Ratios, (2) Schedule of the Employer's Net Pension Liability, and (3) Schedule of Employer Contributions.

In addition, Exhibit 4 provides the pension expense, Exhibit 5 provides information regarding deferred outflows and inflows from the current reporting period, and Exhibit 6 provides information regarding the combined deferred outflows and inflows from current and prior reporting periods that the City of Austin will need to disclose in its financial statements for the fiscal year ending September 30, 2018.

As noted earlier in this report, the measurement date for determining this accounting information is December 31, 2017. Since the City of Austin's fiscal year end is September 30, 2018, the City will need to identify and disclose contributions to the pension plan subsequent to the measurement date of the Net Pension Liability (Paragraph 57 of GASB Statement No. 68).

## **SECTION B**

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### **FINANCIAL STATEMENTS AND REQUIRED SUPPLEMENTARY INFORMATION**

## Exhibit 1

### Schedule of Changes in the Employer's Net Pension Liability and Related Ratios

| Year ending December 31,                                                          | 2017                    | 2016                    | 2015                    | 2014                    |
|-----------------------------------------------------------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| <b>Total Pension Liability</b>                                                    |                         |                         |                         |                         |
| Service Cost                                                                      | \$ 107,767,510          | \$ 107,111,330          | \$ 93,506,590           | \$ 89,235,267           |
| Interest on the Total Pension Liability                                           | 266,257,048             | 251,684,051             | 236,843,912             | 222,709,911             |
| Benefit Changes                                                                   | 0                       | 0                       | 0                       | 0                       |
| Difference between Expected and<br>Actual Experience                              | 22,754,618              | 19,913,690              | 13,413,789              | 33,911,010              |
| Assumption Changes                                                                | 0                       | 0                       | 123,493,165             | 0                       |
| Benefit Payments                                                                  | (186,286,855)           | (175,218,095)           | (165,464,616)           | (157,563,807)           |
| Refunds                                                                           | (4,045,324)             | (3,910,786)             | (4,052,436)             | (4,154,419)             |
| <b>Net Change in Total Pension Liability</b>                                      | <b>206,446,997</b>      | <b>199,580,190</b>      | <b>297,740,404</b>      | <b>184,137,962</b>      |
| <b>Total Pension Liability - Beginning</b>                                        | <b>3,591,376,306</b>    | <b>3,391,796,116</b>    | <b>3,094,055,712</b>    | <b>2,909,917,750</b>    |
| <b>Total Pension Liability - Ending (a)</b>                                       | <b>\$ 3,797,823,303</b> | <b>\$ 3,591,376,306</b> | <b>\$ 3,391,796,116</b> | <b>\$ 3,094,055,712</b> |
| <b>Plan Fiduciary Net Position</b>                                                |                         |                         |                         |                         |
| Employer Contributions                                                            | \$ 110,846,582          | \$ 104,272,793          | \$ 100,484,694          | \$ 93,331,482           |
| Employee Contributions                                                            | 56,193,592              | 60,801,253              | 54,065,793              | 50,489,091              |
| Pension Plan Net Investment Income                                                | 376,820,025             | 171,640,016             | (47,607,661)            | 99,704,100              |
| Benefit Payments                                                                  | (186,286,855)           | (175,218,095)           | (165,464,616)           | (157,563,807)           |
| Refunds                                                                           | (4,045,324)             | (3,910,786)             | (4,052,436)             | (4,154,419)             |
| Pension Plan Administrative Expense                                               | (2,778,290)             | (2,700,917)             | (2,421,331)             | (2,631,218)             |
| Other                                                                             | 0                       | 0                       | 0                       | 0                       |
| <b>Net Change in Plan Fiduciary Net Position</b>                                  | <b>350,749,730</b>      | <b>154,884,264</b>      | <b>(64,995,557)</b>     | <b>79,175,229</b>       |
| <b>Plan Fiduciary Net Position - Beginning</b>                                    | <b>2,299,688,386</b>    | <b>2,144,804,122</b>    | <b>2,209,799,679</b>    | <b>2,130,624,450</b>    |
| <b>Plan Fiduciary Net Position - Ending (b)</b>                                   | <b>\$ 2,650,438,116</b> | <b>\$ 2,299,688,386</b> | <b>\$ 2,144,804,122</b> | <b>\$ 2,209,799,679</b> |
| <b>Net Pension Liability - Ending (a) - (b)</b>                                   | <b>1,147,385,187</b>    | <b>1,291,687,920</b>    | <b>1,246,991,994</b>    | <b>884,256,033</b>      |
| <b>Plan Fiduciary Net Position as a Percentage<br/>of Total Pension Liability</b> | <b>69.79 %</b>          | <b>64.03 %</b>          | <b>63.24 %</b>          | <b>71.42 %</b>          |
| <b>Covered Employee Payroll</b>                                                   | <b>\$ 615,814,344</b>   | <b>\$ 579,293,294</b>   | <b>\$ 558,248,300</b>   | <b>\$ 518,508,233</b>   |
| <b>Net Pension Liability as a Percentage<br/>of Covered Employee Payroll</b>      | <b>186.32 %</b>         | <b>222.98 %</b>         | <b>223.38 %</b>         | <b>170.54 %</b>         |

**Notes to Schedule:**

Covered payroll is imputed from the actual employer contributions during the calendar year.

## Exhibit 2

### Schedule of Employer's Net Pension Liability

| <u>Year Ending<br/>December 31,</u> | <u>Total<br/>Pension<br/>Liability</u> | <u>Plan Net<br/>Position</u> | <u>Net Pension<br/>Liability</u> | <u>Plan Net Position<br/>as a % of Total<br/>Pension Liability</u> | <u>Covered<br/>Payroll</u> | <u>Net Pension Liability<br/>as a % of<br/>Covered Payroll</u> |
|-------------------------------------|----------------------------------------|------------------------------|----------------------------------|--------------------------------------------------------------------|----------------------------|----------------------------------------------------------------|
| 2014                                | \$ 3,094,055,712                       | \$ 2,209,799,679             | \$ 884,256,033                   | 71.42%                                                             | \$ 518,508,233             | 170.54%                                                        |
| 2015                                | 3,391,796,116                          | 2,144,804,122                | 1,246,991,994                    | 63.24%                                                             | 558,248,300                | 223.38%                                                        |
| 2016                                | 3,591,376,306                          | 2,299,688,386                | 1,291,687,920                    | 64.03%                                                             | 579,293,294                | 222.98%                                                        |
| 2017                                | 3,797,823,303                          | 2,650,438,116                | 1,147,385,187                    | 69.79%                                                             | 615,814,344                | 186.32%                                                        |

## Exhibit 3

### Schedule of Employer Contributions

| <u>FY Ending<br/>September 30,</u> | <u>Actuarially<br/>Determined<br/>Contribution</u> | <u>Actual<br/>Contribution</u> | <u>Contribution<br/>Deficiency<br/>(Excess)</u> | <u>Covered<br/>Payroll</u> | <u>Actual Contribution<br/>as a % of<br/>Covered Payroll</u> |
|------------------------------------|----------------------------------------------------|--------------------------------|-------------------------------------------------|----------------------------|--------------------------------------------------------------|
| 2015                               | \$ 96,554,486                                      | \$ 97,655,481                  | \$ (1,100,995)                                  | \$ 542,530,450             | 18.00%                                                       |
| 2016                               | 109,724,555                                        | 102,609,160                    | 7,115,395                                       | 566,227,351                | 18.12%                                                       |
| 2017                               | 119,038,488                                        | 108,929,092                    | 10,109,396                                      | 600,726,000                | 18.13%                                                       |
| 2018                               | TBD                                                | TBD                            | TBD                                             | TBD                        | TBD                                                          |

### Notes to Schedule of Employer Contributions

**Valuation Date:**

December 31, 2017

**Notes**

Members and employers contribute based on statutorily fixed or negotiated rates. A funding period is solved for through open group projections. The actuarially determined contribution is determined by applying the contribution rates from the funding valuation based on the Board's Funding Policy to the portion of the calendar years that occur during the City's fiscal year. In other words the contribution rate determined by the December 31, 2016 valuation is used for the period October 1, 2017 thru December 31, 2017 and the contribution rate determined by the December 31, 2017 valuation is used for the period January 1, 2018 thru September 30, 2018.

**Methods and Assumptions Used to Determine Contribution Rates:**

|                               |                                                                                                                                                                                       |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Actuarial Cost Method         | Entry Age Normal                                                                                                                                                                      |
| Amortization Method           | N/A                                                                                                                                                                                   |
| Remaining Amortization Period | 25 years for ADEC based on Board's Funding Policy.                                                                                                                                    |
| Asset Valuation Method        | Expected actuarial value plus 20% recognition of prior years' differences between expected and actual investment income                                                               |
| Inflation                     | 2.75%                                                                                                                                                                                 |
| Salary Increases              | 4.00% to 6.25%                                                                                                                                                                        |
| Investment Rate of Return     | 7.50%                                                                                                                                                                                 |
| Retirement Age                | Experience-based table of rates that are gender specific. Last updated for December 31, 2015 valuation pursuant to an experience study of the 5-year period ending December 31, 2015. |
| Mortality                     | RP-2014 Mortality Table with Blue Collar adjustment. Generational mortality improvements in accordance with Scale BB are projected                                                    |

**Other Information:**

**Notes**

There were no benefit changes during the year.



## **Exhibit 4**

### **Pension Expense**

#### **A. Expense**

|                                                                    |                       |
|--------------------------------------------------------------------|-----------------------|
| 1. Service Cost                                                    | \$ 107,767,510        |
| 2. Interest on the Total Pension Liability                         | 266,257,048           |
| 3. Current-Period Benefit Changes                                  | 0                     |
| 4. Employee Contributions                                          | (56,193,592)          |
| 5. Projected Earnings on Plan Investments                          | (171,498,993)         |
| 6. Pension Plan Administrative Expense                             | 2,778,290             |
| 7. Other Changes in Plan Fiduciary Net Position                    | 0                     |
| 8. Recognition of Outflow (Inflow) of Resources due to Liabilities | 40,959,176            |
| 9. Recognition of Outflow (Inflow) of Resources due to Assets      | 14,267,282            |
| 10. Total Pension Expense                                          | <u>\$ 204,336,721</u> |

### **Recognition of Deferred Outflows and Inflows of Resources**

According to Paragraph 33 of GASB Statement No. 68, differences between expected and actual experience and changes in assumptions are recognized in pension expense using a systematic and rational method over a closed period equal to the average of the expected remaining service lives of all employees that are provided with pensions through the pension plan (active employees and inactive employees) determined as of the beginning of the measurement period.

At the beginning of the 2017 plan year, the expected remaining service lives of all employees was 96,854 years for COAERS. Additionally, the COAERS plan membership (active employees and inactive employees) was 17,805. As a result, the average of the expected remaining service lives for purposes of recognizing the applicable deferred outflows and inflows of resources established in the 2017 plan year is 5.4397 years.

Additionally, differences between projected and actual earnings on pension plan investments should be recognized in pension expense using a systematic and rational method over a closed five-year period.

For this purpose, the deferred outflows and inflows of resources are recognized in the pension expense as a level dollar amount over the closed period identified above.

## **Exhibit 5**

### **Statement of Outflows and Inflows Arising From the Current Reporting Period**

#### **A. Outflows (Inflows) of Resources due to Liabilities**

|                                                                                                                                                                         |                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| 1. Difference between expected and actual experience<br>of the Total Pension Liability (gains) or losses                                                                | \$ 22,754,618        |
| 2. Assumption Changes (gains) or losses                                                                                                                                 | \$ 0                 |
| 3. Recognition period for Liabilities: Average of the<br>expected remaining service lives of all employees (in years)                                                   | 5.4397               |
| 4. Outflow (Inflow) of Resources to be recognized in the current pension expense<br>Difference between expected and actual experience<br>of the Total Pension Liability | \$ 4,183,065         |
| 5. Outflow (Inflow) of Resources to be recognized in the current pension expense<br>Assumption Changes                                                                  | \$ 0                 |
| 6. Outflow (Inflow) of Resources to be recognized in the current pension expense<br>due to Liabilities                                                                  | <u>\$ 4,183,065</u>  |
| 7. Deferred Outflow (Inflow) of Resources to be recognized in future pension<br>Difference between expected and actual experience<br>of the Total Pension Liability     | \$ 18,571,553        |
| 8. Deferred Outflow (Inflow) of Resources to be recognized in future pension<br>Assumption Changes                                                                      | \$ 0                 |
| 9. Deferred Outflow (Inflow) of Resources to be recognized in future pension<br>due to Liabilities                                                                      | <u>\$ 18,571,553</u> |

#### **B. Outflows (Inflows) of Resources due to Assets**

|                                                                                                          |                  |
|----------------------------------------------------------------------------------------------------------|------------------|
| 1. Net difference between projected and actual earnings on<br>pension plan investments (gains) or losses | \$ (205,321,032) |
| 2. Recognition period for Assets (in years)                                                              | 5.0000           |
| 3. Outflow (Inflow) of Resources to be recognized in the current pension expense<br>due to Assets        | \$ (41,064,207)  |
| 4. Deferred Outflow (Inflow) of Resources to be recognized in future pension<br>expense due to Assets    | \$ (164,256,825) |



## Exhibit 6

### Statement of Outflows and Inflows Arising From the Current and Prior Reporting Periods

#### A. Outflows and Inflows of Resources due to Liabilities and Assets to be recognized in Current Pension Expense

|                       | Outflows<br>of Resources | Inflows<br>of Resources | Net Outflows<br>of Resources |
|-----------------------|--------------------------|-------------------------|------------------------------|
| 1. due to Liabilities | \$ 40,959,176            | \$ 0                    | \$ 40,959,176                |
| 2. due to Assets      | 57,613,099               | 43,345,817              | 14,267,282                   |
| 3. Total              | \$ 98,572,275            | \$ 43,345,817           | \$ 55,226,458                |

#### A. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

|                                                                                     | Outflows<br>of Resources | Inflows<br>of Resources | Net Outflows<br>of Resources |
|-------------------------------------------------------------------------------------|--------------------------|-------------------------|------------------------------|
| 1. Differences between expected and actual experience                               | \$ 17,251,067            | \$ 0                    | \$ 17,251,067                |
| 2. Assumption Changes                                                               | 23,708,109               | 0                       | 23,708,109                   |
| 3. Net Difference between projected and actual earnings on pension plan investments | 57,613,099               | 43,345,817              | 14,267,282                   |
| 4. Total                                                                            | \$ 98,572,275            | \$ 43,345,817           | \$ 55,226,458                |

#### B. Deferred Outflows and Deferred Inflows of Resources by Source to be recognized in Future Pension Expenses

|                                                                                     | Deferred Outflows<br>of Resources | Deferred Inflows<br>of Resources | Net Deferred Outflows<br>of Resources |
|-------------------------------------------------------------------------------------|-----------------------------------|----------------------------------|---------------------------------------|
| 1. Differences between expected and actual experience                               | \$ 43,446,544                     | \$ 0                             | \$ 43,446,544                         |
| 2. Assumption Changes                                                               | 52,368,838                        | 0                                | 52,368,838                            |
| 3. Net Difference between projected and actual earnings on pension plan investments | 101,754,799                       | 171,101,653                      | (69,346,854)                          |
| 4. Total                                                                            | \$ 197,570,181                    | \$ 171,101,653                   | \$ 26,468,528                         |

#### C. Deferred Outflows and Deferred Inflows of Resources by Year to be recognized in Future Pension Expenses

| Year Ending<br>December 31 | Net Deferred Outflows<br>of Resources |
|----------------------------|---------------------------------------|
| 2018                       | \$ 55,006,652                         |
| 2019                       | 34,928,897                            |
| 2020                       | (30,005,510)                          |
| 2021                       | (35,300,804)                          |
| 2022                       | 1,839,293                             |
| Thereafter                 | 0                                     |
| Total                      | \$ 26,468,528                         |

Note: The City of Austin will also need to create a deferred outflow and disclose the amount of employer contributions to COAERS after the measurement date of the Net Pension Liability of December 31, 2017 and prior to the end of the City's fiscal year September 30, 2018.

Exhibit E

**GRS** Gabriel Roeder Smith & Company  
Consultants & Actuaries

**CITY OF AUSTIN EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION REPORT  
FOR THE YEAR ENDING DECEMBER 31, 2016**

May 12, 2017

Mr. Christopher Hanson  
Executive Director  
City of Austin Employees' Retirement System  
418 E. Highland Mall Blvd.  
Austin, TX 78752

Dear Mr. Hanson:

**Subject: Actuarial Valuation as of December 31, 2016**

We are pleased to present our report on the actuarial valuation of the City of Austin Employees' Retirement System (COAERS or the System). This report describes the current actuarial condition of COAERS, determines the period over which the unfunded liabilities of the System are expected to be paid off and determines the funded status of the System.

In addition, the report provides various summaries of the data. A separate report is issued with regard to valuation results determined in accordance with Governmental Accounting Standards Board (GASB) Statements 67 and 68. Results of this report should not be used for any other purpose without consultation with the undersigned. Valuations are prepared annually as of December 31<sup>st</sup>, the last day of the COAERS plan year. This report was prepared at the request of the Board and is intended for use by the COAERS staff and those designated or approved by the Board. This report may be provided to parties other than COAERS staff only in its entirety and only with the permission of the Board.

As you know, the employee and employer contribution rates are set by statute. It is expected that these contribution rates will remain level as a percentage of payroll. The System's recently adopted funding policy is for the contribution rates to be sufficient to cover the normal cost of the plan and to amortize any unfunded actuarial accrued liabilities over a period not to exceed 25 years.

Currently, the total contribution rate is sufficient to amortize the System's unfunded liabilities in approximately 31 years. Therefore, the Board's funding policy is not currently being met. As of the prior valuation, the total contribution rate was sufficient to amortize the unfunded liabilities in 33 years. The decrease in the funding period is primarily due to an increase in the active membership and the corresponding increase in covered payroll.

In 2010 the City of Austin adopted the Amended Supplemental Funding Plan (ASFP). The ASFP provides for an additional City contribution rate of up to a maximum of 10.0% above the base 8.0% rate. The City is now contributing an additional 10.0%, or a total rate of 18.0%. The additional contribution rate is intended to stay in place until the ASFP is amended or repealed.

We certify that the information presented herein is accurate and fairly portrays the actuarial position of COAERS as of December 31, 2016. All of the supporting schedules and tables contained in this actuarial valuation report were prepared by Gabriel, Roeder, Smith &

Mr. Christopher Hanson  
May 12, 2017  
Page 2

Company, including various accounting and statistical tables which should help you compare the results of this plan year with prior years. The information presented in the trend data schedules of this report has been prepared by Gabriel, Roeder, Smith & Company (GRS). The information for years 1993 through 2000 was prepared by Watson Wyatt & Company.

The following schedules in the actuarial section of the COAERS Comprehensive Annual Financial Report were prepared by GRS: Summary of Cost Items, Analysis of Normal Cost by Component, Actuarial Present Value of Future Benefits and Calculation of Actuarial Accrued Liability, Development of Actuarial Value of Assets, Change in Net Position, Change in Unfunded Actuarial Accrued Liability, Relative Size of Unfunded Actuarial Accrued Liability, Schedule of Active Member Valuation Data, Schedule of Retirees and Beneficiaries Added to and Removed from Rolls, Solvency Test, Schedule of Funding Progress.

GRS provided COAERS with the information used in preparing the following trend schedules in the financial section of the CAFR: Notes to the Financial Statements - Schedule of Net Pension Liability, and Sensitivity of the Net Pension Liability to Changes in the Discount Rate; Required Supplementary Information - Schedule of Changes in the Net Pension Liability and Related Ratios. GRS provided no additional assistance in the preparation of any other schedules in the financial section of the CAFR.

As authorized under Article 6243n of the Vernon's Civil Statutes of the State of Texas, actuarial assumptions and methods are set by the Board of Trustees, based upon recommendations made by the plan's actuary. An experience investigation was performed for the five year period ending December 31, 2015. As a result of that study, revised assumptions were adopted by the Board effective with the valuation as of December 31, 2015. We believe the assumptions are internally consistent, reasonable, and, where appropriate, based on the actual experience of COAERS. All of the assumptions and methods used in this valuation were selected in compliance with the Actuarial Standards of Practice.

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rates and funding periods. Due to the limited scope of this assignment, GRS did not perform an analysis of the potential range of such possible future differences. The actuarial calculations are intended to provide information for rational decision making.

Member data for retired, active and inactive participants was supplied as of December 31, 2016, by the COAERS staff. We have not subjected this data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data. Asset information was also supplied by the COAERS staff.

The last actuarial valuation of COAERS was prepared as of December 31, 2015 by Gabriel, Roeder, Smith & Company. Valuations are prepared annually as of December 31<sup>st</sup>.

Gabriel Roeder Smith & Company

Mr. Christopher Hanson  
May 12, 2017  
Page 3

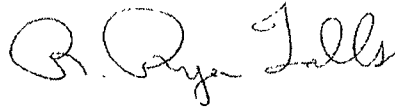
The undersigned are independent actuaries and consultants. Mr. Falls is an Enrolled Actuary and a Member of the American Academy of Actuaries and he meets the Qualification Standards of the American Academy of Actuaries. Both Mr. Falls and Mr. Ward are experienced in performing valuations for large public retirement systems.

We would like to thank you and your staff for your assistance in providing all necessary information to complete this valuation. Your courteous help is very much appreciated. We look forward to discussing this actuarial valuation report with you at your convenience. Please do not hesitate to let us know if you have any questions or need additional information.

Sincerely,



Lewis Ward  
Consultant  
zzl



R. Ryan Falls, F.S.A, E.A., M.A.A.A.  
Senior Consultant

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## EXECUTIVE SUMMARY

The key results from the valuation of the City of Austin Employees' Retirement System as of December 31, 2016 may be summarized as follows:

|                                                               | <u>December 31, 2016</u> | <u>December 31, 2015</u> |
|---------------------------------------------------------------|--------------------------|--------------------------|
|                                                               | (1)                      | (2)                      |
| • Members                                                     |                          |                          |
| — Actives                                                     | 9,364                    | 9,063                    |
| — Retirees (including disabled) and beneficiaries             | 5,934                    | 5,679                    |
| — Vested - terminated                                         | <u>981</u>               | <u>985</u>               |
| — Total                                                       | 16,279                   | 15,727                   |
| • Covered payroll                                             | \$ 599,574,934           | \$ 559,829,504           |
| • Normal cost as % of payroll*                                | 18.01%                   | 18.49%                   |
| • Actuarial accrued liability                                 | \$ 3,591,376,306         | \$ 3,391,796,116         |
| • Actuarial value of assets                                   | \$ 2,423,269,015         | \$ 2,308,087,140         |
| • Unfunded actuarial accrued liability (UAAL)                 | \$ 1,168,107,291         | \$ 1,083,708,976         |
| • Estimated yield on assets                                   |                          |                          |
| — Actuarial value basis                                       | 5.74%                    | 5.91%                    |
| — Market value basis                                          | 8.03%                    | -2.27%                   |
| • Contribution rate                                           |                          |                          |
| — Employee                                                    | 8.00%                    | 8.00%                    |
| — Employer                                                    | 18.00%                   | 18.00%                   |
| • Benefit and refund payments                                 | \$ 179,128,881           | \$ 169,517,052           |
| • Amortization period of unfunded actuarial accrued liability | 31 years                 | 33 years                 |
| • Funding Policy employer contribution rate                   | 19.61%                   | 19.84%                   |
| • Funded ratio                                                | 67.5%                    | 68.0%                    |

\* Includes 0.51% of payroll for administrative expenses beginning in December 31, 2015 valuation.

## INTRODUCTION

This December 31, 2016 actuarial valuation of the City of Austin Employees' Retirement System has been prepared by Gabriel, Roeder, Smith & Company. The primary purpose of the valuation is to value the liabilities of the System as of December 31, 2016, determine the funding period of any unfunded liability for the plan year beginning January 1, 2017, and to provide certain required disclosure information. We are pleased to have the privilege of working for the Board, and look forward to discussing the results with you at your convenience.

Section C of this report provides the current funded status of the plan and reviews the valuation results. Assets are discussed in Section D, while Section E contains an analysis of the actuarial gains and losses during the past year.

Section F discusses some of the historical comparisons and statistical summaries for the plan. Section G provides a summary of the valuation results along with other comments.

Various tables supporting the report are contained in Sections H and I, including any change in benefit provisions since the last valuation.



### FUNDED STATUS OF THE PLAN

The funded status of the plan is shown in Table 1, Table 2, and Table 3. Table 1 summarizes the various cost items from the current year's and prior year's actuarial valuations, while Table 2 provides an allocation of the normal cost by its various components. Table 3 shows the components of the actuarial liability.

Reviewing the composition of normal cost of the System, Table 2 indicates that the employer normal cost as of December 31, 2016, is 18.01% of pay. This compares with 18.49% of pay as of the last valuation on December 31, 2015. This normal cost is developed based on the Individual Entry Age Normal (EAN) actuarial cost method. As may be seen in Item 1, the normal cost for the retirement benefits is 14.41% of pay. The normal cost for the deferred termination benefits is 1.08% and 1.34% for refunds of terminated employees (both vested and non-vested). The normal cost for disability benefits is 0.19%, and the normal cost for death benefits is 0.48%. In addition, the cost of anticipated administrative expenses is being added to the normal cost rate. This adds 0.51% of pay to the normal cost rate as of December 31, 2016. The decline in the average normal cost reflects the continued shift in the active membership from Group A to Group B. We expect this pattern of declining normal costs (as a percentage of payroll) to continue until the active population is mostly Group B.

Table 1 illustrates a number of the key actuarial items for the 2016 valuation. As mentioned above, the total normal cost rate is 18.01% of covered payroll. The actuarial accrued liability is \$3,591.4 million as shown in Item 5 and as detailed in Table 3. The actuarial value of assets equals \$2,423.3 million, as shown in Item 6. Item 7 of Table 1 shows that the plan has an \$1,168.1 million unfunded liability (i.e. liabilities exceed plan assets) as of the valuation date. As of the last valuation (December 31, 2015), the System was underfunded by \$1,083.7 million. The increase in the unfunded liability is described in greater detail in Section E and Table 6.

On October 1, 2012, the City began contributing 18% of payroll and the employees are contributing 8% of payroll. Combining the employees' contributions with the City contribution, the System will have 26.00% of payroll to fund benefits. The current normal cost of the plan is 18.01%, which means that the System is currently receiving contributions in excess of the normal cost equal to 7.99% of pay (26.00% less 18.01%). These excess contributions are available to amortize any unfunded actuarial accrued liability. Based on these contribution rates, if all assumptions are exactly met then the current unfunded liability will be fully amortized over the next 31 years.

### FUNDED STATUS OF THE PLAN (Continued)

The actuarial valuation report as of December 31, 2016 reveals that the funded ratio (the ratio of actuarial assets to actuarial accrued liability) is 67.5%. On a market value of asset basis the funded status is 64.0%. The funded status is one of many metrics used to show trends and develop future expectations about the health of the System. The funded status measure itself is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations or assessing the need for or the amount of future contributions since it does not reflect normal cost contributions, the timing of amortization payments, or future experience other than expected.

Under the Amended Supplemental Funding Plan (ASFP) the total City contribution rate is 18.0% of pay. The additional contribution is intended to stay in place until the ASFP is amended or repealed. The normal cost was determined using the Individual Entry Age Normal (EAN) actuarial cost method. This method determines the normal cost for all employees on an individual basis, based on the benefits applicable to each individual member. Because employees hired on or after January 1, 2012 (Group B) have a less valuable benefit tier than employees hired prior to that date (Group A), the normal cost for Group B is less than the normal cost of Group A. With the application of the Individual EAN method, the normal cost is equal to the average of the individual members' normal costs. Since the current group of employees is primarily Group A, this means that the average normal costs for the group will decline over time as Group B employees replace Group A employees.

Because the contributions to the System are a fixed percentage of payroll, this means that the percentage of payroll that will go to pay off the unfunded liability will increase in the future as the average normal cost decreases. This result makes it difficult to calculate the funding period using a mathematical formula since the amount of contributions to pay off the unfunded liability will not be either a constant dollar amount or a constant percentage of payroll in the future. For this reason we are using an open group projection to determine when the System is expected to pay off its unfunded liability. The open group projection assumes a constant active population and that there will be no actuarial gains or losses on liabilities or the actuarial value of assets. Based on the open group projection the funding period of the System as of the valuation date is 31 years.

### CHANGE IN ASSETS

Table 4 shows the development of the actuarial value of assets. Item 11 of Table 4, shows that the actuarial value of assets as of December 31, 2016 is \$2,423.3 million. Table 4 also shows the development of the gain/(loss) on the actuarial value of assets for the prior plan year. As shown in Item 12, the System had a loss on an actuarial asset basis of \$41.1 million in 2016. This compares to the \$40.8 million loss in 2015.

The method for determining the actuarial value of assets offsets excesses or shortfalls in the current year's investment income dollar for dollar against prior years' deferred gains or losses. Any remaining amounts from the current or prior years continue to be recognized over a five-year period. Despite the investment income exceeding the assumed 7.50% rate of return on a market value of assets (MVA) basis, the current year provided a shortfall in investment income on an actuarial value of asset basis due to the prior year's actuarial value of assets (AVA) having yet to fully recognize the large deferred losses from fiscal year 2015. In other words, since the prior year AVA was much greater than the MVA (due to the deferred losses), this year's investment gains on a market value basis were not sufficient to "catch up" to this year's expected AVA. In addition to the current year shortfall of \$1.4 million, the significant loss in 2015 will continue to be incrementally recognized, leaving \$164.7 million in deferred losses to be recognized. As a result, \$41.1 million, was recognized in the current year's actuarial value of assets, with the remainder deferred to future valuations.

The total deferral of all Excess/(Shortfall) investment income for the year (shown in Table 4, Column 6 of Item 8) is (\$123.6) million.

An analysis of the change in the System's market value of assets for the last two plan years and an estimate of the return on assets for the System are included in Table 5. The estimated average annual rate of return for the year ending December 31, 2016, assuming that income, revenue, and expenditures are evenly distributed throughout the year is 8.03% on a market value of assets basis. The rate of return for the year ending December 31, 2016, on an actuarial value basis was 5.74%. This compares with the actuarial assumed investment return at the beginning of the year of 7.50%.

### ACTUARIAL GAINS AND LOSSES

An important part of the change in unfunded actuarial accrued liability from year to year is due to the impact of actuarial gains and losses of the System. This section summarizes the combined asset and liability experience changes since the prior valuation on December 31, 2015.

As can be seen in Item 7 of Table 6, the expected value of the unfunded actuarial accrued liability as of December 31, 2016, was an underfunded position of \$1,117.1 million. This expected value reflects an assumed investment return assumption of 7.50% on the beginning of year unfunded actuarial accrued liability, normal cost, and contributions during 2016.

Since the actual unfunded actuarial accrued liability as of December 31, 2016 is \$1,168.1 million, it represents a total unexpected net increase for the period of \$51.0 million, as shown in Item 9 of Table 6. That is, the unfunded actuarial accrued liability is greater than expected. The net increase in the unfunded actuarial accrued liability includes an asset loss of \$41.1 million as shown in Table 4, and an unexpected increase on the liability side equal to \$9.9 million, which is broken out by source in Items 15-22 of Table 6.

Please see Table 12 for a more detailed description of the assumptions and methods.

## HISTORICAL COMPARISONS AND STATISTICAL SUMMARIES

Various statistical data on the System is shown in the tables contained in Section I. In addition, Tables 7 through 10 of Section H contain certain actuarial trend information which may be of interest.

Table 7 relates the size of the unfunded actuarial accrued liability (UAAL) to three different measurements. In Columns 3 and 4 the UAAL is related to the covered payroll of the System. Columns 5 and 6 relate the UAAL to the actuarial value of assets, while Columns 7 and 8 relate the UAAL to the total actuarial liabilities of the System.

Tables 8 through 10 provide information which should be included in your annual report. Table 8 provides a schedule of active member valuation data. Table 9 provides a schedule of retirees and beneficiaries added to and removed from payment rolls. Solvency test results are presented in Table 10.

### SUMMARY AND CLOSING COMMENTS

It is our opinion that the results of this valuation provide a reasonable reflection of the funded status of the System. The System's contributions are currently sufficient to amortize the unfunded liability of the System.

As previously mentioned, in 2010 the City of Austin adopted an Amended Supplemental Funding Plan (ASFP) which provides for an additional contribution from the City, above the 8.0% base rate, which has resulted in a gradual increase the City's total contribution rate to the System to 18.0%. This additional contribution is intended to remain in place until the ASFP is either amended or repealed.

The overall funded position of the System decreased from 68.0% at the prior valuation to 67.5% at this valuation. Using an open group projection, we have determined that the System is expected to be fully funded in 31 years, assuming all valuation assumptions are realized in the future. The decrease in the funding period is primarily due to an increase in active membership and the corresponding increase in covered payroll. Because the payroll base is larger, we are now expecting larger future contributions towards the unfunded liability than in the prior year. Of course these projections could change with the addition of any unfunded liabilities (such as cost of living adjustments) or if there is a significant downturn in the financial markets.

ACTUARIAL TABLES

| Table<br>Number | Content of Tables                                                                            | Page |
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| 1               | Summary of Cost Items                                                                        | 10   |
| 2               | Analysis of Normal Cost by Component                                                         | 11   |
| 3               | Actuarial Present Value of Future Benefits and Calculation of<br>Actuarial Accrued Liability | 12   |
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SUMMARY OF COST ITEMS

|                                                           | December 31, 2016 |                            | December 31, 2015 |                            |
|-----------------------------------------------------------|-------------------|----------------------------|-------------------|----------------------------|
|                                                           | Cost Item<br>(1)  | Cost as<br>% of Pay<br>(2) | Cost Item<br>(3)  | Cost as<br>% of Pay<br>(4) |
| 1. Participants                                           |                   |                            |                   |                            |
| a. Active                                                 | 9,364             |                            | 9,063             |                            |
| b. Terminated vested                                      | 981               |                            | 985               |                            |
| c. Retired participants and beneficiaries                 | 5,822             |                            | 5,569             |                            |
| d. Disabled                                               | 112               |                            | 110               |                            |
| e. Total                                                  | 16,279            |                            | 15,727            |                            |
| 2. Covered Payroll                                        | \$ 599,574,934    |                            | \$ 559,829,504    |                            |
| 3. Averages for Active Participants                       |                   |                            |                   |                            |
| a. Average age                                            | 45.0              |                            | 45.0              |                            |
| b. Average years of service                               | 9.4               |                            | 9.5               |                            |
| c. Average pay                                            | \$ 64,030         |                            | \$ 61,771         |                            |
| 4. Total Normal Cost                                      |                   |                            |                   |                            |
| a. Normal Cost Rate                                       | 17.50%            |                            | 17.98%            |                            |
| b. Administrative Expenses                                | 0.51%             |                            | 0.51%             |                            |
| c. Total                                                  | 18.01%            |                            | 18.49%            |                            |
| 5. Actuarial Accrued Liability                            |                   |                            |                   |                            |
| a. Active participants                                    | \$ 1,642,806,001  |                            | \$ 1,546,255,969  |                            |
| b. Terminated vested participants                         | 66,281,482        |                            | 65,134,127        |                            |
| c. Refunds of terminated nonvested participants           | 9,251,513         |                            | 8,731,210         |                            |
| d. Retired participants and beneficiaries                 | 1,853,906,622     |                            | 1,753,547,784     |                            |
| e. Disabled participants                                  | 19,130,688        |                            | 18,127,026        |                            |
| f. Total                                                  | \$ 3,591,376,306  | 598.99%                    | \$ 3,391,796,116  | 605.86%                    |
| 6. Actuarial Assets                                       | \$ 2,423,269,015  | 404.16%                    | \$ 2,308,087,140  | 412.28%                    |
| 7. Unfunded Actuarial Accrued Liability (UAAL)            | \$ 1,168,107,291  | 194.82%                    | \$ 1,083,708,976  | 193.58%                    |
| 8. Relative Size of UAAL                                  |                   |                            |                   |                            |
| a. As percent of actuarial assets                         | 48.20%            |                            | 46.95%            |                            |
| b. As percent of covered payroll                          | 194.82%           |                            | 193.58%           |                            |
| 9. Funding period using open group projection             | 31                |                            | 33                |                            |
| 10. Employer contribution rate to satisfy funding policy* | 19.61%            |                            | 19.84%            |                            |

\* employer rate that produces fully funded plan in 25-years in open group projection



ANALYSIS OF NORMAL COST BY COMPONENT

| Benefit Component<br>(1)           | Cost as % of Pay         |                          |
|------------------------------------|--------------------------|--------------------------|
|                                    | December 31, 2016<br>(2) | December 31, 2015<br>(3) |
| 1. Retirement Benefits             | 14.41%                   | 14.97%                   |
| 2. Termination - Deferred Benefits | 1.08%                    | 1.07%                    |
| 3. Termination - Refund Benefits   | 1.34%                    | 1.26%                    |
| 4. Disability Benefits             | 0.19%                    | 0.19%                    |
| 5. Death Benefits                  | 0.48%                    | 0.49%                    |
| 6. Administrative Expenses         | <u>0.51%</u>             | <u>0.51%</u>             |
| 7. Normal Cost                     | 18.01%                   | 18.49%                   |

**ACTUARIAL PRESENT VALUE OF FUTURE BENEFITS  
AND CALCULATION OF ACTUARIAL ACCRUED LIABILITY**

|                                                                           | December 31, 2016<br>(1) | December 31, 2015<br>(2) |
|---------------------------------------------------------------------------|--------------------------|--------------------------|
| A. Present Value of Future Benefits                                       |                          |                          |
| 1. Active participants                                                    |                          |                          |
| a. Retirement benefits                                                    | \$ 2,259,029,975         | \$ 2,154,224,609         |
| b. Deferred termination benefits                                          | 85,420,239               | 79,113,538               |
| c. Refund of nonvested terminations                                       | 50,184,142               | 41,832,471               |
| d. Disability benefits                                                    | 14,987,500               | 13,719,309               |
| e. Death benefits                                                         | <u>56,424,009</u>        | <u>53,501,019</u>        |
| f. Total                                                                  | \$ 2,466,045,865         | \$ 2,342,390,946         |
| 2. Retired participants                                                   |                          |                          |
| a. Service retirements and beneficiaries                                  | \$ 1,853,906,622         | \$ 1,753,547,784         |
| b. Disability retirements                                                 | <u>19,130,688</u>        | <u>18,127,026</u>        |
| c. Total                                                                  | \$ 1,873,037,310         | \$ 1,771,674,810         |
| 3. Inactive participants                                                  |                          |                          |
| a. Vested terminations with deferred benefits                             | \$ 66,281,482            | \$ 65,134,127            |
| b. Nonvested terminations with refunds payable                            | <u>9,251,513</u>         | <u>8,731,210</u>         |
| c. Total                                                                  | \$ 75,532,995            | \$ 73,865,337            |
| 4. Total actuarial present value of future benefits                       | \$ 4,414,616,170         | \$ 4,187,931,093         |
| B. Normal Cost Rate (including administrative expenses)                   | 18.01%                   | 18.49%                   |
| C. Present Value of Future Normal Costs                                   | \$ 823,239,864           | \$ 796,134,977           |
| D. Actuarial Accrued Liability for Active Members                         |                          |                          |
| 1. Present value of future benefits (Item A.1.f)                          | \$ 2,466,045,865         | \$ 2,342,390,946         |
| 2. Less present value of future normal costs (Item C)                     | <u>823,239,864</u>       | <u>796,134,977</u>       |
| 3. Actuarial accrued liability                                            | \$ 1,642,806,001         | \$ 1,546,255,969         |
| E. Total Actuarial Accrued Liability (Item A.2.c + Item A.3.c + Item D.3) | \$ 3,591,376,306         | \$ 3,391,796,116         |

DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS

|                                                                                                                                             | Year Ending<br>December 31, 2016 |                                                                             |                                        |                                               |                           |                                                     |                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------|----------------------------------------|-----------------------------------------------|---------------------------|-----------------------------------------------------|------------------------------------------------------|
| 1. Actuarial value of assets at beginning of year                                                                                           | \$                               | 2,308,087,140                                                               |                                        |                                               |                           |                                                     |                                                      |
| 2. Net new investments                                                                                                                      |                                  |                                                                             |                                        |                                               |                           |                                                     |                                                      |
| a. Contributions                                                                                                                            | \$                               | 165,074,046                                                                 |                                        |                                               |                           |                                                     |                                                      |
| b. Benefits and refunds paid                                                                                                                | \$                               | (179,128,881)                                                               |                                        |                                               |                           |                                                     |                                                      |
| c. Administrative expenses                                                                                                                  | \$                               | (2,700,917)                                                                 |                                        |                                               |                           |                                                     |                                                      |
| d. Subtotal                                                                                                                                 | \$                               | (16,755,752)                                                                |                                        |                                               |                           |                                                     |                                                      |
| 3. Assumed investment return rate for fiscal year                                                                                           |                                  | 7.50%                                                                       |                                        |                                               |                           |                                                     |                                                      |
| 4. Expected net investment income                                                                                                           | \$                               | 173,037,973                                                                 |                                        |                                               |                           |                                                     |                                                      |
| 5. Expected actuarial value at end of year (Item 1+ Item 2 + Item 4)                                                                        | \$                               | 2,464,369,361                                                               |                                        |                                               |                           |                                                     |                                                      |
| 6. Market value of assets at end of year                                                                                                    | \$                               | 2,299,688,386                                                               |                                        |                                               |                           |                                                     |                                                      |
| 7. Difference (Item 6 - Item 5)                                                                                                             | \$                               | (164,680,975)                                                               |                                        |                                               |                           |                                                     |                                                      |
| 8. Development of amounts to be recognized as of December 31, 2016:                                                                         |                                  |                                                                             |                                        |                                               |                           |                                                     |                                                      |
|                                                                                                                                             | Fiscal<br>Year<br>End            | Remaining Deferrals<br>of Excess (Shortfall)<br>of Investment Income<br>(1) | Offsetting of<br>Gains/(Losses)<br>(2) | Net Deferrals<br>Remaining<br>(3) = (1) + (2) | Years<br>Remaining<br>(4) | Recognized for<br>this valuation<br>(5) = (3) / (4) | Remaining after<br>this valuation<br>(6) = (3) - (5) |
|                                                                                                                                             | 2012                             | \$ 0                                                                        | \$ 0                                   | \$ 0                                          | 1                         | \$ 0                                                | \$ 0                                                 |
|                                                                                                                                             | 2013                             | 0                                                                           | 0                                      | 0                                             | 2                         | 0                                                   | 0                                                    |
|                                                                                                                                             | 2014                             | 0                                                                           | 0                                      | 0                                             | 3                         | 0                                                   | 0                                                    |
|                                                                                                                                             | 2015                             | (163,283,018)                                                               | 0                                      | (163,283,018)                                 | 4                         | (40,820,755)                                        | (122,462,263)                                        |
|                                                                                                                                             | 2016                             | (1,397,957)                                                                 | 0                                      | (1,397,957)                                   | 5                         | (279,591)                                           | (1,118,366)                                          |
|                                                                                                                                             | Total                            | \$ (164,680,975)                                                            | \$ 0                                   | \$ (164,680,975)                              |                           | \$ (41,100,346)                                     | \$ (123,580,629)                                     |
| 9. Preliminary actuarial value of plan assets, end of year (Item 5 + Item 8: Column 5)                                                      | \$                               | 2,423,269,015                                                               |                                        |                                               |                           |                                                     |                                                      |
| 10. Actuarial value of assets corridor                                                                                                      |                                  |                                                                             |                                        |                                               |                           |                                                     |                                                      |
| a. 80% of market value, end of year                                                                                                         | \$                               | 1,839,750,709                                                               |                                        |                                               |                           |                                                     |                                                      |
| b. 120% of market value, end of year                                                                                                        | \$                               | 2,759,626,063                                                               |                                        |                                               |                           |                                                     |                                                      |
| 11. Final actuarial value of plan net assets, end of year<br>(Item 9, but recognize 1/3 of any deferred gains or losses outside of Item 10) | \$                               | 2,423,269,015                                                               |                                        |                                               |                           |                                                     |                                                      |
| 12. Asset gain (loss) for year (Item 11 - Item 5)                                                                                           | \$                               | (41,100,346)                                                                |                                        |                                               |                           |                                                     |                                                      |
| 13. Asset gain (loss) as % of final actuarial value of assets                                                                               |                                  | (1.70%)                                                                     |                                        |                                               |                           |                                                     |                                                      |
| 14. Ratio of actuarial value to market value                                                                                                |                                  | 105.4%                                                                      |                                        |                                               |                           |                                                     |                                                      |

Notes: Remaining deferrals in Column (1) for prior years are from Column (6) in last year's report. The number in the current year is the difference between the remaining deferrals for prior years and Item 7 (which is the difference between the market value of assets and the expected actuarial value of assets). Column 2 is a direct offset of the current year's excess/(shortfall) return against prior years' excess/(shortfall) of the opposite type

CHANGE IN NET POSITION

|                                                                         | Valuation Period Ending December 31, |                     |
|-------------------------------------------------------------------------|--------------------------------------|---------------------|
|                                                                         | 2016                                 | 2015                |
|                                                                         | (1)                                  | (2)                 |
| 1. Assets in plan at beginning of year (A)                              | \$ 2,144,804,122                     | \$ 2,209,799,679    |
| 2. Employer contributions                                               | 104,272,793                          | 100,484,694         |
| 3. Employee contributions                                               | 60,801,253                           | 54,065,793          |
| 4. Benefit payments made*                                               | 175,218,095                          | 165,464,616         |
| 5. Refunds of contributions                                             | 3,910,786                            | 4,052,436           |
| 6. Expenses paid from trust                                             | 2,700,917                            | 2,421,331           |
| 7. Investment expense                                                   | 4,781,660                            | 6,539,755           |
| 8. Investment return                                                    | <u>176,421,676</u>                   | <u>(41,067,906)</u> |
| 9. Assets in plan at end of year (B)<br>(1 + 2 + 3 - 4 - 5 - 6 - 7 + 8) | \$ 2,299,688,386                     | \$ 2,144,804,122    |
| 10. Approximate rate of return on average invested assets               |                                      |                     |
| a. Net investment income (8 - 7 = I)**                                  | \$ 171,640,016                       | \$ (50,028,992)     |
| b. Estimated yield based on (2I/(A + B - I))                            | 8.03%                                | -2.27%              |

\* Benefit payments exclude any distributions from the 415 Restoration Plan

\*\* Administrative Expenses are no longer netted out of return. Formula for 12-31-2015 was (8 - 7 - 6 = I)

**CHANGE IN UNFUNDED ACTUARIAL ACCRUED LIABILITY  
AS OF DECEMBER 31, 2016**

| <u>CALCULATION OF TOTAL ACTUARIAL GAIN OR LOSS</u>                               | <u>2016</u>        | <u>2015</u>        |
|----------------------------------------------------------------------------------|--------------------|--------------------|
| 1. Unfunded actuarial accrued liability (UAAL) as of prior year                  | \$ 1,083,708,976   | \$ 900,174,491     |
| 2. Actual normal cost paid during year (includes service purchases)              | <u>118,920,262</u> | <u>100,724,677</u> |
| 3. Subtotal (1 + 2)                                                              | \$ 1,202,629,238   | \$ 1,000,899,168   |
| 4. Interest at prior valuation's rate of 7.50%                                   | 85,737,683         | 73,666,604         |
| 5. Contributions during year                                                     | (165,074,046)      | (154,550,487)      |
| 6. Interest on contributions for one-half year                                   | (6,190,277)        | (5,988,831)        |
| 7. Expected UAAL as of December 31st (3 + 4 + 5 + 6)                             | \$ 1,117,102,598   | \$ 914,026,454     |
| 8. Actual UAAL as of December 31st                                               | 1,168,107,291      | 1,083,708,976      |
| 9. Unexpected Change in UAAL for the period (8 - 7)                              | \$ 51,004,693      | \$ 169,682,522     |
| <u>SOURCE OF CHANGE IN UAAL</u>                                                  |                    |                    |
| 10. Asset (gain)/loss (See Table 4)                                              | \$ 41,100,346      | \$ 40,820,755      |
| 11. Total unanticipated increase/(decrease) in liabilities for the period (9-10) | 9,904,347          | 128,861,767        |
| 12. Increase/(decrease) due to benefit enhancements                              | 0                  | 0                  |
| 13. Increase/(decrease) due to assumption & method changes                       | <u>0</u>           | <u>123,493,165</u> |
| 14. Liability experience (gain)/loss (11 - 12 - 13)                              | \$ 9,904,347       | \$ 5,368,602       |
| <u>SOURCE OF LIABILITY (GAINS) AND LOSSES</u>                                    |                    |                    |
| 15. Salary Increases                                                             | \$ 4,580,328       | \$ (3,150,463)     |
| 16. Service Retirement                                                           | (8,416,978)        | (8,506,247)        |
| 17. Withdrawal                                                                   | 3,455,296          | 6,452,073          |
| 18. Disability Retirement                                                        | (74,347)           | 287,312            |
| 19. Active Mortality                                                             | 784,778            | 232,809            |
| 20. Retiree Mortality                                                            | (2,412,086)        | (1,495,240)        |
| 21. Rehires                                                                      | 2,447,155          | 2,002,408          |
| 22. Other (Data) including proportionate program                                 | <u>9,540,201</u>   | <u>9,545,950</u>   |
| 23. Total Liability Experience (Gain)/Loss                                       | \$ 9,904,347       | \$ 5,368,602       |

RELATIVE SIZE OF UNFUNDED ACTUARIAL ACCRUED LIABILITY

| Valuation<br>as of<br>31-Dec<br>(1) | Unfunded/<br>(Overfunded)<br>Actuarial Accrued<br>Liability<br>(2) | Relative to<br>Covered Payroll |                                         | Relative to Actuarial<br>Value of Present Assets |                                        | Relative to Total<br>Actuarial Accrued Liability |                                                        |
|-------------------------------------|--------------------------------------------------------------------|--------------------------------|-----------------------------------------|--------------------------------------------------|----------------------------------------|--------------------------------------------------|--------------------------------------------------------|
|                                     |                                                                    | Covered<br>Payroll<br>(3)      | Percent of<br>Covered<br>Payroll<br>(4) | Present<br>Assets<br>(5)                         | Percent<br>of Present<br>Assets<br>(6) | Actuarial<br>Accrued<br>Liability<br>(7)         | Percent of<br>Actuarial<br>Accrued<br>Liability<br>(8) |
| 1998                                | (74,816,812)                                                       | 219,326,742                    | (34.1%)                                 | 952,634,480                                      | (7.9%)                                 | 877,817,668                                      | (8.5%)                                                 |
| 1999                                | (60,632,797)                                                       | 244,538,110                    | (24.8%)                                 | 1,105,121,657                                    | (5.5%)                                 | 1,044,488,860                                    | (5.8%)                                                 |
| 2000                                | (18,353,201)                                                       | 268,635,564                    | (6.8%)                                  | 1,230,971,746                                    | (1.5%)                                 | 1,212,618,545                                    | (1.5%)                                                 |
| 2001                                | 48,980,941                                                         | 316,793,390                    | 15.5%                                   | 1,311,288,668                                    | 3.7%                                   | 1,360,269,609                                    | 3.6%                                                   |
| 2002                                | 189,347,298                                                        | 322,007,672                    | 58.8%                                   | 1,250,851,348                                    | 15.1%                                  | 1,440,198,646                                    | 13.1%                                                  |
| 2003                                | 203,040,300                                                        | 312,790,966                    | 64.9%                                   | 1,348,790,502                                    | 15.1%                                  | 1,551,830,802                                    | 13.1%                                                  |
| 2004                                | 321,383,795                                                        | 326,590,164                    | 98.4%                                   | 1,356,797,448                                    | 23.7%                                  | 1,678,181,243                                    | 19.2%                                                  |
| 2005                                | 395,382,953                                                        | 348,619,141                    | 113.4%                                  | 1,398,798,722                                    | 28.3%                                  | 1,794,181,675                                    | 22.0%                                                  |
| 2006                                | 476,226,660                                                        | 390,963,991                    | 121.8%                                  | 1,497,783,958                                    | 31.8%                                  | 1,974,010,618                                    | 24.1%                                                  |
| 2007                                | 459,277,808                                                        | 417,450,797                    | 110.0%                                  | 1,653,533,484                                    | 27.8%                                  | 2,112,811,292                                    | 21.7%                                                  |
| 2008                                | 765,526,422                                                        | 448,740,469                    | 170.6%                                  | 1,481,377,439                                    | 51.7%                                  | 2,246,903,861                                    | 34.1%                                                  |
| 2009                                | 658,466,636                                                        | 422,539,199                    | 155.8%                                  | 1,672,470,344                                    | 39.4%                                  | 2,330,936,980                                    | 28.2%                                                  |
| 2010                                | 749,087,565                                                        | 438,877,002                    | 170.7%                                  | 1,711,577,229                                    | 43.8%                                  | 2,460,664,794                                    | 30.4%                                                  |
| 2011                                | 932,942,173                                                        | 451,831,198                    | 206.5%                                  | 1,790,902,641                                    | 52.1%                                  | 2,723,844,815                                    | 34.3%                                                  |
| 2012                                | 1,070,656,825                                                      | 470,231,969                    | 227.7%                                  | 1,897,722,867                                    | 56.4%                                  | 2,968,379,692                                    | 36.1%                                                  |
| 2013                                | 861,988,246                                                        | 490,553,170                    | 175.7%                                  | 2,047,929,504                                    | 42.1%                                  | 2,909,917,750                                    | 29.6%                                                  |
| 2014                                | 900,174,491                                                        | 539,158,693                    | 167.0%                                  | 2,193,881,221                                    | 41.0%                                  | 3,094,055,712                                    | 29.1%                                                  |
| 2015                                | 1,083,708,976                                                      | 559,829,504                    | 193.6%                                  | 2,308,087,140                                    | 47.0%                                  | 3,391,796,116                                    | 32.0%                                                  |
| 2016                                | 1,168,107,291                                                      | 599,574,934                    | 194.8%                                  | 2,423,269,015                                    | 48.2%                                  | 3,591,376,306                                    | 32.5%                                                  |

**SCHEDULE OF ACTIVE MEMBER VALUATION DATA**

| Year Ending<br>31-Dec | Active<br>Participants | Percent<br>Change | Covered Payroll | Percent<br>Change | Average<br>Salary | Percent<br>Change |
|-----------------------|------------------------|-------------------|-----------------|-------------------|-------------------|-------------------|
| (1)                   | (2)                    | (3)               | (4)             | (5)               | (6)               | (7)               |
| 1998                  | 6,311                  | -7.2%             | 219,326,742     | 0.1%              | 34,753            | 7.8%              |
| 1999                  | 6,512                  | 3.2%              | 244,538,110     | 11.5%             | 37,552            | 8.1%              |
| 2000                  | 6,894                  | 5.9%              | 268,635,564     | 9.9%              | 38,967            | 3.8%              |
| 2001                  | 7,713                  | 11.9%             | 316,793,390     | 17.9%             | 41,073            | 5.4%              |
| 2002                  | 7,647                  | -0.9%             | 322,007,672     | 1.6%              | 42,109            | 2.5%              |
| 2003                  | 7,432                  | -2.8%             | 312,790,966     | -2.9%             | 42,087            | -0.1%             |
| 2004                  | 7,489                  | 0.8%              | 326,590,164     | 4.4%              | 43,609            | 3.6%              |
| 2005                  | 7,638                  | 2.0%              | 348,619,141     | 6.7%              | 45,643            | 4.7%              |
| 2006                  | 8,055                  | 5.5%              | 390,963,991     | 12.1%             | 48,537            | 6.3%              |
| 2007                  | 8,358                  | 3.8%              | 417,450,797     | 6.8%              | 49,946            | 2.9%              |
| 2008                  | 8,643                  | 3.4%              | 448,740,469     | 7.5%              | 51,920            | 4.0%              |
| 2009                  | 8,142                  | -5.8%             | 422,539,199     | -5.8%             | 51,896            | 0.0%              |
| 2010                  | 8,270                  | 1.6%              | 438,877,002     | 3.9%              | 53,069            | 2.3%              |
| 2011                  | 8,348                  | 0.9%              | 451,831,198     | 3.0%              | 54,124            | 2.0%              |
| 2012                  | 8,387                  | 0.5%              | 470,231,969     | 4.1%              | 56,067            | 3.6%              |
| 2013                  | 8,592                  | 2.4%              | 490,553,170     | 4.3%              | 57,094            | 1.8%              |
| 2014                  | 9,028                  | 5.1%              | 539,158,693     | 9.9%              | 59,721            | 4.6%              |
| 2015                  | 9,063                  | 0.4%              | 559,829,504     | 3.8%              | 61,771            | 3.4%              |
| 2016                  | 9,364                  | 3.3%              | 599,574,934     | 7.1%              | 64,030            | 3.7%              |

SCHEDULE OF RETIREES AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS

| Year<br>Ending<br>December 31 | Added to Rolls |                      | Removed from Rolls |                      | Rolls-End of Year |                      | % Increase<br>in Annual<br>Allowances | Average<br>Annual<br>Allowances |
|-------------------------------|----------------|----------------------|--------------------|----------------------|-------------------|----------------------|---------------------------------------|---------------------------------|
|                               | Number         | Annual<br>Allowances | Number             | Annual<br>Allowances | Number            | Annual<br>Allowances |                                       |                                 |
| (1)                           | (2)            | (3)                  | (4)                | (5)                  | (6)               | (7)                  | (8)                                   | (9)                             |
| 2001                          | 224            | 5,278,490            | 95                 | 2,046,233            | 2,592             | 65,647,094           | 7.9%                                  | 25,327                          |
| 2002                          | 309            | 7,754,803            | 118                | 2,534,050            | 2,783             | 72,520,159           | 10.5%                                 | 26,058                          |
| 2003                          | 271            | 7,706,066            | 59                 | 1,502,757            | 2,995             | 78,596,302           | 8.4%                                  | 26,243                          |
| 2004                          | 227            | 5,619,478            | 85                 | 1,741,624            | 3,137             | 82,121,249           | 4.5%                                  | 26,178                          |
| 2005                          | 258            | 6,699,023            | 98                 | 2,438,555            | 3,297             | 85,324,686           | 3.9%                                  | 25,879                          |
| 2006                          | 259            | 6,788,190            | 89                 | 1,883,938            | 3,467             | 90,312,037           | 5.8%                                  | 26,049                          |
| 2007                          | 289            | 8,523,459            | 123                | 2,262,126            | 3,633             | 96,071,149           | 6.4%                                  | 26,444                          |
| 2008                          | 290            | 8,299,468            | 88                 | 2,056,217            | 3,835             | 101,840,870          | 6.0%                                  | 26,556                          |
| 2009                          | 331            | 9,953,411            | 80                 | 1,630,148            | 4,086             | 109,656,152          | 7.7%                                  | 26,837                          |
| 2010                          | 341            | 10,495,807           | 92                 | 2,029,423            | 4,335             | 117,954,059          | 7.6%                                  | 27,210                          |
| 2011                          | 324            | 9,851,119            | 117                | 2,785,375            | 4,542             | 124,748,580          | 5.8%                                  | 27,466                          |
| 2012                          | 405            | 13,035,228           | 116                | 3,011,032            | 4,831             | 134,653,163          | 7.9%                                  | 27,873                          |
| 2013                          | 387            | 12,451,142           | 98                 | 2,176,950            | 5,120             | 144,755,297          | 7.5%                                  | 28,273                          |
| 2014                          | 397            | 12,737,257           | 121                | 2,568,479            | 5,396             | 154,937,553          | 7.0%                                  | 28,713                          |
| 2015                          | 411            | 13,547,663           | 128                | 2,980,334            | 5,679             | 165,579,191          | 6.9%                                  | 29,156                          |
| 2016                          | 385            | 12,920,841           | 130                | 3,199,901            | 5,934             | 175,327,721          | 5.9%                                  | 29,546                          |



SOLVENCY TEST

| Valuation Date    | Aggregated Accrued Liabilities for                 |                               |                                                                  |                    | Portions of Accrued Liabilities Covered<br>by Reported Assets |         |             |
|-------------------|----------------------------------------------------|-------------------------------|------------------------------------------------------------------|--------------------|---------------------------------------------------------------|---------|-------------|
|                   | Active and<br>Inactive<br>Members<br>Contributions | Retirees and<br>Beneficiaries | Active and Inactive<br>Members<br>(Employer<br>Financed Portion) | Reported<br>Assets |                                                               |         |             |
|                   | (1)                                                | (2)                           | (3)                                                              | (4)                | (5)                                                           | (5)/(2) | [(5)-(2)]/3 |
| December 31, 2001 | 248,579,180                                        | 654,307,118                   | 457,383,311                                                      | 1,311,288,668      | 100.0%                                                        | 100.0%  | 89.3%       |
| December 31, 2002 | 265,812,595                                        | 718,187,586                   | 456,198,465                                                      | 1,250,851,348      | 100.0%                                                        | 100.0%  | 58.5%       |
| December 31, 2003 | 252,182,701                                        | 777,100,825                   | 522,547,276                                                      | 1,348,790,502      | 100.0%                                                        | 100.0%  | 61.1%       |
| December 31, 2004 | 261,905,526                                        | 812,266,336                   | 604,009,381                                                      | 1,356,797,448      | 100.0%                                                        | 100.0%  | 46.8%       |
| December 31, 2005 | 280,994,642                                        | 848,185,652                   | 665,001,381                                                      | 1,398,798,722      | 100.0%                                                        | 100.0%  | 40.5%       |
| December 31, 2006 | 295,166,238                                        | 904,166,079                   | 774,678,301                                                      | 1,497,783,958      | 100.0%                                                        | 100.0%  | 38.5%       |
| December 31, 2007 | 333,340,167                                        | 968,493,997                   | 810,977,128                                                      | 1,653,533,484      | 100.0%                                                        | 100.0%  | 43.4%       |
| December 31, 2008 | 357,423,035                                        | 1,025,407,475                 | 864,073,351                                                      | 1,481,377,439      | 100.0%                                                        | 100.0%  | 11.4%       |
| December 31, 2009 | 362,288,592                                        | 1,109,773,550                 | 858,874,838                                                      | 1,672,470,344      | 100.0%                                                        | 100.0%  | 23.3%       |
| December 31, 2010 | 377,651,365                                        | 1,195,328,215                 | 887,685,214                                                      | 1,711,577,229      | 100.0%                                                        | 100.0%  | 15.6%       |
| December 31, 2011 | 413,944,399                                        | 1,267,467,354                 | 1,042,433,062                                                    | 1,790,902,641      | 100.0%                                                        | 100.0%  | 10.5%       |
| December 31, 2012 | 417,481,360                                        | 1,375,244,710                 | 1,175,653,622                                                    | 1,897,722,867      | 100.0%                                                        | 100.0%  | 8.9%        |
| December 31, 2013 | 436,164,975                                        | 1,478,146,019                 | 995,606,756                                                      | 2,047,929,504      | 100.0%                                                        | 100.0%  | 13.4%       |
| December 31, 2014 | 453,220,166                                        | 1,580,320,342                 | 1,060,515,204                                                    | 2,193,881,221      | 100.0%                                                        | 100.0%  | 15.1%       |
| December 31, 2015 | 471,000,910                                        | 1,771,674,810                 | 1,149,120,396                                                    | 2,308,087,140      | 100.0%                                                        | 100.0%  | 5.7%        |
| December 31, 2016 | 497,752,958                                        | 1,873,037,310                 | 1,220,586,038                                                    | 2,423,269,015      | 100.0%                                                        | 100.0%  | 4.3%        |

SCHEDULE OF FUNDING PROGRESS

| Valuation<br>Date | Actuarial Value<br>of Assets (AVA) | Actuarial Accrued<br>Liability (AAL) | Unfunded Actuarial<br>Accrued Liability<br>(UAAL) (3) - (2) | Funded Ratio<br>(2)/(3) | Annual<br>Covered<br>Payroll | UAAL as % of<br>Payroll (4)/(6) |
|-------------------|------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------|------------------------------|---------------------------------|
| (1)               | (2)                                | (3)                                  | (4)                                                         | (5)                     | (6)                          | (7)                             |
| December 31, 1998 | 952.6                              | 877.8                                | (74.8)                                                      | 108.5%                  | 219.3                        | (34.1%)                         |
| December 31, 1999 | 1,105.1                            | 1,044.5                              | (60.6)                                                      | 105.8%                  | 244.5                        | (24.8%)                         |
| December 31, 2000 | 1,231.0                            | 1,212.6                              | (18.4)                                                      | 101.5%                  | 268.6                        | (6.8%)                          |
| December 31, 2001 | 1,311.3                            | 1,360.3                              | 49.0                                                        | 96.4%                   | 316.8                        | 15.5%                           |
| December 31, 2002 | 1,250.9                            | 1,440.2                              | 189.3                                                       | 86.9%                   | 322.0                        | 58.8%                           |
| December 31, 2003 | 1,348.8                            | 1,551.8                              | 203.0                                                       | 86.9%                   | 312.8                        | 64.9%                           |
| December 31, 2004 | 1,356.8                            | 1,678.2                              | 321.4                                                       | 80.8%                   | 326.6                        | 98.4%                           |
| December 31, 2005 | 1,398.8                            | 1,794.2                              | 395.4                                                       | 78.0%                   | 348.6                        | 113.4%                          |
| December 31, 2006 | 1,497.8                            | 1,974.0                              | 476.2                                                       | 75.9%                   | 391.0                        | 121.8%                          |
| December 31, 2007 | 1,653.5                            | 2,112.8                              | 459.3                                                       | 78.3%                   | 417.5                        | 110.0%                          |
| December 31, 2008 | 1,481.4                            | 2,246.9                              | 765.5                                                       | 65.9%                   | 448.7                        | 170.6%                          |
| December 31, 2009 | 1,672.5                            | 2,330.9                              | 658.5                                                       | 71.8%                   | 422.5                        | 155.8%                          |
| December 31, 2010 | 1,711.6                            | 2,460.7                              | 749.1                                                       | 69.6%                   | 438.9                        | 170.7%                          |
| December 31, 2011 | 1,790.9                            | 2,723.8                              | 932.9                                                       | 65.7%                   | 451.8                        | 206.5%                          |
| December 31, 2012 | 1,897.7                            | 2,968.4                              | 1,070.7                                                     | 63.9%                   | 470.2                        | 227.7%                          |
| December 31, 2013 | 2,047.9                            | 2,909.9                              | 862.0                                                       | 70.4%                   | 490.6                        | 175.7%                          |
| December 31, 2014 | 2,193.9                            | 3,094.1                              | 900.2                                                       | 70.9%                   | 539.2                        | 167.0%                          |
| December 31, 2015 | 2,308.1                            | 3,391.8                              | 1,083.7                                                     | 68.0%                   | 559.8                        | 193.6%                          |
| December 31, 2016 | 2,423.3                            | 3,591.4                              | 1,168.1                                                     | 67.5%                   | 599.6                        | 194.8%                          |

Note: Dollar amount in millions.

**STATEMENT OF ACTUARIAL METHODS AND ASSUMPTIONS**  
**(Effective as of December 31, 2016)**

The most recent experience study was completed in conjunction with the December 31, 2015 actuarial valuation. Please see our Experience Study report dated May 2016 to see more detail of the rationale for the current assumptions. As authorized under Article 6243n of the Vernon's Civil Statutes of the State of Texas, actuarial assumptions and methods are set by the Board of Trustees, based upon recommendations made by the plan's actuary.

**A. ACTUARIAL ASSUMPTIONS**

**1. Investment Return Rate (adopted effective December 31, 2015)**

7.50% per annum, compounded annually, composed of an assumed inflation rate of 2.75% and a real rate of return of 4.75%, net of investment expenses.

**2. Mortality**

**a. Nondisabled annuitants (adopted effective December 31, 2015)**

Healthy retirees and beneficiaries – The RP-2014 Combined Healthy Mortality Tables with Blue Collar Adjustments. Generational mortality improvements in accordance with Scale BB from the table's base year of 2014 (see Item 21 for further discussion of mortality improvement).

**b. Disabled annuitants (adopted effective December 31, 2015)**

Disabled annuitants – The RP-2014 Combined Healthy Mortality Tables with Blue Collar Adjustments, set forward three years. Generational mortality improvements in accordance with Scale BB from the table's base year of 2014; minimum 3% rate of mortality at all ages (see Item 21 for further discussion of mortality improvement).

**c. Active members (adopted effective December 31, 2015)**

Active employees – The RP-2014 Employee Mortality Tables with Blue Collar Adjustments. Generational mortality improvements in accordance with Scale BB from the table's base year of 2014 (see Item 21 for further discussion).

**STATEMENT OF ACTUARIAL METHODS AND ASSUMPTIONS**  
**(EFFECTIVE AS OF December 31, 2016)**  
**(Continued)**

3. Retirement Rates: (adopted effective December 31, 2015)  
The following rates of retirement are assumed for members eligible for normal retirement.

| Age        | Rates of Retirement |                |
|------------|---------------------|----------------|
|            | <u>Males</u>        | <u>Females</u> |
| 44 & under | 22.0%               | 25.0%          |
| 45         | 22.0%               | 23.0%          |
| 46         | 22.0%               | 23.0%          |
| 47         | 22.0%               | 23.0%          |
| 48         | 22.0%               | 23.0%          |
| 49         | 22.0%               | 23.0%          |
| 50         | 22.0%               | 26.0%          |
| 51         | 22.0%               | 26.0%          |
| 52         | 22.0%               | 26.0%          |
| 53         | 22.0%               | 26.0%          |
| 54         | 22.0%               | 26.0%          |
| 55         | 22.0%               | 26.0%          |
| 56         | 22.0%               | 26.0%          |
| 57         | 22.0%               | 26.0%          |
| 58         | 22.0%               | 26.0%          |
| 59         | 22.0%               | 26.0%          |
| 60         | 22.0%               | 21.0%          |
| 61         | 22.0%               | 21.0%          |
| 62         | 27.0%               | 24.0%          |
| 63         | 22.0%               | 21.0%          |
| 64         | 22.0%               | 21.0%          |
| 65         | 22.0%               | 24.0%          |
| 66         | 30.0%               | 24.0%          |
| 67         | 30.0%               | 24.0%          |
| 68         | 22.0%               | 21.0%          |
| 69         | 22.0%               | 21.0%          |
| 70         | 22.0%               | 20.0%          |
| 71         | 22.0%               | 20.0%          |
| 72         | 22.0%               | 20.0%          |
| 73         | 22.0%               | 20.0%          |
| 74 & older | 100.0%              | 100.0%         |

Group B members are assumed to retire at twice the applicable rate upon the first year they attain eligibility for normal retirement. Early retirement rates (of 1% at age 55 increasing by 1% every two years to 5% at ages 63 and 64) apply for Group B members.

**STATEMENT OF ACTUARIAL METHODS AND ASSUMPTIONS**  
**(EFFECTIVE AS OF December 31, 2016)**  
**(Continued)**

4. Rates of Decrement Due to Withdrawal (adopted effective December 31, 2015)

Rates of withdrawal are comprised of a select period for the first 3 years of employment and ultimate rates based on years of service from retirement after the end of the select period. The following rates during the select period apply at all ages during the applicable year of employment:

| <u>Years of<br/>Employment</u> | <u>Males</u> | <u>Females</u> |
|--------------------------------|--------------|----------------|
| 1                              | 0.125        | 0.175          |
| 2                              | 0.115        | 0.160          |
| 3                              | 0.090        | 0.140          |

**STATEMENT OF ACTUARIAL METHODS AND ASSUMPTIONS**  
**(EFFECTIVE AS OF December 31, 2016)**  
**(Continued)**

After the select period ends, rates of withdrawal are based on the number of years from retirement. The rates are shown below for males and females

| Years from Eligibility for<br>Unreduced Retirement | Rates of Withdrawal<br>After Select Period |                |
|----------------------------------------------------|--------------------------------------------|----------------|
|                                                    | <u>Males</u>                               | <u>Females</u> |
| 1                                                  | 0.0090                                     | 0.0086         |
| 2                                                  | 0.0122                                     | 0.0160         |
| 3                                                  | 0.0146                                     | 0.0201         |
| 4                                                  | 0.0166                                     | 0.0237         |
| 5                                                  | 0.0182                                     | 0.0238         |
| 6                                                  | 0.0198                                     | 0.0239         |
| 7                                                  | 0.0212                                     | 0.0261         |
| 8                                                  | 0.0225                                     | 0.0282         |
| 9                                                  | 0.0237                                     | 0.0302         |
| 10                                                 | 0.0248                                     | 0.0320         |
| 11                                                 | 0.0323                                     | 0.0422         |
| 12                                                 | 0.0348                                     | 0.0444         |
| 13                                                 | 0.0399                                     | 0.0465         |
| 14                                                 | 0.0401                                     | 0.0525         |
| 15                                                 | 0.0430                                     | 0.0575         |
| 16                                                 | 0.0430                                     | 0.0575         |
| 17                                                 | 0.0430                                     | 0.0575         |
| 18                                                 | 0.0430                                     | 0.0575         |
| 19                                                 | 0.0430                                     | 0.0575         |
| 20                                                 | 0.0430                                     | 0.0575         |
| 21                                                 | 0.0450                                     | 0.0600         |
| 22                                                 | 0.0450                                     | 0.0600         |
| 23                                                 | 0.0450                                     | 0.0600         |
| 24                                                 | 0.0450                                     | 0.0600         |
| 25                                                 | 0.0450                                     | 0.0600         |
| 26                                                 | 0.0470                                     | 0.0650         |
| 27                                                 | 0.0470                                     | 0.0650         |
| 28                                                 | 0.0470                                     | 0.0650         |
| 29                                                 | 0.0470                                     | 0.0650         |
| 30                                                 | 0.0470                                     | 0.0650         |
| 31+                                                | 0.0500                                     | 0.0700         |

**STATEMENT OF ACTUARIAL METHODS AND ASSUMPTIONS**  
**(EFFECTIVE AS OF December 31, 2016)**  
**(Continued)**

5. Disability Rates\* (adopted effective December 31, 2015)

Sample rates are shown below:

| <u>Age</u> | <u>Rates of Decrement<br/>Due to Disability<br/>Males and Females</u> |
|------------|-----------------------------------------------------------------------|
| 20         | 0.000004                                                              |
| 25         | 0.000025                                                              |
| 30         | 0.000099                                                              |
| 35         | 0.000259                                                              |
| 40         | 0.000494                                                              |
| 45         | 0.000804                                                              |
| 50         | 0.001188                                                              |
| 55         | 0.001647                                                              |
| 60         | 0.002180                                                              |

\* Rates are for disability due to all causes, occupational disability rates are assumed to be 10% of all causes.

6. Rates of Salary Increase (adopted effective December 31, 2015)

| <u>Years<br/>of<br/>Service</u> | <u>Promotional<br/>Rate of<br/>Increase</u> | <u>Total Annual Rate of Increase<br/>Including 2.75% Inflation Component<br/>and 1.25% Productivity Component</u> |
|---------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 1 – 7                           | 2.25%                                       | 6.25%                                                                                                             |
| 8                               | 2.00%                                       | 6.00%                                                                                                             |
| 9                               | 1.50%                                       | 5.50%                                                                                                             |
| 10                              | 1.25%                                       | 5.25%                                                                                                             |
| 11 - 15                         | 1.00%                                       | 5.00%                                                                                                             |
| 16 - 19                         | 0.75%                                       | 4.75%                                                                                                             |
| 20 or more                      | 0.00%                                       | 4.00%                                                                                                             |

7. DROP Participation: (adopted effective December 31, 2015)

It was assumed that 20% of retiring active members with at least 20 years of service would elect a "Backward" DROP. It is assumed that all members who Back Drop will elect to DROP back to the date that would provide the greatest actuarial value to the member.

**STATEMENT OF ACTUARIAL METHODS AND ASSUMPTIONS**  
**(EFFECTIVE AS OF December 31, 2016)**  
**(Continued)**

8. Married Percentage: (adopted effective December 31, 1997)  
100% of the active members are assumed to be married.
9. There will be no recoveries once disabled: (adopted effective December 31, 1997)
10. Spousal Age Difference: (adopted effective December 31, 2012)  
Males are assumed to be three years older than their spouses.
11. Normal Form of Payment: (adopted effective December 31, 1997)  
It is assumed that all retiring members will elect the Life only form of payment with a guaranteed return of accumulated employee contributions.
12. Crediting Rate on Employee Contributions: (adopted effective December 31, 2002)  
It is assumed that the interest credit rate on employee contributions will be 6.0%.
13. Individual salaries used to project benefits: (adopted effective December 31, 1997)  
Rates of pay as of the valuation date are reported for all employees.
14. Pay increase timing: (adopted effective December 31, 1997)  
Middle of calendar year.
15. Decrement timing: (adopted effective December 31, 1997)  
Decrements of all types are assumed to occur mid-year.
16. Eligibility testing: (adopted effective December 31, 2002)  
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.



**STATEMENT OF ACTUARIAL METHODS AND ASSUMPTIONS**  
**(EFFECTIVE AS OF December 31, 2016)**  
**(Continued)**

17. Decrement relativity: (adopted effective December 31, 2002)

Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.

18. Incidence of Contributions: (adopted effective December 31, 2002)

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.

19. Benefit Service: (adopted December 31, 1997)

All members are assumed to accrue one year of eligibility service each year.

20. Mortality Improvement:

The base mortality tables are anchored at the year 2014. To account for future mortality improvement, the base mortality rates shown in Item 2 are projected forward using scale BB for all future years.

21. Service Purchases (military, permissive, and sick leave conversion):

No service purchases of any type are assumed. Any gains or losses due to these purchases are recognized in the valuation following the purchase.

ACTUARIAL VALUE OF ASSETS

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 expected investment return each year is calculated based on the actuarial value of assets with the difference from actual income smoothed in over five years in 20% increments. If the current year's difference is opposite sign of the prior years' deferred Excesses/(Shortfalls), then the prior years' bases (starting with the oldest) are reduced dollar for dollar along with the current year's base. Any remaining bases are then recognized over five years (20% per year) from their initial creation.

If the resulting preliminary asset value is less than 80% or more than 120% of the market value of assets, then 1/3 of the amount outside of the 80%-120% corridor is recognized in the final actuarial value of assets.

**STATEMENT OF ACTUARIAL METHODS AND ASSUMPTIONS**  
**(EFFECTIVE AS OF December 31, 2016)**  
**(Continued)**

**B. ACTUARIAL FUNDING METHOD**

The actuarial accrued liability is determined using the Entry Age Normal actuarial cost method. This method assigns the System's total actuarial present value of future benefits to various periods. The actuarial accrued liability is assigned to years prior to the valuation and the normal cost is assigned to the year following the valuation. The remaining costs are assigned to future years.

The normal cost is determined on an individual basis using the Individual Entry Age Normal Cost method. The actuarial accrued liability is the difference between the total present value of future benefits and the actuarial present value of future normal costs where future normal costs are based on the benefit provisions that are applicable to each individual member. The unfunded actuarial accrued liability is the excess of the actuarial accrued liability over the actuarial value of assets.

**C. FUNDING PERIOD**

The funding period is determined using an open group projection. In the open group projection, the demographic assumptions are applied to the current active employees and any employees that are assumed to leave employment are replaced one for one with a new employee. Over time this results in the change of the employee group from mostly Group A members to Group B members. The projection is built to assume no gains or losses on the actuarial accrued liability or the actuarial value of assets. The funding period is the length of time it takes in the open group projection for the actuarial value of assets to exceed the actuarial accrued liability.

In the projection, new members' pay are assumed to increase at 4.00% year over year (i.e. a new employee in 2015 is assumed to be hired at a salary that is 4.00% greater than a new employee hired in 2014. The 4.00% growth rate is equal to our wage inflation assumption of 4.00% (ultimate salary increase assumption showing in Item A.6.)

**D. CHANGES IN ASSUMPTIONS AND METHODS**

No changes in the actuarial assumptions and methods since the prior valuation.

**SUMMARY OF BENEFIT PROVISIONS  
OF THE RETIREMENT PLAN AS OF DECEMBER 31, 2016**

**A. EFFECTIVE DATE**

January 1, 1941.

**B. ELIGIBILITY AND PARTICIPATION**

Any regular and permanent employee of the City of Austin, excluding all civil service commissioned police officers and firefighters, the Mayor and members of the City Council and all part-time employees who work less than 75 percent of a normal work week.

Members originally hired prior to January 1, 2012 are classified as Group A members and members hired on or after January 1, 2012 are classified as Group B members.

Unless noted otherwise, the provisions for Group A and Group B are the same.

**C. MEMBERSHIP SERVICE**

The period of time during which an eligible employee pays into and keeps on deposit the contribution prescribed to be paid by the employee into the System.

**D. AVERAGE FINAL COMPENSATION**

The average of the monthly compensation for the 36 calendar months of highest compensation during the last 120 months prior to termination. The monthly compensation used in the determination of benefits cannot exceed the compensation limits of Internal Revenue Code §401(a)(17) for the applicable period. The limit for 2011 is up to \$20,416.67 for persons who first become members after 1995 (members hired prior to 1996 have no limit on their compensation).

**E. CITY AND MEMBER CONTRIBUTION RATES**

The City currently contributes a base rate of 8.00% of pay for each active member. Under the Amended Supplemental Funding Plan, the City is providing an additional contribution for each active member. Beginning October 1, 2012, this additional contribution became 10% of pay, for a total city contribution of 18%. Each active member contributes 8.00% of pay. These employee contributions are made under a pre-tax 401(h) pick-up arrangement.

**SUMMARY OF BENEFIT PROVISIONS  
OF THE RETIREMENT PLAN AS OF DECEMBER 31, 2016  
(Continued)**

**F. RETIREMENT BENEFITS**

**1. Normal Retirement**

**a. Eligibility:**

Group A – A participant may retire upon attaining age 62, or any age with 23 years of service, or attaining age 55 with 20 years of service.

Group B – A participant may retire upon attaining age 62 with 30 years of service, or at age 65 with 5 years of service.

**b. Monthly Benefit:**

Group A – 3.00% of average final compensation times years of service.

Group B – 2.50% of average final compensation times years of service.

- c. Payment Form:** Benefits are paid as a monthly life annuity to the participant, with a provision that should the participant die prior to receiving monthly payments whose sum is greater than or equal to the participant's accumulated employee contributions, then the participant's beneficiary shall receive a lump-sum equal to the excess of the participant's accumulated employee contributions with interest over the sum of the monthly payments received.

**d. Optional Forms of Payment:**

- i) Joint and contingent annuity with either 100%, 66 2/3%, or 50% of the reduced retirement income payable for the life of the contingent annuitant upon the death of the retiring participant, with the provision that, should the contingent annuitant predecease the participant, the monthly annuity will revert to the amount that would have been payable under the normal form of payment,
- ii) Joint and 66 2/3% last survivor provides a reduced retirement income payable as long as both the member and the joint annuitant are alive, and upon the death of either the member or the joint annuitant, the benefit reduces to 2/3 of such amount for the remainder of the life of the last survivor,

**SUMMARY OF BENEFIT PROVISIONS  
OF THE RETIREMENT PLAN AS OF DECEMBER 31, 2016  
(Continued)**

iii) Period certain and life annuity with 15 years of payments guaranteed, or

- e. Deferred Retirement Option Program (DROP): A member may elect to retroactively participate in the System's DROP (i.e. a Backward DROP). The member would receive a lump-sum payment equal to 90% of the sum of the monthly annuities the participant would have received if the member had retired at the DROP entry date. No COLAs are included but changes in the benefit multiplier are reflected. The maximum period a member may retroactively elect under the DROP is 60 months.

2. Early Retirement:

a. Eligibility:

Group A – Currently there are no reduced retirement benefits under the plan.

Group B – A participant may retire with a reduced benefit upon attaining age 55 with 10 years of service.

b. Monthly Benefit:

Group A – Not applicable.

Group B – the same formula benefit as determined under normal retirement multiplied by an actuarial equivalent early retirement reduction factor.

G. DISABILITY RETIREMENT

1. Eligibility: If the employee is terminated by reason of a total and permanent disability which prevents the employee from engaging in any employment duties. If the employee has less than five years of service, the disability must be job related.
2. Monthly Benefit: Same as Normal Retirement benefit using pay and service at date of disability.
3. Form of Payment: The normal form of payment that is available to a member taking normal retirement and the optional forms of payments described in F.1.d.i) and F.1.d.ii) above.

**SUMMARY OF BENEFIT PROVISIONS  
OF THE RETIREMENT PLAN AS OF DECEMBER 31, 2016  
(Continued)**

**H. VESTING OF BENEFITS**

**1. Vesting**

An employee is vested according to the following schedule:

| <u>Years of<br/>Vesting Service</u> | <u>Vested<br/>Percentage</u> |
|-------------------------------------|------------------------------|
| Less than 5                         | 0%                           |
| 5 or more                           | 100%                         |

**Benefits Upon Vesting**

A vested participant is entitled to the retirement benefit payable at normal retirement earned to the date of participant's termination multiplied by his/her vested percentage, or a refund of the employee's accumulated employee contributions with interest.

**I. DEATH IN SERVICE**

**1. Eligibility:** All active members.

**2. Benefit:** The amount of the benefit payable to the beneficiary is:

**a. Employee eligible for retirement at date of death:**

The surviving spouse if any may elect to receive an annuity equal to the monthly benefit as if the member had retired under any retirement option that would have been available to the member at the end of the month in which the member died. If there is no surviving spouse, then the beneficiary may elect to receive a 15 years certain and life annuity. The surviving spouse or beneficiary instead of electing the annuity may elect to receive a death benefit equal to twice the member's accumulated employee contributions with interest.

**b. Employee not eligible for retirement at date of death:**

A refund of the member's accumulated deposits (with interest) plus a death benefit from COA ERS equal to the member's accumulated deposits (with interest), but excluding any purchases for Non-contributory time, prior military service purchases, or Supplementary Service Credit.

**SUMMARY OF BENEFIT PROVISIONS  
OF THE RETIREMENT PLAN AS OF DECEMBER 31, 2016  
(Continued)**

**J. RETIREE LUMP-SUM DEATH BENEFIT**

Upon death of a retired member, a \$10,000 lump-sum death benefit is payable. This benefit is also payable upon the death of an active member eligible for retirement whose surviving spouse or beneficiary elects to receive an annuity.

**K. COST-OF-LIVING ADJUSTMENT (COLA)**

On January 1 of each year the Board may approve a cost-of-living adjustment for those retirees who retired on or before December 31 of the previous year. The maximum adjustment which can be approved is 6%. The amount of the adjustment is set by the Board upon recommendation by the System's actuary that such an adjustment will not make the Fund financially unsound, and the adjustment is not inconsistent with the Code. The adjustment is prorated for any benefit which has been in effect for less than a year, with the proration being 1/12 for each monthly payment received during the prior year.

**L. LUMP-SUM ADDITIONAL BENEFIT PAYMENT**

Once each year the Board may approve a lump-sum additional benefit payment to be paid to those members and beneficiaries currently in payment status. The additional payment would be equal to a percentage of the member's monthly annuity with a maximum percentage of 100%.

**M. LEGISLATED PLAN CHANGES ENACTED BY 1995 LEGISLATURE**

**1. 2.3% Multiplier**

The benefit multiplier was increased from 2.2% per year of service to 2.3% per year of service effective October 1995.

**2. 2.3% Retiree Gross-up**

Effective October 1995, current retirees received an increase in their benefit amount to bring their retirement benefit amount up to what it would be currently if they had retired under the 2.3% multiplier.

**SUMMARY OF BENEFIT PROVISIONS  
OF THE RETIREMENT PLAN AS OF DECEMBER 31, 2016  
(Continued)**

3. \$10,000 Retiree Lump-Sum Death Benefit

The lump-sum death benefit payable upon the death of a retiree was increased from \$2,000 to \$10,000.

4. Plan Participation Begins at Date of Hire

The six-month service requirement for participation was eliminated. Current active members were granted service for the period between their date of hire and their date of participation, up to six months.

N. LEGISLATED PLAN CHANGES ENACTED BY 1997 LEGISLATURE

1. 2.6% Multiplier

The benefit multiplier was increased from 2.3% per year of service to 2.6% per year of service effective October 1997.

2. 2.6% Retiree Gross-up

Effective October 1997, current retirees received an increase in their benefit amount to bring their retirement benefit amount up to what it would be currently if they had retired under the 2.6% multiplier.

3. Military Service Purchase

Increased the number of months of military service that may be purchased from 24 to 48.

4. Noncontributory Service Purchase

Allowed an employee to purchase noncontributory service for the following periods of time: (1) while employee was on workers' compensation leave, (2) while employee was on an authorized leave of absence, and (3) while employee performed service for the employer in a position for which the service was not otherwise creditable. The employee pays the full actuarial cost of the service purchase.



**SUMMARY OF BENEFIT PROVISIONS  
OF THE RETIREMENT PLAN AS OF DECEMBER 31, 2016  
(Continued)**

5. Employer Purchase of Creditable Service

Allowed the employer to purchase the amount of service required to qualify an employee for an unreduced retirement benefit at age 55. To be eligible for the purchase, the employee must never have been a highly compensated employee within the meaning of IRC Section 414(q). The cost of the service purchase is the full actuarial cost of both the benefit and the retirement eligibility.

O. LEGISLATED PLAN CHANGES ENACTED BY 1999 LEGISLATURE

1. 2.7% Multiplier

The benefit multiplier was increased from 2.6% per year of service to 2.7% per year of service effective October 1999.

2. 2.7% Retiree Gross-up

Effective October 1999, current retirees received an increase in their benefit amount to bring their retirement benefit amount up to what it would be currently if they had retired under the 2.7% multiplier.

3. 23 & Out Provision

The service requirement at which a participant may retire with an unreduced retirement benefit was decreased from 25 years of Creditable Service to 23 years of Creditable Service.

4. Pop-Up Provisions for Certain Joint and Survivor Payment Options

Certain optional forms of payment which extend coverage to a joint annuitant (Options I, II, and III) were amended so that, should the contingent annuitant predecease the participant, the monthly annuity will revert to the amount that would have been payable under the normal form of payment.

5. LUMP-SUM ADDITIONAL BENEFIT PAYMENT

The Board was given the ability to make an additional payment to members and beneficiaries in payment status in the form of a lump-sum additional benefit payment. The additional payment would be a percentage of the current monthly payment with a maximum percentage of 100%.

**SUMMARY OF BENEFIT PROVISIONS  
OF THE RETIREMENT PLAN AS OF DECEMBER 31, 2016  
(Continued)**

**6. EMPLOYER PURCHASE OF CREDITABLE SERVICE**

Limitations on employer purchases of Creditable Service for a Member before actual retirement were removed.

**P. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2000**

**1. "415 Restoration of Retirement Income Plan"**

Certain highly compensated members may have their retirement annuity limited because of Section 415(b)(1) of the Internal Revenue Code. A plan amendment effective January 1, 2000, provides for COA ERS to pay a benefit payment that exceeds the maximum benefit limitation imposed by the Internal Revenue Code from a separate, non-qualified, pay-as-you-go "Restoration of Retirement Income Plan."

**2. 2.98% Multiplier**

The benefit multiplier was increased from 2.7% per year of service to 2.98% per year of service effective April 2000.

**3. 2.98% Retiree Gross-up**

Effective April 2000, current retirees received an increase in their benefit amount to bring their retirement benefit amount up to what it would be currently if they had retired under the 2.98% multiplier.

**4. "Pop-up" Benefit Amendment**

The "pop-up" benefit is extended to retirees who selected the actuarial equivalent of Life Annuity option with underlying options of I, II, or III.

**Q. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2001**

None

**SUMMARY OF BENEFIT PROVISIONS  
OF THE RETIREMENT PLAN AS OF DECEMBER 31, 2016  
(Continued)**

**R. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2002**

**1. 3.00% Multiplier**

Benefit multiplier was increased from 2.98% per year of service to 3.00% per year of service effective January 2002.

**2. 3.00% Retiree Gross-up**

Effective January 2002, current retirees received an increase in their benefit amount to bring their retirement benefit amount up to what it would be currently if they had retired under the 3.00% multiplier.

**3. Deferred Retirement Option Program**

A "Backward" DROP was added as an optional benefit effective in 2002. The retiring member may elect to retroactively participate in a DROP. The member would receive a lump-sum payment equal to 90% of the sum of the monthly annuities the participant would have received if the member had retired at the DROP entry date. No COLAs are included but changes in the benefit multiplier are reflected.

**4. Purchase of Permissive Time**

A member may purchase up to five years of Permissive Time. The purchase price charged to the member is the anticipated actuarial cost to the System for the additional service. Minimum purchase is one month with a maximum of 60 months (5 years) or the number of months needed to reach first eligibility for retirement whichever is less.

**5. Conversion of Unused Sick Leave**

At retirement an employee may elect to purchase Creditable Service for unused sick leave. The Board requires payment by the Member, and then by the City of the equivalent amount of retirement contributions that would have been made had the sick hours been exercised as sick hours. An employee must already be eligible for retirement to purchase the service.

**SUMMARY OF BENEFIT PROVISIONS  
OF THE RETIREMENT PLAN AS OF DECEMBER 31, 2016  
(Continued)**

**S. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2003**

**1. "Pop-up" Benefit Amendment**

"Pop-up" benefit was extended to any Joint and Survivor option (including level income options), other than Joint and Last Survivor.

**2. Permissive Time Amendment**

Permissive Time resolution was amended removing the provision that restricts members from purchasing Permissive Time in excess of the amount needed to reach first retirement eligibility.

**T. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2004**

None

**U. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2005**

None

**V. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2006**

None

**W. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2007**

None

**X. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2008**

None

**Y. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2009**

None

**Z. BENEFIT ENHANCEMENTS ENACTED BY THE BOARD OF TRUSTEES IN 2010**

None

**SUMMARY OF BENEFIT PROVISIONS  
OF THE RETIREMENT PLAN AS OF DECEMBER 31, 2016  
(Continued)**

**AA. LEGISLATED PLAN CHANGES ENACTED BY THE 2011 LEGISLATURE**

**1. Retirement Provisions**

For members hired on after January 1, 2012 (Group B members), changed the eligibility for normal retirement to age 65 with 5 years of service, or age 62 with 30 years of service. Also for members hired on or after January 1, 2012, added an eligibility for early retirement upon age 55 with 10 years of service.

**2. Benefit Multiplier**

For members hired on after January 1, 2012, the benefit multiplier was changed to 2.5% per year of service. Early retirement benefits would be reduced on an actuarially equivalent basis.

**BB. BENEFIT ENHANCEMENTS ENACTED IN 2012**

None

**CC. BENEFIT ENHANCEMENTS ENACTED IN 2013**

None

**DD. BENEFIT ENHANCEMENTS ENACTED IN 2014**

None

**EE. BENEFIT ENHANCEMENTS ENACTED IN 2015**

None

**FF. BENEFIT ENHANCEMENTS ENACTED IN 2016**

None

## DEFINITION OF TERMS

1. ***Actuarial Cost Method***

A method for determining the actuarial present value of future benefits and allocating such value to time periods in the form of a normal cost and an actuarial accrued liability.

2. ***Present Value of Future Benefits***

This is computed by projecting the total future benefit cash flow from the System, using actuarial assumptions, and then discounting the cash flow to the valuation date.

3. ***Normal Cost***

Computed differently under different actuarial cost methods, the normal cost generally represents the value of the portion of the participant's anticipated retirement, termination, and/or death and disability benefits accrued during a year.

4. ***Actuarial Accrued Liability***

Computed differently under different actuarial cost methods. Generally actuarial accrued liability represents the value of the portion of the participant's anticipated retirement, termination, and/or death and disability benefits accrued as of the valuation date.

5. ***Entry Age Actuarial Cost Method***

A method under which a participant's actuarial present value of future benefits is allocated on a level basis over the earnings of the participant between his/her entry into the System and his/her assumed exit.

6. ***Unfunded Actuarial Accrued Liability***

The difference between total actuarial present value of future benefits over the sum of the tangible assets of the System and the actuarial present value of the members' future normal costs. The System is underfunded if the difference is positive and overfunded if the difference is negative.

7. ***Actuarial Value of Assets***

The value of cash, investments, and other property belonging to the System, as valued by the actuary for purposes of the actuarial valuation.

**DEFINITION OF TERMS**  
**(Continued)**

**8. *Actuarial Gain or Loss***

From one valuation to the next, if the experience of the plan differs from that anticipated by the actuarial assumptions, an actuarial gain or loss occurs. For example, an actuarial gain would occur if the assets in the trust had a yield of 12% based on actuarial value, while the assumed yield on the actuarial value of assets was 7.50%.

The Statistical Section provides additional historical perspective, context, and detail to assist the reader in using the information in the financial statements and note disclosures to understand and assess the economic condition of the City of Austin Employees' Retirement System (COA ERS). In compliance with *GASB Statement No. 44, Economic Condition Reporting: The Statistical Section*, schedules are classified into the following categories: Demographic and Economic Information, Operating Information, and Financial Trends.

## STATISTICAL TABLES

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**Sources:** Schedules and data are provided by the consulting actuary, Gabriel Roeder Smith & Company, unless otherwise noted.



**DISTRIBUTION OF ALL ACTIVE PARTICIPANTS BY AGE AND LENGTH OF SERVICE  
AS OF DECEMBER 31, 2016**

| Attained<br>Age | 0   | 1   | 2   | 3   | 4   | 5-9   | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35+ | Number of<br>Employees | Average<br>Annual<br>Salary |
|-----------------|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-------|-----|------------------------|-----------------------------|
| Under 25        | 87  | 37  | 27  | 8   | 2   | 0     | 0     | 0     | 0     | 0     | 0     | 0   | 161                    | \$ 37,693                   |
| 25-29           | 225 | 136 | 119 | 96  | 39  | 62    | 2     | 0     | 0     | 0     | 0     | 0   | 679                    | 44,505                      |
| 30-34           | 191 | 145 | 152 | 139 | 89  | 271   | 78    | 7     | 0     | 0     | 0     | 0   | 1,072                  | 52,631                      |
| 35-39           | 144 | 113 | 163 | 95  | 85  | 343   | 243   | 106   | 0     | 0     | 0     | 0   | 1,292                  | 60,173                      |
| 40-44           | 87  | 84  | 119 | 93  | 77  | 287   | 291   | 224   | 54    | 0     | 0     | 0   | 1,316                  | 66,114                      |
| 45-49           | 94  | 61  | 94  | 69  | 62  | 321   | 260   | 296   | 155   | 32    | 1     | 0   | 1,445                  | 69,312                      |
| 50-54           | 45  | 37  | 83  | 54  | 48  | 257   | 210   | 268   | 179   | 69    | 17    | 0   | 1,267                  | 69,571                      |
| 55-59           | 39  | 41  | 58  | 48  | 29  | 213   | 203   | 280   | 141   | 74    | 28    | 0   | 1,154                  | 71,511                      |
| 60-64           | 19  | 21  | 30  | 34  | 20  | 132   | 148   | 156   | 78    | 45    | 26    | 9   | 718                    | 72,477                      |
| 65 & Over       | 9   | 6   | 8   | 7   | 7   | 59    | 53    | 62    | 24    | 11    | 9     | 5   | 260                    | 74,054                      |
| All Ages        | 940 | 681 | 853 | 643 | 458 | 1,945 | 1,488 | 1,399 | 631   | 231   | 81    | 14  | 9,364                  | \$ 64,030                   |

**DISTRIBUTION OF GROUP A ACTIVE PARTICIPANTS BY AGE AND LENGTH OF SERVICE  
AS OF DECEMBER 31, 2016**

| Attained Age | 0 | 1 | 2 | 3 | 4  | 5-9   | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35+ | Number of Employees | Average Annual Salary |
|--------------|---|---|---|---|----|-------|-------|-------|-------|-------|-------|-----|---------------------|-----------------------|
| Under 25     | 0 | 0 | 0 | 0 | 0  | 0     | 0     | 0     | 0     | 0     | 0     | 0   | 0                   | \$ 0                  |
| 25-29        | 0 | 0 | 0 | 0 | 1  | 62    | 2     | 0     | 0     | 0     | 0     | 0   | 65                  | 50,436                |
| 30-34        | 0 | 0 | 1 | 0 | 3  | 268   | 78    | 7     | 0     | 0     | 0     | 0   | 357                 | 56,994                |
| 35-39        | 0 | 2 | 1 | 2 | 2  | 340   | 243   | 106   | 0     | 0     | 0     | 0   | 696                 | 64,373                |
| 40-44        | 0 | 0 | 1 | 3 | 3  | 286   | 291   | 224   | 54    | 0     | 0     | 0   | 862                 | 69,173                |
| 45-49        | 0 | 0 | 0 | 0 | 1  | 315   | 260   | 296   | 155   | 32    | 1     | 0   | 1,060               | 71,773                |
| 50-54        | 0 | 1 | 1 | 0 | 2  | 249   | 210   | 268   | 179   | 69    | 17    | 0   | 996                 | 72,077                |
| 55-59        | 0 | 1 | 1 | 0 | 2  | 209   | 203   | 280   | 141   | 74    | 28    | 0   | 939                 | 73,069                |
| 60-64        | 0 | 1 | 0 | 0 | 0  | 130   | 148   | 156   | 78    | 45    | 26    | 9   | 593                 | 73,697                |
| 65 & Over    | 0 | 0 | 0 | 0 | 0  | 54    | 53    | 62    | 24    | 11    | 9     | 5   | 218                 | 76,766                |
| All Ages     | 0 | 5 | 5 | 5 | 14 | 1,913 | 1,488 | 1,399 | 631   | 231   | 81    | 14  | 5,786               | \$ 69,992             |

**DISTRIBUTION OF GROUP B ACTIVE PARTICIPANTS BY AGE AND LENGTH OF SERVICE  
AS OF DECEMBER 31, 2016**

| Attained<br>Age | 0   | 1   | 2   | 3   | 4   | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35+ | Number of<br>Employees | Average<br>Annual<br>Salary |
|-----------------|-----|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-----|------------------------|-----------------------------|
| Under 25        | 87  | 37  | 27  | 8   | 2   | 0   | 0     | 0     | 0     | 0     | 0     | 0   | 161                    | \$ 37,693                   |
| 25-29           | 225 | 136 | 119 | 96  | 38  | 0   | 0     | 0     | 0     | 0     | 0     | 0   | 614                    | 43,877                      |
| 30-34           | 191 | 145 | 151 | 139 | 86  | 3   | 0     | 0     | 0     | 0     | 0     | 0   | 715                    | 50,452                      |
| 35-39           | 144 | 111 | 162 | 93  | 83  | 3   | 0     | 0     | 0     | 0     | 0     | 0   | 596                    | 55,268                      |
| 40-44           | 87  | 84  | 118 | 90  | 74  | 1   | 0     | 0     | 0     | 0     | 0     | 0   | 454                    | 60,307                      |
| 45-49           | 94  | 61  | 94  | 69  | 61  | 6   | 0     | 0     | 0     | 0     | 0     | 0   | 385                    | 62,537                      |
| 50-54           | 45  | 36  | 82  | 54  | 46  | 8   | 0     | 0     | 0     | 0     | 0     | 0   | 271                    | 60,359                      |
| 55-59           | 39  | 40  | 57  | 48  | 27  | 4   | 0     | 0     | 0     | 0     | 0     | 0   | 215                    | 64,703                      |
| 60-64           | 19  | 20  | 30  | 34  | 20  | 2   | 0     | 0     | 0     | 0     | 0     | 0   | 125                    | 66,690                      |
| 65 & Over       | 9   | 6   | 8   | 7   | 7   | 5   | 0     | 0     | 0     | 0     | 0     | 0   | 42                     | 59,977                      |
| All Ages        | 940 | 676 | 848 | 638 | 444 | 32  | 0     | 0     | 0     | 0     | 0     | 0   | 3,578                  | \$ 54,388                   |

**DISTRIBUTION OF ALL ACTIVE PARTICIPANTS BY SERVICE AND  
 CURRENT RATE OF PAY AS OF DECEMBER 31, 2016**

| <u>Completed<br/>Years of Service</u> | <u>Number of<br/>Employees</u> | <u>Total Average<br/>Salary</u> |
|---------------------------------------|--------------------------------|---------------------------------|
| 0                                     | 940                            | \$ 50,044                       |
| 1                                     | 681                            | 52,197                          |
| 2                                     | 853                            | 56,066                          |
| 3                                     | 643                            | 57,914                          |
| 4                                     | 458                            | 58,248                          |
| 5-9                                   | 1,945                          | 64,811                          |
| 10-14                                 | 1,488                          | 67,999                          |
| 15-19                                 | 1,399                          | 72,867                          |
| 20-24                                 | 631                            | 77,075                          |
| 25-29                                 | 231                            | 83,231                          |
| 30-34                                 | 81                             | 85,514                          |
| 35+                                   | <u>14</u>                      | <u>91,294</u>                   |
| All Years                             | 9,364                          | \$ 64,030                       |