

Houston Firefighters' Relief and Retirement Fund

Actuarial Valuation Report
As of July 1, 2008

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Summary of Key Results (\$000)

| | July 1, 2008 | July 1, 2007 |
|--|--------------------|--------------------|
| Actuarial Contribution Rate | | |
| • Normal Cost (City Portion) | 20.1% | 21.5% |
| • Amortization of Unfunded Actuarial Accrued Liability (Surplus) | 4.0 | 7.9 |
| • Additional Statutory Requirement | <u>0.0</u> | <u>0.0</u> |
| • City's Actuarial Contribution Rate | 24.1% | 29.4% |
| • Employee Contribution Rate | 9.0% | 9.0% |
| Summary of Assets | | |
| • Market Value | \$ 3,029,159 | \$ 2,966,082 |
| <i>Rate of Return</i> | 3.7% | 16.4% |
| • Actuarial Value | 2,945,086 | 2,633,625 |
| <i>Rate of Return</i> | 13.7% | 14.6% |
| Summary of Liabilities | | |
| • Actuarial Accrued Liability | \$ 3,080,487 | \$ 2,892,292 |
| • Actuarial Value of Assets | <u>(2,945,086)</u> | <u>(2,633,625)</u> |
| • Unfunded Actuarial Accrued Liability | \$ 135,401 | \$ 258,667 |
| • Funded Ratio | 95.6% | 91.1% |
| Summary of Data | | |
| Number of Participants Included in the Valuation | | |
| Active participants | 2,755 | 2,662 |
| DROP participants | 1,121 | 1,157 |
| Retirees and beneficiaries | 2,460 | 2,315 |
| Vested terminated participants | <u>8</u> | <u>8</u> |
| Total | 6,344 | 6,142 |
| Projected Annual Payroll | | |
| Active participants | \$ 158,393 | \$ 151,941 |
| DROP participants | <u>80,779</u> | <u>80,456</u> |
| Total | \$ 239,172 | \$ 232,397 |

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Summary of Market Value of Assets (\$000)

| Investment Category | <u>July 1, 2008</u> | | <u>July 1, 2007</u> | | <u>July 1, 2006</u> | |
|---|---------------------|---------|---------------------|---------|---------------------|---------|
| | Amount | Percent | Amount | Percent | Amount | Percent |
| Cash & Short Term Investments | \$ 94,691 | 3.1% | \$ 138,883 | 4.7% | \$ 139,715 | 5.4% |
| Fixed Income Investments | 954,753 | 31.5% | 952,587 | 32.1% | 839,208 | 32.6% |
| Equity Securities | 1,322,162 | 43.6% | 1,620,334 | 54.6% | 1,165,275 | 45.3% |
| Other Assets | | | | | | |
| Alternative Investments - Partnerships | 476,713 | 15.7% | 117,697 | 4.0% | 290,559 | 11.3% |
| Real Estate | 165,779 | 5.5% | 122,626 | 4.1% | 122,941 | 4.8% |
| Land, Building, etc. | 7,814 | 0.3% | 8,474 | 0.3% | 9,464 | 0.4% |
| Other Net Assets, Receivables & Payables: | | | | | | |
| Accrued Interest & Dividends | 17,154 | 0.6% | 15,192 | 0.5% | 13,686 | 0.5% |
| Accrued City Contributions | 2,556 | 0.1% | 2,139 | 0.1% | 1,953 | 0.1% |
| Accrued Member Contributions | 965 | 0.0% | 808 | 0.0% | 736 | 0.0% |
| Net Other | (13,428) | (0.4)% | (12,658) | (0.4)% | (9,653) | (0.4)% |
| Total Market Value of Assets | <u>\$3,029,159</u> | 100.0% | <u>\$2,966,082</u> | 100.0% | <u>\$2,573,884</u> | 100.0% |

Change in Market Value Assets Since the Prior Report

| | <u>Fiscal Year End June 30, 2008</u> | <u>Fiscal Year End June 30, 2007</u> |
|--|--|--|
| 1. Beginning of Year Market Value | \$2,966,081,728 | \$2,573,884,346 |
| 2. Increases Due to: | | |
| a. Contributions: | | |
| i. City | \$ 54,051,414 | \$ 52,821,473 |
| ii. Members | 20,431,049 | 19,981,657 |
| iii. Total | <u>\$ 74,482,463</u> | <u>\$ 72,803,130</u> |
| b. Investment Income | \$ 118,393,476 | \$ 437,157,659 |
| c. Court Judgment | N/A | 1,273,490 |
| d. Total increases | <u>\$ 192,875,939</u> | <u>\$ 511,234,279</u> |
| 3. Decreases Due to: | | |
| a. Benefit payments | \$ 112,163,836 | \$ 100,965,331 |
| b. Refund of member contributions | 347,112 | 202,679 |
| c. Investment expenses | 9,986,181 | 10,182,092 |
| d. Administrative expenses | 6,372,986 | 6,800,953 |
| e. Professional Services | <u>929,000</u> | <u>885,842</u> |
| f. Total decreases | <u>\$ 129,799,115</u> | <u>\$ 119,036,897</u> |
| 4. End of Year Market Value | \$3,029,158,552 | \$2,966,081,728 |

Development of the Actuarial Value of Assets (\$000)

Actuarial Investment Gain (Loss)

| | | |
|--|-----------|------------------|
| 1. Market Value of Assets on July 1, 2007 | \$ | 2,966,082 |
| 2. 2007/2008 Net Cash Flow | | |
| a. Contributions | | 74,482 |
| b. Disbursements | | 112,511 |
| c. Net Cash Flow | | <u>(38,029)</u> |
| 2.a.- 2.b. | | |
| 3. Expected Investment Return | | 250,501 |
| [1. x .085] + [2.c. x .0425] | | |
| 4. Expected Market Value of Assets on July 1, 2008 | | 3,178,554 |
| 1. + 2.c. + 3. | | |
| 5. Market Value of Assets on July 1, 2008 | | 3,029,159 |
| 6. Investment Gain / (Loss) | \$ | (149,395) |
| 5. - 4. | | |

Development of Actuarial Value of Assets, continued (\$000)

Schedule of Actuarial Investment Gains (Losses)

| Plan Year Ending | Initial Actuarial Gain (Loss) | Five-Year Amortization | Unrecognized Gain (Loss)* As of July 1, 2008 |
|---------------------|----------------------------------|---------------------------|--|
| June 30, 2008 | \$ (149,395) | \$ (29,879) | \$ (119,516) |
| June 30, 2007 | 202,988 | 40,598 | 121,792 |
| June 30, 2006 | 121,568 | 24,314 | 48,627 |
| June 30, 2005 | 165,853 | 33,171 | 33,170 |
| June 30, 2004 | 153,926 | 30,785 | - |
| | | | \$ 84,073 |

Actuarial Value of Assets

| | |
|---|--------------|
| 1. Market Value of Assets on July 1, 2008 | \$ 3,029,159 |
| 2. (Gain) Loss to be Recognized in Future Years | (84,073) |
| 3. Actuarial Value as of July 1, 2008 | \$ 2,945,086 |

* Deferred for recognition in future years.

Unfunded Actuarial Accrued Liability (\$000)

| | July 1, 2008 | July 1, 2007 |
|---|-----------------------|-----------------------|
| Actuarial Present Value of: | | |
| Future Benefits | | |
| Active | \$ 910,912 | \$ 914,418 |
| DROP | 1,160,354 | 1,262,283 |
| Deferred Vested | 1,523 | 1,423 |
| Retired | 1,567,043 | 1,244,062 |
| Total for All Participants | <u>\$ 3,639,832</u> | <u>\$ 3,422,186</u> |
| Future Employee Contributions | \$ 162,718 | \$ 163,391 |
| Future Normal Cost - City Portion | \$ 396,627 | \$ 366,503 |
| Actuarial Accrued Liability | \$ 3,080,487 | \$ 2,892,292 |
| Actuarial Value of Assets | \$ (2,945,086) | \$ (2,633,625) |
| Unfunded Actuarial Accrued Liability | \$ 135,401 | \$ 258,667 |
| Total Normal Cost (BOY) | \$ 66,546 | \$ 67,829 |

Change in Key Results Since the Prior Valuation (\$000)

1. Analysis of Change in Unfunded Liability

| | <u>2007/2008</u> | <u>2006/2007</u> |
|---|------------------|------------------|
| a. Unfunded at Beginning of Period | \$ 258,667 | \$ 345,901 |
| b. Estimated Change Due to Normal Operation | | |
| Normal Cost | \$ 67,829 | \$ 63,916 |
| Contributions | (74,482) | (72,803) |
| Interest | 24,587 | 31,740 |
| Net Change | \$ 17,934 | \$ 22,853 |
| c. Estimated Change due to Actuarial Experience | | |
| Actuarial (gain) loss from asset sources | \$ (127,248) | \$ (140,572) |
| Actuarial (gain) loss from liability sources | (13,952) | 30,485 |
| Net change | \$ (141,200) | \$ (110,087) |
| d. Change due to Change in Actuarial Assumptions | \$ 0 | \$ 0 |
| e. Unfunded Actuarial Accrued Liability at End of Period | \$ 135,401 | \$ 258,667 |

2. Analysis of Change in Actuarial Asset Value

| | <u>2007/2008</u> | <u>2006/2007</u> |
|---|------------------|------------------|
| a. Value at Beginning of Period | \$ 2,633,625 | \$ 2,324,999 |
| b. Contributions | \$ 74,482 | \$ 72,803 |
| c. Distributions | \$ (112,511) | \$ (101,168) |
| d. Expected Investment Return at 8.5% | \$ 222,242 | \$ 196,419 |
| f. Expected Value at End of Period | \$ 2,817,838 | \$ 2,493,053 |
| g. Actual Actuarial Asset Value | \$ 2,945,086 | \$ 2,633,625 |
| h. Actuarial Gain (Loss) Due to Asset Sources | \$ 127,248 | \$ 140,572 |
| i. Final Actuarial Asset Value | \$ 2,945,086 | \$ 2,633,625 |

Change in Key Results Since the Prior Valuation, continued (\$000)

3. Analysis of Change in Actuarial Accrued Liability

| | <u>2007/2008</u> | <u>2006/2007</u> |
|---|------------------|------------------|
| a. Actuarial Accrued Liability at Beginning of Period | \$ 2,892,292 | \$ 2,670,900 |
| b. Increase Due to Normal Cost | \$ 67,829 | \$ 63,916 |
| c. Decrease Due to Distributions | \$ (112,511) | \$ (101,168) |
| e. Interest and Other | \$ 246,829 | \$ 228,160 |
| f. Expected Actuarial Accrued Liability at End of Period | \$ 3,094,439 | \$ 2,861,808 |
| g. Actual Actuarial Accrued Liability before change in actuarial assumptions | \$ 3,080,487 | \$ 2,892,292 |
| h. Actuarial Loss (Gain) from Liability Sources | \$ (13,952) | \$ 30,484 |
| i. Change due to Change in Actuarial Assumptions | \$ 0 | \$ 0 |
| j. Actuarial Accrued Liability | \$ 3,080,487 | \$ 2,892,292 |

Historical Unfunded Actuarial Accrued Liability (\$000)

| Valuation Date | Actuarial Accrued Liability (AAL) | Actuarial Value of Assets (AVA) | AVA as a Percentage of AAL | Unfunded AAL | Projected Covered Payroll | UAAL as a Percentage of Covered Payroll |
|----------------|-----------------------------------|---------------------------------|----------------------------|--------------|---------------------------|---|
| July 1, 1984 | \$ 294,584 | \$ 228,032 | 77% | \$ 66,552 | \$ 86,068 | 77% |
| July 1, 1986 | 396,609 | 401,271 | 101 | (4,662) | 99,619 | (5) |
| July 1, 1987 | 415,871 | 453,322 | 109 | (37,451) | 99,837 | (38) |
| July 1, 1988 | 440,012 | 478,460 | 109 | (38,448) | 96,051 | (40) |
| July 1, 1989 | 473,431 | 543,898 | 115 | (70,467) | 98,091 | (72) |
| July 1, 1990 | 512,471 | 598,814 | 117 | (86,343) | 97,633 | (88) |
| July 1, 1991 | 621,014 | 642,499 | 103 | (21,485) | 104,350 | (21) |
| July 1, 1992 | 670,123 | 694,080 | 104 | (23,957) | 102,360 | (23) |
| July 1, 1993 | 758,642 | 762,794 | 101 | (4,152) | 119,503 | (3) |
| July 1, 1994 | 793,011 | 831,741 | 105 | (38,730) | 120,082 | (32) |
| July 1, 1995 | 852,327 | 912,417 | 107 | (60,090) | 126,977 | (47) |
| July 1, 1996 | 989,343* | 1,024,569 | 104 | (35,226) | 131,641 | (27) |
| July 1, 1997 | 1,128,230 | 1,183,817 | 105 | (55,587) | 141,989 | (39) |
| July 1, 1998 | 1,271,416 | 1,347,414 | 106 | (75,998) | 149,045 | (51) |
| July 1, 1999 | 1,470,597 | 1,538,487 | 105 | (67,890) | 158,965 | (43) |
| July 1, 2000 | 1,589,350 | 1,726,302 | 109h | (136,952) | 163,630 | (84) |
| July 1, 2001 | 1,650,810 | 1,863,098 | 113 | (212,288) | 164,315 | (129) |
| July 1, 2002 | 1,970,154 | 1,922,405 | 98 | 47,749 | 190,578 | 25 |
| July 1, 2004 | 2,266,823 | 2,000,302 | 88 | 266,521 | 181,527 | 147 |
| July 1, 2005 | 2,461,142 | 2,119,203 | 86 | 341,939 | 192,084 | 178 |
| July 1, 2006 | 2,670,900 | 2,324,999 | 87 | 345,901 | 218,746 | 158 |
| July 1, 2007 | 2,892,292 | 2,633,625 | 91 | 258,667 | 232,397 | 111 |
| July 1, 2008 | 3,080,487 | 2,945,086 | 96 | 135,401 | 239,172 | 57 |

* Includes the effect of the change in plan provisions effective November 1, 1996.

Historical Solvency Test (\$000)

| Actuarial Accrued Liability for: | | | | | | | | |
|----------------------------------|----------------------------|--|---|---------------------------|--|------|-----|--|
| Valuation Date | Employee Contributions (1) | Retirees, Beneficiaries, and Vested Participants (2) | Active Participants (City Financed Portion) (3) | Actuarial Value of Assets | Portion of Actuarial Accrued Liability Covered by Assets | | | |
| | | | | | (1) | (2) | (3) | |
| July 1, 1984 | \$ 49,367 | \$ 106,204 | \$ 93,480 | \$ 228,032 | 100% | 100% | 78% | |
| July 1, 1986 | 62,253 | 133,219 | 201,137 | 401,271 | 100 | 100 | 100 | |
| July 1, 1987 | 68,057 | 140,330 | 207,484 | 453,322 | 100 | 100 | 100 | |
| July 1, 1988 | 71,001 | 162,085 | 206,926 | 478,460 | 100 | 100 | 100 | |
| July 1, 1989 | 74,324 | 176,865 | 222,242 | 543,898 | 100 | 100 | 100 | |
| July 1, 1990 | 77,472 | 203,190 | 231,809 | 598,814 | 100 | 100 | 100 | |
| July 1, 1991 | 82,301 | 245,391 | 293,322 | 642,499 | 100 | 100 | 100 | |
| July 1, 1992 | 87,254 | 270,511 | 312,358 | 694,080 | 100 | 100 | 100 | |
| July 1, 1993 | 92,709 | 292,558 | 373,375 | 762,794 | 100 | 100 | 100 | |
| July 1, 1994 | 97,583 | 318,222 | 377,206 | 831,741 | 100 | 100 | 100 | |
| July 1, 1995 | 103,552 | 342,388 | 406,387 | 912,417 | 100 | 100 | 100 | |
| July 1, 1996 | 131,421 | 360,055 | 497,867 | 1,024,569 | 100 | 100 | 100 | |
| July 1, 1997 | 156,501 | 383,605 | 588,124 | 1,183,817 | 100 | 100 | 100 | |
| July 1, 1998 | 261,186 | 389,700 | 614,957 | 1,347,414 | 100 | 100 | 100 | |
| July 1, 1999 | 324,154 | 424,990 | 721,453 | 1,538,487 | 100 | 100 | 100 | |
| July 1, 2000 | 376,688 | 438,303 | 774,359 | 1,726,302 | 100 | 100 | 100 | |
| July 1, 2001 | 374,918 | 555,332 | 720,560 | 1,863,098 | 100 | 100 | 100 | |
| July 1, 2002 | 406,522 | 698,964 | 864,668 | 1,922,405 | 100 | 100 | 94 | |
| July 1, 2004 | 307,036 | 909,085 | 1,050,702 | 2,000,302 | 100 | 100 | 75 | |
| July 1, 2005 | 351,112 | 997,506 | 1,112,524 | 2,119,203 | 100 | 100 | 69 | |
| July 1, 2006 | 354,007 | 1,162,755 | 1,154,138 | 2,324,999 | 100 | 100 | 70 | |
| July 1, 2007 | 408,856 | 1,245,485 | 1,237,951 | 2,633,625 | 100 | 100 | 79 | |
| July 1, 2008 | 431,132 | 1,568,566 | 1,080,789 | 2,945,086 | 100 | 100 | 87 | |

Analysis of Financial Experience (\$000)

| Year Ended | Gain (Loss) During the Year From Financial Experience | | | Gain (Loss) Due to Non-Recurring Items* | Composite Net Gain (Loss) During the Year |
|---------------|---|---------------|-----------|---|---|
| | Liability Sources | Asset Sources | Total | | |
| June 30, 1997 | \$ (6,027) | \$ 30,894 | \$ 24,867 | \$ 0 | \$ 24,867 |
| June 30, 1998 | (9,126) | 7,467 | (1,659) | (11,082) | (12,741) |
| June 30, 1999 | (30,772) | (11,189) | (41,961) | (57,642) | (99,603) |
| June 30, 2000 | 21,667 | 3,920 | 25,587 | (15,950) | 9,637 |
| June 30, 2001 | (9,353) | (35,515) | (44,868) | 68,166 | 23,298 |
| June 30, 2002 | (163,358) | (39,336) | (202,694) | 0 | (202,694) |
| June 30, 2004 | (8,019) | (175,458) | (183,477) | 5,142 | (178,335) |
| June 30, 2005 | (10,841) | (21,995) | (32,836) | (15,038) | (47,874) |
| June 30, 2006 | (25,268) | 52,355 | 27,087 | (12,459) | 14,628 |
| June 30, 2007 | (30,485) | 140,572 | 110,087 | 0 | 110,088 |
| June 30, 2008 | 13,952 | 127,248 | 141,200 | 0 | 141,200 |

* Non-recurring items reflect changes in actuarial assumptions, methods and plan provisions.

Actuarially Determined City Contribution Rates

| | Actuarial Valuation as of July 1, 2008 | Actuarial Valuation as of July 1, 2007 |
|--|---|---|
| 1. Normal Cost (City Portion) | 20.1% | 21.5% |
| 2. Amortization of Unfunded Actuarial Accrued Liability (Surplus) | 4.0 | 7.9 |
| 3. Additional Statutory Requirement | <u>0.0</u> | <u>0.0</u> |
| 4. City's Contribution Rate | 24.1% | 29.4% |
| 5. Employee Contribution Rate | 9.0% | 9.0% |

Change in Actuarially Determined City Contribution Rate Since the Prior Valuation

| | |
|---|--------------|
| 1. City Contribution Rate as of July 1, 2007 | 29.4% |
| 2. Change in the City Contribution Rate Due To: | |
| a. Normal operation of the plan | (1.3) |
| b. Actuarial (gain)/loss from liability sources | (0.4) |
| c. Actuarial (gain)/loss from asset sources | (3.6) |
| d. Change in Employee Contribution Rate | 0.0 |
| e. Change in actuarial assumptions & amortization methods | <u>0.0</u> |
| 3. City Contribution Rate as of July 1, 2008 | 24.1% |
| 4. Additional Statutory Requirement | <u>0.0%</u> |
| 5. Total City Contribution Rate as of July 1, 2008 | <u>24.1%</u> |

Analysis of Actual Contribution Rates

| | Contribution Rate | |
|-------------------------|-------------------|----------|
| | City* | Employee |
| Fiscal Year 2005 | 18.0% | 9.00% |
| Fiscal Year 2006 | 23.8% | 9.00% |
| Fiscal Year 2007 | 23.8% | 9.00% |
| Fiscal Year 2008 | 23.8% | 9.00% |

*Payable Monthly

Historical City Contributions as a Percentage of Covered Payroll

| Actuarially Calculated City Contribution Rate ⁽¹⁾ | | Actual City Contribution Rate | |
|--|---------------------|------------------------------------|---------------------|
| Valuation Date | Rate | Period | Rate |
| July 1, 1986 | 14.7% | July 1, 1987 through June 30, 1988 | 15.0% |
| July 1, 1987 | 13.0 | July 1, 1988 through June 30, 1989 | 15.0 |
| July 1, 1988 | 13.3 | July 1, 1989 through June 30, 1990 | 15.0 |
| July 1, 1989 | 12.9 | July 1, 1990 through June 30, 1991 | 15.0 |
| July 1, 1990 | 13.2 | July 1, 1991 through June 30, 1992 | 15.0 |
| July 1, 1991 | 15.4 | July 1, 1992 through June 30, 1993 | 15.0 ⁽²⁾ |
| July 1, 1992 | 15.3 | July 1, 1993 through June 30, 1994 | 15.3 |
| July 1, 1993 | 15.6 | July 1, 1994 through June 30, 1995 | 15.0 |
| July 1, 1994 | 14.9 | July 1, 1995 through June 30, 1996 | 15.0 |
| July 1, 1995 | 13.4 ⁽³⁾ | July 1, 1996 through June 30, 1997 | 15.4 |
| July 1, 1996 | 14.1 ⁽³⁾ | July 1, 1997 through June 30, 1998 | 15.4 |
| July 1, 1997 | 14.9 ⁽³⁾ | July 1, 1998 through June 30, 1999 | 15.4 |
| July 1, 1998 | 11.5 | July 1, 1999 through June 30, 2000 | 15.4 |
| July 1, 1999 | 11.0 | July 1, 2000 through June 30, 2001 | 15.4 |
| July 1, 2000 | 9.9 ⁽³⁾ | July 1, 2001 through June 30, 2002 | 15.4 |
| July 1, 2001 | 14.9 ⁽³⁾ | July 1, 2002 through June 30, 2003 | 15.4 |
| July 1, 2002 | 23.8 | July 1, 2003 through June 30, 2004 | 16.5 ⁽³⁾ |
| July 1, 2003 | N/A ⁽⁴⁾ | July 1, 2004 through June 30, 2005 | 18.0 |
| July 1, 2004 | 31.1 | July 1, 2005 through June 30, 2006 | 23.8 |
| July 1, 2005 | 33.5 | July 1, 2006 through June 30, 2007 | 23.8 |
| July 1, 2006 | 32.7 | July 1, 2007 through June 30, 2008 | 23.8 |
| July 1, 2007 | 29.4 | July 1, 2008 through June 30, 2009 | 29.4 |
| July 1, 2008 | 24.1 | July 1, 2009 through June 30, 2010 | TBD |

⁽¹⁾ Before application of statutory minimum contribution.

⁽²⁾ Excluding additional contribution due to settlement of lawsuit.

⁽³⁾ Average for the year.

⁽⁴⁾ No valuation performed.

Projection of Estimated Assets and Liabilities (\$000)

| Year Beginning July 1 | Annual Payroll | Estimated Contributions | | | Market Value of Assets (BOY) | Market Return | Actuarial Value of Assets (BOY) | Actuarial Accrued Liability (BOY) | Unfunded Liability Amount (BOY) | Funded Percent (BOY) |
|-----------------------------|-------------------|-------------------------|-----------------|-------------------|---------------------------------------|------------------|--|--|--|----------------------------|
| | | City Amount | City Percent | City Shortfall | | | | | | |
| 2008 | \$ 239,172 | \$ 70,317 | 29.4% | -5.3% | \$ 3,029,159 | 8.5% | \$ 2,945,086 | \$ 3,080,487 | \$ 135,401 | 96% |
| 2009 | 246,347 | 72,426 | 29.4% | -7.9% | 3,235,582 | 8.5% | 3,219,709 | 3,268,085 | 48,376 | 99% |
| 2010 | 253,738 | 74,599 | 29.4% | -9.5% | 3,438,938 | 8.5% | 3,458,098 | 3,450,320 | (7,779) | 100% |
| 2011 | 261,350 | 51,965 | 19.9% | -0.9% | 3,638,296 | 8.5% | 3,668,175 | 3,626,044 | (42,131) | 101% |
| 2012 | 269,190 | 51,042 | 19.0% | 0.8% | 3,808,636 | 8.5% | 3,808,636 | 3,795,932 | (12,703) | 100% |
| 2013 | 277,266 | 54,806 | 19.8% | 0.1% | 3,973,865 | 8.5% | 3,973,865 | 3,963,277 | (10,588) | 100% |
| 2014 | 285,584 | 56,632 | 19.8% | 0% | 4,137,795 | 8.5% | 4,137,795 | 4,127,270 | (10,525) | 100% |
| 2015 | 294,151 | 58,359 | 19.8% | 0% | 4,298,687 | 8.5% | 4,298,687 | 4,288,071 | (10,616) | 100% |
| 2016 | 302,976 | 60,126 | 19.8% | 0% | 4,456,767 | 8.5% | 4,456,767 | 4,446,047 | (10,720) | 100% |
| 2017 | 312,065 | 61,945 | 19.9% | 0% | 4,611,654 | 8.5% | 4,611,654 | 4,600,827 | (10,827) | 100% |
| 2018 | 321,427 | 63,819 | 19.9% | 0% | 4,761,911 | 8.5% | 4,761,911 | 4,750,977 | (10,934) | 100% |
| 2019 | 331,070 | 65,750 | 19.9% | 0% | 4,976,676 | 8.5% | 4,976,676 | 4,965,634 | (11,042) | 100% |
| 2020 | 341,002 | 67,738 | 19.9% | 0% | 5,197,100 | 8.5% | 5,197,100 | 5,185,949 | (11,151) | 100% |
| 2021 | 351,232 | 69,786 | 19.9% | 0% | 5,422,913 | 8.5% | 5,422,913 | 5,411,651 | (11,262) | 100% |
| 2022 | 361,769 | 71,896 | 19.9% | 0% | 5,652,834 | 8.5% | 5,652,834 | 5,641,461 | (11,373) | 100% |
| 2023 | 372,622 | 74,070 | 19.9% | 0% | 5,886,143 | 8.5% | 5,886,143 | 5,874,657 | (11,486) | 100% |
| 2024 | 383,801 | 76,308 | 19.9% | 0% | 6,147,292 | 8.5% | 6,147,292 | 6,135,692 | (11,600) | 100% |
| 2025 | 395,315 | 78,614 | 19.9% | 0% | 6,435,984 | 8.5% | 6,435,984 | 6,424,269 | (11,715) | 100% |
| 2026 | 407,174 | 80,990 | 19.9% | 0% | 6,754,228 | 8.5% | 6,754,228 | 6,742,397 | (11,831) | 100% |
| 2027 | 419,390 | 83,437 | 19.9% | 0% | 7,103,096 | 8.5% | 7,103,096 | 7,091,147 | (11,948) | 100% |

Participant Data Reconciliation

| | <u>Active</u> | <u>DROP</u> | Deferred <u>Vested</u> | <u>Retired</u> | <u>Total</u> |
|--|---------------|--------------|---------------------------|----------------|--------------|
| 1. Number of members as of July 1, 2007 | 2,662 | 1,157 | 8 | 2,315 | 6,142 |
| 2. Change in status during the plan year: | | | | | |
| a. Actives who retired | (3) | (116) | | 120 | 1 |
| b. Actives who entered D.R.O.P. | (95) | 95 | | | 0 |
| c. Inactives who retired | | | | | 0 |
| d. Participants who became disabled | (1) | (11) | | 12 | 0 |
| 3. No longer members due to: | | | | | |
| a. Death | (3) | (4) | | (21) | (28) |
| b. Nonvested terminations | (20) | | | | (20) |
| c. Child attained cut-off age | | | | | |
| 4. New member due to: | | | | | |
| a. Initial membership | 206 | | | | 206 |
| b. Death of another member | | | | 32 | 32 |
| c. Correction | 9 | | | 2 | 11 |
| 5. Number of members as of July 1, 2008 | 2,755 | 1,121 | 8 | 2,460 | 6,344 |

Summary of Active Participants as of July 1, 2008

| Attained Age | <u>Completed Years of Service</u> | | | | | | | | | | |
|---------------------|-----------------------------------|------------|------------|-------------|-------------|-------------|-----------|----------|----------------|---------------|--------------|
| | Under 1 | 1 to 4 | 5 to 9 | 10 to 14 | 15 to 19 | 20 to 24 | 25 to 29 | 30 to 34 | 35 to 39 | 40 & up | Total |
| Under 25 | 74 | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 123 |
| Avg.Pay | 34,905 | 42,943 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38,107 |
| 25 to 29 | 86 | 350 | 85 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 521 |
| Avg.Pay | 33,989 | 49,983 | 54,668 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 48,107 |
| 30 to 34 | 40 | 345 | 278 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 710 |
| Avg.Pay | 33,836 | 49,601 | 56,191 | 64,834 | 0 | 0 | 0 | 0 | 0 | 0 | 52,302 |
| 35 to 39 | 6 | 180 | 228 | 228 | 80 | 0 | 0 | 0 | 0 | 0 | 722 |
| Avg.Pay | 36,610 | 49,241 | 57,413 | 64,464 | 66,711 | 0 | 0 | 0 | 0 | 0 | 58,460 |
| 40 to 44 | 0 | 6 | 75 | 159 | 142 | 40 | 1 | 0 | 0 | 0 | 423 |
| Avg.Pay | 0 | 42,028 | 54,331 | 63,747 | 67,835 | 71,505 | 71,341 | 0 | 0 | 0 | 63,893 |
| 45 to 49 | 0 | 0 | 2 | 49 | 93 | 54 | 35 | 0 | 0 | 0 | 233 |
| Avg.Pay | 0 | 0 | 68,357 | 65,073 | 64,658 | 73,384 | 75,753 | 0 | 0 | 0 | 68,466 |
| 50 to 54 | 0 | 0 | 0 | 0 | 12 | 3 | 7 | 0 | 0 | 0 | 22 |
| Avg.Pay | 0 | 0 | 0 | 0 | 64,600 | 65,364 | 95,967 | 0 | 0 | 0 | 74,685 |
| 55 to 59 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Avg.Pay | 0 | 0 | 0 | 0 | 0 | 0 | 63,383 | 0 | 0 | 0 | 63,383 |
| 60 to 64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Avg.Pay | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 65 & up | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Avg.Pay | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70 & up | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Avg.Pay | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 206 | 930 | 668 | 483 | 327 | 97 | 44 | 0 | 0 | 0 | 2,755 |
| Avg.Pay | 34,365 | 49,276 | 56,242 | 64,326 | 66,538 | 72,361 | 78,588 | 0 | 0 | 0 | 55,818 |
| | | Average | Age: | 35.44 | | | Average | Service: | 8.37 | | |

Summary of DROP Participants as of July 1, 2008

| Attained Age | Completed Years of Service | | | | | | | | | | Total | |
|---------------------|----------------------------|----------|----------|-------------|-------------|-------------|------------|------------|-------------|------------|----------|--------------|
| | Under 1 | 1 to 4 | 5 to 9 | 10 to 14 | 15 to 19 | 20 to 24 | 25 to 29 | 30 to 34 | 35 to 39 | 40 & up | | |
| Under 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Avg.Pay | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 to 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Avg.Pay | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 to 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Avg.Pay | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35 to 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Avg.Pay | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40 to 44 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 13 |
| Avg.Pay | 0 | 0 | 0 | 0 | 0 | 62,286 | 0 | 0 | 0 | 0 | 0 | 62,286 |
| 45 to 49 | 0 | 0 | 0 | 1 | 0 | 80 | 255 | 11 | 0 | 0 | 0 | 347 |
| Avg.Pay | 0 | 0 | 0 | 77,678 | 0 | 69,100 | 69,418 | 73,652 | 0 | 0 | 0 | 69,503 |
| 50 to 54 | 0 | 0 | 0 | 0 | 0 | 32 | 339 | 144 | 15 | 0 | 0 | 530 |
| Avg.Pay | 0 | 0 | 0 | 0 | 0 | 68,292 | 69,298 | 72,793 | 72,855 | 0 | 0 | 70,288 |
| 55 to 59 | 0 | 0 | 0 | 0 | 0 | 1 | 92 | 59 | 52 | 4 | 0 | 208 |
| Avg.Pay | 0 | 0 | 0 | 0 | 0 | 61,593 | 67,356 | 69,587 | 73,927 | 62,027 | 0 | 69,501 |
| 60 to 64 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 9 | 4 | 0 | 17 |
| Avg.Pay | 0 | 0 | 0 | 0 | 0 | 0 | 60,953 | 68,144 | 84,167 | 78,452 | 0 | 78,629 |
| 65 & up | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 4 |
| Avg.Pay | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 78,468 | 60,128 | 0 | 73,883 |
| 70 & up | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| Avg.Pay | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 78,998 | 0 | 78,998 |
| Total | 0 | 0 | 0 | 1 | 0 | 126 | 687 | 217 | 79 | 11 | 0 | 1,121 |
| Avg.Pay | 0 | 0 | 0 | 77,678 | 0 | 68,133 | 69,070 | 71,901 | 75,063 | 70,913 | 0 | 69,961 |
| | | Average | Age: | 52.02 | | | Average | Service: | 28.77 | | | |

Summary of Active and DROP Participants as of July 1, 2008

| Attained Age | Completed Years of Service | | | | | | | | | | Total | |
|---------------------|----------------------------|------------|------------|-------------|-------------|-------------|------------|------------|-------------|------------|----------|--------------|
| | Under 1 | 1 to 4 | 5 to 9 | 10 to 14 | 15 to 19 | 20 to 24 | 25 to 29 | 30 to 34 | 35 to 39 | 40 & up | | |
| Under 25 | 74 | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 123 |
| Avg.Pay | 34,905 | 42,943 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38,107 |
| 25 to 29 | 86 | 350 | 85 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 521 |
| Avg.Pay | 33,989 | 49,983 | 54,668 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 48,107 |
| 30 to 34 | 40 | 345 | 278 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 710 |
| Avg.Pay | 33,836 | 49,601 | 56,191 | 64,834 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 52,302 |
| 35 to 39 | 6 | 180 | 228 | 228 | 80 | 0 | 0 | 0 | 0 | 0 | 0 | 722 |
| Avg.Pay | 36,610 | 49,241 | 57,413 | 64,464 | 66,711 | 0 | 0 | 0 | 0 | 0 | 0 | 58,460 |
| 40 to 44 | 0 | 6 | 75 | 159 | 142 | 53 | 1 | 0 | 0 | 0 | 0 | 436 |
| Avg.Pay | 0 | 42,028 | 54,331 | 63,747 | 67,835 | 69,244 | 71,341 | 0 | 0 | 0 | 0 | 63,845 |
| 45 to 49 | 0 | 0 | 2 | 50 | 93 | 134 | 290 | 11 | 0 | 0 | 0 | 580 |
| Avg.Pay | 0 | 0 | 68,357 | 65,325 | 64,658 | 70,827 | 70,183 | 73,652 | 0 | 0 | 0 | 69,086 |
| 50 to 54 | 0 | 0 | 0 | 0 | 12 | 35 | 346 | 144 | 15 | 0 | 0 | 552 |
| Avg.Pay | 0 | 0 | 0 | 0 | 64,600 | 68,041 | 69,838 | 72,793 | 72,855 | 0 | 0 | 70,463 |
| 55 to 59 | 0 | 0 | 0 | 0 | 0 | 1 | 93 | 59 | 52 | 4 | 0 | 209 |
| Avg.Pay | 0 | 0 | 0 | 0 | 0 | 61,593 | 67,313 | 69,587 | 73,927 | 62,027 | 0 | 69,472 |
| 60 to 64 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 9 | 4 | 0 | 17 |
| Avg.Pay | 0 | 0 | 0 | 0 | 0 | 0 | 60,953 | 68,144 | 84,167 | 78,452 | 0 | 78,629 |
| 65 & up | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 4 |
| Avg.Pay | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 78,468 | 60,128 | 0 | 73,883 |
| 70 & up | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| Avg.Pay | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 78,998 | 0 | 78,998 |
| Total | 206 | 930 | 668 | 484 | 327 | 223 | 731 | 217 | 79 | 11 | 0 | 3,876 |
| Avg.Pay | 34,365 | 49,276 | 56,242 | 64,353 | 66,538 | 69,972 | 69,643 | 71,901 | 75,063 | 70,913 | 0 | 59,909 |
| | | Average | Age: | 40.24 | | | Average | Service: | 14.27 | | | |

Historical Active and DROP Participant Data

| Valuation Date | Number of Participants | Average Age | Projected Annual Payroll (\$000) | Average Annual Salary | Percentage Increase in Average Salary |
|-------------------|------------------------|-------------|----------------------------------|-----------------------|---------------------------------------|
| September 1, 1972 | 1,930 | 34.5 | \$ 22,500 | \$ 11,676 | N/A |
| January 1, 1976 | 2,262 | 33.0 | 34,600 | 15,318 | 31.2% |
| January 1, 1978 | 2,158 | 33.5 | 40,200 | 18,639 | 21.7 |
| January 1, 1980 | 2,543 | 32.5 | 49,900 | 19,646 | 5.4 |
| January 1, 1982 | 2,942 | 32.5 | 73,844 | 25,100 | 27.8 |
| July 1, 1984 | 3,204 | 34.0 | 86,068 | 26,863 | 7.0 |
| July 1, 1986 | 3,167 | 33.7 | 99,619 | 31,455 | 17.1 |
| July 1, 1987 | 3,164 | 35.3 | 99,837 | 31,554 | 0.3 |
| July 1, 1988 | 3,023 | 36.1 | 96,051 | 31,774 | 0.7 |
| July 1, 1989 | 2,967 | 36.7 | 98,091 | 33,061 | 4.1 |
| July 1, 1990 | 2,926 | 37.1 | 97,633 | 33,367 | 0.9 |
| July 1, 1991 | 2,969 | 37.6 | 104,350 | 35,147 | 5.3 |
| July 1, 1992 | 2,913 | 38.3 | 102,360 | 35,139 | 0.0 |
| July 1, 1993 | 2,958 | 38.6 | 119,503 | 40,400 | 15.0 |
| July 1, 1994 | 2,945 | 39.2 | 120,082 | 40,775 | 0.9 |
| July 1, 1995 | 3,084 | 39.2 | 126,977 | 41,173 | 1.0 |
| July 1, 1996 | 3,039 | 40.1 | 131,641 | 43,317 | 5.2 |
| July 1, 1997 | 3,202 | 40.2 | 141,949 | 44,331 | 2.3 |
| July 1, 1998 | 3,229 | 40.9 | 149,045 | 46,158 | 4.1 |
| July 1, 1999 | 3,282 | 41.4 | 158,965 | 48,435 | 4.9 |
| July 1, 2000 | 3,271 | 42.1 | 163,630 | 50,024 | 3.3 |
| July 1, 2001 | 3,318 | 42.1 | 164,315 | 49,522 | (1.0) |
| July 1, 2002 | 3,375 | 41.8 | 190,578 | 56,468 | 14.0 |
| July 1, 2004 | 3,656 | 40.4 | 181,526 | 48,206 | (14.6) |
| July 1, 2005 | 3,894 | 39.4 | 192,084 | 49,358 | 2.4 |
| July 1, 2006 | 3,796 | 41.2 | 218,746 | 52,731 | 6.8 |
| July 1, 2007 | 3,819 | 40.5 | 232,397 | 57,581 | 9.2 |
| July 1, 2008 | 3,876 | 40.2 | 239,172 | 59,909 | 4.0 |

Summary of Inactive Participants as of July 1, 2008

| | Number | Annual Benefits (\$000) | Average Annual Benefit |
|-----------------------------------|------------|----------------------------|---------------------------|
| ▪ Benefits in Pay Status | | | |
| -- Retirees | 1,652 | \$ 74,700 | \$ 45,218 |
| -- Beneficiaries | 546 | 15,087 | 27,632 |
| -- Disabled participants | <u>262</u> | <u>8,429</u> | 32,172 |
| -- Total | 2,460 | 98,216 | 39,925 |
| ▪ Deferred Benefits | | | |
| -- Vested terminated participants | 8 | \$ 159,298 | \$ 19,912 |
| -- Beneficiaries | N/A | N/A | N/A |
| -- Disabled participants | <u>N/A</u> | N/A | N/A |
| -- Total | 8 | \$ 159,298 | \$ 19,912 |

Retirees and Beneficiaries Added to and Removed from Rolls

| Period Ended | Added to Rolls | | Removed from Rolls | | Rolls at the End of the Year | | Percentage Increase in Annual Benefits | Average Annual Benefit |
|-------------------|----------------|-------------------------|--------------------|-------------------------|------------------------------|-------------------------|--|------------------------|
| | Number | Annual Benefits (\$000) | Number | Annual Benefits (\$000) | Number | Annual Benefits (\$000) | | |
| December 31, 1977 | 98 | \$ 788 | 17 | \$ 40 | 745 | \$ 3,708 | 27.0% | \$ 4,978 |
| December 31, 1978 | 72 | 719 | 23 | 76 | 794 | 4,294 | 15.8 | 5,408 |
| December 31, 1979 | 67 | 719 | 21 | 83 | 840 | 5,008 | 16.6 | 5,962 |
| December 31, 1980 | 33 | 473 | 23 | 84 | 850 | 5,498 | 9.8 | 6,468 |
| December 31, 1981 | 61 | 862 | 38 | 159 | 873 | 6,097 | 10.9 | 6,983 |
| December 31, 1982 | 63 | 644 | 26 | 171 | 910 | 6,772 | 11.1 | 7,442 |
| December 31, 1983 | 54 | 605 | 39 | 207 | 925 | 7,403 | 9.3 | 8,003 |
| June 30, 1984* | 41 | 619 | 17 | 98 | 949 | 3,952 | 6.8 | 8,328 |
| June 30, 1985 | 75 | 968 | 53 | 290 | 971 | 8,432 | 6.7 | 8,684 |
| June 30, 1986 | 54 | 752 | 38 | 243 | 987 | 9,550 | 13.3 | 9,676 |
| June 30, 1987 | 76 | 1,101 | 33 | 235 | 1,030 | 10,522 | 10.2 | 10,215 |
| June 30, 1988 | 121 | 2,002 | 38 | 311 | 1,113 | 12,754 | 21.2 | 11,459 |
| June 30, 1989 | 74 | 1,306 | 42 | 299 | 1,145 | 14,032 | 10.0 | 12,255 |
| June 30, 1990 | 111 | 1,996 | 37 | 288 | 1,219 | 16,428 | 17.1 | 13,477 |
| June 30, 1991 | 129 | 1,784 | 38 | 401 | 1,310 | 17,888 | 8.9 | 13,665 |
| June 30, 1992 | 78 | 1,588 | 44 | 401 | 1,344 | 19,866 | 11.1 | 14,781 |
| June 30, 1993 | 82 | 1,717 | 48 | 585 | 1,378 | 21,516 | 8.3 | 15,614 |
| June 30, 1994 | 112 | 2,006 | 58 | 660 | 1,432 | 23,297 | 8.3 | 16,269 |
| June 30, 1995 | 87 | 1,728 | 28 | 353 | 1,491 | 25,142 | 7.9 | 16,863 |
| June 30, 1996 | 67 | 1,402 | 56 | 660 | 1,502 | 26,379 | 4.9 | 17,563 |
| June 30, 1997 | 56 | 1,050 | 37 | 487 | 1,521 | 27,581 | 4.6 | 18,133 |
| June 30, 1998 | 54 | 1,064 | 43 | 477 | 1,532 | 28,675 | 4.0 | 18,717 |
| June 30, 1999 | 64 | 1,840 | 28 | 551 | 1,568 | 30,233 | 5.4 | 19,281 |
| June 30, 2000 | 95 | 2,364 | 71 | 1,167 | 1,592 | 34,583 | 14.4 | 21,723 |
| June 30, 2001 | 127 | 3,581 | 47 | 775 | 1,672 | 38,347 | 10.9 | 22,935 |
| June 30, 2002 | 172 | 5,493 | 61 | 998 | 1,783 | 44,300 | 15.5 | 24,846 |
| June 30, 2004** | 377 | N/A | 109 | N/A | 2,051 | 57,676 | 30.2 | 28,121 |
| June 30, 2005 | 135 | 4,353 | 53 | 1,107 | 2,133 | 62,882 | 9.0 | 29,481 |
| June 30, 2006 | 195 | 7,231 | 60 | 1,437 | 2,268 | 70,420 | 12.0 | 31,050 |
| June 30, 2007 | 106 | 3,822 | 59 | 1,407 | 2,315 | 74,948 | 6.4 | 32,375 |
| June 30, 2008 | 166 | 9,334 | 21 | 828 | 2,460 | 98,216 | 31.0 | 39,925 |

* Six-month period

** Two-year period

Summary of Actuarial Methods and Assumptions, continued

Demographic Assumptions

Retirement Rates

| Number of Years of Service | Probability of Retiring Within One Year |
|-------------------------------|--|
| 20 | 8% |
| 21 | 6% |
| 22 | 6% |
| 23 | 5% |
| 24 | 5% |
| 25 | 6% |
| 26 | 10% |
| 27 | 12% |
| 28 | 12% |
| 29 | 12% |
| 30 | 25% |
| 31 | 25% |
| 32 | 40% |
| 33 | 40% |
| 34 | 40% |
| 35 | 50% |
| 36 | 50% |
| 37 | 60% |
| 38 | 80% |
| 39 | 80% |
| 40+ | 100% |

Summary of Actuarial Methods and Assumptions, continued

Demographic Assumptions

| DROP Duration | Duration of DROP at Retirement | Percentage of Participants Electing Retirement at the Specified Duration |
|---------------|--------------------------------------|--|
| | 0 | 10% |
| | 3 | 10 |
| | 5 | 10 |
| | 8 | 30 |
| | 10 | 40 |

Summary of Actuarial Methods and Assumptions, continued

Mortality Rates

Active participants and nondisabled pensioners

1994 Group Annuity Mortality Table (see table below for sample rates).

Note: The 1994 Group Annuity Mortality Table is used to determine the mortality assumptions for the plan, including the probability of ceasing active service due to death.

Disabled pensioners

Graduated rates (see table below for sample rates).

Disability Rates

Graduated rates (see table below for sample rates).

Percentage of Deaths and Disabilities in the Line of Duty

| <u>Age</u> | <u>Death</u> | <u>Disability*</u> |
|------------|--------------|--------------------|
| 25 | 100% | 60% |
| 35 | 100 | 60 |
| 45 | 42 | 34 |
| 55 | 20 | 25 |

* 1% of firefighters who become disabled in the line of duty are assumed to be incapable of performing any substantial gainful activity.

Termination Rates

| <u>Age</u> | <u>Termination Rate</u> |
|------------|-------------------------|
| 20 | 1.3% |
| 25 | 1.3 |
| 30 | 1.2 |
| 35 | 0.7 |
| 40 | 0.6 |
| 45 | 0.2 |
| 50 | 0.0 |

For participants terminating with at least 10 years but less than 20 years of service:

- 50% will elect a contribution refund
- 50% will elect a deferred monthly pension benefit

Marital Status at Benefit Eligibility

Percentage married

- 90% of participants are assumed to be married.
- No beneficiaries other than the spouse assumed.

Age difference

- Husbands assumed to be three years older than wives.

Summary of Actuarial Methods and Assumptions, continued

| | |
|---|--|
| Load of Nature of Average Monthly Salaries | <ul style="list-style-type: none"> Active liabilities and normal costs were increased 3% to account for differences between the plan's definition of average monthly salary (average of the highest 78 pay periods), and the average of the final 78 pay periods. |
| Development of Valuation Pay | <ul style="list-style-type: none"> Valuation pay is developed by increasing the prior year's pay with the nominal individual pay increase rate. |
| Age at which Benefits End for Child Beneficiaries | <ul style="list-style-type: none"> Benefits are assumed to stop once the child beneficiary reaches age 23. |

Missing Data Assumptions

Current Age:

| | |
|---|---|
| Active participants | 37 |
| Retirees and spouse beneficiaries | 50 |
| Children beneficiaries | 10 |
| Disabled retirees | 40 |
| Deferred vested terminations | 45 |
| DROP participants | 50 |
| Service for Active Participants | 17 |
| Pay | \$49,500 |
| Employee Contributions | Based on the prior year's contributions and current year's pay. |
| Age at First Payment for Vested Terminations: | 50 |
| Benefits Not Valued | The proportional retirement program between the Houston municipal, police and fire pension funds which allows for combining service credit from two or more City of Houston pension plans was not valued because its impact is expected not to be material. |

Sample Rates

| Age | Sample Rates per 100 Participants | | | | |
|-----|-----------------------------------|--------|--------------------|--------|------------|
| | Non-disabled Mortality | | Disabled Mortality | | Disability |
| | Male | Female | Male | Female | All |
| 20 | 0.05 | 0.03 | 2.30 | 0.70 | 0.75 |
| 25 | 0.07 | 0.03 | 2.60 | 1.30 | 0.75 |
| 30 | 0.08 | 0.04 | 2.90 | 1.90 | 0.75 |
| 35 | 0.09 | 0.05 | 2.80 | 2.20 | 1.50 |
| 40 | 0.11 | 0.07 | 3.10 | 2.30 | 1.50 |
| 45 | 0.16 | 0.10 | 3.50 | 2.30 | 1.50 |
| 50 | 0.26 | 0.14 | 4.10 | 2.60 | 1.50 |
| 55 | 0.44 | 0.23 | 5.30 | 3.00 | 1.50 |
| 60 | 0.80 | 0.44 | 6.50 | 3.40 | 3.00 |

Changes in Assumptions and Methods since the prior year

Assumptions and methods used in the July 1, 2008 valuation are the same as those in the prior valuation.

Summary of Plan Provisions

Membership

Any firefighter who has not reached the age of 36 at the time he or she first enters employment shall automatically become a participant in the Fund upon completing the training period. Before October 1, 1990, the eligibility age was age 31. Before 1984, participants entered the Fund on January 1 or July 1.

Average Salary

The average of the highest 36 months of salary (or 78 pay periods), including base pay and overtime, before reduction for pre-tax employee contributions and salary deferrals.

Standard Service Pension

Eligibility

20 years of service

Benefit

For retirement on or after November 1, 1997, 50% of average monthly salary; plus 3% of average monthly salary per year of service in excess of 20 years.

For retirement on or after November 1, 1996 and prior to November 1, 1997, 48.334% of average monthly salary, plus 2.834% of average monthly salary per year of service in excess of 20 years.

For retirement on or after November 1, 1995 and prior to November 1, 1996, 46.667% of average monthly salary, plus 2.667% of average monthly salary per year of service in excess of 20 years.

For retirement on or after September 1, 1991 and prior to November 1, 1995, 45% of average monthly salary, plus 2.5% of average monthly salary per year of service in excess of 20 years, up to 30 years, plus 1.0% of average monthly salary in excess of 30 years.

For retirement on or after September 1, 1989 and prior to September 1, 1991, 45% of average monthly salary, plus 2.5% of average monthly salary per year of service in excess of 20 years.

For retirement on or after September 1, 1987 and prior to September 1, 1989, 45% of average monthly salary, plus 2% of average monthly salary per year of service in excess of 20 years.

For retirement on or after July 1, 1986 and prior to September 1, 1987, 40% of average monthly salary plus 2% of average monthly salary per year of service in excess of 20 years.

Summary of Plan Provisions, continued

| | |
|----------------------------------|--|
| Standard Service Pension (cont.) | For retirement on or after January 1, 1970 and prior to July 1, 1986, 35% of average monthly salary plus 3% of average monthly salary per year of service in excess of salary per year of service in excess of 25 years. |
| Maximum | For retirement on or after September 1, 1991, 80% of average monthly salary. For retirement on or after September 1, 1989 and prior to September 1, 1991, 70% of average monthly salary. For retirement on or after September 1, 1987 and prior to September 1, 1989, 65% of average monthly salary. For retirements on or after January 1, 1970 and prior to September 1, 1987, 60% of average monthly salary. |

Alternate Service Pension

| | |
|-------------|---|
| Eligibility | Firefighters who became participants prior to September 1, 1987 and who attain age 50 with 20 years of service will receive the greater of the standard or alternate pension. |
| Benefit | 50% of average monthly salary plus 1% of average monthly salary per year of service after becoming eligible to retire on an alternate pension. |
| Maximum | 65% of average monthly salary. |

Supplemental Bonus Check

Supplemental payments totaling up to \$5 million will be payable on a prorated basis determined by the Board of Trustees to all retirees and survivors.

Summary of Plan Provisions, continued

Deferred Retirement Option Plan (DROP)

| | |
|-------------|--|
| Eligibility | 20 years of service. |
| Benefit | Effective July 1, 2000, eligible participants may elect to participate in the DROP for up to ten years or until they leave active service. The member's standard or alternate service pension (whichever is greater) will be calculated based on service and earnings at the time the DROP is elected. |

A notional account will be maintained for each DROP participant. This account will be credited with the following amounts while the member is a participant of the DROP:

- ~ The member's monthly retirement pension, including applicable cost-of-living adjustments,
- ~ The member's contribution to the Retirement Fund, and
- ~ Investment earnings/losses as the rate of the Retirement Fund's earnings/losses averaged over a five-year period.

A benefit equal to the DROP account balance would be paid at the time the member leaves active service. The payment would be made as a single lump sum or as three annual installments, if the member chooses.

Effective on July 1, 2000, a three-year back DROP is available for all eligible participants. The DROP account would be recalculated based on what the account balance would have been had the participant elected the DROP up to 3 years earlier than he/she actually did. The initial DROP entry date cannot be backdated prior to September 1, 1995, or prior to 20 years of credited service, and must be on the first of the month selected.

The monthly benefit for a participant at actual retirement will increase 2% for every year of DROP participation (Phased in at 1% effective September 1, 2000 and 1% effective September 1, 2001).

Summary of Plan Provisions, continued

Deferred Retirement Option Plan (DROP) (cont.)

If a DROP participant suffers an on-duty disability resulting in the inability to perform any gainful activity or dies in the line of duty, the death or disability annuity benefit would be calculated as though the participant had not entered the DROP. In addition, the DROP account would be payable to the participant or beneficiary.

Service-Connected Disability Pension

Eligibility

No age or service requirements.

Benefit

50% of average monthly salary or service pension if greater and eligible. Firefighters who are not capable of performing any substantial gainful activity will receive 75% of average monthly salary, or service pension, if greater and eligible.

Non-Service-Connected Disability Pension

Eligibility

No age or service requirements.

Benefit

25% of average monthly salary, plus 2.5% of average monthly salary per year of service.

Maximum

50% of average monthly salary or service pension, if greater and eligible.

Vested Pension

Eligibility

At least 10 but less than 20 years of service.

Benefit

1.7% of average monthly salary per year of service, payable beginning at age 50 or optional refund of contributions with interest at a flat rate of 5% not compounded.

Death Benefits

Payable as specified below if survived by a spouse, dependent children, or dependent parents. Effective November 1, 1997 dependent children can continue to receive benefits between the ages of 18 and 22 if they are in college.

Non-service-connected: Monthly benefit that would have been payable had the participant retired for non-service-connected disability on the date of his or her death (or service pension if greater).

Summary of Plan Provisions, continued

Death Benefits (cont.)

Postretirement: Monthly benefit which was payable to the participant prior to his or her death. Effective July 1, 1998, a “graded” postretirement death benefit is payable to a surviving spouse if the retiree was not married at the time of retirement. This “graded” benefit is equal to 20% of the postretirement death benefit for each year of marriage to a maximum 100% after five years of marriage.

Preretirement: Refund of contributions made if no eligible survivors. If death occurs after 10 years of service, interest is credited on the contributions at the flat rate of 5% not compounded. If death occurs before 10 years of service, no interest is credited.

Lump sum: A one-time \$5,000 lump sum death benefit for any active or retired firefighter. This benefit applies to active members, current retirees, and disabled participants.

Additional Benefit

Effective on or after July 1, 2001, an extra monthly benefit of \$150 is payable for life to any retired or disabled member or to an eligible survivor of a deceased member. This benefit is not subject to the postretirement adjustment.

Excess Benefit

Benefit equal to the excess of any members’ standard service pension benefit over the limit imposed by Section 415 of the code.

Postretirement Adjustment

Prior to October 1, 1990: Pensions adjusted each year based on changes in the CPI-U, but not below original amount or above original amount increased 3% each year, not compounded.

Pension adjustments for participants who retire after March 1, 1982 begin at age 55.

Pension adjustments begin immediately for participants whose benefits become payable on or after July 1, 1986 and are based upon 30 or more years of service.

On or after October 1, 1990 and prior to November 1, 1997: Pensions adjusted each year based on changes in the CPI-U. The adjustment is based on the amount of benefits payable at the time of adjustment. The maximum annual increase shall be 3% of the benefits payable at the time of adjustment.

Summary of Plan Provisions, continued

Postretirement Adjustment (cont.)

Pension adjustments begin immediately for participants whose benefits become payable on or after July 1, 1986 and are based upon 30 or more years of service.

On or after November 1, 1997: Pensions adjusted each year at a fixed rate of 3%. The adjustment is based on the amount of benefits payable at the time of adjustment.

Pension adjustment for participants who retire or terminate with a vested benefit after March 1, 1982 begin at age 48. Pension adjustments begin immediately for participants who become disabled and cannot perform any substantial gainful activity (current and future) and qualify for general on-duty disability benefits. Participants whose benefits become payable on or after July 1, 1986 and are based upon 30 or more years of service are also eligible for pension adjustments to begin immediately.

Contribution Rates

Members

9% of salary. Refund of contributions without interest in the event of termination before 10 years of service.

City

Beginning in 1983, the rate required to fund the Retirement Fund on an actuarial reserve basis. However, a minimum contribution of twice the employee contribution rate is required by statute.

Changes in Plan Provisions Since the Prior Year

Plan provisions reflected in the July 1, 2008 valuation are the same as those in the prior valuation.

Actuarial Certification

We certify that the information contained in this Actuarial Report has been prepared in accordance with generally accepted actuarial principles and practices. To the best of our knowledge, the information fairly presents the actuarial position of the Houston Firefighters' Relief & Retirement Fund as of July 1, 2008.

The Board of Trustees of the fund can use this report for determining the Actuarial City Contribution Rate. Use of this report for any other purpose or by anyone other than the Board may not be appropriate and may result in mistaken conclusions because of failure to understand applicable assumptions, methods, or inapplicability of the report for that purpose. No one may make any representations or warranties based on any statements or conclusions contained in this report without Buck Consultants' written consent.

In preparing the actuarial results, we have relied upon information provided by the Board of Trustees regarding plan provisions, plan participants, plan assets, contribution rates and other matters used in the actuarial valuation. Although we did not audit the data, we reviewed the data for reasonableness and consistency with the prior year's information. The results of the valuation are dependent on the accuracy of the data. The prior actuaries prepared historical information for 2004 and prior fiscal years. We did not verify or provide an actuarial review of this historical information.

The Board of Trustees selected the actuarial methods and assumptions used in this valuation. The Board has sole authority to determine the actuarial assumptions. In our opinion, the actuarial assumptions used are appropriate for purposes of the valuation and, in the aggregate, are reasonably related to the experience of the Fund and to reasonable expectations.

We are members of the American Academy of Actuaries and we meet the Academy's Qualification Standards to issue this Statement of Actuarial Opinion. This report has been prepared in accordance with all applicable Actuarial Standards of Practice and we are available to answer questions about it.

Buck Consultants, LLC



Lee James, FSA, MAAA, EA, FCA



Carly Nichols, FSA, EA, MAAA

March 2009