



## **Houston Firefighters' Relief and Retirement Fund**

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**Actuarial Valuation Report  
As of July 1, 2004**

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## Summary of Key Results (\$000)

	July 1, 2004	July 1, 2002
<b>Actuarial Contribution Rate</b>		
• Normal Cost (City Portion)	20.7%	22.1%
• Amortization of Unfunded Actuarial Accrued Liability (Surplus)	10.4	1.7
• Additional Statutory Requirement	<u>0.0</u>	<u>0.0</u>
• <b>City's Actuarial Contribution Rate</b>	<b>31.1%</b>	<b>23.8%</b>
• Employee Contribution Rate	9.0%	7.7%
<b>Summary of Assets</b>		
• Market Value	\$ 1,980,903	\$ 1,655,165
• Actuarial Value	2,000,302	1,922,405
<b>Summary of Liabilities</b>		
• Actuarial Accrued Liability	\$ 2,266,823	\$ 1,970,154
• Actuarial Value of Assets	<u>(2,000,302)</u>	<u>(1,922,405)</u>
• Unfunded Actuarial Accrued Liability	\$ 266,521	\$ 47,749
<b>Summary of Data</b>		
Number of Participants Included in the Valuation		
Active participants	2,475	2,116
DROP participants	1,181	1,259
Retirees and beneficiaries	2,051	1,783
Vested terminated participants	<u>9</u>	<u>12</u>
Total	5,716	5170
Annual Payroll		
Active participants	\$ 113,418	\$ 112,477
DROP participants	<u>68,109</u>	<u>78,101</u>
Total	\$ 181,527	\$ 190,578

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## Summary of Market Value of Assets (\$000)

Investment Category	<u>July 1, 2004</u>		<u>July 1, 2003</u>	
	Amount	Percent	Amount	Percent
Cash & Short Term Investments	\$ 89,936	4.5%	\$ 163,498	9.5%
Fixed Income Investments	617,678	31.2%	586,570	34.0%
Equity Securities	840,839	42.4%	587,709	34.1%
Other Assets				
Alternative Investments - Partnerships	300,478	15.2%	286,539	16.6%
Real Estate	108,339	5.5%	74,095	4.3%
Land, Building, etc.	10,097	0.5%	10,207	0.6%
Other Investments*				
Other Net Assets, Receivables & Payables:				
Accrued Interest & Dividends	10,341	0.5%	10,056	0.6%
Accrued City Contributions	964	0.0%	753	0.0%
Accrued Member Contributions	482	0.0%	376	0.0%
Net Other	1,748	0.1%	3,441	0.2%
Other Assets (Liabilities)*				
Total Market Value of Assets	<u>\$ 1,980,902</u>	<u>100.0%</u>	<u>\$ 1,723,244</u>	<u>100.0%</u>
Adjustment for Insurance Reserve				
Adjusted Total Market Value of Assets				

## Change in Market Value Assets Since the Prior Report

	<u>Fiscal Year End June 30, 2004</u>	<u>Fiscal Year End June 30, 2003</u>
<b>1. Beginning of Year Market Value</b>	<b>\$1,723,244,375</b>	<b>\$1,660,164,965</b>
<b>2. Increases Due to:</b>		
a. Contributions:		
i. City	\$ 28,476,946	\$ 27,989,458
ii. Members	<u>\$ 14,238,463</u>	<u>\$ 13,994,725</u>
iii. Total	\$ 42,715,409	\$ 41,984,183
b. Investment Income	\$316,190,426	\$108,323,249
c. Total increases	<u>\$358,905,835</u>	<u>\$150,307,432</u>
<b>3. Decreases Due to:</b>		
a. Benefit payments	\$ 83,618,595	\$ 71,385,364
b. Refund of member contributions	\$ 97,363	\$ 125,824
c. Investment expenses	\$ 11,965,521	\$ 10,943,000
d. Administrative expenses	\$ 4,903,809	\$ 4,362,986
e. Professional Services	<u>\$ 661,517</u>	<u>\$ 410,848</u>
f. Total decreases	\$101,246,805	\$ 87,228,022
<b>4. End of Year Market Value</b>	<b>\$1,980,903,405</b>	<b>\$1,723,244,375</b>

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

### Actuarial Investment Gain (Loss) for the 2 Year Period

<b>1. Market Value of Assets on July 1, 2002</b>	<b>\$ 1,660,165</b>
2. 2002/2003 Net Cash Flow	
a. Contributions	41,984
b. Disbursements	71,511
c. Net Cash Flow	(29,527)
2.a.- 2.b.	
3. Expected Investment Return	139,859
[ 1. x .085] + [2.c. x .0425]	
4. Expected Market Value of Assets on July 1, 2003	1,770,497
1. + 2.c. + 3.	
5. Market Value of Assets on July 1, 2003	1,723,244
<b>6. Actuarial Investment Gain / (Loss)</b>	<b>\$ (47,253)</b>
5. - 4.	
7. Market Value of Assets on July 1, 2003	1,723,244
8. 2003/2004 Net Cash Flow	
a. Contributions	42,715
b. Disbursements	83,716
c. Net Cash Flow	(41,001)
8.a.- 8.b.	
9. Expected Investment Return	144,733
[ 1. x .085] + [2.c. x .0425]	
10. Expected Market Value of Assets on July 1, 2004	1,826,977
7. + 8.c. + 9.	
11. Market Value of Assets on July 1, 2004	1,980,903
<b>12. Actuarial Investment Gain / (Loss)</b>	<b>\$ 153,926</b>
11. - 10.	

## 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, 2004
July 1, 2004	\$153,926	\$ 30,785	\$ 123,141
July 1, 2003	(\$47,253)	(9,451)	(28,352)
July 1, 2002	(196,682)	(39,336)	(78,673)
July 1, 2001	(177,576)	(35,515)	(35,515)
July 1, 2000	19,600	3,920,000	-
			<hr/> \$ (19,399)

### Actuarial Value of Assets

1. Market Value as of July 1, 2004	\$ 1,980,903
2. (Gain) Loss to be Recognized in Future Years	19,399
3. Actuarial Value as of July 1, 2004	\$ 2,000,302

\* Deferred for recognition in future years.

## Unfunded Actuarial Accrued Liability (\$000)

	July 1, 2004	July 1, 2002
<b>Actuarial Present Value of:</b>		
<b>Future Benefits</b>		
Active	\$ 699,924	\$ 744,645
DROP	1,045,815	957,185
Deferred Vested	1,010	1,134
Retired	908,075	697,830
Total for All Participants	<u>\$ 2,654,824</u>	<u>\$ 2,400,794</u>
<b>Future Employee Contributions</b>	\$ 122,763	\$ 119,135
<b>Future Normal Cost - City Portion</b>	\$ 265,237	\$ 311,505
<b>Actuarial Accrued Liability</b>	\$ 2,266,823	\$ 1,970,154
<b>Actuarial Value of Assets</b>	\$ (2,000,302)	\$ (1,922,405)
<b>Unfunded Actuarial Accrued Liability</b>	<b>\$ 266,521</b>	<b>\$ 47,749</b>



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

### 1. Analysis of Change in Unfunded Liability

	<u>2003/2004</u>	<u>2002/2003</u>
a. Unfunded at Beginning of Period	\$ 66,967	\$ 47,749
b. Estimated Change Due to Normal Operation		
Normal Cost	\$ 57,027	\$ 54,311
Contributions	(42,715)	(41,984)
Interest	6,909	6,891
Net Change	<u>\$ 21,220</u>	<u>\$ 19,218</u>
c. Estimated Change due to Actuarial Experience		
Actuarial (gain) loss from asset sources	\$ 175,458	
Actuarial (gain) loss from liability sources	8,019	
Net change	<u>\$ 183,477</u>	
d. Change due to Change in Actuarial Assumptions	(5,142)	
e. Unfunded Actuarial Accrued Liability (Surplus) at End of Period	\$ 266,521	\$ 66,967

### 2. Analysis of Change in Actuarial Asset Value

	<u>2003/2004</u>	<u>2002/2003</u>
a Value at Beginning of Period	\$ 2,050,051	\$ 1,922,405
b Contributions	\$ 42,715	\$ 41,984
c. Distributions for Benefits & Other Expenses	\$ (89,281)	\$ (76,285)
d. Expected Investment Return at 8.5%	\$ 172,275	\$ 161,947
f. Expected Value at End of Period	\$ 2,175,760	\$ 2,050,051
g. Actual Actuarial Asset Value	\$ 2,000,302	
h. Actuarial Gain (Loss) Due to Asset Sources	\$ (175,458)	

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

### 3. Analysis of Change in Actuarial Accrued Liability

	<u>2003/2004</u>	<u>2002/2003</u>
a. Actuarial Accrued Liability at Beginning of Period	\$ 2,121,994	\$ 1,970,154
b. Increase Due to Normal Cost	\$ 57,027	\$ 54,311
c. Decrease Due to Distributions	\$ (83,716)	\$ (71,511)
e. Interest and Other	\$ 184,680	\$ 169,040
f. Expected Actuarial Accrued Liability at End of Period	\$ 2,279,985	\$ 2,121,994
g. Actual Actuarial Accrued Liability before change in actuarial assumptions	\$ 2,271,966	\$ --
h. Actuarial Loss (Gain) from Liability Sources	\$ 8,019	
i. Change due to Change in Actuarial Assumptions	\$ (5,142)	
j. Actuarial Accrued Liability	\$ 2,266,823	

## Historical Unfunded Actuarial Accrued Liability (Surplus) (\$000)

Valuation Date	Actuarial Accrued Liability (AAL)	Actuarial Value of Assets (AVA)	AVA as a Percentage of AAL	Unfunded AAL (Surplus)	Covered Pay
July 1, 1982	\$ 208,877	\$ 148,191	71%	\$ 60,686	\$ 70
July 1, 1984	294,584	228,032	77	66,552	86
July 1, 1986	396,609	401,271	101	(4,662)	99
July 1, 1987	415,871	453,322	109	(37,451)	99
July 1, 1988	440,012	478,460	109	(38,448)	96
July 1, 1989	473,431	543,898	115	(70,467)	98
July 1, 1990	512,471	598,814	117	(86,343)	97
July 1, 1991	621,014	642,499	103	(21,485)	104
July 1, 1992	670,123	694,080	104	(23,957)	102
July 1, 1993	758,642	762,794	101	(4,152)	119
July 1, 1994	793,011	831,741	105	(38,730)	120
July 1, 1995	852,327	912,417	107	(60,090)	126
July 1, 1996	989,343*	1,024,569	104	(35,226)	131
July 1, 1997	1,128,230	1,183,817	105	(55,587)	141
July 1, 1998	1,271,416	1,347,414	106	(75,998)	145
July 1, 1999	1,470,597	1,538,487	105	(67,890)	158
July 1, 2000	1,589,350	1,726,302	109h	(136,952)	163
July 1, 2001	1,650,810	1,863,098	113	(212,288)	164
July 1, 2002	1,970,154	1,922,405	98	47,749	190
July 1, 2004	2,266,823	2,000,302	88	266,521	181

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

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## Historical Solvency Test (\$000)

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

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## Analysis of Financial Experience (\$000)

Year Ended	Gain (Loss) During the Year From Financial Experience			Gain (Loss) Due to Non-Recurring Items*
	Liability Sources	Asset Sources	Total	
June 30, 1997	\$ (6,027)	\$ 30,894	\$ 24,867	\$ 0
June 30, 1998	(9,126)	7,467	(1,659)	(11,082)
June 30, 1999	(30,772)	(11,189)	(41,961)	(57,642)
June 30, 2000	21,667	3,920	25,587	(15,950)
June 30, 2001	(9,353)	(35,515)	(44,868)	68,166
June 30, 2002	(163,358)	(39,336)	(202,694)	0
June 30, 2004	(8,019)	(175,458)	(183,477)	5,142

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

## Actuarially Determined City Contribution Rates

	Actuarial Valuation as of July 1, 2004	Actuarial Valuation as of July 1, 2002
1. Normal Cost (City Portion)	20.7%	22.1%
2. Amortization of Unfunded Actuarial Accrued Liability (Surplus)	10.4	1.7
3. Additional Statutory Requirement	<u>0.0</u>	<u>0.0</u>
<b>4. City's Actuarial Contribution Rate</b>	<b>31.1%</b>	<b>23.8%</b>
5. Employee Contribution Rate	9.0%	7.7%

## Change in Actuarially Determined City Contribution Rate Since the Prior Valuation

1. City Contribution Rate as of July 1, 2002	23.8%
2. Change in the City Contribution Rate Due To:	
a. Normal operation of the plan	2.0
b. Actuarial loss from liability sources	0.3
c. Actuarial loss from asset sources	6.9
d. Change in Employee Contribution Rate	(1.0)
e. Change in actuarial assumptions & amortization methods	<u>(.9)</u>
3. City Contribution Rate as of July 1, 2004	31.1%

## Analysis of Actual Contribution Rates

	<u>Fiscal Year 2005</u>	<u>Fiscal Year 2004</u>	<u>Fiscal Year 2003</u>
	July 1, 2004 through June 30, 2005	Average for July 1, 2003 through June 30, 2004	July 1, 2002 through June 30, 2003
City Normal Cost Rate			
Rate to Amortize Unfunded Actuarial Accrued Liability (Surplus) Over 40 Years from January 1, 1983			
Preliminary City Contribution Rate			
Additional Statutory Requirement			
City Contribution Rate (Payable Monthly)	18.0%	16.48%	15.4
Employee Contribution Rate	9.0%	8.24%	7.7
		<u>Fiscal Year 2004</u>	
	<u>July 1, 2003 through August 31, 2003</u>	<u>September 1, 2003 through June 30, 2004</u>	<u>Average for July 1, 2003 through June 30, 2004</u>
City Contribution Rate (Payable Monthly)	15.40%	16.70%	16.48%
Employee Contribution Rate	7.70%	8.35%	8.24%

## Historical City Contributions as a Percentage of Covered Payroll

Actuarially Calculated City Contribution Rate <sup>(1)</sup>		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 <sup>(2)</sup>
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 <sup>(3)</sup>	July 1, 1996 through June 30, 1997	15.4
July 1, 1996	14.1 <sup>(3)</sup>	July 1, 1997 through June 30, 1998	15.4
July 1, 1997	14.9 <sup>(3)</sup>	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 <sup>(3)</sup>	July 1, 2001 through June 30, 2002	15.4
July 1, 2001	14.9 <sup>(3)</sup>	July 1, 2002 through June 30, 2003	15.4
July 1, 2002	23.8	July 1, 2003 through June 30, 2004	16.5 <sup>(3)</sup>
July 1, 2003	N/A <sup>(4)</sup>	July 1, 2004 through June 30, 2005	18.0
July 1, 2004	31.1	July 1, 2005 through June 30, 2006	N/A

<sup>(1)</sup> Before application of statutory minimum contribution.

<sup>(2)</sup> Excluding additional contribution due to settlement of lawsuit.

<sup>(3)</sup> Average for the year.

<sup>(4)</sup> No valuation performed.



## Projection of Estimated Assets and Liabilities (\$000)

Year Beginning July 1	Annual Payroll	Estimated Contributions			Market Value of Assets	Market Return	Actuarial Value of Assets	Actuarial Accrued Liability
		City Amount	City Percent	City Shortfall				
2004	\$ 181,527	\$ 32,675	18.0%	13%	\$ 1,980,903	8.5%	\$ 2,000,302	\$ 2,266,823
2005	186,973	44,500	23.8%	10%	2,035,782	8.5%	2,001,664	2,351,153
2006	192,582	45,835	23.8%	11%	2,126,001	8.5%	2,073,881	2,462,174
2007	198,359	47,210	23.8%	11%	2,217,687	8.5%	2,186,902	2,576,252
2008	204,310	70,657	34.6%	-1%	2,301,246	8.5%	2,301,246	2,683,920
2009	210,439	71,441	33.9%	0%	2,390,900	8.5%	2,390,900	2,776,573
2010	216,753	72,967	33.7%	0%	2,480,470	8.5%	2,480,470	2,869,905
2011	223,255	74,588	33.4%	0%	2,593,650	8.5%	2,593,650	2,986,938
2012	229,953	76,256	33.2%	0%	2,719,452	8.5%	2,719,452	3,116,636
2013	236,851	77,969	32.9%	0%	2,851,732	8.5%	2,851,732	3,252,850
2014	243,957	79,728	32.7%	0%	2,997,687	8.5%	2,997,687	3,402,779
2015	251,276	81,533	32.4%	0%	3,158,547	8.5%	3,158,547	3,567,652
2016	258,814	83,387	32.2%	0%	3,335,649	8.5%	3,335,649	3,748,806
2017	266,578	85,291	32.0%	0%	3,530,442	8.5%	3,530,442	3,947,693
2018	274,576	87,245	31.8%	0%	3,744,506	8.5%	3,744,506	4,165,889
2019	282,813	89,253	31.6%	0%	3,979,551	8.5%	3,979,551	4,405,110
2020	291,297	91,314	31.3%	0%	4,237,440	8.5%	4,237,440	4,667,214
2021	300,036	93,432	31.1%	0%	4,520,194	8.5%	4,520,194	4,954,226
2022	309,037	95,607	30.9%	0%	4,830,009	8.5%	4,830,009	5,268,340
2023	318,309	97,840	30.7%	0%	5,169,268	8.5%	5,169,268	5,611,941

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## Participant Data Reconciliation

	<u>Active</u>	<u>DROP</u>	<u>Deferred Vested</u>	<u>Retired</u>	<u>Total</u>
<b>1. Number of members as of July 1, 2002</b>	<b>2,116</b>	<b>1,259</b>	<b>12</b>	<b>1,783</b>	<b>5,170</b>
<b>2. Change in status during the plan year:</b>					
a. Actives who became inactive	(2)		2		0
b. Actives who retired	(35)	(271)		306	0
c. Act. who entered D.R.O.P.	(201)	201			0
d. Inactives who retired			(5)	5	0
e. Retirees who became active					
<b>3. No longer members due to:</b>					
a. Death	(23)	(8)		(109)	(140)
<b>4. New member due to:</b>					
a. Initial membership	620				620
b. Death of another member				56	56
c. Correction				10	10
<b>5. Number of members as of July 1, 2004</b>	<b>2,475</b>	<b>1,181</b>	<b>9</b>	<b>2,051</b>	<b>5,716</b>

## Summary of Active Participants as of July 1, 2004

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	
<b>Under 25</b>	52	73	0	0	0	0	0	0	0	0	<b>125</b>
Avg.Pay	23,887	32,517	0	0	0	0	0	0	0	0	28,927
<b>25 to 29</b>	117	336	30	1	0	0	0	0	0	0	<b>484</b>
Avg.Pay	24,451	36,377	47,023	49,045	0	0	0	0	0	0	34,180
<b>30 to 34</b>	46	267	212	66	0	0	0	0	0	0	<b>591</b>
Avg.Pay	24,070	36,637	48,141	50,559	0	0	0	0	0	0	41,340
<b>35 to 39</b>	11	107	168	174	46	0	0	0	0	0	<b>506</b>
Avg.Pay	23,618	37,542	48,759	50,334	54,332	0	0	0	0	0	46,889
<b>40 to 44</b>	0	1	66	150	99	158	0	0	0	0	<b>474</b>
Avg.Pay	0	22,849	49,592	49,167	56,211	55,934	0	0	0	0	52,898
<b>45 to 49</b>	0	0	3	30	27	163	45	1	0	0	<b>269</b>
Avg.Pay	0	0	52,778	49,429	56,284	56,984	59,766	49,765	0	0	56,463
<b>50 to 54</b>	0	0	0	1	1	17	4	2	0	0	<b>25</b>
Avg.Pay	0	0	0	51,418	53,141	61,849	56,582	46,288	0	0	58,996
<b>55 to 59</b>	0	0	0	0	0	0	1	0	0	0	<b>1</b>
Avg.Pay	0	0	0	0	0	0	61,184	0	0	0	61,184
<b>60 to 64</b>	0	0	0	0	0	0	0	0	0	0	<b>0</b>
Avg.Pay	0	0	0	0	0	0	0	0	0	0	0
<b>65 &amp; up</b>	0	0	0	0	0	0	0	0	0	0	<b>0</b>
Avg.Pay	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>226</b>	<b>784</b>	<b>479</b>	<b>422</b>	<b>173</b>	<b>338</b>	<b>50</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>2,475</b>
Avg.Pay	24,203	36,248	48,517	49,890	55,705	56,738	59,540	47,447	0	0	44,491
		Average	Age:	35.3			Average	Service:	8.9		

## Summary of DROP Participants as of July 1, 2004

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	
<b>Under 40</b>	0	0	0	0	0	0	0	0	0	0	0
Avg.Pay	0	0	0	0	0	0	0	0	0	0	0
<b>40 to 44</b>	0	0	0	0	0	33	0	0	0	0	33
Avg.Pay	0	0	0	0	0	53,681	0	0	0	0	53,681
<b>45 to 49</b>	0	0	0	0	0	199	238	15	0	0	452
Avg.Pay	0	0	0	0	0	54,095	55,672	59,755	0	0	55,113
<b>50 to 54</b>	0	0	0	0	0	94	215	166	13	0	488
Avg.Pay	0	0	0	0	0	54,712	54,742	58,182	51,406	0	55,818
<b>55 to 59</b>	0	0	0	0	0	1	33	74	58	0	166
Avg.Pay	0	0	0	0	0	70,381	57,925	57,036	59,432	0	58,130
<b>60 to 64</b>	0	0	0	0	0	1	0	5	19	5	30
Avg.Pay	0	0	0	0	0	56,860	0	56,039	60,739	59,477	59,616
<b>65 to 69</b>	0	0	0	0	0	0	0	1	1	5	7
Avg.Pay	0	0	0	0	0	0	0	58,461	59,074	62,193	61,214
<b>70 &amp; up</b>	0	0	0	0	0	0	0	0	0	5	5
Avg.Pay	0	0	0	0	0	0	0	0	0	67,311	67,311
<b>Total</b>	0	0	0	0	0	328	486	261	91	15	1,181
Avg.Pay	0	0	0	0	0	54,288	55,414	57,907	58,554	62,994	55,990
		Average	Age:	50.9			Average	Service:	27.6		

## Summary of Active and DROP Participants as of July 1, 2004

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		
<b>Under 25</b>	52	73	0	0	0	0	0	0	0	0	0	<b>125</b>
Avg.Pay	23,887	32,517	0	0	0	0	0	0	0	0	0	28,927
<b>25 to 29</b>	117	336	30	1	0	0	0	0	0	0	0	<b>484</b>
Avg.Pay	24,451	36,377	47,023	49,045	0	0	0	0	0	0	0	34,180
<b>30 to 34</b>	46	267	212	66	0	0	0	0	0	0	0	<b>591</b>
Avg.Pay	24,070	36,637	48,141	50,559	0	0	0	0	0	0	0	41,340
<b>35 to 39</b>	11	107	168	174	46	0	0	0	0	0	0	<b>506</b>
Avg.Pay	23,618	37,542	48,759	50,334	54,332	0	0	0	0	0	0	46,889
<b>40 to 44</b>	0	1	66	150	99	191	0	0	0	0	0	<b>507</b>
Avg.Pay	0	22,849	49,592	49,167	56,211	55,545	0	0	0	0	0	52,949
<b>45 to 49</b>	0	0	3	30	27	362	283	16	0	0	0	<b>721</b>
Avg.Pay	0	0	52,778	49,429	56,284	55,396	56,323	59,131	0	0	0	55,617
<b>50 to 54</b>	0	0	0	1	1	111	219	168	13	0	0	<b>513</b>
Avg.Pay	0	0	0	51,418	53,141	55,805	54,776	58,040	51,406	0	0	55,972
<b>55 to 59</b>	0	0	0	0	0	1	34	74	58	0	0	<b>167</b>
Avg.Pay	0	0	0	0	0	70,381	58,021	57,036	59,432	0	0	58,149
<b>60 to 64</b>	0	0	0	0	0	1	0	5	19	5	0	<b>30</b>
Avg.Pay	0	0	0	0	0	56,860	0	56,039	60,739	59,477	0	59,616
<b>65 &amp; up</b>	0	0	0	0	0	0	0	1	1	5	0	<b>7</b>
Avg.Pay	0	0	0	0	0	0	0	58,461	59,074	62,193	0	61,214
<b>70 &amp; up</b>	0	0	0	0	0	0	0	0	0	5	0	<b>5</b>
Avg.Pay	0	0	0	0	0	0	0	0	0	67,311	0	67,311
<b>Total</b>	<b>226</b>	<b>784</b>	<b>479</b>	<b>422</b>	<b>173</b>	<b>666</b>	<b>536</b>	<b>264</b>	<b>91</b>	<b>15</b>	<b>0</b>	<b>3,656</b>
Avg.Pay	24,203	36,248	48,517	49,890	55,705	55,531	55,798	57,789	58,554	62,994	0	48,206
		Average Age:		40.4			Average Service:		14.9			

## Historical Active and DROP Participant Data

Valuation Date	Number of Participants	Average Age	Annual Payroll (\$000)	Average Annual Salary
September 1, 1972	1,930	34.5	\$ 22,500	\$ 11,676
January 1, 1976	2,262	33.0	34,600	15,318
January 1, 1978	2,158	33.5	40,200	18,639
January 1, 1980	2,543	32.5	49,900	19,646
January 1, 1982	2,942	32.5	73,844	25,100
July 1, 1984	3,204	34.0	86,068	26,863
July 1, 1986	3,167	33.7	99,619	31,455
July 1, 1987	3,164	35.3	99,837	31,554
July 1, 1988	3,023	36.1	96,051	31,774
July 1, 1989	2,967	36.7	98,091	33,061
July 1, 1990	2,926	37.1	97,633	33,367
July 1, 1991	2,969	37.6	104,350	35,147
July 1, 1992	2,913	38.3	102,360	35,139
July 1, 1993	2,958	38.6	119,503	40,400
July 1, 1994	2,945	39.2	120,082	40,775
July 1, 1995	3,084	39.2	126,977	41,173
July 1, 1996	3,039	40.1	131,641	43,317
July 1, 1997	3,202	40.2	141,949	44,331
July 1, 1998	3,229	40.9	149,045	46,158
July 1, 1999	3,282	41.4	158,965	48,435
July 1, 2000	3,271	42.1	163,630	50,024
July 1, 2001	3,318	42.1	164,315	49,522
July 1, 2002	3,375	41.8	190,578	56,468
July 1, 2004	3,656	40.4	181,526	48,206

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## Summary of Inactive Participants as of July 1, 2004

	Number	Annual Benefits (\$000)
▪ Benefits in Pay Status		
-- Retirees	1,343	\$ 41,241
-- Beneficiaries	456	10,345
-- Disabled participants	<u>252</u>	<u>6,090</u>
-- Total	2,051	57,676
▪ Deferred Benefits		
-- Vested terminated participants	9	\$ 109
-- Beneficiaries	N/A	N/A
-- Disabled participants	<u>N/A</u>	<u>N/A</u>
-- Total	9	109

## Retirees and Beneficiaries Added to and Removed from Rolls

Period Ended	Added to Rolls		Removed from Rolls		Rolls at the End of the Year	
	Number	Annual Benefits (\$000)	Number	Annual Benefits (\$000)	Number	Annual Benefits (\$000)
December 31, 1977	98	\$ 788	17	\$ 40	745	\$ 3,708
December 31, 1978	72	719	23	76	794	4,294
December 31, 1979	67	719	21	83	840	5,008
December 31, 1980	33	473	23	84	850	5,498
December 31, 1981	61	862	38	159	873	6,097
December 31, 1982	63	644	26	171	910	6,772
December 31, 1983	54	605	39	207	925	7,403
June 30, 1984*	41	619	17	98	949	3,952
June 30, 1985	75	968	53	290	971	8,432
June 30, 1986	54	752	38	243	987	9,550
June 30, 1987	76	1,101	33	235	1,030	10,522
June 30, 1988	121	2,002	38	311	1,113	12,754
June 30, 1989	74	1,306	42	299	1,145	14,032
June 30, 1990	111	1,996	37	288	1,219	16,428
June 30, 1991	129	1,784	38	401	1,310	17,888
June 30, 1992	78	1,588	44	401	1,344	19,866
June 30, 1993	82	1,717	48	585	1,378	21,516
June 30, 1994	112	2,006	58	660	1,432	23,297
June 30, 1995	87	1,728	28	353	1,491	25,142
June 30, 1996	67	1,402	56	660	1,502	26,379
June 30, 1997	56	1,050	37	487	1,521	27,581
June 30, 1998	54	1,064	43	477	1,532	28,675
June 30, 1999	64	1,840	28	551	1,568	30,233
June 30, 2000	95	2,364	71	1,167	1,592	34,583
June 30, 2001	127	3,581	47	775	1,672	38,347
June 30, 2002	172	5,493	61	998	1,783	44,300
June 30, 2004**	377		109		2,051	57,676

\* Six-month period

\*\* Two-year period

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## Summary of Actuarial Methods and Assumptions

### Actuarial Methods

- Actuarial Value of Assets  
Gains and losses in the market value of assets, based on the difference between the actual rate of return and the assumed rate of return, are recognized in the actuarial value over five years.
  
- Actuarial Cost Method  
Entry Age Method with liabilities allocated from date of entry to 30 years of service. The Unfunded Actuarial Accrued Liability (Surplus), including the effects of actuarial gains and losses, is amortized as a level percentage of payroll over 30 Years. The contribution is increased for interest for one-half of a year to reflect timing of payment.

Summary of Actuarial Methods and Assumptions, continued

**KEY ECONOMIC ASSUMPTIONS - New**

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**Investment Return**

	<u>Former</u>	<u>New</u>
Real Rate of Return		5.5%
Inflation		<u>3.0%</u>
Total Nominal Rate	8.5%	8.5%

**General Inflation**

<u>Former</u>	<u>New</u>
4.0%	3.0%

**Payroll Growth Rate**

<u>Former</u>	<u>New</u>
5.0%	3.0%

**Individual Pay Increase Rate – New**

<u>Age</u>	Former Nominal Rate	New Rates (Nominal = Real + Inflation)	
		Proposed Nominal	Proposed Real
20	10.0%	7.00%	4.00%
25	7.5%	6.25%	3.25%
30	6.0%	5.50%	2.50%
35	5.0%	5.00%	2.00%
40	4.5%	4.00%	1.00%
45	4.0%	3.70%	0.70%
50	3.5%	3.40%	0.40%
55	3.0%	3.00%	0.00%
	Inflation Assumption:	3.00%	

## Summary of Actuarial Methods and Assumptions, continued

### Demographic Assumptions - New

#### Retirement Rates

Number of Years of Service	Probability of Retiring Within One Year	
	Former	New
20	2%	8%
21	3%	6%
22	3%	6%
23	4%	5%
24	4%	5%
25	4%	6%
26	5%	10%
27	5%	12%
28	5%	12%
29	10%	12%
30	20%	25%
31	30%	25%
32	40%	40%
33	50%	40%
34	60%	40%
35	70%	50%
36	80%	50%
37	85%	60%
38	90%	80%
39	95%	80%
40+	100%	100%

Summary of Actuarial Methods and Assumptions, continued

**Demographic Assumptions - Unchanged**

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

### 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

## 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.
<b>Alternate Service Pension</b>	
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.
<b>Supplemental Bonus Check</b>	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, 2004 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 Fund as of July 1, 2004.

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. The prior actuaries prepared historical information for 2002 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.

Buck Consultants

A handwritten signature in black ink that reads "Bruce W. Jenkins". The signature is written in a cursive style.

Bruce W. Jenkins, ASA, MAAA, EA

September 2005