

Actuarial Section

Pension Trust Fund
Supplemental Death Benefits Fund

Actuary's Certification Letter (Pension Trust Fund)



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May 26, 2022

Board of Trustees
Texas Municipal Retirement System
Austin, Texas 78731

Dear Trustees:

In accordance with the Texas Municipal Retirement System (TMRS) Act, the annual actuarial valuation of the assets and liabilities of the TMRS Pension Trust Fund was completed as of December 31, 2021.

The financing objective for each TMRS participating city plan is to provide retirement, death and disability benefits for the city's employees financed by an employer contribution rate. This rate is determined annually and is expected to remain approximately level as a percentage of the city's covered payroll. In TMRS, a city's actuarially determined employer contribution rate consists of two components: the employer normal cost contribution rate and the prior service contribution rate. Both rates are determined as a level percentage of payroll. The normal cost contribution rate finances the portion of an active Member's projected retirement benefit allocated annually. The prior service contribution rate amortizes the unfunded actuarial accrued liability ("UAAL") over the applicable period for that city. Both the normal cost and prior service contribution rates include recognition of the projected impact of annually repeating updated service credits and cost of living adjustments.

The participating cities' contribution rates are certified annually by the Board of Trustees which is responsible for establishing and maintaining the funding policy. These rates are actuarially determined and are based upon the plan provisions in effect as of April 1, 2022 and the actuarial assumptions and methodology adopted by the Board. The Board's current policy is that the contribution rates determined by a given actuarial valuation become effective one (1) year after the valuation date. For example, the rates determined by the December 31, 2021 actuarial valuation will be applicable for the calendar year beginning January 1, 2023 and ending December 31, 2023.

To test how well the financing objective for each city plan is being achieved, annual actuarial valuations are made. These actuarial valuations recognize differences in the past year between the actuarial assumptions and the actual experience, and any benefit changes for each plan. A separate actuarial valuation for each participating city was made based upon the plan of benefits in effect as of April 1, 2022.

TMRS staff supplied data for retired, active and inactive Members as of December 31, 2021. We did not audit this data, but we did apply a number of tests to the data, and we concluded that it was reasonable and consistent with the prior year's data. TMRS staff also supplied the asset data and financial information as of December 31, 2021. The amounts of the assets in the actuarial valuations agree with the amounts as reported by TMRS.

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Actuary's Certification Letter (Pension Trust Fund)

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Board of Trustees
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The current actuarial assumptions were developed from the actuarial investigation of the experience of TMRS over the four-year period from December 31, 2014 to December 31, 2018. These assumptions were adopted by the Board in 2019 and were first used in the December 31, 2019 valuation. The Actuarial Experience Investigation Study report, dated October 15, 2019, details the analysis and changes to assumptions. The assumptions and methods used in this valuation are summarized in the Actuarial Section of the Annual Comprehensive Financial Report. There were no changes in the actuarial assumptions or methods since the prior valuation.

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.

It is our opinion that the recommended assumptions and methods are internally consistent and are reasonably based on TMRS' past and anticipated future experience and comply with the parameters for disclosure as set forth in Governmental Accounting Standards Board Statement No. 67. GRS prepared the following schedules in the Actuarial Section:

Participating Cities and Active Members
Retiree and Beneficiary Data
Summary of Actuarial Liabilities and Funding Progress
Funded Portion of Actuarial Liabilities by Type

All of our work and all of the actuarial assumptions and methods used for funding purposes conform with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of the TMRS Act and, where applicable, the Internal Revenue Code and the Statements of the Governmental Accounting Standards Board.

The undersigned are independent actuaries and consultants. Both are Members of the American Academy of Actuaries, both meet all of the Qualification Standards of the American Academy of Actuaries, and both are experienced in performing valuations for large public retirement systems.

Respectfully Submitted,



Joseph P. Newton, MAAA, FSA, EA
Pension Market Leader



Janie Shaw, MAAA, ASA, EA
Consultant



Summary of Actuarial Assumptions (Pension Trust Fund)

These actuarial assumptions were developed primarily from the 2019 Actuarial Experience Investigation Study that looked at the four-year period from December 31, 2014 to December 31, 2018. They were adopted by the Board of Trustees (Board) in 2019 and first used in the December 31, 2019 actuarial valuation. A summary of the meaningful actuarial assumptions is described below. A full description of all actuarial assumptions and methods can be found in the Actuarial Valuation Report as of December 31, 2021 (tmrs.com/actuarial_reports.php).

I. Economic Assumptions

A. General Inflation

2.50% per year.

B. Discount/Crediting Rates

1. Investment Return Assumption: 6.75% per year.
2. Supplemental Disability Benefits Fund and individual employee accounts: 5.00% per year.

C. Overall Payroll Growth

2.75% per year, adjusted lower for cities with population declines over the last 10 years.

D. Individual Salary Increases

Salaries are assumed to increase by the following graduated service-based scale.

Years of Service	Salary Increase Rate
1	11.50%
2	7.25%
3	6.75%
4	6.25%
5	6.00%
6	5.75%
7	5.50%
8	5.25%
9	5.00%
10	4.75%
11 – 12	4.50%
13 – 15	4.25%
16 – 20	4.00%
21 – 24	3.75%
25+	3.50%

E. Cost of Living Adjustments (COLAs)

The Consumer Price Index (CPI) is assumed to be 2.50% per year prospectively. COLAs, when applicable, are 30%, 50% or 70% of CPI, according to the provisions adopted by each city. The actual future COLA assumptions are as follows: 0.87% per year for the 30% CPI provision, 1.38% per year for the 50% CPI provision and 1.86% per year for the 70% CPI provision.

F. Load for Updated Service Credit

The USC calculation includes a load on final average earnings.

Summary of Actuarial Assumptions (Pension Trust Fund)

CONTINUED

II. Demographic Assumptions

A. Termination Rates

- For the first 10 years of service, the base table rates vary by gender, entry age and length of service. For each city, the base table is then multiplied by a factor from 75% to 125% based on the experience of the individual city. A further multiplier is applied depending on an employee's classification: 1) Firefighter = 68%, 2) Police = 86%, or 3) Other = 108%. A sample of the base rates follows:

Males	Years of Service										
	Age	0	1	2	3	4	5	6	7	8	9
	20	0.3079	0.2766	0.2305	0.2037	0.1951	0.1764	0.1612	0.1311	0.1078	0.0860
	25	0.2798	0.2393	0.1911	0.1638	0.1507	0.1336	0.1210	0.1060	0.0976	0.0798
	30	0.2585	0.2163	0.1697	0.1395	0.1138	0.1052	0.0945	0.0817	0.0785	0.0655
	35	0.2642	0.2183	0.1663	0.1334	0.1107	0.1048	0.0894	0.0758	0.0655	0.0598
	40	0.2602	0.2172	0.1647	0.1279	0.1103	0.0994	0.0849	0.0749	0.0633	0.0608
	45	0.2392	0.2040	0.1640	0.1287	0.1110	0.0976	0.0857	0.0750	0.0638	0.0607
	50	0.2191	0.1825	0.1489	0.1211	0.1072	0.0935	0.0851	0.0755	0.0636	0.0609
	55	0.2112	0.1759	0.1334	0.1132	0.0908	0.0911	0.0813	0.0719	0.0643	0.0591
	60	0.2108	0.1626	0.1298	0.1118	0.0833	0.0915	0.0794	0.0721	0.0602	0.0579
	65	0.2109	0.1542	0.1305	0.1121	0.0847	0.0914	0.0798	0.0738	0.0577	0.0581
	70	0.2109	0.1557	0.1304	0.1121	0.0845	0.0914	0.0797	0.0735	0.0581	0.0581

Females	Years of Service										
	Age	0	1	2	3	4	5	6	7	8	9
	20	0.3080	0.2836	0.2258	0.2132	0.2030	0.2054	0.1561	0.1565	0.1590	0.1600
	25	0.2828	0.2449	0.2101	0.1995	0.1739	0.1690	0.1392	0.1375	0.1206	0.1144
	30	0.2617	0.2224	0.1981	0.1791	0.1369	0.1370	0.1297	0.1145	0.0989	0.0817
	35	0.2464	0.2153	0.1834	0.1462	0.1294	0.1258	0.1130	0.1103	0.1016	0.0782
	40	0.2281	0.2026	0.1641	0.1365	0.1316	0.1115	0.1040	0.0940	0.0847	0.0745
	45	0.2227	0.1884	0.1450	0.1359	0.1072	0.1034	0.0909	0.0797	0.0717	0.0737
	50	0.2238	0.1823	0.1369	0.1249	0.0901	0.0896	0.0837	0.0735	0.0686	0.0628
	55	0.2236	0.1766	0.1372	0.1218	0.0848	0.0819	0.0725	0.0717	0.0696	0.0560
	60	0.2236	0.1548	0.1372	0.1191	0.0811	0.0856	0.0656	0.0649	0.0436	0.0386
	65	0.2236	0.1454	0.1372	0.1169	0.0813	0.0871	0.0678	0.0603	0.0281	0.0285
	70	0.2236	0.1471	0.1372	0.1173	0.0813	0.0868	0.0675	0.0611	0.0308	0.0303

Summary of Actuarial Assumptions (Pension Trust Fund)

CONTINUED

2. After 10 years of service, base termination rates vary by gender and by the number of years remaining until first retirement eligibility. For each city, the base table is then multiplied by a factor from 75% to 125% based on the experience of the individual city (same factor as above). A further multiplier is applied depending on an employee's classification: 1) Firefighter = 54%, 2) Police = 83%, or 3) Other = 113%. A sample of the base rates follows:

Years From Retirement	Males	Females
1	0.0182	0.0234
2	0.0243	0.0315
3	0.0287	0.0375
4	0.0324	0.0425
5	0.0355	0.0467
6	0.0383	0.0506
7	0.0408	0.0540
8	0.0432	0.0572
9	0.0453	0.0602
10	0.0474	0.0630
11	0.0493	0.0657
12	0.0511	0.0682
13	0.0528	0.0706
14	0.0545	0.0728
15	0.0560	0.0750

Termination rates end at first eligibility for retirement.

B. Forfeiture Rates (withdrawal of member contributions after termination)

Rates for vested members vary by age and employer match, and they are expressed as a percentage of the termination rates shown in Section II. A. The withdrawal rates for cities with a 2:1 match are shown below; 4% is added to the rates for 1.5:1 cities, and 8% is added for 1:1 cities.

Age	Percent of Terminating Employees Choosing to Take a Refund
25	40.2%
30	40.2%
35	40.2%
40	37.0%
45	31.6%
50	26.1%
55	20.7%

Forfeiture rates end at first eligibility for retirement.

Summary of Actuarial Assumptions (Pension Trust Fund)

CONTINUED

C. Mortality Rates

1. Service Retirees and Beneficiary.

The gender-distinct 2019 Municipal Retirees of Texas mortality table is used for calculating the actuarial liability and the retirement contribution rates. The rates are projected on a fully generational basis by a mortality improvement scale (Scale UMP).

2. Disabled Retiree Mortality Rates.

For calculating the actuarial liability and the retirement contribution rates, the mortality tables for healthy retirees are used with a four-year set-forward for males and a three-year set-forward for females. In addition, a 3.5% and 3% minimum mortality rate is applied to reflect the impairment for younger male and female members, respectively, who become disabled. The rates are projected on a fully generational basis by Scale UMP to account for future mortality improvements subject to the floor.

3. Pre-Retirement Mortality Rates.

TMRS uses the PUB(1) mortality tables, with the Public Safety table used for males and the General Employee table used for females. The rates are projected on a fully generational basis by Scale UMP to account for future mortality improvements.

D. Annuity Purchase Rates

The post-retirement mortality assumption for Annuity Purchase Rates (APRs) is based on the Mortality Experience Investigation Study covering 2009 through 2011 and dated December 31, 2013. For determining the amount of the monthly benefit at the time of retirement for both healthy and disabled retirees, the APRs until 2027 are being phased-in based on a unisex blend of the RP-2000 Combined Healthy Mortality Tables with Blue Collar Adjustment for males and females, with both rates multiplied by 107.5% and projected on a fully generational basis with scale BB. The current table of APRs is explicitly valued through 2032, and then it is assumed the APRs and the valuation mortality assumptions will be consistent over time. For retirees, a unisex blend of 70% of the male table and 30% of the female table is used, while 30% of the male table and 70% of the female table is used for beneficiaries.

E. Disability Rates

Age	Males and Females
20	0.000003
25	0.000019
30	0.000074
35	0.000194
40	0.000371
45	0.000603
50	0.000891
55	0.001235
60	0.001635
65	0.002090

Summary of Actuarial Assumptions (Pension Trust Fund)

CONTINUED

F. Service Retirement Rates (applied to both active and inactive Members)

The base table rates vary by age. For members under the age of 62, these rates are then multiplied by two factors (below) based on 1) employee contribution rate and city match and 2) if the city has a recurring COLA. For cities without a 20-year/any age retirement provision, the rates are loaded by 50% for ages 60 and below with 25 or more years of service.

Age	Rate
<50	0.05
50 – 51	0.07
52 – 54	0.08
55 – 59	0.13
60	0.16
61	0.17
62	0.25
63 – 64	0.20
65 – 74	0.30
75 and over	1.00

Plan design factors applied to base retirement rates are as follows:

Employer Match	Employee Contribution Rate		
	5%	6%	7%
1 to 1	0.75	0.80	0.84
1.5 to 1	0.81	0.86	0.92
2 to 1	0.86	0.93	1.00

Recurring COLA: 100%

No recurring COLA: 95%

Summary of Actuarial Assumptions (Pension Trust Fund)

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III. Methods and Assumptions

A. Valuation of Assets

The actuarial value of assets is based on the market value of assets with a ten-year phase-in of actual investment return in excess of (less than) expected investment income. The actuarial value of assets is further adjusted by 33% of any difference between the initial value and a 12% corridor around the market value of assets, if necessary.

B. Actuarial Cost Method

Entry Age Normal.

C. Amortization Policy

For underfunded cities, the amortization as of the valuation date is a level percentage of payroll over individual closed, laddered periods of not more than 20 years.

Once a city becomes overfunded, all prior amortization ladders, or bases, are erased and an amount of the surplus is credited against the contribution rate to keep the funded ratio constant year-over-year.

Ad hoc USC and COLA benefit enhancements are amortized over individual periods of not more than 12 years using a level dollar policy.

D. Small City Methodology

For cities with fewer than 20 employees, more conservative methods and assumptions are used, including lower termination rates, longer life expectancies and shorter amortization periods.

Definitions (Pension Trust Fund)

1. **Actuarial gain (loss).** A measure of the difference between actual and expected experience based on the actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with the actuarial cost method used.
2. **Actuarial accrued liability.** The actuarial present value of benefits attributable to all periods prior to the valuation date.
3. **Actuarial present value.** The value of an amount or series of amounts payable or receivable at various times, determined as of the valuation date by the application of the actuarial assumptions.
4. **Actuarial value of assets.** The value of cash, investments and other property belonging to a pension plan, as used by the actuary for the purpose of an actuarial valuation.
5. **Amortization period.** The period over which the existing unfunded or overfunded actuarial accrued liability is projected to be paid off, as a level percentage of payroll.
6. **Actuarially Determined Employer Contribution (ADEC).** The city's periodic required contributions to the defined benefit pension plan, calculated in accordance with current TMRS funding policy.
7. **Average age of contributing members.** The average attained age as of the valuation date.
8. **Average length of service of contributing members.** The average length of total credited service in TMRS as of the valuation date.
9. **Current service benefits.** Benefits attributable to the member's accumulated deposits and an amount provided by the participating city at retirement to match the accumulated deposits at the matching ratio in effect when the deposits were made.
10. **Entry Age Normal actuarial cost method.** The Entry Age Normal actuarial cost method develops the annual cost of the plan in two parts: that attributable to benefits accruing in the current year, known as the normal cost, and that due to service earned prior to the current year, known as the amortization of the unfunded actuarial accrued liability. The normal cost and the actuarial accrued liability are calculated individually for each member. The normal cost rate for a member is the contribution rate which, if applied to a member's compensation throughout their period of anticipated covered service, would be sufficient to meet all benefits payable on their behalf. The salary-weighted average of these rates is the total normal cost rate. The actuarial accrued liability is based on the portion of benefits attributable to service credited prior to the valuation date. Actuarial gains (losses), as they occur, reduce (increase) the unfunded actuarial accrued liability.
11. **Funded ratio.** The actuarial value of assets expressed as a percentage of the actuarial accrued liability.
12. **Funding policy.** The program for the amounts and timing of contributions to be made by plan members and participating cities to provide the benefits specified by a pension plan.
13. **Normal cost contribution rate.** The actuarial present value of benefits allocated to a valuation year by the actuarial cost method, expressed as a percentage of the covered payroll. It is equal to the sum of the actuarial present value of benefits allocated to the year following the valuation date, divided by the compensation expected to be received during the next year for the closed group of members, as of the valuation date.
14. **Overfunded actuarial accrued liability.** The excess of the actuarial value of assets over the actuarial accrued liability.

Definitions (Pension Trust Fund)

CONTINUED

15. **Phase-in rate.** The minimum required contribution rate to TMRS, which reflects the portion of the full rate being phased-in due to the changes in actuarial assumptions and methods.
16. **Prior service benefits.** Benefits other than current service benefits. These include all benefits arising from prior service credits, special prior service credits, antecedent service credits, updated service credits and cost-of-living adjustments.
17. **Prior service contribution rate.** The level percentage of payroll required to amortize the unfunded or overfunded actuarial liability over a specified amortization period. If the rate is negative, it is offset against the normal cost contribution rate, with the limitation that the sum of the two rates cannot be negative.
18. **Projected Unit Credit actuarial cost method.** A method under which the benefits of each member included in the valuation are allocated by a consistent formula to valuation years based on years of service. Benefits are allocated equally to each year of service over the member's career from hire to retirement. Normal costs are based on the portion of the benefit allocated to the year following the valuation year. Accrued liabilities are based on benefits allocated to the time preceding the date of the actuarial valuation. Under this method, actuarial gains (losses), as they occur, reduce (increase) the unfunded actuarial liability.
19. **Retirement contribution rate.** The sum of the normal cost contribution rate and the prior service contribution rate.
20. **Unfunded actuarial accrued liability.** The excess of the actuarial accrued liability over the actuarial value of assets.

Participating Cities and Active Members (Pension Trust Fund)

Table A-1

Participating Cities and Active Members					
Valuation Date	Number of Active Cities	Active Members			
		Number	Annual Payroll	Average Annual Pay	Percent Increase in Average
12/31/2012	844	101,827	\$ 4,961,671,305	\$ 48,889	1.9%
12/31/2013	844	102,870	\$ 5,142,446,602	\$ 50,244	2.8%
12/31/2014	853	104,019	\$ 5,374,536,634	\$ 51,956	3.4%
12/31/2015	859	106,894	\$ 5,683,846,845	\$ 53,898	3.7%
12/31/2016	864	108,891	\$ 5,884,788,962	\$ 54,543	1.2%
12/31/2017	875	110,208	\$ 6,188,490,343	\$ 56,490	3.6%
12/31/2018	879	111,851	\$ 6,444,177,866	\$ 58,040	2.7%
12/31/2019	878	114,384	\$ 6,790,788,227	\$ 60,033	3.4%
12/31/2020	886	114,497	\$ 7,161,381,734	\$ 62,577	4.2%
12/31/2021	892	116,053	\$ 7,345,701,461	\$ 63,723	1.8%

As of December 31, 2021, there were seven cities with no active contributing members and no city contributions due. In addition, one city and a privatized hospital had no contributing members but paid a dollar contribution amount to TMRS that is calculated annually by the actuary. Thus, there were 901 total cities, with 892 of them active.

The average annual pay was calculated by dividing the annual payroll by the average of the number of contributing members at the beginning and the end of the year.

Retiree and Beneficiary Data (Pension Trust Fund)

Table A-2

Retiree and Beneficiary Data								
Year Ended	Added to Rolls		Removed from Rolls		End of Year		% Increase in Annual Benefit	Average Annual Benefit
	Number of Accounts	Annual Benefit	Number of Accounts	Annual Benefit	Number of Accounts	Annual Benefit		
12/31/2012	3,545	\$ 72,731,553	710	\$ 8,898,201	46,902	\$ 783,234,690	8.9%	\$ 16,699
12/31/2013	3,890	\$ 72,535,316	823	\$ 11,113,993	49,969	\$ 844,656,013	7.8%	\$ 16,904
12/31/2014	4,319	\$ 92,940,036	833	\$ 11,533,222	53,455	\$ 926,062,827	9.6%	\$ 17,324
12/31/2015	3,916	\$ 76,796,719	890	\$ 12,357,106	56,481	\$ 990,502,440	7.0%	\$ 17,537
12/31/2016	4,073	\$ 82,664,225	943	\$ 13,821,624	59,611	\$ 1,059,345,041	7.0%	\$ 17,771
12/31/2017	4,198	\$ 95,727,539	1,033	\$ 14,068,157	62,776	\$ 1,141,004,423	7.7%	\$ 18,176
12/31/2018	4,448	\$ 98,030,847	1,173	\$ 16,549,004	66,051	\$ 1,222,486,266	7.1%	\$ 18,508
12/31/2019	4,758	\$ 107,229,230	1,184	\$ 18,442,625	69,625	\$ 1,311,272,871	7.3%	\$ 18,833
12/31/2020	4,871	\$ 117,495,300	1,394	\$ 20,566,206	73,102	\$ 1,408,201,965	7.4%	\$ 19,264
12/31/2021	5,115	\$ 115,206,771	1,542	\$ 23,545,014	76,675	\$ 1,499,863,722	6.5%	\$ 19,561

The number of retirement accounts is greater than the number of people who retired because some retirees worked for more than one participating city in TMRS and retired with a separate benefit from each participating city. As of December 31, 2021, there were 9,659 more retirement accounts than retirees. In addition, this schedule excludes 1,076 retirees who received a single payment in lieu of a monthly benefit. Upon their death, these retirees are still entitled to supplemental death benefits for their beneficiaries, if their city provides this benefit.

The average annual benefit in Table A-2 is 12 times the amount payable in January following the valuation date, including any retirement benefit increase, if applicable.

Summary of Actuarial Liabilities and Funding Progress (Pension Trust Fund)

Table A-3

Summary of Actuarial Liabilities and Funding Progress (dollars in millions)								
Annual Report Year	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Funded Ratio (1) / (2)	Unfunded AAL (UAAL) (2) - (1)	Covered Payroll	UAAL as a % of Covered Payroll (4) / (5)	City Contributions	Average City Rate (7) / (5)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2012	\$ 19,784.8	\$ 22,683.8	87.2%	\$ 2,899.0	\$ 4,961.7	58.4%	\$ 664.4	13.4%
2013 ❶	\$ 21,293.6	\$ 25,320.7	84.1%	\$ 4,027.1	\$ 5,142.4	78.3%	\$ 680.8	13.2%
2014	\$ 22,861.0	\$ 26,647.5	85.8%	\$ 3,786.5	\$ 5,374.5	70.5%	\$ 719.2	13.4%
2015 ❷	\$ 24,347.7	\$ 28,378.9	85.8%	\$ 4,031.2	\$ 5,683.9	70.9%	\$ 750.8	13.2%
2016	\$ 25,844.0	\$ 29,963.3	86.3%	\$ 4,119.2	\$ 5,884.8	70.0%	\$ 767.1	13.0%
2017	\$ 27,813.6	\$ 31,811.6	87.4%	\$ 3,998.0	\$ 6,188.5	64.6%	\$ 837.1	13.5%
2018	\$ 29,385.1	\$ 33,731.5	87.1%	\$ 4,346.4	\$ 6,444.2	67.4%	\$ 880.1	13.7%
2019 ❸	\$ 31,313.8	\$ 35,584.9	88.0%	\$ 4,271.1	\$ 6,790.8	62.9%	\$ 928.7	13.7%
2020 ❹	\$ 33,609.6	\$ 37,535.9	89.5%	\$ 3,926.3	\$ 7,161.4	54.8%	\$ 1,191.7	16.6%
2021 ❺	\$ 36,282.0	\$ 40,081.9	90.5%	\$ 3,799.9	\$ 7,345.7	51.7%	\$ 1,076.9	14.7%

- ❶ Actuarial assumptions were modified as of the December 31, 2013 valuation, along with a change in the actuarial cost method from Projected Unit Credit to Entry Age Normal.
- ❷ Actuarial assumptions were modified as of the December 31, 2015 valuation.
- ❸ Actuarial assumptions were modified as of the December 31, 2019 valuation.
- ❹ The increase in city contributions in 2020 is primarily due to \$210.3 million in additional lump sum contributions by two cities that issued pension obligation bonds. Excluding these additional contributions, the average city rate would have been 13.7%.
- ❺ City contributions in 2021 include \$62.3 million in additional lump sum contributions, of which \$57.7 million was contributed by one city that issued pension obligation bonds. Excluding these additional contributions, the average city rate would have been 13.8%.

Each TMRS participating city is financially responsible for its own plan. Therefore, the aggregate numbers shown in the above table reflect only the aggregate condition of TMRS and do not indicate the status of any city's plan. Columns (1) and (2) of the table also include the assets and liabilities of the Supplemental Disability Benefits Fund.

Funded Portion of Actuarial Liabilities by Type (Pension Trust Fund)

Table A-4

Funded Portion of Actuarial Liabilities by Type (dollars in millions)							
Valuation Date	Actuarial Liabilities for			Net Assets Available for Benefits	Portion of Actuarial Liabilities Covered by Net Assets		
	Current Member Contributions	Retirees and Beneficiaries	Current Members (Employer-Financed Portion)		(1)	(2)	(3)
	(1)	(2)	(3)				
12/31/2012	\$ 4,775.2	\$ 8,832.0	\$ 9,076.6	\$ 19,784.8	100.0%	100.0%	68.1%
12/31/2013	\$ 4,956.7	\$ 9,861.5	\$ 10,502.5	\$ 21,293.6	100.0%	100.0%	61.7%
12/31/2014	\$ 5,088.2	\$ 10,768.5	\$ 10,790.8	\$ 22,861.0	100.0%	100.0%	64.9%
12/31/2015	\$ 5,312.3	\$ 11,615.5	\$ 11,451.1	\$ 24,347.7	100.0%	100.0%	64.8%
12/31/2016	\$ 5,530.0	\$ 12,478.4	\$ 11,954.9	\$ 25,844.0	100.0%	100.0%	65.5%
12/31/2017	\$ 5,747.3	\$ 13,412.0	\$ 12,652.3	\$ 27,813.6	100.0%	100.0%	68.4%
12/31/2018	\$ 5,986.1	\$ 14,403.1	\$ 13,342.3	\$ 29,385.1	100.0%	100.0%	67.4%
12/31/2019	\$ 6,210.5	\$ 15,467.5	\$ 13,906.9	\$ 31,313.8	100.0%	100.0%	69.3%
12/31/2020	\$ 6,447.7	\$ 16,508.8	\$ 14,579.4	\$ 33,609.6	100.0%	100.0%	73.1%
12/31/2021	\$ 6,691.0	\$ 17,979.8	\$ 15,411.1	\$ 36,282.0	100.0%	100.0%	75.3%

The financing objective for each TMRS participating city’s plan is to finance long-term benefit liabilities through contributions that remain approximately level from year to year as a percentage of the city’s payroll. If the contributions to each plan are level over the long term and soundly executed, each plan will pay all benefits when due — the ultimate test of financial soundness.

The table above shows one short-term means of checking a system’s funding progress. The present assets are compared with: (1) current member contributions on deposit, (2) liabilities for future benefits to present retirees and (3) the employer-financed portion of the liabilities for service already rendered by current members. In a system that has been following the discipline of level percentage of payroll financing, the liabilities for current member contributions on deposit (liability 1) and the liabilities for future benefits to present retirees (liability 2) will be fully covered by present assets, except in rare circumstances. In addition, the employer-financed portion of liabilities for service already rendered by current members (liability 3) will be at least partially covered by the remainder of present assets. Generally, if a system has been using level cost financing, and if there are no changes in benefits, actuarial assumptions, or methods, the funded portion of liability 3 will increase over time, although it is uncommon for it to be fully funded.

Each TMRS participating city is financially responsible for its own plan. Therefore, the aggregate numbers shown above reflect only the aggregate condition of TMRS and do not indicate the status of any one plan.

Actuary's Certification Letter (Supplemental Death Benefits Fund)



P: 469.524.0000 | www.grsconsulting.com

May 26, 2022

Board of Trustees
Texas Municipal Retirement System
Austin, Texas 78731

Dear Trustees:

The TMRS Supplemental Death Benefits Fund (SDBF) is an optional cost-sharing multiple-employer defined benefit group life insurance plan. It provides death benefits to both active and retired members, and each participating city can elect to cover just active members, or active and retired members. A supplemental death contribution rate is determined annually for each participating city as a percentage of that city's covered payroll. The contribution rate finances the expected benefit payments each year on a pay-as-you-go basis.

The death benefit for active employees provides a lump sum payment approximately equal to the employee's annual salary (calculated based on the employee's actual earnings for the 12-month period preceding the month of death). The death benefit for retirees is a fixed amount of \$7,500.

Benefits are paid to both actives and retirees from the SDBF. Therefore, it is our understanding that reporting under the Governmental Accounting Standards Board ("GASB") Statement No. 74 is not required, since the SDBF is not an OPEB trust as described in paragraph 3 of the statement. GRS will provide information to each participating city for their reporting under GASB Statement No 75.

The contribution rates for the cities participating in the SDBF are certified annually by the Board of Trustees which is responsible for establishing and maintaining the funding policy. These rates are determined actuarially, based on the plan provisions in effect as of April 1, 2022 and the actuarial assumptions and methodology adopted by the Board. These are based on the results of the actuarial investigation of the experience of TMRS over the four-year period from December 31, 2014 to December 31, 2018 and were first used in the December 31, 2019 valuation. Due to the higher mortality rates associated with the global pandemic, the Board adopted changes to the assumptions and methodology used for calculating 2023 SDB rates as determined in the December 31, 2021 actuarial valuation. The Board's current policy is that the contribution rates determined by a given actuarial valuation become effective one (1) year after the valuation date. For example, the rates determined by the December 31, 2021 actuarial valuation will be applicable for the calendar year beginning January 1, 2023 and ending December 31, 2023.

TMRS staff supplied the data for active and retired Members as of December 31, 2021. We did not audit this data, but we did apply a number of tests to the data and we concluded that it was reasonable and consistent with the prior year's data. TMRS staff also supplied the asset data and financial information as of December 31, 2021.

5605 North MacArthur Boulevard | Suite 870 | Irving, Texas 75038-2631

Actuary's Certification Letter (Supplemental Death Benefits Fund)

CONTINUED

Board of Trustees
May 26, 2022
Page 2

GRS prepared the following schedules in the Actuarial Section:

Participating Employers and Covered Members
Average Contribution Rates

All of our work and all of the actuarial assumptions and methods conform with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of the TMRS Act and, where applicable, the Internal Revenue Code and the Statements of the Governmental Accounting Standards Board.

The undersigned are independent actuaries and consultants. Both are Members of the American Academy of Actuaries, both meet all of the Qualification Standards of the American Academy of Actuaries, and both are experienced in performing valuations for large public retirement systems.

Respectfully Submitted,



Joseph P. Newton, MAAA, FSA, EA
Pension Market Leader



Janie Shaw, MAAA, ASA, EA
Consultant



Summary of Actuarial Assumptions (Supplemental Death Benefits Fund)

The actuarial assumptions used in the calculation of the funding valuation for the Supplemental Death Benefits Fund (SDBF) are based on the 2019 Actuarial Experience Investigation Study that looked at the four-year period from December 31, 2014 to December 31, 2018. The assumptions were adopted in 2019 and first used in the December 31, 2019 actuarial valuation. No other demographic assumptions are applicable for purposes of developing the SDBF contribution rates.

I. Assumptions

A. Mortality Rates

Same as for the Pension Trust Fund.

B. Investment Return

A statutory interest credit of 5% is allocated annually and is not dependent on investment earnings.

C. Actuarial Cost Method

To calculate a city's actuarially determined contribution rate, the one-year term cost is used.

D. Valuation of Assets

Assets in the SDBF are valued at fund value (or fund balance). However, since the contribution rates are based just on the one-year term cost, assets are not included in developing the rate.

E. Changes in Actuarial Assumptions and Methods

A load equal to 2.0 and 1.1, respectively, is applied to the term cost for active coverage and retiree coverage in 2023 only. Additionally, the credit previously applied to the supplemental death benefit rate for active coverage equal to 2% of the fund balance was eliminated.

II. Benefit Provisions

A. Participation in SDBF

Participation in the SDBF is optional and may be rescinded. Each city that chooses to participate can elect to cover just active members, or both active members and retirees.

B. Benefit Eligibility

Benefits are payable if the death occurs during the period in which a city has elected to participate in the SDBF. For retirees who have service with multiple TMRS cities, benefits are payable only if the city from which the member retired participates in the SDBF when the death occurs.

C. Benefit Amount

The death benefit for active members provides a lump sum payment approximately equal to the employee's annual salary (calculated based on the employee's actual earnings for the 12-month period preceding the month of death). The death benefit for retirees is a fixed amount of \$7,500.

Membership and Contribution Rate Data (Supplemental Death Benefits Fund)

Table A-5

Participating Cities and Covered Members								
Actuarial Valuation Date	Number of Participating Cities	Active Members	Retired Members	Inactive Members	Total Members	Annual Payroll	Average Annual Pay	Percent Increase in Average Annual Pay
12/31/2014	743	69,391	24,569	7,672	101,632	\$ 3,526,108,551	\$ 50,815	3.7%
12/31/2015	753	71,287	25,819	7,921	105,027	\$ 3,707,706,923	\$ 52,011	2.4%
12/31/2016	753	72,742	26,884	8,513	108,139	\$ 3,887,244,457	\$ 53,439	2.7%
12/31/2017	764	73,757	28,947	8,989	111,693	\$ 4,096,626,695	\$ 55,542	3.9%
12/31/2018	768	75,035	30,453	9,555	115,043	\$ 4,279,380,674	\$ 57,032	2.7%
12/31/2019	766	76,953	32,039	9,957	118,949	\$ 4,559,480,007	\$ 59,250	3.9%
12/31/2020	777	77,880	33,723	10,409	122,012	\$ 4,886,294,497	\$ 62,741	5.9%
12/31/2021	783	79,205	35,323	11,284	125,812	\$ 5,023,116,464	\$ 63,419	1.1%

Table A-6

Average Contribution Rates		
Actuarial Valuation Date	Active Coverage	Retiree Coverage
12/31/2014	0.17%	0.05%
12/31/2015	0.16%	0.05%
12/31/2016	0.17%	0.05%
12/31/2017	0.17%	0.06%
12/31/2018	0.17%	0.06%
12/31/2019 ^①	0.12%	0.16%
12/31/2020	0.12%	0.16%
12/31/2021 ^②	0.25%	0.17%

^① Mortality assumptions and premium calculation methods were modified as of the December 31, 2019 valuation.

^② Premium calculations determined by the December 31, 2021 actuarial valuation include a one-time load for adverse experience of 2.0 and 1.1 for active and retiree coverage, respectively.

Contribution rates are effective beginning one year from the actuarial valuation date.

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