Texas Municipal Retirement System

Actuarial Experience Investigation Study
as of December 31, 2022

GRS

GRS

September 28, 2023

Board of Trustees
Texas Municipal Retirement System
Austin, Texas

Dear Members of the Board:

Subject: Results of the 2023 Experience Study

We are pleased to present our report of the 2023 Actuarial Experience Investigation Study for the Texas Municipal Retirement System (TMRS). Our report includes a discussion of the recent experience of the System, presents our recommendations for new actuarial assumptions and methods, and provides information about the actuarial impact of these recommendations on the liabilities and other key actuarial measures of TMRS.

With the Board's approval of the recommendations in this report, we believe the actuarial condition of the System will be more accurately portrayed. The Board's decisions should be based on the appropriateness of each recommendation, not on their collective effect on funding periods or unfunded liabilities.

This study was conducted in accordance with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. The undersigned meet all of the Qualification Standards of the American Academy of Actuaries. In addition, all of the undersigned have extensive experience as retained public sector actuaries for several large, statewide public retirement systems.

We wish to thank Ms. Leslee Hardy, ASA, EA, FCA, MAAA, Director of Plan Design & Funding, and the entire TMRS staff for their assistance in this project.

Sincerely,

Joseph P. Newton, FSA, EA, MAAA

Janie Shaw, MAAA, ASA, EA

Yi Chen, ASA, EA, MAAA

J:\3052\Exp\1 Report\ExperienceStudy.docx

Table of Contents

SECTION I

INTRODUCTION

Introduction

A periodic review and selection of the actuarial assumptions is one of many important components of understanding and managing the financial aspects of the Texas Municipal Retirement System (TMRS). Use of outdated or inappropriate assumptions can result in understated costs which will lead to higher future contribution requirements or perhaps an inability to pay benefits when due. Or, on the other hand, it may produce overstated costs which place an unnecessarily large burden on the current generation of members, employers, and taxpayers.

A single set of assumptions is typically not expected to be suitable forever. As the actual experience unfolds or the future expectations change, the assumptions should be reviewed and adjusted accordingly.

It is important to recognize that the impact from various outcomes and the ability to adjust from experience deviating from the assumptions are not symmetric. Due to compounding economic forces, legal limitations, and even moral obligations, outcomes from underestimating future liabilities are much more difficult to manage than outcomes of overestimates, and that asymmetric risk should be considered when the assumptions are set and the investment policy and funding policy are created. As such, the assumption set used in the valuation process needs to represent the "best estimate" of the future experience of the System and be at least as likely, if not more likely, to overestimate the future liabilities than underestimate them.

Using this strategic mindset, each assumption was analyzed compared to the actual experience of TMRS and general experience of other large public employee retirement systems. Changes in certain assumptions and methods are suggested upon this comparison to remove any bias that may exist and to perhaps add a slight margin for future adverse experience, where appropriate. Next, the assumption set as a whole was analyzed for consistency and to ensure that the projection of liabilities was reasonable and consistent with historical trends.

The following report provides our recommended changes to the current actuarial assumptions.

Summary of Process

In determining liabilities and contribution rates for retirement plans, actuaries must make assumptions about the future. Among the assumptions that must be made are:

- Retirement rates
- Mortality rates
- Turnover rates
- Disability rates
- Investment return rate
- Salary increase rates
- Inflation rate

For some of these assumptions, such as the mortality rates, past experience provides important evidence about the future. For others, such as the investment return assumption, the link between past and future

results is much weaker. In either case, actuaries should review the plan's assumptions periodically and determine whether these assumptions are consistent with actual past experience and with anticipated future experience.

The last such actuarial experience investigation was performed following the December 31, 2018 actuarial valuation. For this experience study, we have added TMRS' experience for the four-year period from December 31, 2018 through December 31, 2022 (FY 2019 – FY 2022).

In conducting experience studies, actuaries generally use data over a period of several years. This is necessary in order to gather enough data so that the results are statistically significant. In addition, if the study period is too short, the impact of recent economic conditions may lead to misleading results. It is known, for example, that the health of the general economy can impact salary increase rates and withdrawal rates. Using results gathered during a short-term "boom or bust" will not be representative of the long-term trends in these assumptions. Also, the adoption of legislation, such as plan improvements or changes in salary schedules, will sometimes cause a short-term distortion in the experience. For example, if an early retirement window was opened during the study period, we would usually see a short-term spike in the number of retirements followed by a dearth of retirements for the following two-to-four years. Using a longer study period mitigates giving too much weight to such short-term effects. On the other hand, using a much longer period could "water down" real changes that may be occurring, such as mortality improvement or a change in the ages at which members retire.

For this analysis, we used between five and twenty years of data, depending on the assumption being studied as follows:

Assumption	Data Used	Comment
Payroll/Population Growth	10-20 Years	Long term trends are needed, but more importantly, prospective changes must be considered
Individual Salary Increases	10 Years	Longer period will capture a longer economic cycle
Turnover	10 Years	Longer period will capture a longer economic cycle
Post-Retirement Mortality	9 Years	Longer period allows for low volatility in the assumption and more credibility. Need an odd number of years to have a central year of the study.
All other	5 Years	The assumptions react quicker to changing trends and are less correlated with the economic cycle. Five years provides more credibility to some of the assumptions that have smaller incidence, such as active mortality and disability

In an experience study, we first determine the number of deaths, retirements, etc. that occurred during the study period. Then we determine the number expected to occur, based on the current actuarial assumptions. The number of "expected" decrements is determined by multiplying the probability of the occurrence at the given age, by the "exposures" at that same age. For example, let's look at a rate of retirement of 11% at age 55. The number of exposures can only be those members who are age 55 and eligible for retirement at that time. Thus, they are considered "exposed" to that assumption. Finally, we calculate the A/E ratio, where "A" is the actual number (of retirements, for example) and "E" is the expected

number. If the current assumptions were "perfect", the A/E ratio would be 100%. When it varies much from this figure, it is a sign that a new assumption may be needed. However, in some cases we prefer to set our assumptions to produce an A/E ratio a little above or below 100%, in order to introduce some conservatism. Of course we not only look at the assumptions as a whole, but we also review how well they fit the actual results by gender, by age, and by service.

If the data leads the actuary to conclude that new tables are needed, the actuary may "graduate" or smooth the results, since the raw results can be quite uneven from age to age or from service to service.

For most of the assumptions, the data was weighted by some way to reflect how the liability is changing or expected to change versus how individuals are behaving. The weighted analysis gives a better reflection of how actuarial gains or losses are being generated instead of just demographic reconciliation

Please bear in mind that, while the recommended assumption set represents our best estimate, there are other reasonable actuarial assumption sets that could be supported. Some reasonable assumption sets would show higher or lower liabilities or costs. For example, while our analysis may conclude that an overall 6.75% investment return assumption is appropriate, others might argue that a different rate is also appropriate.

Organization of Report

Section II summarizes our recommendations. Section III contains our detailed findings and recommendations for each actuarial assumption. The impact of adopting our recommendations on liabilities and contribution rates is shown in Section IV. Section V discloses all of the new actuarial assumptions and methods. Appendix A provides the detail for the termination load and population decline assumption by City, and Appendix B provides the estimated impact on individual employer's contribution rates.

SECTION II

SUMMARY OF RECOMMENDATIONS

Summary of Recommendations

Generally, the impact on the contribution rates from the recommended changes are minor. The main factor that will determine whether a City will have a meaningful increase or decrease in their contribution rate is whether the City had a large change up or down in their individual turnover multiplier. Otherwise, the increase in the salary assumptions increased the normal cost but this was largely offset by an increase in the rate of turnover for longer career members. The average payroll weighted contribution rate for retirement increases by 0.11% of payroll based on all recommended assumptions and methods. Our recommended changes to the current actuarial assumptions, and supporting rationale, may be summarized as follows:

Economic Assumptions

1. No change to the inflation assumption of 2.50%.

2. No change to the current nominal investment return assumption of 6.75%. Based on our analysis and the Portfolio "Option 2" adopted by the Board at the June meeting, the median expected geometric return (50th percentile) over the next 10 years for the current asset allocation is approximately 7.2%. This is similar to the result of 7.1% provided by NEPC. Over the last five years, the results of the GRS annual survey of investment professionals would have produced expected returns ranging from 5.9% in 2022 to 7.2% in 2023. These expectations are volatile from year to year and the current 6.75% is in the middle of what that range has been.

3. We recommend increasing the ultimate salary increase by 0.1% to 3.60% for long service members. We also recommend adding 0.25% to all steps in the 25-year service related component of the assumption based on recent trends and experience. The net impact is an approximate 0.35% increase in the average annual increase throughout a member's career. This is the most meaningful change in this experience study and increases normal costs, especially if a City has the Updated Service Credit provision.

4. No change to the load on the Updated Service Credit calculation equal to 0.1% per year into the future to reflect the asymmetric accrual pattern associated with the benefit formula.

5. No change to the current payroll growth rate assumption of 2.75%. The payroll growth assumption does not impact the liabilities, only the development of the amortization of the unfunded actuarial accrued liability and becomes less important the shorter the remaining amortization bases become. Recommend continuing to include a reduction for some cities based on patterns of population decline.

6. No change to the assumed future cost-of-living increases for the traditional retroactive COLAs. New assumptions were added for the non-retroactive COLA added in the 2023 legislative session.

Mortality Assumptions (Valuation Purposes Only – No Impact on Annuity Purchase Rates)

7. We recommend adding a small load to the mortality tables for healthy retirees based on recent higher mortality experience. We will monitor this assumption to see if a more meaningful change is warranted in the next experience study. We will continue to assume that mortality rates will improve in the future using a fully generational approach, and update the projection scale to the most recent MP-2021 Scales

with immediate convergence to the ultimate rates of improvement for all years.

8. No change to the process of using the same tables as the non-disabled retirees for disabled post-retirement mortality assumption with a set-forward and a minimum mortality probability to reflect impaired mortality for this group.

9. No change for the pre-retirement mortality tables for females but recommend adding a 10% load to mortality rates for males.

10. No change in the assumption that there will be no subsidy provided through the Annuity Purchase Rates (APRs) to either the member or the employer from the other party, and thus will generally be equivalent to the mortality expectations in the actuarial valuation over time. The known APRs until 2032 are explicitly valued and then the APRs and the valuation mortality are assumed to be equivalent.

Other Demographic Assumptions

11. Recommend simplifying the assumptions for retirement probabilities from the current tables which are based on age and benefit provisions to just one based on age. No meaningful change to the pattern of retirement overall.

12. Recommend slightly decreasing the rates of termination for early career members but simplifying the table after the first three years to be based solely on years from retirement. The net impact is higher probability of turnover for members who will have longer careers, and thus have larger liabilities. We have made small adjustments to the multipliers to the base rates based on job classification (police, fire, or other) and to the City specific multiplier as appropriate.

13. Recommend decreasing the forfeiture rates for vested members not eligible for retirement.

14. Recommend reducing the rates of disability.

15. No change to the current 40% Partial Lump Sum assumption.

16. No change to the assumption that members choose the 50% Survivor Option at retirement.

Actuarial Methods and Policies

17. No change to the use of a 10-year smoothing technique, nor the use of a "soft" corridor around the market value of assets to determine the actuarial value of assets, used for determining the annual employer contribution rates. No change to the 12% corridor to approximate one standard deviation of the expected annual investment performance.

18. No change to the use of the Entry Age Normal Cost Method.

19. No change to the use of closed 20-year amortization periods for experience losses for underfunded cities.

20. No change to the adjustments made to the mortality, turnover, and amortization periods for small cities.

21. No change to the provision that once a city reaches overfunded status, all prior closed non-ad hoc bases are erased and no change to the amortization policy for overfunded cities to a credit that would be projected to remain the same over all time horizons and keep the funded ratio constant at the current level.

22. No change to the use of 12-year level dollar amortization policy for ad hoc benefit enhancements.

23. Supplemental Death Benefit Fund: Recommend lowering the current load on active term costs from 2.0 to 1.5 and no change to the 1.1 load on the premium for retirees.

Actuarial Impact of Recommendations
Illustrated based on December 31, 2022 Actuarial Valuation
Active TMRS Cities in Total (BAF Only)

		Current (1)	Proposed (2)	Difference (2) - (1)
1.	UAAL	$ 4,392	$ 4,124	$ (268)
2.	Funded ratio	89.5%	90.1%	0.6%
	Illustrated Contribution Rate for Calendar Year 2024:			
3.	Full retirement rate	13.84%	13.95%	0.11%
4.	Estimated Contributions $ in millions	$ 1,133	$ 1,142	$ 9

SECTION III

ANALYSIS OF EXPERIENCE AND RECOMMENDATIONS

Analysis of Experience and Recommendations

We will begin by discussing the economic assumptions: inflation, expenses, the investment return rate, the salary increase assumption, and the rate of payroll growth. Next are the demographic assumptions: mortality, disability, termination and retirement. Finally, we will discuss all of the actuarial methods used.

Inflation and Investment Return Assumptions

Actuarial Standards of Practice (ASOP) No. 27, Selection of Economic Assumptions for Measuring Pension Obligations, provides guidance to actuaries regarding the selection of economic assumptions for measuring obligations for defined benefit plans.

As no one knows what the future holds, it is necessary for an actuary to estimate possible future economic outcomes. Recognizing that there is not one right answer, the current standard calls for an actuary to develop a reasonable economic assumption. A reasonable assumption is one that:

a. is appropriate for the purpose of the measurement,

b. reflects the actuary's professional judgment,

c. takes into account historical and current economic data that is relevant as of the measurement date,

d. is an estimate of future experience; an observation of market data; or a combination thereof,

e. and has no significant bias except when provisions for adverse deviation or plan provisions that are difficult to measure are included.

However, the standard explicitly advises an actuary not to give undue weight to recent experience.

Each economic assumption should individually satisfy this standard. Furthermore, with respect to any particular valuation, each economic assumption should be consistent with every other economic assumption over the measurement period. Generally, the economic assumptions are much more subjective in nature than the demographic assumptions.

INFLATION

By "inflation," we mean price inflation, as measured by annual increases in the Consumer Price Index (CPI). This inflation assumption underlies most of the other economic assumptions, including the investment return, salary increases, and payroll growth rate. The current annual inflation assumption is 2.50%.

Actual Change in CPI-U

The following chart shows the average annual inflation, as measured by the increase in the Consumer Price Index (CPI-U) in each of the ten consecutive five-year periods over the last fifty years.

Average Annual Inflation
CPI-U, Five Fiscal Year Averages
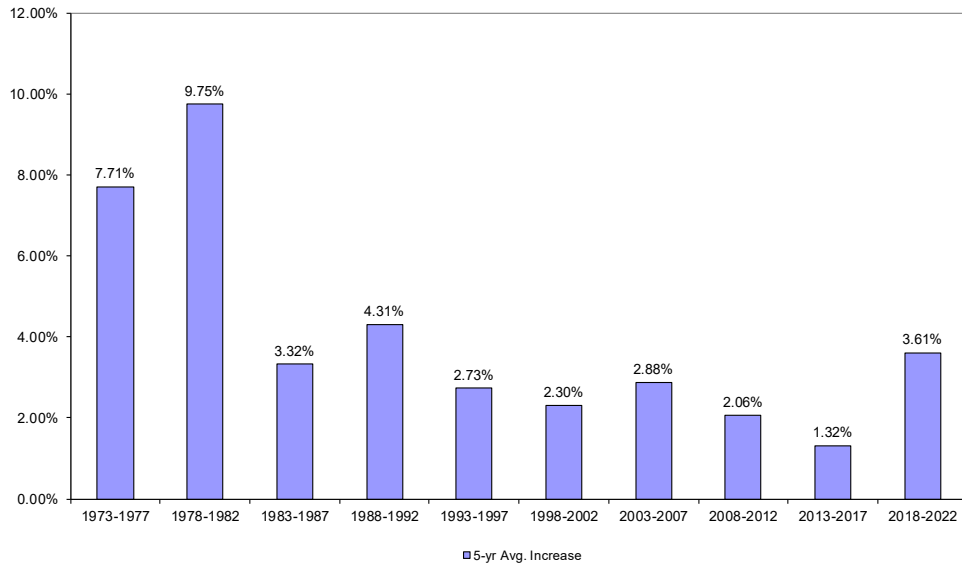
Source: Bureau of Labor Statistics, CPI-U, all items, average during calendar year

The table below shows the average inflation over various periods, ending December 2022.

Periods Ending Dec. 2022	Average Annual Increase in CPI-U
Last five (5) years	3.61%
Last ten (10) years	2.46%
Last fifteen (15) years	2.32%
Last twenty (20) years	2.46%
Last twenty-five (25) years	2.43%
Last thirty (30) years	2.48%
Since 1913 (first available year)	3.15%

Source: Bureau of Labor Statistics, CPI-U, all items, average during calendar year

Sources of Forward-Looking Forecasts

As the valuation is a forward-looking exercise, the forward-looking expectations are more relevant than the historical data. The following is a list of several external sources for forward-looking inflation expectations.

Forward-Looking Price Inflation Forecasts[a]	
Congressional Budget Office[b]	
5-Year Annual Average	2.83%
10-Year Annual Average	2.57%
Federal Reserve Bank of Philadelphia[c]	
5-Year Annual Average	2.50%
10-Year Annual Average	2.36%
Federal Reserve Bank of Cleveland[d]	
10-Year Expectation	1.66%
20-Year Expectation	1.88%
30-Year Expectation	2.05%
Federal Reserve Bank of St. Louis[e]	
10-Year Breakeven Inflation	2.20%
20-Year Breakeven Inflation	2.48%
30-Year Breakeven Inflation	2.23%
U.S. Department of the Treasury[f]	
10-Year Breakeven Inflation	2.10%
20-Year Breakeven Inflation	2.40%
30-Year Breakeven Inflation	2.19%
50-Year Breakeven Inflation	2.29%
100-Year Breakeven Inflation	2.37%
Social Security Trustees[g]	
Ultimate Intermediate Assumption	2.40%

[a]**End of the Second Quarter, 2023**. Version 2023-07-10 by Gabriel, Roeder, Smith & Company

[b]*The Budget and Economic Outlook: 2023 to 2033* , Release Date: February 2023, Consumer Price Index (CPI-U), Percentage Change from Year to Year, 5-Year Annual Average (2023 - 2027), 10-Year Annual Average (2023 - 2032).

[c]*Second Quarter 2023 Survey of Professional Forecasters* , Release Date: May 12, 2023, Headline CPI, Annualized Percentage Points, 5-Year Annual Average (2023 - 2027), 10-Year Annual Average (2023 - 2032).

[d]Inflation Expectations, Model output date: June 1, 2023.

[e]The breakeven inflation rate represents a measure of expected inflation derived from X-Year Treasury Constant Maturity Securities and X-Year Treasury Inflation-Indexed Constant Maturity Securities. Observation date: June, 2023.

[f]The Treasury Breakeven Inflation (TBI) Curve, Monthly Average Rates, June, 2023.

[g]*The 2023 Annual Report of The Board of Trustees of The Federal Old-Age And Survivors Insurance and Federal Disability Insurance Trust Funds* , March 31, 2023, p. 10, Key Assumptions and Summary Measures for the Last 65 Years of the Long-Range (75-year) Projection Period, Intermediate, Consumer Price Index (CPI-W).

As shown, even though recent inflation has exceeded the current 2.50% assumption, all of the sources with a 10+ year time horizon are projecting inflation to be at or less than the currently assumed 2.50%.

Comparison of Inflation Expectations from 2019 to 2023

Finally, the following table provides a comparison of the inflation expectations documented in the 2019 experience study report and the current inflation expectations.

| Source | Inflation Expectations | | |
	2019	2023	Change
(1)	(2)	(3)	(4)
TMRS' Investment Consultant	2.50%	2.50%	0.00%
GRS Survey of Investment Consultants	2.18%	2.52%	+0.34%
Implied Inflation 20-Year Treasuries	1.75%	2.40%	+0.75%
Social Security Administration Trustees Report	2.60%	2.40%	-0.20%
Survey of Professional Forecasters	2.21%	2.36%	+0.15%

Recommendation

We are recommending continued use of the 2.50% assumption. Since most retirees in the System receive cost-of-living adjustments that are tied to the increase in CPI-U, there is some risk to selecting an inflation assumption that is too low. While the 2.50% assumption is slightly higher than the expected rates of future inflation for many of the various sources above, including the bond market and the surveys of the Society of Professional Forecasters, it is equal to the assumption used by NEPC (TMRS' investment consultant) and is within a reasonable range of acceptable assumptions.

INVESTMENT AND ADMINISTRATIVE EXPENSES

Since the trust fund pays expenses in addition to member benefits and refunds, we must make some assumption about these. Almost all actuaries treat investment expenses as an offset to the investment return assumption. That is, the investment return assumption represents expected return after payment of investment expenses.

In regards to investment expenses, investment consulting firms periodically issue reports that describe their capital market assumptions. The estimates for core investments (i.e., fixed income, equities, and real estate) are generally based on anticipated returns produced by passive index funds that are net of investment related fees. The investment return expectations for the alternative asset classes such as private equity and absolute return are also net of investment expenses. Therefore, we did not make any adjustments to account for investment related expenses. Some systems may also employ active management investment strategies that result in higher investment expenses compared to strategies that invest in passive index funds. We have assumed that active management strategies would result in the same returns, net of investment expenses, as passive management strategies.

On the other hand, there is a divergence of practice on the handling of administrative expenses. Some actuaries make an assumption that administrative expenses will be some fixed or increasing dollar amount, others assume that the administrative expenses will be some percentage of the plan's actuarial liabilities or normal cost, and others treat administrative expenses like investment expenses, as an offset to the investment return assumption.

Historical TMRS practice is to set the investment return assumption as the net return after payment of administrative expenses as the annual interest crediting mechanism is net of all expenses per Statute. Based on information from the 2022 ACFR, we have estimated administrative expenses to be 0.07% of assets.

INVESTMENT RETURN ASSUMPTION

The investment return assumption is one of the principal assumptions used in any actuarial valuation of a retirement plan. It is used to discount future expected benefit payments to the valuation date in order to determine the liabilities of the individual cities. Even a small change to this assumption can produce significant changes to the liabilities and contribution rates. Currently (used in the 2022 valuation), it is assumed that future investment returns will average 6.75% per year, net of investment and administrative expenses.

Similar to the inflation assumption, past performance is not a reliable indicator of future performance even when averaged over a long time period. Also, the actual asset allocation of the trust fund will significantly impact the overall performance, so returns achieved under a different allocation are not meaningful. More importantly, the real rates of return for many asset classes, especially equities, vary so dramatically from year to year that even a twenty-year period is not long enough to provide reasonable guidance. There are strong reasons to believe the next twenty years will be different than the last twenty, in large part because current bond yields are significantly lower than they were 20 years ago.

Comparison to Peers

We do not recommend the selection of an investment return assumption based on prevalence information. However, it is still informative to identify where the investment return assumption for TMRS is compared to its peers. The chart below shows the distribution of the investment return assumptions in the Public Plans Data as of April of 2023.
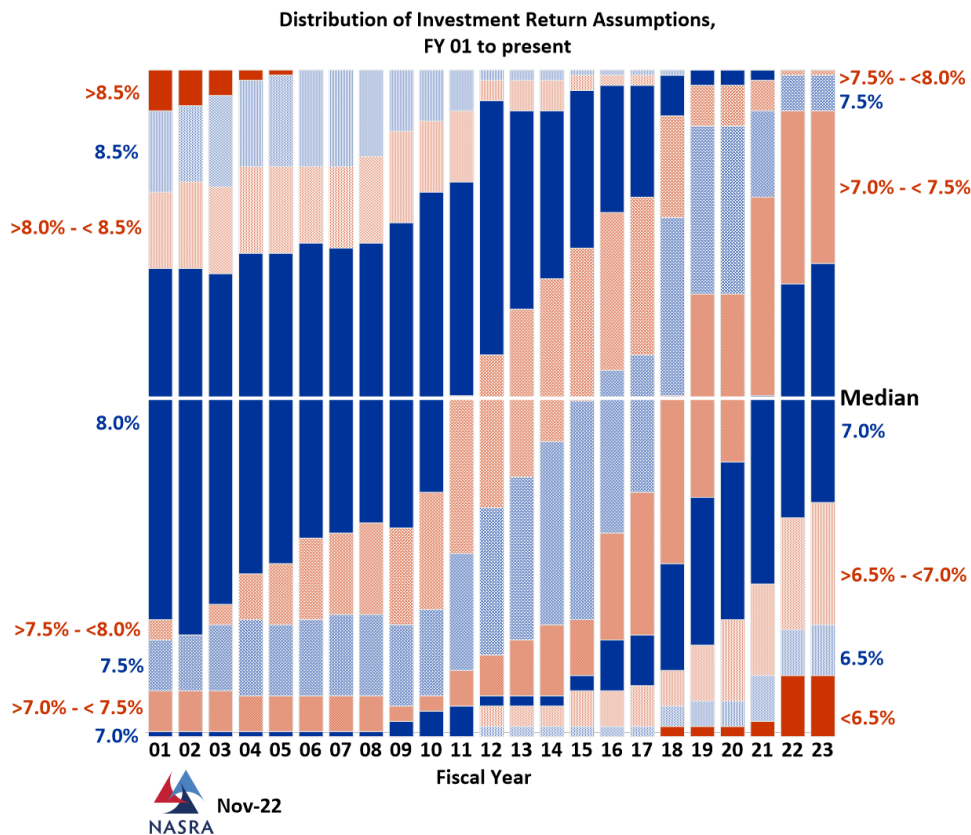
Source: 2023 Public Plans Database.

The graphic includes the overall national trends in this assumption. The median rate of return is 7.00%, down from 7.25% when reviewed in the 2019 experience study.

Asset Allocation

We believe the most appropriate approach to selecting an investment return assumption is to identify expected returns given the funds' asset allocation mapped to forward-looking capital market assumptions. Because GRS is a benefits consulting firm and does not provide investment consulting advice, we do not develop or maintain our own forecasts of capital market expectations. Instead, we utilized the forward-looking return expectations developed by nationally recognized investment consulting firms, including NEPC, TMRS' investment consultant.

The following is an excerpt from ASOP 27 on the topic of using experts:

> **Section 3.5.6 Views of Experts** – *Economic data and analyses are available from a variety of sources, including representatives of the plan sponsor and administrator, investment advisors, economists, and other professionals. When the actuary is responsible for selecting or giving advice on selecting economic assumptions within the scope of this standard, the actuary may incorporate the views of experts but the selection or advice should reflect the actuary's professional judgement.*

In our professional judgement, it is appropriate to rely on NEPC's input as part of our consideration in making a recommendation as they are the experts and have specialized knowledge in this subject matter. This is the same data being used for investment decision making, and thus is a reasonable set of data for use in decisions on funding as well. The following table shows a summary of the recently approved long-term asset allocation for TMRS that was used in the analysis.

ASSET CLASS	TMRS
Global Equity	35%
Core Fixed Income	6%
Non-Core Fixed Income	6%
Hedge Funds	5%
Private Equity	13%
Real Estate	12%
Infrastructure	6%
Other Private	4%
Private Debt	13%
Total	100.0%

In the June Board meeting, NEPC provided the analysis for choosing the asset allocation and included an expected return of 7.1% for the next ten years. This includes a 55.9% probability of meeting or exceeding the current 6.75% assumed return assumption over the long-term (30 years). Please note this is not discounted for the 0.07% of assets for administrative expenses.

To validate this we utilized the forward-looking return expectations developed by eleven investment consulting firms that also do work with our clients. These investment consulting firms periodically issue reports that describe their capital market assumptions. That is, their estimates of expected returns, volatility, and correlations. While these assumptions are developed based upon historical analysis, many of these firms also incorporate forward-looking adjustments to better reflect near-term expectations. The

forward-looking return expectations were mapped to the target asset class allocation. The table below provides the 40th, 50th, and 60th percentiles of the 10-year geometric average of the expected nominal return, net of expenses, as well as the probability of exceeding the current 6.75% assumption.

Expected Annual Geometric Returns and Return Probabilities
(Based on Short-Term Capital Market Assumptions)

GRS 2023 CMAM				
Capital Market Assumption Set (CMA)	Distribution of 10-Year Average Geometric Net Nominal Return			Probability of exceeding 6.75%
	40th	50th	60th	
(1)	(2)	(3)	(4)	(5)
1	5.3%	6.1%	7.0%	43%
2	5.4%	6.5%	7.6%	48%
3	5.7%	6.8%	7.8%	50%
4	6.1%	7.0%	8.0%	53%
5	6.0%	7.1%	8.3%	53%
6	6.4%	7.3%	8.3%	56%
7	6.5%	7.5%	8.5%	58%
8	6.7%	7.6%	8.5%	59%
9	6.6%	7.7%	8.8%	59%
10	6.7%	7.8%	8.9%	59%
11	6.9%	7.9%	9.0%	61%
Average	**6.2%**	**7.2%**	**8.2%**	**55%**

Notice the range of the 50th percentile outcome is from 6.1% to 7.9%, which the 6.75% assumption falls in the middle of. Also, while the expected outcome is 7.2%, there is only a 55% probability of achieving the 6.75% assumption. Finally, below we have provided the average expected return from the last five GRS surveys to show more detail in the volatility in these expectations. The following exhibit shows the median 10-year outcome from the GRS survey for the past five years for the new target TMRS portfolio.

10-year Expected Return of Current Portfolio					
Determined by last 5 GRS Surveys					
2019	2020	2021	2022	2023	Average
(1)	(2)	(3)	(4)	(5)	(6)
6.8%	6.4%	6.1%	5.9%	7.2%	6.5%

The forward-looking expectations for the same portfolio have varied from 5.9% to 7.2%. This type of precision and volatility is appropriate for the use by TMRS and NEPC in its investment decisions because they are always interacting with current market prices and expectations over a specific investment cycle. However, for use in setting the contribution requirements and funding patterns over a number of years, if not decades, consistency around a single number that is in the middle of the range is more appropriate.

Thus, we find the current 6.75% investment return assumption reasonable and recommend no change.

SALARY INCREASE RATES

In order to project future benefits, the actuary must project future salary increases for individual members. Salaries may increase for a variety of reasons:

- Across-the-board increases for all employees;
- Across-the-board increases for a given group of employees;
- Increases to a minimum salary schedule;
- Additional pay for additional duties;
- Step or service-related increases;
- Increases for acquisition of advanced degrees or specialized training;
- Promotions; or
- Merit increases, if available.

Our salary increase assumption is meant to reflect all of these types of increases, to the extent they are included in pensionable earnings. The actuary should not look at the overall increases in payroll in setting this assumption, because payroll can grow at a rate different from the average pay increase for individual members. To analyze salary increases, we examine the actual increase in salary for each member who is active in two consecutive fiscal years.

Most actuaries recommend salary increase assumptions that include an element that depends on the member's age or service, especially for large, public retirement systems. It is typical to assume larger pay increases for younger or shorter-service employees. This is done in order to reflect pay increases that accompany step increases, changes in job responsibility, promotions, demonstrated merit, etc. The experience shows salaries have been more closely correlated to service (rather than age), as promotions and productivity increases tend to be greater in the first few years of a career, even if the new employee is older than the average new hire.

The current assumption follows this pattern. The current salary increase rates vary by service for the first 25 years. They range from 11.50% for a new member's first increase to 3.50% for members with 25 years of service or more. We analyzed the salary increases based on the change in the member's reported pay from one year to the next. That is, we looked at each member who appeared as an active member in two consecutive valuations individually, and measured his/her salary increase. Then we grouped the increases for all members with the same service, and determined their average increase.

Salary increases for governmental employees can vary significantly from year to year. When the employer's tax revenues stall or increase slowly, salary increases often are small or nonexistent. During good times, salary increases can be larger. Our experience across many governmental plans also shows several occasions in which salary increases will be low for a period of several years followed by a significant increase in one year. Therefore, for this assumption in particular, we prefer to use data over a longer period in establishing our assumptions. We used a ten-year period for this analysis. In addition, generally there is a lag between inflation and its impact on wages, especially in the public sector. Using a 1-year lag (using the period 2012-2021), inflation averaged 1.99% and we have utilized that for our analysis. The average pay increases for members active in both valuations with more than one year of service are as follows:

| Period	Increase	Inflation (1-year lag)	Increase Above Inflation
CY 2012 to CY 2013	5.5%	2.1%	3.4%
CY 2013 to CY 2014	6.2%	1.5%	4.7%
CY 2014 to CY 2015	7.4%	1.6%	5.8%
CY 2015 to CY 2016	4.6%	0.1%	4.4%
CY 2016 to CY 2017	6.4%	1.3%	5.2%
CY 2017 to CY 2018	5.8%	2.1%	3.7%
CY 2018 to CY 2019	6.6%	2.4%	4.2%
CY 2019 to CY 2020	7.4%	1.8%	5.6%
CY 2020 to CY 2021	4.8%	1.2%	3.6%
CY 2021 to CY 2022	8.9%	4.7%	4.2%
Weighted Average	6.36%	1.99%	4.42%

The average increase is 6.36%, or 4.42% above inflation. Based on current assumptions, the expected increase above inflation was 2.70%, meaning the actual increases have been higher than expected both on nominal and on real terms.

To separate the steps component of the schedule, we segregated out members with more than 25 years of service. These members should be past the step portions of their careers and therefore, only receive the general increases granted plus individual merit. The actual increase for these members during the ten-year period was 3.86%, or 1.87% above the lagged inflation, which shows there have been meaningful merit and promotional increases even for long service employees.

While the 3.87% is higher than the currently assumed 3.50% on a nominal basis, we believe there may be some circumstances that created this large pattern over the last decade that may not be repeated. At the beginning of the period, the average salary for a TMRS active member was quite low in comparison to other States. After the past decade that is no longer the case, so some of the salary increases could have been a catching up to other populations. Also, real estate values, along with other sources of tax revenue, have had historical increases the last decade, which may cool going forward, especially considering recent State legislative actions to curb this growth. Finally, coming out of the pandemic there were large amount of federal dollars available to help municipalities that are not currently scheduled to continue. For now, we are recommending increasing the long-term individual merit and promotion component 0.1% to 3.60% along with a meaningful 0.25% per year increase in the step-schedule discussed below. This is an assumption that we are watching and could need further adjustment in the next experience study.

The net impact of the inflation assumption of 2.50% and a long service productivity component of 1.10% over inflation computes to 3.60% per year assumed salary increase for long service members.

Salary Increases Above Inflation By Service
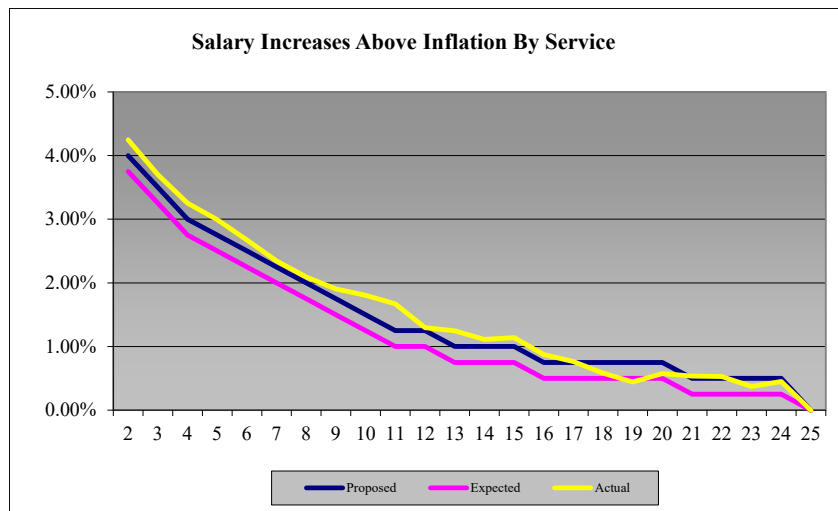
The above exhibit models the portion of the salary increases for short term members that exceeded the salary increases for long term members based on the current assumptions, the actual experience, and a set of new proposed assumptions. You can see that the actual increases were higher than the current assumption. We have increased each step by 0.25% accordingly. Based on the new schedule and adjustment to the merit and promotional component discussed above, the average increase over a member's career increases approximately 0.35% per year. This will create an increase in the normal cost, especially for Cities with the Updated Service Credit provision. The following exhibits provide more detail and illustrations of the findings of the analysis.

Years of Service	Current Salary Scale		2013 - 2022 Actual Experience			Proposed Salary Scale	
	Total	Step Rate/ Promotional	Total	Above Inflation	Step Rate/ Promotional	Total	Step Rate/ Promotional
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	11.50%	8.00%	12.43%	10.44%	8.57%	11.85%	8.25%
2	7.25%	3.75%	8.10%	6.11%	4.24%	7.60%	4.00%
3	6.75%	3.25%	7.55%	5.56%	3.69%	7.10%	3.50%
4	6.25%	2.75%	7.11%	5.12%	3.25%	6.60%	3.00%
5	6.00%	2.50%	6.85%	4.86%	2.99%	6.35%	2.75%
6	5.75%	2.25%	6.53%	4.54%	2.67%	6.10%	2.50%
7	5.50%	2.00%	6.20%	4.21%	2.34%	5.85%	2.25%
8	5.25%	1.75%	5.95%	3.96%	2.09%	5.60%	2.00%
9	5.00%	1.50%	5.76%	3.77%	1.90%	5.35%	1.75%
10	4.75%	1.25%	5.66%	3.67%	1.80%	5.10%	1.50%
11	4.50%	1.00%	5.53%	3.54%	1.67%	4.85%	1.25%
12	4.50%	1.00%	5.15%	3.16%	1.29%	4.85%	1.25%
13	4.25%	0.75%	5.10%	3.11%	1.24%	4.60%	1.00%
14	4.25%	0.75%	4.97%	2.98%	1.11%	4.60%	1.00%
15	4.25%	0.75%	4.99%	3.00%	1.13%	4.60%	1.00%
16	4.00%	0.50%	4.73%	2.74%	0.87%	4.35%	0.75%
17	4.00%	0.50%	4.62%	2.63%	0.76%	4.35%	0.75%
18	4.00%	0.50%	4.44%	2.45%	0.58%	4.35%	0.75%
19	4.00%	0.50%	4.30%	2.31%	0.44%	4.35%	0.75%
20	4.00%	0.50%	4.43%	2.44%	0.57%	4.35%	0.75%
21	3.75%	0.25%	4.39%	2.40%	0.53%	4.10%	0.50%
22	3.75%	0.25%	4.38%	2.39%	0.52%	4.10%	0.50%
23	3.75%	0.25%	4.23%	2.24%	0.37%	4.10%	0.50%
24	3.75%	0.25%	4.30%	2.31%	0.44%	4.10%	0.50%
25	3.50%	0.00%	3.86%	1.87%	0.00%	3.60%	0.00%

Salary Scale Assumption

Calendar Year	Average Long Service Increase	CPI	Productivity
2013	3.19%	2.07%	1.12%
2014	3.90%	1.46%	2.43%
2015	4.82%	1.62%	3.20%
2016	2.32%	0.12%	2.20%
2017	4.22%	1.26%	2.96%
2018	3.29%	2.13%	1.16%
2019	4.03%	2.44%	1.59%
2020	5.28%	1.81%	3.47%
2021	1.91%	1.23%	0.67%
2022	5.65%	4.70%	0.95%
Average	3.86%	1.99%	1.87%
Proposed	3.60%	2.50%	1.10%

Projection of Salary Growth for New Entrant with $40,000 Salary
Considering only Step-Schedule

Legend: Actual — Current Assumption — Proposed Assumption

Projection of Salary Growth for New Entrant with $40,000 Salary
Nominal Increases

Average Annual Increase Over Career:
Current: 4.95%
Actual: 5.65%
Proposed: 5.30%

Legend: Actual — Current Assumptions — Proposed Assumptions
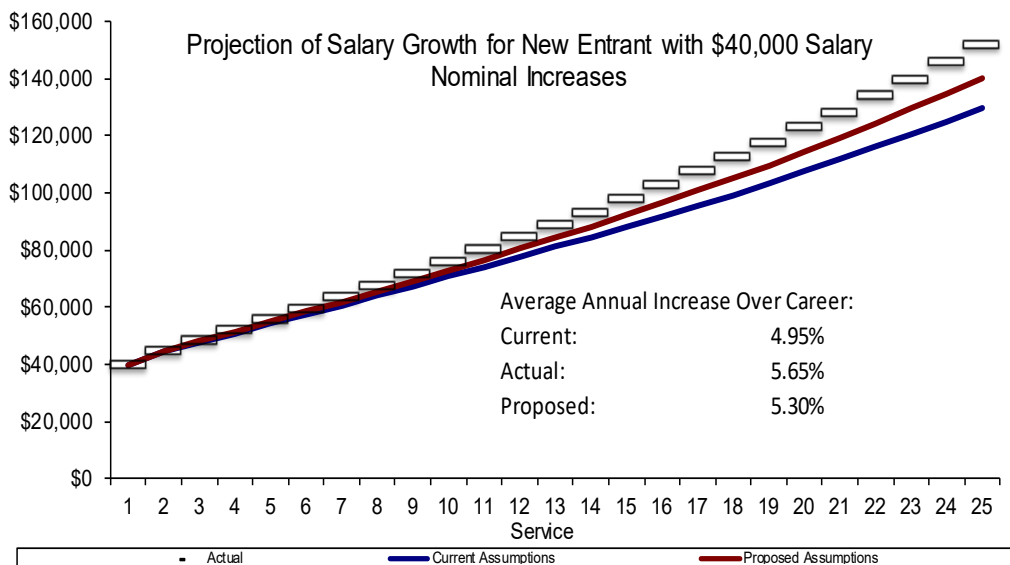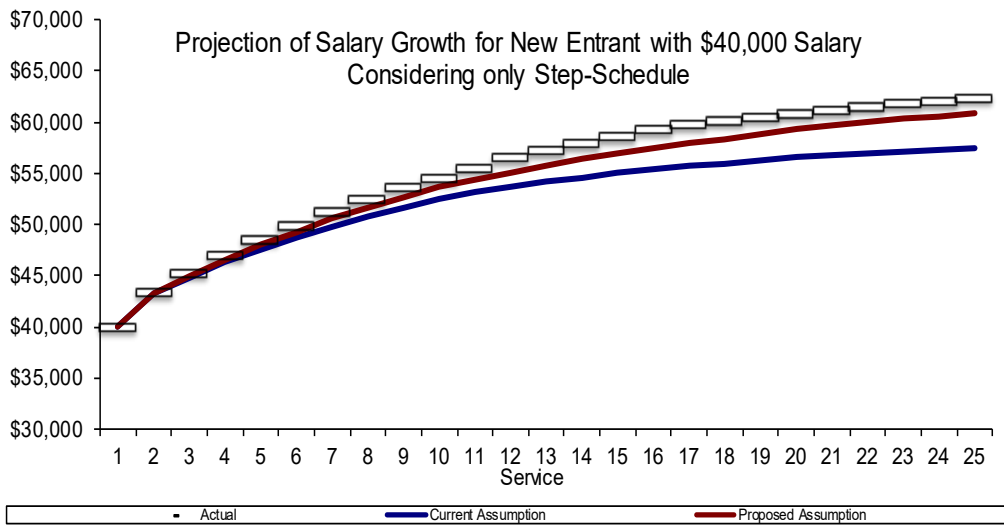
OVERALL PAYROLL GROWTH

The salary increase rates discussed above are assumptions applied to individuals. They are used in projecting future benefits. We also use a separate growth assumption, currently 2.75%, to project the growth in revenue that can be anticipated since the contributions are received as a percentage of payroll. This is used in determining the charge needed to amortize the unfunded actuarial accrued liability. The amortization payments are calculated to be a level percentage of payroll, so as payroll increases over time, these charges do too. Thus, the amortization percentage is dependent on the rate at which payroll is assumed to increase.

The current assumption is built between the 2.50% inflation assumption and a small 0.25% spread for productivity increases. Our preference for this assumption is to be close to inflation so that every generation pays equally towards the UAAL in inflation adjusted dollars. Over the last decade TMRS payroll has grown faster than inflation and it would be contrary to this trend to lower it. Thus, we are recommending no change to his assumption at this time.

Adjustment for population growth

We prefer to not anticipate membership growth in setting the amortization growth assumption. However, the assumption can be adjusted for anticipated decline in the population, which will impact the amount of payroll available to collect contributions.

We compared the annual rate of change in membership from 2008 through 2022 for each city. If a city had a net overall decrease in membership during that time, we have discounted the payroll growth rate for that city by half of the actual rate of annual decrease over the past decade, capped at a 1.5% reduction and rounded down to the nearest 0.1%. For example, if a city had an average population decline of 0.64% per year, the reduction would be 0.64%/2=0.32%, rounded down to 0.30%. This reduction only applies to cities which are underfunded at a given valuation. Overfunded cities will use the 2.75% payroll growth assumption unadjusted in determining their credit from their surplus.

This reduction will help ensure contributions as a percentage of payroll will not escalate if the population does not stabilize over the coming decade. For employers that have a relatively small unfunded liability, or a short amortization period, this reduction will have minimal impact.

This adjustment was first performed in the 2015 experience study and carried forward to the 2019 study. Thus, most cities impacted by this adjustment already have a population decline adjustment. The net change compared to the current assumption is a net decrease in the number of cities that will have the adjustment from 202 to 179.

COST OF LIVING INCREASES

A member city may elect to increase the annuities of its retirees, either annually or on an annually repeating basis, effective January 1 of a calendar year. Cities may adopt annuity increases at a rate equal to either 30%, 50%, or 70% of the increase (if any) in the Consumer Price Index — all Urban Consumers (CPI-U) between the December preceding the member's retirement date and the December 13 months before the effective date of the increase, minus any previously granted increases.

Please note that the formula for projecting future increases is not $(1+CPI*70\%)^N$, and thus a 70% repeating COLA would not grow at 2.50% * 70% = 1.75% per year. The actual formula would be $1+[(1+CPI)^N-1]*70\%$, which will outpace the 1.75% above.

We recommend no change to the current future COLA assumptions: 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.

Cities currently have an option to choose a non-retroactive version of the COLA. For these cities, a direct proportion of the 2.5% CPI assumption is more appropriate, meaning 0.75% per year for the 30% CPI provision, 1.25% per year for the 50% CPI provision, and 1.75% per year for the 70% CPI provision.

UPDATED SERVICE CREDIT

Updated Service Credit (USC) is an optional benefit feature of TMRS. A city may adopt or rescind the USC provision by ordinance. USC is designed to help a member's benefit maintain its value over the duration of the member's career.

For the purposes of determining USC, a study date (the December 31 that is 13 months prior to the effective date of the USC adoption) is used to determine the average USC salary. A hypothetical balance is then calculated based on the average USC salary, the current employee deposit rate, city matching ratio, and 3% annual interest assumption. This hypothetical balance is then compared to the member's actual deposits, earned interest, and matching funds. If the hypothetical balance is greater, then the difference between these two balances is the base updated service credit to which the percentage adopted is applied.

This provision does not typically create USC in a consistent manner, but instead occurs when either the benefits are changed or when a member receives a promotion or other larger than typical salary increase. If the member has not received significant salary increases, the USC calculation may not result in a credit. Thus, this provision accrues differently than most pension benefits in that the accrual is not consistent throughout the career.

Once a USC has been given to a member, this balance remains and is credited with 5% annual interest for the remainder of the member's career. Thus, once the USC is made the value cannot be offset by future opposing experience.

In the last experience study, we had noticed that the gain/loss by source created in the valuation has shown a loss from salary increases being higher than traditional mathematical estimations would have expected. This occurs because this provision creates an asymmetry in the actuarial model so that experience from members that create losses are not necessarily offset by experience from members that create gains as they are in typical benefit structures. This asymmetry causes this provision to fall under Section 3.5.3 of ASOP No.4: Plan Provisions that are Difficult to Measure.

Thus, using traditional applications of the salary scales were creating a bias that was not incorporated into the contribution rates and thus was likely to generate losses in future valuations and could potentially underestimate the cost of this provision for cities that are contemplating adding it. We considered adding a load to the salary increase assumption to project larger liabilities, but that would have also increased the present value of future salaries used in determining the normal cost and would have increased liabilities for cities that do not have this provision. Thus, we recommended the addition of a load in the USC calculation itself that gets larger the longer the time horizon to allow for potential promotions or large salary increases. We currently use a load in the USC calculation itself that gets larger the longer the time horizon for potential promotions or large salary increases. The load is 0.1% per year into the future the calculation occurs.

To re-examine the appropriate load, we performed a stochastic analysis on a hypothetical member who works 25 years and retires, randomly pulling actual increases received by members from the last four years of data. We simulated 1,000 careers and observed the difference between the mean outcome of USC balance and what the typical application of the salary scale would have produced.

Salary increases are not uniform across the population, meaning if the average increase was 3%, there will not necessarily be the same number of members that receive a 2% increase as a 4% increase. Instead,

there will be more members who receive an increase slightly less than the average, and this will be offset by a lower number of members receiving increases well above average. The following is the distribution of pay increase for members with 10 years of service:

Members with 10 years of Service Grouped by Size of Pay Increase
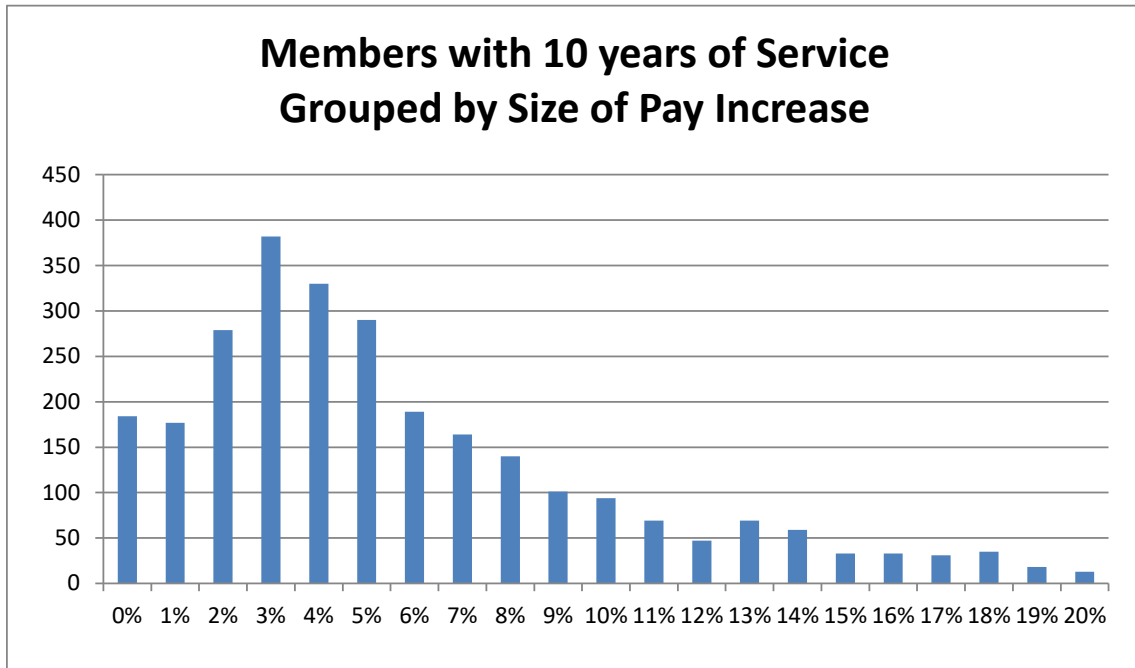
For the data above, the average increase was 5.85%, however, only 40% of the population received pay increases greater than 5.85%. The median (50th percentile) was 4.70%. This type of pattern is called a lognormal distribution and is the source of the asymmetry over an actual career vs the deterministically modeled career in the actuarial valuation.

It should be noted that the higher the salary increases are overall, the less impact asymmetry has as the interest credits are fixed. Even so, the current analysis confirmed the current load of 0.1% per year into the future the calculation occurs continues to be a reasonable assumption.

POST-RETIREMENT MORTALITY RATES (LIABILITY AND COST CALCULATIONS)

TMRS' actuarial liabilities and retirement contribution rates depend in part on how long retirees live. If members live longer, benefits will be paid for a longer period of time and the liability and ultimate employer contribution rates will be larger.

The issue of future mortality improvement is one that the governing bodies of our profession have increasingly become more focused on studying and ensuring that the actuarial profession remains on the forefront of this issue. Actuarial Standard of Practice, ASOP 35, Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations, requires pension actuaries to make and disclose an assumption as to the expected mortality improvement after the valuation date.

The expectation of continued increases in longevity is supported by national trends. The following graph provides the expected remaining lifetime in years for a 65-year old retiree measured beginning in 1960. This significant change in pattern has led most of the actuarial profession to agree that future improvements will likely continue.

Life Expectancy in Years, Current Age 65
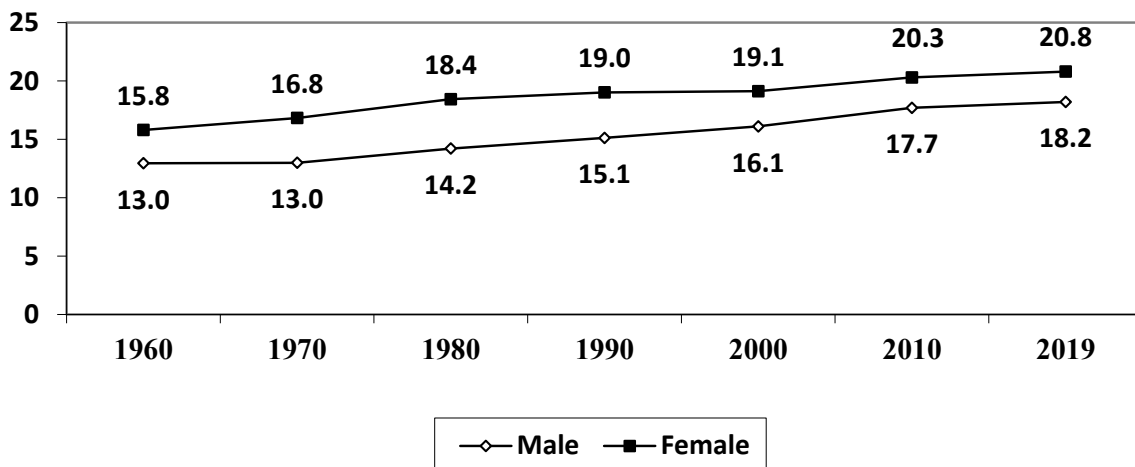
Source: National Vital Statistics Reports

Based on this, TMRS currently uses a fully generational approach for mortality assumptions. By doing this, future mortality rates will be projected to continually decrease each year. Therefore, the life expectancy at age 60 for someone reaching 60 now will not be as long as the life expectancy for someone reaching 60 in 2030, and their life expectancy will not be as long as someone reaching 60 in 2040, etc. For illustrative purposes, the following table provides the life expectancy for individuals retiring in future years, based on the current Municipal Retirees of Texas mortality table as of 2019.

Life Expectancy for an Age 65 Retiree (in Years) – Current Assumption					
Gender	Year of Retirement				
	2020	2025	2030	2035	2040
Male	19.7	20.1	20.5	20.9	21.3
Female	23.2	23.6	24.0	24.3	24.7

Because of this assumption of continuous improvement, life expectancies for today's younger active members are expected to be longer than those of today's retirees. The improvement over time is built into the projections for individual members.

APPROACH AND STRATEGY

Our strategy is to have a long-term, mostly unchanging projected mortality improvement scale and then update the base tables with each experience study to keep the data as recent as possible. This will allow for small, more frequent adjustments in comparison to a long period of no adjustments followed by a large one-time adjustment. We have utilized nine years of experience to increase the credibility of the analysis, minimize any variance created by timing of data collection from year to year, and maximize stability from study to study. We adjusted each year's data to the central year, in this case 2018.

To analyze the data, we began by determining the number of retirees exposed to mortality and the resulting expected number of deaths in each year at each age for males and females. The analysis uses only the retirees, not the beneficiaries, joint annuitants, or survivors. We use a liability-weighted (or benefit weighted) analysis. There are two reasons for using a liability-weighted approach. First, mortality experience across the U.S. has been shown to vary depending on income level. Liability-weighting considers differing benefit levels. Second, selecting an assumption based on headcount-weighting is consistent with estimating expected deaths, but selecting an assumption based on liability-weighting is consistent with minimizing gains and losses associated with expected deaths. By weighting the data by annuity amounts, we are giving more weight to members who have larger annuities (and thus have larger liabilities).

Impact from Pandemic

The data from the last three fiscal years was clearly impacted by the pandemic, with higher rates of mortality than the first 6 years. For example, the national statistic for a 65-year old in 2021 was 17.0 years for males and 19.8 years for females, compared to the 18.2 and 20.8 in 2019 in the chart on the previous page. As illustrated on the following graph, this was especially true at the older ages. No one knows for sure how future mortality patterns will be impacted. As such, we have discounted the data from this study by not creating a new table based on the current data (which would impact the curve, or fit, by age) and by only moving half way between the current assumption and the 9-year experience by applying a multiplier to the table. Since the multiplier is annuity weighted and there are more recent retirees than older retirees and more recent retirees have larger annuities, this adjustment will be more influenced by the experience from age 60 to 75 than by the experience at older ages. If there truly has been a change in the shape of the mortality curve, we will reflect that in the next experience study.

Base Mortality Experience
Males

Legend: — Actual Experience   – – Current Assumption   —— Proposed Assumption
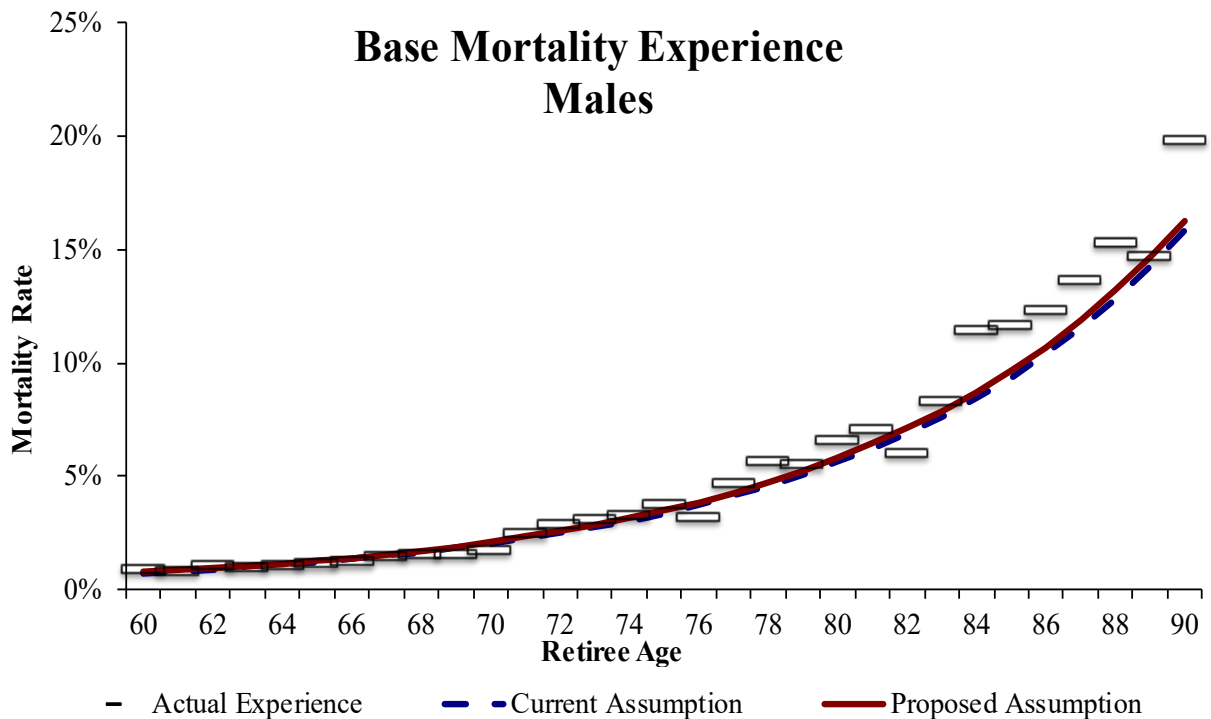
TMRS SPECIFIC ANALYSIS

The current post-retirement mortality assumption was developed in 2019 based on the TMRS specific data in that experience study.   There are separate tables for males and females and they are generationally projected with scale MP-2019 (immediate convergence).

Credibility

When choosing an appropriate mortality assumption, actuaries typically use standard mortality tables, unlike when choosing other demographic assumptions. They may choose to adjust these standard mortality tables, however, to reflect various characteristics of the covered group, and to provide for expectations of future mortality improvement (both up to and after the measurement date). If the population has sufficient credibility to justify its own mortality table, then the use of such a table also could be appropriate. Factors that may be considered in selecting and/or adjusting a mortality table include the demographics of the covered group, the size of the group, the disability provisions of the current group, the statistical credibility of its experience, and the anticipated rate of future mortality improvement.

We analyzed the data against the recently published PUB(10) mortality tables, and very well could have used them. They fit the data, especially for males, very well. However, we are uncertain as to the timing of the next publication of tables (with the recent ones actually based on data that is almost 14 years old) and would rather have a more frequent, controllable adjustment process. Thus, we would prefer to develop client specific tables if possible as it would be on much more recent data.

We first measured the credibility of the dataset to determine whether standard, unadjusted tables should be used or if client specific data was warranted.   We apply a credibility procedure in accordance with ASOP

No. 25, Credibility Procedures to determine partial credibility based on the limited fluctuation method to determine appropriate adjustments to the base table to be applied to each gender within each member classification. We utilized approaches described in this paper https://www.soa.org/globalassets/assets/files/static-pages/sections/retirement/credibility-resource-pension.pdf for this analysis. The paper shows that to be +/-5% with 90% confidence requires 1,082 deaths per gender. However, when using a benefit weighted approach to the analysis, even more deaths are required as the variance in the benefit amounts decreases the overall credibility. During the period, there were 8,742 male deaths and 2,679 female deaths indicating a highly credible group. The following provides the full details with p=95% and r=5%.

| Gender	Male	Female
Actual Deaths	8,742	2,679
Deaths needed for full credibility		
Based on Count	1,537	1,537
Based on Annuity Amount	3,035	3,012
Z Factor		
Based on Count	100.0%	100.0%
Based on Annuity Amount	100.0%	94.9%

Base Tables

We use the limited fluctuation credibility procedure to determine the appropriate scaling factor of the base mortality tables for each gender on a benefits weighted basis. In each case, the Z-factor (shown above) is computed based on the experience of the group being studied. This Z-factor is a measure of the credibility of the pertinent group.

The Best Fit is the ratio of actual to expected deaths using the base table. The final scale is then determined as the weighted average of the Best Fit and 100% based on the Z-factor. For example, for females, the Z-factor of 94.9% suggests the data for that group is 94.9% credible. The Best Fit for that group (without credibility) would be to scale the base tables by 109.9%. The final scale of 109.4% is the credibility-weighted average (109.4% = 94.9% x 109.9% + 5.1% x 100%).

Gender	Male	Female
Actual Deaths ($000 Annuities)	$1,582	$378
Expected Deaths based on Current Assumptions	$1,474	$344
A/E Ratio based on Best Fit	107.3%	109.9%
Multiplier based on LFCT	107.3%	109.4%
Recommended Multiplier	**103.0%**	**105.0%**
Expected Deaths based on Proposed Assumptions	$1,522	$360
A/E Ratio	103.9%	105.0%

Our standard approach would be to use the Multiplier based on LFCT, rounded down to the nearest percent. However, as discussed above, because of the pandemic we have dampened the change in multipliers by half from the current assumptions. We also examined the results in five-year age groups, checking how well the pattern in the table matched actual experience. Most importantly, we look at life expectancies in the actual data and the tables, looking for a good fit. A summary of the comparison of life expectancies is shown below:
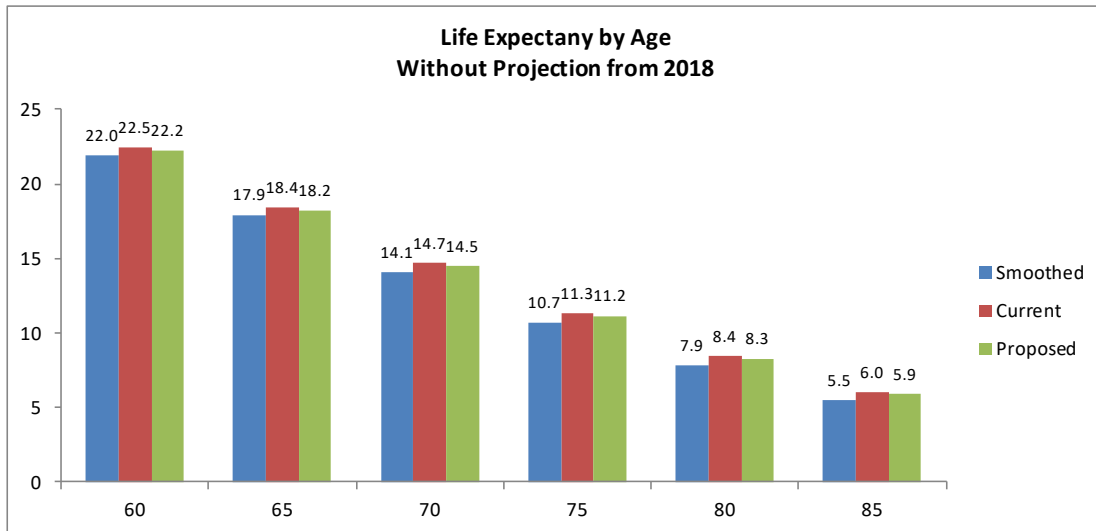
As shown, this produces a reasonable match, with the actual moving towards the recent data.

Recommended Mortality Improvement Assumption

We use a fully generational approach to this assumption. Because of this strategy of building in continuous improvement, life expectancies for today's younger active members are expected to be materially longer than those of today's retirees, and this provides substantial stability and dependability on costs and liabilities. We currently use a 1% improvement assumption per year across most ages.

There is an annual report published by the Retirement Plans Experience Committee of the Society of Actuaries to provide commentary on national trends in mortality experience and provide updated projection scales. The initial report was in 2014, with annual updates every year since. In every update, rates of projection were materially decreased, meaning the original MP-2014 table was found to be too conservative. In addition, the amount of change from year to year has been significant. The amount of volatility produced by changing annually to each "most recent" table has been on the same order as the actual investment performance. Thus, we find that the use of the full version of these tables to produce an overly complex, volatile pattern of results that has actually had minimal, if any, predictive power.

After approximately 15 years, all of the versions (prior to the 2020) of the MP tables reflected the same improvement rate at each future calendar year (the ultimate mortality improvement rates) equal to 1% per year across most ages. This is the assumption we currently use. In order to balance the two objectives of reflecting the most recent data available, while maintaining stability of results from year to year, GRS has been recommending the use of the ultimate mortality improvement rates in the MP tables for all years, which is again approximately 1% per year improvement across most ages.

In the 2020 report the ultimate mortality improvement rates were modified to be higher at some ages and more precise across different age groups based on historical trends. Specifically, the pattern is a 1.35% rate for ages 62 and younger, decreasing linearly to 1.10% at age 80, further decreasing linearly to 0.40% at age 95, and then decreasing linearly to 0.00% at age 115 (and thereafter). In general, the net change in overall liabilities if a retirement system was using the ultimate rates of the MP-2019 table to the ultimate rates of the MP-2020 version is minimal. Basically, the rates at individual ages were changed but the overall pattern over a lifetime is not much different.

We find it would be reasonable to use either set of improvement scales, but give preference to the more recently published report all else being equal. Given the material increase in healthcare costs it has required over the last few decades to allow for the rates of improvement that have existed, and the general worsening in morbidity factors in the United States, we find it reasonable to assume the future improvement would be approximate to or less than it has been historically across most ages. The 2020 report provides several pages of rationale and disclosure of the process used to generate the new long-term rates, including comparing to historical trends, and we find the analysis thorough and reasonable. Thus, we are recommending use of the latest MP-2021 scales, but with immediate convergence. Meaning the final values in the scale for a given age will be applied to all years.

The following is a table with the life expectancy for a retired member who attains age 65 based on the proposed assumption set, by calendar year. As shown, the life expectancy is expected to increase into the future.

Proposed Mortality Assumption - Life Expectancy for an Age 65 Retiree in Years					
Group	Year of Retirement				
	2023	2028	2033	2038	2043
Male	19.6	20.0	20.3	20.7	21.1
Female	22.8	23.2	23.5	23.8	24.2

NON-DISABLED RETIREES
POST-RETIREMENT MORTALITY - MALES
WEIGHTED BY AMOUNT OF ANNUITY IN $000s

Age	Actual Deaths	Total Annuities	Actual Rate	Assumed Rate Current	Assumed Rate Proposed	Expected Deaths Current	Expected Deaths Proposed	Actual / Expected Current (2) / (7)	Actual / Expected Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
55-59	$ 65	$ 9,035	0.0072	0.0056	0.0059	$ 51	$ 53	127%	123%
60-64	148	14,970	0.0099	0.0092	0.0096	138	143	107%	103%
65-69	237	16,738	0.0142	0.0151	0.0156	252	261	94%	91%
70-74	307	11,656	0.0263	0.0250	0.0258	291	301	105%	102%
75-79	275	6,166	0.0446	0.0415	0.0428	256	264	107%	104%
80-84	255	3,344	0.0763	0.0691	0.0712	231	238	110%	107%
85-89	190	1,440	0.1319	0.1153	0.1188	166	171	114%	111%
90-94	89	383	0.2324	0.1958	0.2010	75	77	119%	116%
95-99	16	42	0.3810	0.3333	0.3333	14	14	114%	114%
Totals	$ 1,582	$ 63,774				$ 1,474	$ 1,522	107%	104%

NON-DISABLED RETIREES
POST-RETIREMENT MORTALITY - FEMALES
WEIGHTED BY AMOUNT OF ANNUITY IN $000s

Age	Actual Deaths	Total Annuities	Actual Rate	Assumed Rate Current	Assumed Rate Proposed	Expected Deaths Current	Expected Deaths Proposed	Actual / Expected Current (2) / (7)	Actual / Expected Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
55-59	$ 10	$ 2,537	0.0039	0.0028	0.0028	$ 7	$ 7	143%	143%
60-64	24	4,774	0.0050	0.0046	0.0048	22	23	109%	104%
65-69	49	5,751	0.0085	0.0082	0.0085	47	49	104%	100%
70-74	64	4,351	0.0147	0.0142	0.0149	62	65	103%	98%
75-79	65	2,407	0.0270	0.0253	0.0266	61	64	107%	102%
80-84	67	1,288	0.0520	0.0450	0.0474	58	61	116%	110%
85-89	58	612	0.0948	0.0784	0.0833	48	51	121%	114%
90-94	30	194	0.1546	0.1392	0.1443	27	28	111%	107%
95-99	11	48	0.2292	0.2500	0.2500	12	12	92%	92%
Totals	$ 378	$ 21,962				$ 344	$ 360	110%	105%

DISABLED MORTALITY RATES

This is a minor assumption as there are relatively few disability occurrences and TMRS disability benefits are not subsidized. The assumption for disabled members is the same as healthy members, except a four-year set-forward for males and a three-year set-forward for females is applied, meaning a female member who is age 60 will be valued as if they are 63. In addition, a 3.5% minimum mortality rate is applied for males and a 3.0% minimum mortality rate for females is applied to reflect the impairment for younger members that become disabled. These adjustments appear to still be appropriate.

DISABLED RETIREES
POST-RETIREMENT MORTALITY - MALES
WEIGHTED BY AMOUNT OF ANNUITY

Age	Actual Deaths	Total Annuities	Actual Rate	Assumed Rate Current	Assumed Rate Proposed	Expected Deaths Current	Expected Deaths Proposed	Actual / Expected Current (2) / (7)	Actual / Expected Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
40-44	$ 291	$ 24,717	0.0118	0.0350	0.0350	$ 865	$ 865	34%	34%
45-49	1,773	44,912	0.0395	0.0350	0.0350	1,572	1,572	113%	113%
50-54	1,529	69,384	0.0220	0.0350	0.0350	2,428	2,428	63%	63%
55-59	3,844	123,191	0.0312	0.0350	0.0350	4,312	4,312	89%	89%
60-64	5,266	154,551	0.0341	0.0350	0.0350	5,409	5,409	97%	97%
65-69	7,255	145,290	0.0499	0.0350	0.0350	5,085	5,085	143%	143%
70-74	9,103	117,655	0.0774	0.0376	0.0388	4,418	4,560	206%	200%
75-79	5,275	73,888	0.0714	0.0625	0.0644	4,616	4,762	114%	111%
80-84	5,840	43,454	0.1344	0.1040	0.1071	4,518	4,654	129%	125%
85-89	3,161	15,948	0.1982	0.1764	0.1814	2,814	2,893	112%	109%
90-94	553	2,958	0.1870	0.2995	0.3073	886	909	62%	61%
Totals	$ 43,890	$ 815,948				$ 36,923	$ 37,449	119%	117%

DISABLED RETIREES
POST-RETIREMENT MORTALITY - FEMALES
WEIGHTED BY AMOUNT OF ANNUITY IN $000s

Age	Actual Deaths	Total Annuities	Actual Rate	Assumed Rate Current	Assumed Rate Proposed	Expected Deaths Current	Expected Deaths Proposed	Actual / Expected Current (2) / (7)	Actual / Expected Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
40-44	$ 63	$ 7,132	0.0088	0.0300	0.0300	$ 214	$ 214	29%	29%
45-49	629	16,094	0.0391	0.0300	0.0300	483	483	130%	130%
50-54	335	23,918	0.0140	0.0300	0.0300	718	718	47%	47%
55-59	667	43,757	0.0152	0.0300	0.0300	1,313	1,313	51%	51%
60-64	1,646	59,943	0.0275	0.0300	0.0300	1,798	1,798	92%	92%
65-69	979	48,798	0.0201	0.0300	0.0300	1,464	1,464	67%	67%
70-74	1,911	39,841	0.0480	0.0300	0.0300	1,195	1,195	160%	160%
75-79	1,188	24,231	0.0490	0.0360	0.0375	872	909	136%	131%
80-84	1,515	11,119	0.1363	0.0629	0.0660	699	734	217%	206%
85-89	503	6,591	0.0763	0.1130	0.1185	745	781	68%	64%
90-94	698	2,136	0.3268	0.1994	0.2088	426	446	164%	157%
Totals	$ 10,134	$ 283,560				$ 9,927	$ 10,055	102%	101%

ACTIVE MORTALITY RATES

This is another minor assumption with little impact on the employer contribution rates. However, they do have a material impact on the Supplemental Death Benefit Plan. We recommend continuing to utilize the recently published PUB(10) mortality tables, using the public safety table for males and the general employee table for females. We recommend applying a 110% multiplier to the male table to achieve an A/E ratio closer to 100% in order to protect against adverse experience in the Supplemental Death Benefit Plan.

MALE PRE-RETIREMENT MORTALITY

Age	Actual Deaths	Total Count	Actual Rate	Assumed Rate Current	Assumed Rate Proposed	Expected Deaths Current	Expected Deaths Proposed	Actual / Expected Current (2) / (7)	Actual / Expected Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	0	0	N/A	0.0003	0.0003	0	0	N/A	N/A
20-24	0	448	N/A	0.0004	0.0004	0	0	N/A	N/A
25-29	2	10,275	0.0002	0.0004	0.0004	4	4	50%	25%
30-34	3	26,926	0.0001	0.0004	0.0005	11	13	33%	36%
35-39	10	36,386	0.0003	0.0005	0.0006	18	20	43%	53%
40-44	11	37,451	0.0003	0.0007	0.0007	25	28	26%	31%
45-49	42	40,616	0.0010	0.0010	0.0010	38	43	64%	72%
50-54	54	39,420	0.0014	0.0014	0.0015	53	59	70%	80%
55-59	82	34,983	0.0023	0.0021	0.0023	69	76	79%	113%
60-64	110	23,822	0.0046	0.0032	0.0035	71	76	77%	131%
65-69	53	8,748	0.0061	0.0053	0.0058	42	43	73%	133%
70-74	23	2,217	0.0104	0.0098	0.0108	20	19	38%	60%
Totals	390	261,292				351	381	111%	102%

FEMALE PRE-RETIREMENT MORTALITY

Age	Actual Deaths	Total Count	Actual Rate	Assumed Rate Current	Assumed Rate Proposed	Expected Deaths Current	Expected Deaths Proposed	Actual / Expected Current (2) / (7)	Actual / Expected Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	0	0	N/A	0.0001	0.0001	0	0	N/A	N/A
20-24	0	115	0.0000	0.0001	0.0001	0	0	N/A	N/A
25-29	1	3,331	0.0007	0.0001	0.0001	0	0	N/A	N/A
30-34	1	9,536	0.0000	0.0002	0.0002	2	2	0%	0%
35-39	1	12,641	0.0001	0.0003	0.0003	3	4	25%	33%
40-44	4	13,955	0.0001	0.0004	0.0004	6	6	14%	17%
45-49	3	15,187	0.0005	0.0007	0.0007	10	10	62%	80%
50-54	6	16,335	0.0006	0.0010	0.0010	15	15	56%	63%
55-59	22	15,924	0.0014	0.0014	0.0014	22	22	85%	100%
60-64	20	12,372	0.0019	0.0022	0.0022	26	25	66%	91%
65-69	15	4,918	0.0045	0.0036	0.0036	16	15	83%	136%
70-74	2	1,292	0.0065	0.0060	0.0060	7	6	70%	117%
Totals	75	105,606				107	105	70%	71%

ANNUITY PURCHASE FACTORS

Members of TMRS have their annuities determined by taking their total member contributions plus employer match plus any updated service credit balance at the date of retirement and dividing by an annuity purchase factor (APR) based on the member's (or perhaps beneficiary's) age. The current annuity purchase factors were developed based on experience from the 2013 mortality study and were implemented expecting to be actuarial equivalent to the valuation assumption (meaning the assumptions for both purposes were the same and the best estimate of future experience). The factors are based on a unisex blend of the RP-2000 Combined Healthy Mortality Tables with Blue Collar Adjustment for males and females with both male and female rates multiplied by 107.5% and projected on a fully generational basis with scale BB. The factors are being phased in over a 13-year period beginning 2015 and thus there are 4 years left before the factors would be considered actuarially equivalent.

With the recommended changes above, especially the change in the projection scale, the annuity purchase factors in 2027 are almost identical to what they would be based on the proposed assumptions for valuation purposes and would remain close for a number of years afterward. As such, we are not recommending a change to the actual factors at this time (as the phase in continues). However, as the two assumption sets have different rates of improvement we do foresee a change to the factors in a future experience study if the delta between the two deviate. In other words, if during a future experience study it is found that the annuity purchase factors are creating a subsidy from the employer to the member, or from the member to the employer, they will be adjusted to return to equivalence.

Thus, for valuation purposes, we are assuming that the APRs and the valuation assumptions will be equivalent over the long term. To not do so would develop a bias to understate the cost over the short term and require a contribution increase at a later time to make them equivalent again. We have incorporated the known factors through 2032, which is 5 years after the end of the phase in period, and then assumed actuarial equivalence between the valuation assumptions and annuity purchase rates. This way we are not valuing a subsidy either way over the long term and it will not require a change in contribution rate to make it so.

DISABILITY RATES

Disability is also a minor assumption.

The results of the analysis for the last 5 fiscal years are shown below. To take account for the lag in processing, the actual disabilities are based on the retiree data file as of December 31, 2022 with retirement dates in the five-year period 2017 through 2021. The actual number of disabilities has been much lower than assumed. We have recommended a 20% reduction to the current assumption.

MALE AND FEMALE DISABILITY EXPERIENCE

Age	Actual Disabilities	Total Exposed	Actual Rate	Assumed Rate Current	Assumed Rate Proposed	Expected Disabilities Current	Expected Disabilities Proposed	Actual / Expected Current (2) / (7)	Actual / Expected Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	0	619	0.0000	0.0000	0.0000	0	0	0%	0%
20-24	0	23,491	0.0000	0.0000	0.0000	0	0	0%	0%
25-29	0	60,190	0.0000	0.0000	0.0000	2	2	0%	0%
30-34	7	72,715	0.0001	0.0001	0.0001	9	7	78%	100%
35-39	26	74,183	0.0004	0.0003	0.0002	19	15	137%	173%
40-44	35	69,518	0.0005	0.0005	0.0004	32	25	109%	140%
45-49	30	70,463	0.0004	0.0007	0.0006	50	40	60%	75%
50-54	48	68,600	0.0007	0.0010	0.0008	70	56	69%	86%
55-59	90	62,217	0.0014	0.0014	0.0011	86	69	105%	130%
60-64	11	43,209	0.0003	0.0018	0.0014	77	62	14%	18%
65-69	3	16,115	0.0002	0.0022	0.0018	36	29	8%	10%
70-74	1	4,281	0.0002	0.0028	0.0021	12	9	8%	11%
Totals	251	565,601				393	314	64%	80%
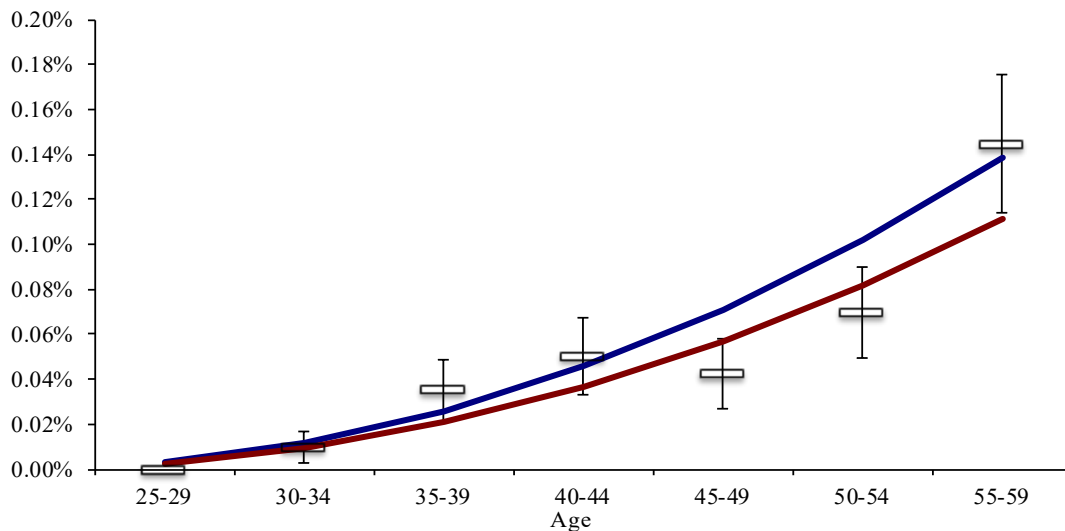
TERMINATION RATES (OR TURNOVER)

Termination rates reflect members who leave for any reason other than death, disability or service retirement. They apply whether the termination is voluntary or involuntary, and whether the member takes a refund or keeps his/her account balance on deposit in TMRS. The current termination rates are composed of two distinct assumptions, one for the first ten years of service called the "select" period and a separate assumption for terminations after the ten year period called the "ultimate." The select assumption reflects the member's age, service and gender. The ultimate assumption is based on the member's time until retirement eligibility and gender. We have analyzed the two assumption periods separately. Probabilities are turned off once a member reaches retirement eligibility, with any terminations after eligible to retire counted as retirements.

Each employer has a multiplier applied to the base tables based on their own experience between 75% and 125% and then there is an additional multiplier applied based on the employment category of the member (Police, Fire, or Other Employees).

We used ten years of data in the analysis. In addition, we have weighted the experience by liability, meaning instead of counting members and the portion of members that terminate, we have counted liabilities and the portion of the liability that terminates. A higher paid member with USC balances, etc. has more liability than a lower paid member, and thus the termination pattern for the higher paid member will have more impact on the future liabilities of the city. Also, traditionally, higher paid members are hired into positions that have lower turnover versus lower paid members. Using liability weighting instead of headcount weighting made a 20% difference in the A/E. The impact is largest early in the career, which has a material impact on the normal cost under the entry age normal funding method. Members who were eligible to retire but showed as a vested termination in the reconciliation was counted as a retirement.

For this assumption, we prefer to have the A/E ratio in the 103%-107% range. This small margin allows for a small portion of terminating members to be rehired in the future without generating actuarial losses.

Select Period

The age and service structure recognized a historical fact that the turnover rates for a new member in their 20's are much different than the turnover rates for a new member in their 40's. In that case, using a simple average among all members can overestimate the cost for the younger members and underestimate the cost for the older members. However, recent trends have not produced as much difference between the ages, especially when weighted by liability instead of count. The following chart gives the probability of turnover for the first ten years of service for the past decade for a member hired at age 25 versus a member hired at age 45.
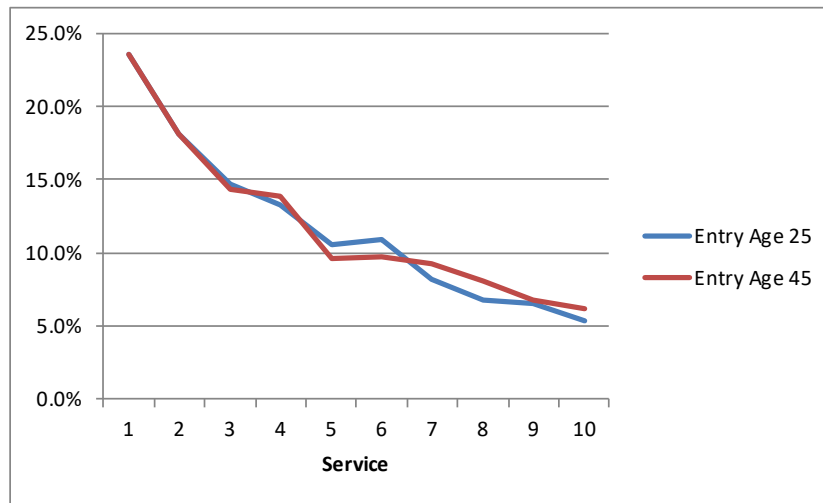
As shown, there is not much difference by entry age, and a similar analysis shows there is not much difference by gender either when occupation is considered. With older entry ages it would be preferable for members to enter into the "Ultimate" portion of the assumption which is based on years from retirement sooner than 10 years. Thus, we have simplified the Select portion of the assumption to be a three-year unisex probability based on service. With the liability weighting and the reorganization, the end result is assuming lower probabilities of turnover early in the member's career.

ALL EMPLOYEES
SELECT TERMINATION EXPERIENCE
WEIGHTED BY LIABILITY IN $000s

Service	Terminations Weighted by Liability	Exposure Weighted by Liability	Crude Rates	Sample Rates		Expected Terminations Weighted by Liability		A/E	
				Current	Proposed	Current	Proposed	Current	Propose
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	$ 960,401	$ 4,168,849	0.2304	0.2568	0.2250	$ 1,070,764	$ 937,991	90%	102%
2	933,955	5,253,847	0.1778	0.2152	0.1750	1,130,424	919,423	83%	102%
3	831,727	5,493,163	0.1514	0.1699	0.1450	933,421	796,509	89%	104%
Totals	2,726,083	14,915,859	0.1828	0.2102	0.1779	3,134,609	2,653,923	87%	103%

For the ultimate segment of this assumption, we use years until retirement eligibility as our grouping metric. Analysis has shown that the pattern of termination becomes highly correlated as members get closer to their retirement age. For TMRS with the service-only retirement eligibility, a 45-year old member with 18 years of service will likely have a lower probability of turnover than a 45-year old with 10 years of service as the former only has to work 2 more years to retire. Likewise, a member age 58 with 12 years of service will have a lower probability of turnover than a 52-year old with 12 years of service, so service only based assumption can have a bias as well. Also, some employers have retirement eligibilities at 20 years of service while others 25. Having an assumption based on years from retirement allows all of these nuances to be reflected objectively in one, simple approach. The following exhibit provides the full analysis in the ultimate period measured by years until retirement. We did have to recreate a new table to graduate in the data points that used to be in the select period. While it appears there is little difference overall, this did increase rates of turnover for members that would reach the service based eligibly conditions before age 60 and thus did lower the normal cost and accrued liability for members that were expected to produce the largest liabilities. Thus this change did impact the valuation results positively overall.

ALL EMPLOYEES
ULTIMATE TERMINATION EXPERIENCE
WEIGHTED BY LIABILITY IN $000s

Years Retiremen Eligibility	Terminations Weighted by Liability	Exposure Weighted by Liability	Crude Rates	Sample Rates		Expected Terminations Weighted by Liability		A/E	
				Current	Proposed	Current	Proposed	Current	Proposed
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	$ 232,270	$ 8,457,890	0.0275	0.0241	0.0272	$ 203,437	$ 230,039	114%	101%
2	260,597	8,096,066	0.0322	0.0287	0.0301	232,025	243,405	112%	107%
3	291,635	7,890,878	0.0370	0.0335	0.0332	264,414	262,239	110%	111%
4	290,123	7,776,229	0.0373	0.0375	0.0367	291,661	285,665	99%	102%
5	328,280	7,619,800	0.0431	0.0408	0.0406	311,143	309,420	106%	106%
6	350,082	7,307,133	0.0479	0.0441	0.0449	322,205	327,996	109%	107%
7	353,026	6,809,925	0.0518	0.0467	0.0496	318,306	337,894	111%	104%
8	378,556	6,399,222	0.0592	0.0495	0.0548	316,556	350,979	120%	108%
9	395,850	6,077,106	0.0651	0.0529	0.0606	321,584	368,440	123%	107%
10	398,975	5,818,321	0.0686	0.0652	0.0670	379,221	389,928	105%	102%
11	410,542	5,607,778	0.0732	0.0730	0.0741	409,331	415,426	100%	99%
12	447,046	5,371,225	0.0832	0.0825	0.0819	442,952	439,838	101%	102%
13	483,242	5,090,565	0.0949	0.0947	0.0905	481,864	460,788	100%	105%
14	528,504	4,792,392	0.1103	0.1072	0.1001	513,618	479,517	103%	110%
15	518,529	4,509,863	0.1150	0.1188	0.1106	535,963	498,806	97%	104%
16+	508,908	3,871,131	0.1315	0.1403	0.1223	542,936	473,284	94%	108%
Totals	6,176,165	101,495,524	0.0609	0.0580	0.0579	5,887,216	5,873,664	105%	105%
1-5	$ 1,402,905	$ 39,840,863	0.0352	0.0327	0.0334	$ 1,302,680	$ 1,330,768	108%	105%
6-10	1,876,489	32,411,707	0.0579	0.0512	0.0548	1,657,872	1,775,237	113%	106%
11-15	2,387,863	25,371,823	0.0941	0.0940	0.0904	2,383,728	2,294,375	100%	104%
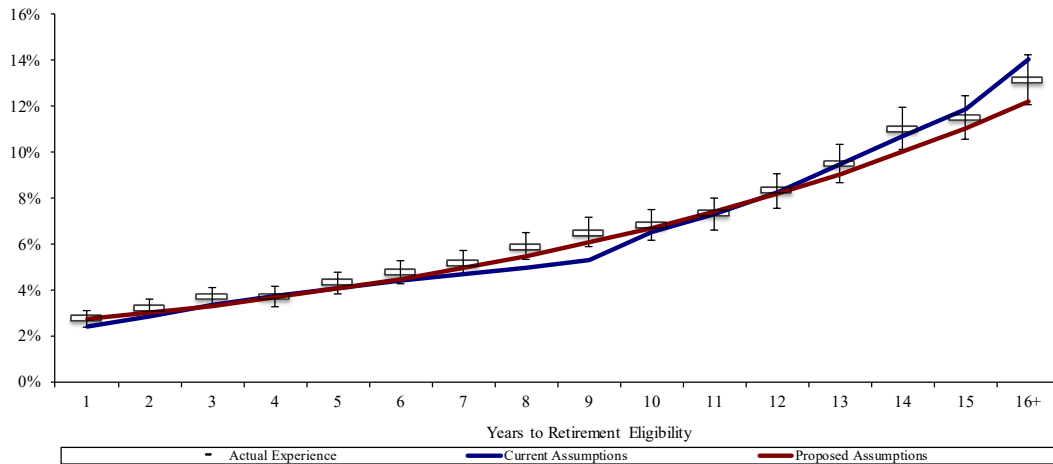
Member Category

As displayed in the following graph, actual experience shows that there are distinct differences in the termination patterns for the diverse three member groups within TMRS, especially for firefighters. Therefore, we will continue to have a structure with multipliers on the base tables based on the category of the individual member: Police, Fire, or Other.

Termination Experience by Member Category
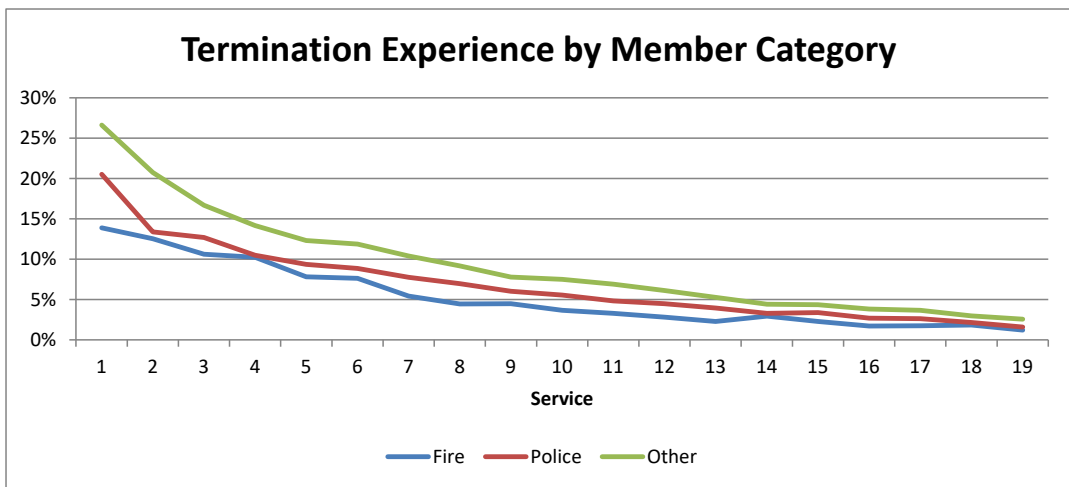
We believe this structure provides for a more objective distinction in the termination pattern between employers than other structures which would apply the same pattern to all individual members. For example, some employers have separate pension plans for their firefighters, so their TMRS population is only Police and Other employees. This employer will likely have greater turnover than an employer that includes firefighters. Under the current structure, these two employers will have explicitly different assumed termination patterns because of the actual census data.

We are recommending the following multipliers which will be applied to the base tables to determine the termination pattern for each member in the actuarial valuation based upon the category of that member:

Category	Multiplier
Police	82%
Fire	63%
Other	116%

Employer Multiplier

Generally, employers were compared to the baseline proposed assumptions using credibility techniques based on their liability weighted A/E ratio. To the extent that credibility would allow for the employer's multiplier to be different than the baseline assumption, the credibility calculation would determine by how much.

We limited this process by not allowing a multiplier for an employer to change from the current multiplier by more than 5% except for cities impacted by the maximum multiplier based on size which is described below. If an employer ultimately needs to have their multiplier changed even further, the next experience study will allow for that transition to continue.

In addition, we placed limits on the multiplier for smaller cities. Smaller cities experience higher turnover in general relative to larger cities. However, if an individual employer experiences very low turnover, the impact on the contribution rates will be substantially larger for smaller employers because there is less

payroll over which to spread the losses. Therefore, to provide conservatism for small employers, we have not allowed the multiplier to be set higher than 120% for employers with less than 100 active members, 100% for employers with between 11 and 15 active members, 90% for employers with between 6 and 10 active members, and 80% for employers with less than 6 active members.

The detail by employer is provided in Appendix A. The average change in the aggregate multiplier is 2% from 97% to 99%.

Final Results

Therefore, the final assumption applied to a specific member will be the base table loaded by the employer multiplier and the member category. For example, if the member's age and service create a termination rate of 10% from the base table, the member is classified in the Police category (82% load), and the individual employer has a multiplier of 90%, then the termination decrement used in the valuation will be 10% * 82% * 90% = 7.4%.

FORFEITURE RATES

When a member leaves service after they are vested, they can elect to withdraw their member contributions, plus interest and forgo any employer match. For a cash balance plan, this can have material impact on the costs and liabilities. The overall liability-weighted forfeiture rate over the study period was approximately 29% for members in cities with a 2-to-1 match which increased to almost 39% for members in cities with a 1-to-1 match. When performing the reconciliation, we also tested against the second year after the termination to capture delays in processing.

The new experience as shown on the chart on the following page suggests the forfeiture rates continue to decline. This is consistent with lower expected earnings on investments as members will place more value on the guaranteed 5% return. We have produced a new, linear pattern.   This change will increase the normal cost and the liabilities for all employers.

ALL EMPLOYEES
REFUND EXPERIENCE
WEIGHTED BY LIABILITY

Age	Refunds Weighted by Liablity	Terminations Weighted by Liablity	Crude Rates	Sample Rates Current	Sample Rates Proposed	Expected Refunds Weighted by Liability Current	Expected Refunds Weighted by Liability Proposed	A/E Current	A/E Propose
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
22	-	36	0.0000	0.4022	0.3957	15	14	NA	NA
23	784	1,239	0.6328	0.4022	0.3901	498	483	157%	162%
24	2,962	4,623	0.6408	0.4022	0.3845	1,859	1,778	159%	167%
25	7,563	13,398	0.5645	0.4022	0.3789	5,389	5,077	140%	149%
26	11,328	22,282	0.5084	0.4022	0.3733	8,962	8,318	126%	136%
27	18,186	38,213	0.4759	0.4022	0.3677	15,369	14,051	118%	129%
28	20,856	50,108	0.4162	0.4022	0.3621	20,154	18,144	103%	115%
29	27,555	67,403	0.4088	0.4022	0.3565	27,110	24,029	102%	115%
30	31,561	78,072	0.4043	0.4022	0.3509	31,401	27,396	101%	115%
31	33,092	88,132	0.3755	0.4022	0.3453	35,447	30,432	93%	109%
32	40,584	115,754	0.3506	0.4022	0.3397	46,557	39,322	87%	103%
33	37,102	112,456	0.3299	0.4022	0.3341	45,230	37,571	82%	99%
34	38,195	110,003	0.3472	0.4022	0.3285	44,244	36,136	86%	106%
35	36,822	120,830	0.3047	0.4022	0.3229	48,598	39,016	76%	94%
36	37,341	126,953	0.2941	0.4022	0.3173	51,061	40,282	73%	93%
37	35,647	132,272	0.2695	0.4022	0.3117	53,200	41,229	67%	86%
38	35,401	127,604	0.2774	0.3914	0.3061	49,941	39,060	71%	91%
39	33,996	122,838	0.2768	0.3805	0.3005	46,745	36,913	73%	92%
40	32,146	107,837	0.2981	0.3697	0.2949	39,869	31,801	81%	101%
41	30,163	108,575	0.2778	0.3589	0.2893	38,966	31,411	77%	96%
42	28,903	101,322	0.2853	0.3481	0.2837	35,266	28,745	82%	101%
43	24,088	98,598	0.2443	0.3372	0.2781	33,250	27,420	72%	88%
44	22,735	92,308	0.2463	0.3264	0.2725	30,129	25,154	75%	90%
45	21,497	81,155	0.2649	0.3156	0.2669	25,610	21,660	84%	99%
46	24,781	82,032	0.3021	0.3047	0.2613	24,998	21,435	99%	116%
47	18,935	81,528	0.2323	0.2939	0.2557	23,961	20,847	79%	91%
48	19,617	75,038	0.2614	0.2831	0.2501	21,241	18,767	92%	105%
49	16,938	69,275	0.2445	0.2722	0.2445	18,860	16,938	90%	100%
50	17,510	65,492	0.2674	0.2614	0.2389	17,121	15,646	102%	112%
51	16,923	61,470	0.2753	0.2506	0.2333	15,403	14,341	110%	118%
52	13,456	58,319	0.2307	0.2398	0.2277	13,982	13,279	96%	101%
53	11,105	47,190	0.2353	0.2289	0.2221	10,803	10,481	103%	106%
54	10,584	44,484	0.2379	0.2181	0.2165	9,702	9,631	109%	110%
55	8,937	45,962	0.1944	0.2073	0.2109	9,526	9,693	94%	92%
56	7,693	41,526	0.1853	0.1964	0.2053	8,157	8,525	94%	90%
57	8,399	42,267	0.1987	0.1856	0.1997	7,845	8,441	107%	100%
58	5,988	38,657	0.1549	0.1748	0.1941	6,756	7,503	89%	80%
59	3,449	32,552	0.1060	0.1639	0.1885	5,337	6,136	65%	56%
Totals	$ 792,822	$ 2,707,804	0.2928	0.3429	0.2907	$ 928,563	$ 787,105	85%	101%

Legend: ▬ Actual   ▬ Current Assumption   ▬ Proposed Assumption
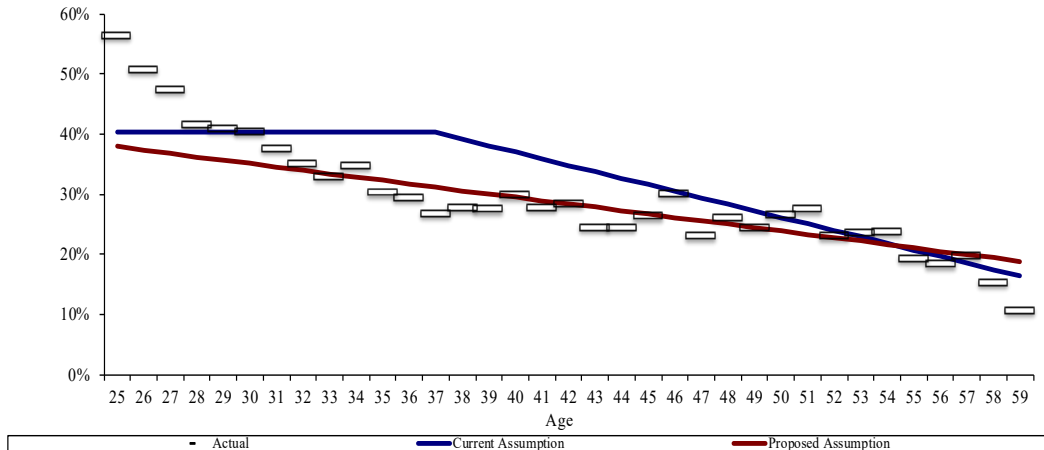
RETIREMENT RATES

We currently use rates of retirement that vary by age. There is also a multiplier based on whether the employer provides a repeating COLA and the net level of the benefit. In most retirement systems with more typical defined benefit structures, an A/E ratio less than 100% is actually desired for conservatism since it is generally more valuable to the member to commence earlier rather than delay retirement to gain additional accruals. However, the cash balance design of TMRS makes the liabilities less sensitive to retirement patterns. Also, the Updated Service Credit provision can produce scenarios where the conservative approach is to assume the member continues to work in order to receive a higher credit.

The analysis was performed weighted by the liability of the individual member. Experience showed that approximately 102% of members retired compared to current assumptions. Members who were eligible to retire but showed as a vested termination in the reconciliation were counted as a retirement. The experience also showed that the differences based on separate benefit provisions, while were still moderately there in the patterns, made no difference in the actuarial results and thus are not significant enough to warrant separate assumptions. Thus, we have simplified into one age-based table. The A/E ratio based on the proposed assumptions of 98% indicates a relatively good fit overall as shown on the following graph.
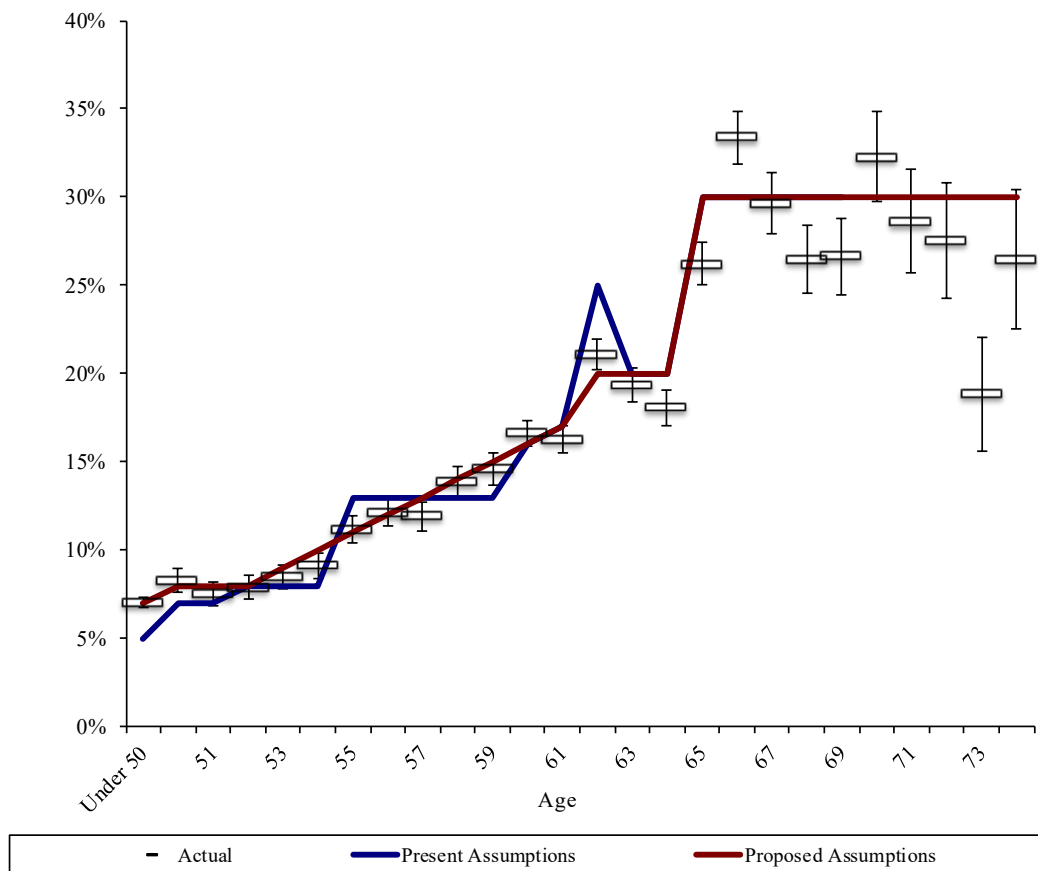
RETIREMENT EXPERIENCE
Weighted by Liability

				Assumed Blended Rate		Expected Retirements		Actual / Expected	
	Actual	Total	Crude					Current	Proposed
Age	Retirements	Exposure	Rate	Current	Proposed	Current	Proposed	(2) / (7)	(2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 50	11,683	166,602	0.0701	0.05	0.07	8,330	11,662	140%	100%
50	2,727	32,932	0.0828	0.07	0.08	2,305	2,635	118%	103%
51	2,550	33,889	0.0753	0.07	0.08	2,372	2,711	108%	94%
52	2,755	34,682	0.0794	0.08	0.08	2,775	2,775	99%	99%
53	2,956	34,898	0.0847	0.08	0.09	2,792	3,141	106%	94%
54	3,168	34,672	0.0914	0.08	0.10	2,774	3,467	114%	91%
55	3,948	35,349	0.1117	0.13	0.11	4,595	3,888	86%	102%
56	4,206	34,523	0.1218	0.13	0.12	4,488	4,143	94%	102%
57	4,040	33,890	0.1192	0.13	0.13	4,406	4,406	92%	92%
58	4,523	32,693	0.1383	0.13	0.14	4,250	4,577	106%	99%
59	4,404	30,173	0.1460	0.13	0.15	3,923	4,526	112%	97%
60	6,106	36,740	0.1662	0.16	0.16	5,878	5,878	104%	104%
61	5,276	32,417	0.1627	0.17	0.17	5,511	5,511	96%	96%
62	5,993	28,417	0.2109	0.25	0.20	7,104	5,683	84%	105%
63	4,508	23,282	0.1936	0.20	0.20	4,656	4,656	97%	97%
64	3,553	19,669	0.1806	0.20	0.20	3,934	3,934	90%	90%
65	4,365	16,639	0.2623	0.30	0.30	4,992	4,992	87%	87%
66	4,267	12,779	0.3339	0.30	0.30	3,834	3,834	111%	111%
67	2,541	8,575	0.2963	0.30	0.30	2,572	2,572	99%	99%
68	1,601	6,050	0.2646	0.30	0.30	1,815	1,815	88%	88%
69	1,248	4,689	0.2663	0.30	0.30	1,407	1,407	89%	89%
70	1,094	3,387	0.3230	0.30	0.30	1,016	1,016	108%	108%
71	710	2,478	0.2864	0.30	0.30	743	743	96%	96%
72	483	1,753	0.2755	0.30	0.30	526	526	92%	92%
73	252	1,339	0.1883	0.30	0.30	402	402	63%	63%
74	281	1,061	0.2648	0.30	0.30	318	318	88%	88%
Totals	89,236	703,574				87,711	91,218	102%	98%

OTHER ASSUMPTIONS

There are other assumptions made in the course of an actuarial valuation, such as those listed below, and GRS believes that these are generally realistic, accurate and reasonable. Therefore, we are recommending no changes, as described below.

1. Valuation payroll (used for determining the amortization contribution rate): A weighted average of the actual salaries paid during the prior fiscal years, with 33% weight given to the most recent year and 67% weight given to the expected payroll for the previous fiscal year, moved forward with one year's payroll growth rate and adjusted for changes in population. (No change)

2. Individual salaries used to project benefits: For members with more than three years of service, actual salaries from the past three fiscal years are used to determine the USC final average salary as of the valuation date. For future salaries, this three-year average is projected forward with two years of salary scale to create the salary for the year following the valuation. This value is then projected with normal salary scales. (No change)

3. Timing of benefit payments: Benefit payments are assumed to be made in the middle of the month. Although TMRS benefits are paid at the end of the month, eligibility for that payment is determined at the beginning of the month. A middle of month payment approximates the impact of the combination of eligibility determination and actual payment timing. (No change)

4. Percent Married: 100% of employees are assumed to be married. (No change)

5. Members are assumed to take a Partial Lump Sum Distribution (PLSD) equal to 40% of their Employee Account Balance at retirement. Over the study period, retirees took PLSDs equal to approximately 42.4% of their total account balance, and this is very consistent with the current assumption of 40%. (No change)

6. Age difference: Male members are assumed to be three years older than their spouses, and female members are assumed to be three years younger than their spouses. (No change)

7. Optional Forms: All healthy and disabled are assumed to select a 50% Joint and Survivor option when they retire. For healthy retirees, this is valued as a 2.1% discount at age 60 in 2019 decreasing to no discount once the APRs have been fully phased-in in 2027. (no change)

8. Percent electing annuity on death (when eligible): For vested members not eligible for retirement, 75% of the spouses of male members and 70% of the spouses of female members are assumed to commence an immediate benefit in lieu of a deferred annuity or a refund. Those not electing an immediate benefit are assumed to take a refund. All of the spouses of married participants who die after becoming eligible for a retirement benefit are assumed to elect an annuity that commences immediately. (No change)

9. Assumed age for commencement of deferred benefits: Members electing to receive a deferred benefit are assumed to commence receipt of benefits once eligible for retirement at the retirement rates applicable to contributing members. (No change)

10. Administrative expenses: The assumed investment return rate represents the anticipated net return after payment of all investment and administrative expenses. (No change)

ACTUARIAL COST METHOD

We recommend no change to the actuarial cost method.

The actuarial cost method being used is known as the 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 an employee is the contribution rate which, if applied to a member's compensation throughout their period of anticipated covered service with the municipality, would be sufficient to meet all benefits payable on their behalf. The normal cost is calculated using an entry age based on benefit service with the current city. If a member has additional time-only vesting service through service with other TMRS cities or other public agencies, they retain this for determination of benefit eligibility and decrement rates. The salary-weighted average of these rates is the total normal cost rate. The unfunded actuarial accrued liability reflects the difference between the portion of projected benefits attributable to service credited prior to the valuation date and assets already accumulated. The unfunded actuarial accrued liability is paid off in accordance with a specified amortization procedure outlined below.

AMORTIZATION POLICY

For "underfunded" cities, the amortization as of the valuation date is a level percentage of payroll over a closed period using the process of "laddering". Bases that existed prior to a valuation continue to be amortized on their original schedule. For cities with twenty or more active members, new experience losses are amortized over individual periods of 20 years. New gains (including lump sum contributions) are offset against and amortized over the same period as the current largest outstanding loss base for the specific City which in turn decreases contribution rate volatility.

Once a City reaches an "overfunded" status, all prior 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 benefit enhancements are amortized over individual 12-year periods using a level dollar policy.

The current policies are within acceptable practices and we recommend no change.

ACTUARIAL ASSET VALUATION METHOD

Actuaries generally recommend using a smoothed actuarial value of assets (AVA), rather than market value (MVA), in order to dampen the fluctuations in measurements such as the funded status and the Actuarially Determined Employer Contribution (ADEC).

Currently, the actuarial value of assets is based on the market value of assets with ten-year smoothing applied. This is accomplished by recognizing 10% of the difference between the expected return on the market value of assets and the expected actuarial value of assets each year over a 10 year period. We continue to believe this method is appropriate. It does not distinguish between types of return (interest, dividends, realized gains/losses, and unrealized gains/losses), like some other methods. It treats different asset classes and different investment styles the same. We do not believe the method has a bias relative to market. In other words, we expect the ratio of the AVA to MVA to average about 100% over the very long term. We believe this method does a good job of smoothing asset gains and losses, and reduces fluctuations in the contribution rates. In addition, the method ensures that the experience from a given year is fully recognized within the 10 year window following the occurrence.

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. The 12% is approximately one standard deviation away from the expected mean return.

Currently, the AVA is determined in one System-wide calculation to determine the ratio of the smoothed value to the market value in aggregate and then applying that same ratio to each employer's market value of assets to determine their actuarial (smoothed) value of assets.

We recommend no change to these methods.

SUPPLEMENTAL DEATH BENEFIT FUND

The Supplemental Death Benefit Fund (SDB) provides lump sum death benefits of 100% of salary to active members and $7,500 for retired members. These benefits are paid from a separate trust with assets commingled, but each City pays one-year term cost based on its own demographics. Over time the SDB is supposed to be financed on a pay-as-you-go basis, meaning no assets are anticipated to be accumulated. However, due to the adverse mortality patterns during the last three years, the assets for the SDB have reached levels that provide no reserve against short-term adverse experience.   Given that SDB claims were greater than historical norms, the TMRS Board adopted a margin for adverse experience applicable for the 2023 and 2024 SDB rates. A load equal to 2.0 and 1.1 is applied to the term cost for active coverage and retiree coverage, respectively.

Very recent experience appears to be closer to assumptions, but it is still prudent to build the reserves back up to protect against another future spike. We recommend lowering the load for actives to 1.5 and keeping the load for retirees at 1.1.

SECTION IV

ACTUARIAL IMPACT OF RECOMMENDATIONS

Actuarial Impact of Recommendations
(Illustrated based on the December 31, 2022 valuation)

Active TMRS Cities in Total (BAF Only)

		Current (1)	Proposed (2)	Difference (2) - (1)
1.	Present Value of Benefits	$ 51,653	$ 51,677	$ 24
2.	a. Actives & Inactives	22,166	22,123	(43)
	b. Annuitants	19,674	19,449	(225)
3.	Total actuarial accrued liability (2a + 2b)	$ 41,840	$ 41,572	$ (268)
4.	Actuarial value of assets	37,448	37,448	-
5.	UAAL (3 - 4)	$ 4,392	$ 4,124	$ (268)
6.	Funded ratio (4 / 3)	89.5%	90.1%	0.6%
7.	UAAL/Payroll	55.6%	52.2%	-3.4%

Illustrated Contribution Rate for Calendar Year 2024:

		Current	Proposed	Difference
8.	Full retirement rate			
	a. Normal cost	8.92%	9.35%	0.43%
	b. Prior service	4.92%	4.60%	-0.32%
	c. Full retirement rate	13.84%	13.95%	0.11%
9.	Estimated Contributions $ in millions	$ 1,133	$ 1,142	$ 9

Change in Contribution Rate by City
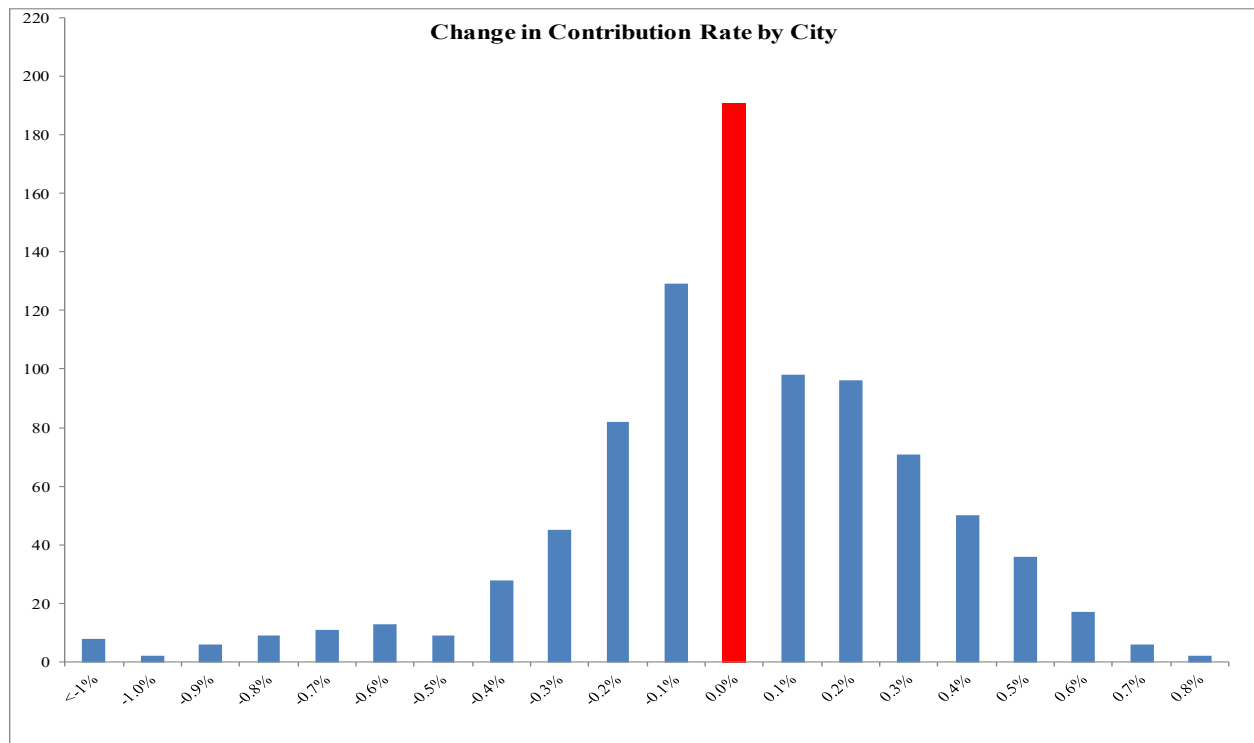
SECTION V

SUMMARY OF NEW ASSUMPTIONS

Summary of New Assumptions

I.   *Economic Assumptions*

A.   General Inflation – General Inflation is assumed to be 2.50% per year.

B.   Discount/Crediting Rates

   1.   System-wide Investment Return Assumption: 6.75% per year, compounded annually, composed of an assumed 2.50% inflation rate and a 4.25% net real rate of return. This rate represents the assumed return, net of all investment and administrative expenses. This is the discount rate used to value the liabilities of the individual employers.

   2.   For the Supplemental Death Benefits Fund, the rate is 4.25% per year, compounded annually, and derived as a blend of 5.00% for the portion of the benefits financed by advance funding contributions and a short-term interest rate for the portion of the benefits financed by current contributions.

   3.   Assumed discount/crediting rate for Supplemental Disability Benefits Fund and individual employee accounts: an annual rate of 5.00% for (1) accumulating prior service credit and updated service credit after the valuation date, (2) accumulating the employee current service balances, (3) determining the amount of the monthly benefit at future dates of retirement or disability, and (4) calculating the actuarial liability of the system-wide Supplemental Disability Benefits Fund.

C.   Overall Payroll Growth – 2.75% per year, which is used to calculate the contribution rates for the retirement plan of each participating city as a level percentage of payroll. This represents the expected increase in total payroll. This increase rate is solely due to the effect of wage inflation on salaries, with no allowance for future membership growth. However, for cities with a decrease in the number of contributing members from 2008 to 2022, the payroll growth is decreased by half the annual percentage decrease in the count capped at a 1.5% decrease per year and rounded down to the nearest 0.1%.

D. Individual Salary Increases –

Salary increases are assumed to occur once a year, on January 1. Therefore, the pay used for the period year following the valuation date is equal to the reported pay for the prior year, increased by the salary increase assumption. Salaries are assumed to increase by the following graduated service-based scale.

Years of Service	Rate (%)
1	11.85%
2	7.60%
3	7.10%
4	6.60%
5	6.35%
6	6.10%
7	5.85%
8	5.60%
9	5.35%
10	5.10%
11-12	4.85%
13-15	4.60%
16-20	4.35%
21-24	4.10%
25 +	3.60%

E. Annuity Increase – The Consumer Price Index (CPI-U) is assumed to be 2.50% per year prospectively. Annuity Increases, when applicable, are 30%, 50%, or 70% of CPI-U, according to the provisions adopted by each city. The actual future COLA assumptions for the traditional retroactive COLA 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. The future assumptions for non-retroactive COLA feature are as follows: 0.75% per year for the 30% CPI provision, 1.25% per year for the 50% CPI provision, and 1.75% per year for the 70% CPI provision.

F. Load for Updated Service Credit – To reflect the asymmetric nature of the credits due to the USC provision, there is a load on the final average earnings used in the calculation of 0.1% per year into the future that the calculation is performed.

II.   *Demographic Assumptions*

A.   Termination Rates

1. The base table rates vary by service and length till retirement eligibility.   For each city the base table is then multiplied by 75% to 125% based on their own experience and size. A further multiplier is applied depending on an employee's classification: 1) Fire – 63%, 2) Police – 82%, or 3) Other – 116%.

The probabilities for the member's first three years of service are 22.5%, 17.5%, and 14.5%. After 3 years of service, base termination rates vary by number of years remaining until first retirement eligibility. A sample of the base rates follows:

Years from Retirement	Female
1	0.0272
2	0.0301
3	0.0332
4	0.0367
5	0.0406
6	0.0449
7	0.0496
8	0.0548
9	0.0606
10	0.0670
11	0.0741
12	0.0819
13	0.0905
14	0.1001
15	0.1106
16+	0.1223

Termination rates end at first eligibility for retirement

B.   Forfeiture Rates (Withdrawal of Member Deposits from TMRS) for vested members vary by age and employer match, and they are expressed as a percentage of the termination rates shown in (A). The withdrawal rates for cities with a 2-to-1 match are shown on the following chart. 6% is added to the rates for 1-1½-to-1 cities, and 12% is added for 1-to-1 cities.

Age	Percent of Terminating Employees Choosing to Take a Refund
25	37.9%
30	35.1%
35	32.3%
40	29.5%
45	26.7%
50	23.9%
55	21.1%

Forfeiture rates end at first eligibility for retirement.

C.   Service Retirees and Beneficiary Mortality Rates

For calculating the actuarial liability and the retirement contribution rates, the Gender-distinct 2019 Municipal Retirees of Texas mortality tables. Male rates are multiplied by 103% and female rates are multiplied by 105%. The rates are projected on a fully generational basis by the most recent Scale MP-2021 (with immediate convergence) to account for future mortality improvements. The life expectancies for a 65 year old retiree (including projection) are as follows:

Proposed Life Expectancy for an Age 65 Retiree (in Years)					
Gender	Year of Retirement				
	2023	2028	2033	2038	2043
Male	19.6	20.0	20.3	20.7	21.1
Female	22.8	23.2	23.5	23.8	24.2

D.   Disabled Annuitant Mortality Rates

For calculating the actuarial liability and the retirement contribution rates, the mortality tables for healthy retirees is used with a 4-year set-forward for males and a 3-year set-forward for females. In addition, a 3.5% and 3% minimum mortality rate will be applied to reflect the impairment for younger members who become disabled for males and females, respectively.   The rates are projected on a fully generational basis by the most recent Scale MP-2021 (with immediate convergence) to account for future mortality improvements subject to the 3% floor.

E.   Pre-Retirement Mortality

For calculating the actuarial liability and the retirement contribution rates, the PUB(10) mortality tables, with 110% of the Public Safety table used for males and 100% of the General Employee table used for females. The rates are projected on a fully generational basis by the most recent Scale MP-2021 (with immediate convergence) to account for future mortality improvements.

F.   Annuity Purchase Rates

For determining the amount of the monthly benefit at the time of retirement for both healthy and disabled annuitants, the annuity purchase rates (APRs) until 2027 are based on a mortality study performed in 2013, with the factors phasing into being based on a unisex blend of the RP-2000 Combined Healthy Mortality Tables with Blue Collar Adjustment for males and females with both male and female 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 members, a unisex blend of 70% of the males 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.

G.   Disability Rates

Age	Males & Females
20	0.000002
25	0.000015
30	0.000059
35	0.000155
40	0.000296
45	0.000482
50	0.000713
55	0.000988
60	0.001308
65	0.001672

H.   Service Retirement Rates, applied to both Active and Inactive Members
        The base table rates vary by age.

Age	Rate
<50	0.07
50-52	0.08
53	0.09
54	0.10
55	0.11
56	0.12
57	0.13
58	0.14
59	0.15
60	0.16
61	0.17
62	0.20
63-64	0.20
65-74	0.30
75 and over	1.00

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. Offsetting unrecognized gains and losses are immediately recognized, with the shortest remaining bases recognized first and the net remaining bases continue to be recognized on their original timeframe. 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: The actuarial cost method being used is known as the 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 an employee is the contribution rate which, if applied to a member's compensation throughout their period of anticipated covered service with the municipality, would be sufficient to meet all benefits payable on their behalf. The normal cost is calculated using an entry age based on benefit service with the current city. If a member has additional time-only vesting service through service with other TMRS cities or other public agencies, they retain this for determination of benefit eligibility and decrement rates. The

salary-weighted average of these rates is the total normal cost rate. The unfunded actuarial accrued liability reflects the difference between the portion of projected benefits attributable to service credited prior to the valuation date and assets already accumulated. The unfunded actuarial accrued liability is paid off in accordance with a specified amortization procedure outlined in C below.

C. Amortization Policy: For "underfunded" cities the amortization as of the valuation date is a level percentage of payroll over a closed period using the process of "laddering". Bases that existed prior to this valuation continue to be amortized on their original schedule.   New loss bases for cities with fifteen or more employees are amortized over individual periods of not more than 20 years. New gains (including lump sum contributions) are offset against and amortized over the same period as the current largest outstanding loss base for the specific City which in turn decreases contribution rate volatility.

Once a City reaches an "overfunded" status, all prior 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 benefit enhancements are amortized over individual periods using a level dollar policy. The period will be based on the minimum of 12 years or the current life expectancy of the covered group. However, if the non-ad hoc (level percent) amortization factor is smaller due to a shorter amortization period based on the employer's size, as described below, ad hoc enhancements will be amortized the same as any other loss.

D. Small City Methodology – For cities with fewer than twenty employees, more conservative methods and assumptions are used. First, lower termination rates are used for smaller cities, with maximum multipliers of 80% for employers with less than 6 members, 90% for employers with 6 to 10 members, 100% for employers with 11 to 15 members, and 120% for employers with less than 100 members.

There is also a load on the life expectancy for employers with less than 15 active members. The life expectancy will be loaded by decreasing the mortality rates by 1% for every active member less than 15. For example, an employer with 5 active members will have the baseline mortality tables multiplied by 90% (10 active members times 1%).

For underfunded cities, the maximum period for amortizing losses is decreased by 1 year for each active member less than the 15-member threshold. For example, an employer with 8 active members and a current maximum amortization period of 20 will use (20-(15-8)) = 13-year amortization period for a loss in that year's valuation. Under this policy, the lowest amortization period will be 20-(15-1) = 6 years. Once

the city is overfunded, the amortization period will revert back to the standard policy.

E. Supplemental Death Benefit Fund – The contribution rate for the Supplemental Death Benefit (SDB) is equal to the expected benefit payments during the upcoming year divided by the annualized pay of current active members and is calculated separately for actives and retirees. The SDB rate for retiree coverage is equal to 110% of the expected term cost.   The SDB rate for active coverage is equal to 150% of the expected term cost.

IV. *Other Assumptions*

1. Valuation payroll (used for determining the amortization contribution rate): A wieghted average of the actual payroll during the prior fiscal years, with 33% weight given to the most recent year and 67% weight given to the expected payroll for the previous fiscal year, moved forward with one year's payroll growth rate and adjusted for changes in population.

2. Individual salaries used to project benefits: For members with more than three years of service, actual salaries from the past three fiscal years are used to determine the USC final average salary as of the valuation date. For future salaries, this three-year average is projected forward with two years of salary scale to create the salary for the year following the valuation. This value is then projected with normal salary scales.

3. Timing of benefit payments: Benefit payments are assumed to be made in the middle of the month. Although TMRS benefits are paid at the end of the month, eligibility for that payment is determined at the beginning of the month. A middle of month payment approximates the impact of the combination of eligibility determination and actual payment timing.

4. Percent married: 100% of the employees are assumed to be married.

5. Age difference: Male members are assumed to be three years older than their spouses, and female members are assumed to be three years younger than their spouses.

6. Optional Forms: All healthy and disabled members are assumed to choose a 50% Joint and Survivor option when they retire. For healthy members, this is approximated by reducing the benefit payment by a factor equal to 2.1% at age 60 (with adjustments by age). The 2.1% is effective for the 2019 calendar year and will reduce by 10% each year until the phase into the APR rates is complete, at which time there will be no need for such factor.

7. Percent electing annuity on death (when eligible): For vested members not eligible for retirement, 75% of the spouses of male members and 70% of the spouses of female members are assumed to commence an immediate benefit in lieu of a deferred annuity or a refund. Those not electing an immediate benefit are assumed to take a refund. All of the spouses of married participants who die after becoming eligible for a retirement benefit are assumed to elect an annuity that commences immediately.

8. Partial Lump Sum Utilization: It is assumed that each member at retirement will withdraw 40% of their eligible account balance.

9. Inactive Population: All non-vested members of a city are assumed to take an immediate refund if they are not contributing members in another city. Vested members not contributing in another city are assumed to take a deferred retirement benefit, except for those who have terminated in the past 12 months for whom one year of forfeiture probability is assumed. The forfeiture rates for inactive members of a city who are contributing members in another city are equal to the probability of termination multiplied by the forfeiture rates shown in II(A) and II(B) respectively. These rates are applied each year until retirement eligibility. Once a member is retirement eligible, they are assumed to commence benefits based on the service retirement rates shown in II(H).

10. There will be no recoveries once disabled.

11. No surviving spouse will remarry and there will be no children's benefit.

12. Decrement timing: Decrements of all types are assumed to occur mid-year.

13. Eligibility testing: Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.

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

15. Incidence of Contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.

16. Benefit Service: All members are assumed to accrue 1 year of eligibility service each year.

17. The decrement rates for service related decrements are based on total TMRS eligibility service.

V. *Participant Data*

Participant data was supplied in electronic text files. There were separate files for (i) active and inactive members, and (ii) members and beneficiaries receiving benefits.

The data for active members included birthdate, gender, service with the current city and total vesting service, salary, employee contribution account balances, as well as the data used in the next calculation of the Updated Service Credit (USC). For retired members and beneficiaries, the data included date of birth, gender, spouse's date of birth (where applicable), amount of monthly benefit, date of retirement, form of payment code, and aggregate increase in the CPI that will be used in the next calculation of the cost of living adjustment.

To the extent possible we have made use of all available data fields in the calculation of the liabilities stated in this report. Actual CPI is used to model the wear-away effect or "catch-up" when a city changes its COLA provisions. Adjustments are made for members who have service both in a city with "20 and out" retirement eligibility and one that hasn't adopted it to calculate the earliest possible retirement date.

Salary supplied for the current year was based on the annualized earnings for the year preceding the valuation date.

Assumptions were made to correct for missing, bad, or inconsistent data. These had no material impact on the results presented.

APPENDIX A

TERMINATION AND POPULATION EXPERIENCE BY CITY

City Number	City Name	Active Count	Terminations Weighted by Liability		A/E Ratio		Current City Load	Proposed City Load	Change	Population	
			Actual	Expected	Raw	Credibility Adj.				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
4	Abernathy	<100	$ 1,012	$ 635	159%	111%	110%	111%	1%	2.1%	0.0%
6	Abilene	>100	69,734	65,972	106%	106%	100%	105%	5%	0.2%	0.0%
7	Addison	>100	32,404	25,573	127%	113%	100%	105%	5%	0.9%	0.0%
8	Agua Dulce	<6	13	38	33%	98%	75%	80%	5%	0.0%	0.0%
10	Alamo	>100	8,808	5,248	168%	129%	120%	125%	5%	2.5%	0.0%
12	Alamo Heights	<100	10,911	6,969	157%	118%	115%	118%	3%	0.0%	0.0%
14	Alba	<11	74	149	50%	97%	75%	80%	5%	0.2%	0.0%
16	Albany	<16	515	552	93%	99%	90%	95%	5%	0.0%	0.0%
17	Aledo	<100	1,952	1,005	194%	115%	95%	100%	5%	4.3%	0.0%
18	Alice	>100	12,341	10,348	119%	109%	125%	120%	-5%	-0.5%	-0.2%
19	Allen	>100	72,163	70,810	102%	102%	101%	102%	1%	1.7%	0.0%
20	Alpine	<100	4,543	2,951	154%	120%	110%	115%	5%	2.9%	0.0%
22	Alto	<16	2,235	1,066	210%	118%	80%	85%	5%	0.7%	0.0%
23	Alton	>100	11,233	5,934	189%	137%	115%	120%	5%	5.8%	0.0%
24	Alvarado	<100	3,954	3,187	124%	106%	115%	110%	-5%	1.3%	0.0%
26	Alvin	>100	21,026	17,007	124%	114%	115%	114%	-1%	0.9%	0.0%
28	Alvord	<11	687	369	186%	109%	85%	90%	5%	-0.3%	-0.1%
30	Amarillo	>100	126,673	115,180	110%	110%	101%	106%	5%	0.4%	0.0%
32	Amherst	<11	155	192	81%	98%	75%	80%	5%	-1.0%	-0.5%
34	Anahuac	<11	1,093	565	193%	115%	100%	95%	-5%	-1.9%	-0.9%
36	Andrews	<100	6,722	8,138	83%	96%	85%	90%	5%	3.0%	0.0%
38	Angleton	>100	12,290	8,134	151%	120%	119%	120%	1%	1.6%	0.0%
40	Anna	>100	8,260	7,511	110%	103%	105%	103%	-2%	11.0%	0.0%
41	Annetta	<6	151	148	102%	100%	75%	80%	5%	0.0%	0.0%
44	Anson	<100	1,798	715	252%	137%	95%	100%	5%	3.2%	0.0%
45	Anthony	<100	2,097	1,203	174%	117%	95%	100%	5%	3.0%	0.0%
48	Aransas Pass	>100	11,766	7,041	167%	130%	125%	125%	0%	1.9%	0.0%
50	Archer City	<11	1,625	629	258%	126%	85%	90%	5%	1.0%	0.0%
49	Arcola	<100	806	376	214%	117%	80%	85%	5%	0.0%	0.0%
51	Argyle	<100	4,826	1,885	256%	129%	115%	120%	5%	3.1%	0.0%
52	Arlington	>100	190,452	251,084	76%	76%	95%	90%	-5%	0.5%	0.0%
54	Arp	<16	717	436	164%	109%	85%	90%	5%	2.7%	0.0%
60	Aspermont	<11	134	236	57%	97%	75%	80%	5%	0.0%	0.0%
62	Athens	>100	12,720	10,005	127%	109%	108%	109%	1%	0.5%	0.0%
64	Atlanta	<100	2,454	1,561	157%	111%	105%	110%	5%	-1.3%	-0.6%

Texas Municipal Retirement System

City Number	City Name	Active Count	Terminations Weighted by Liability Actual	Terminations Weighted by Liability Expected	A/E Ratio Raw	A/E Ratio Credibility Adj.	Current City Load	Proposed City Load	Change	Population Actual Annual Rate of Change	Population Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
66	Aubrey	<100	6,902	3,388	204%	130%	115%	120%	5%	4.3%	0.0%
74	Avinger	<6	63	23	282%	108%	75%	80%	5%	3.3%	0.0%
75	Azle	>100	12,408	8,437	147%	118%	125%	120%	-5%	1.8%	0.0%
77	Baird	<11	703	452	156%	107%	90%	90%	0%	0.5%	0.0%
78	Balch Springs	>100	16,151	14,820	109%	103%	118%	113%	-5%	1.2%	0.0%
79	Balcones Heights	<100	6,164	3,627	170%	115%	115%	115%	0%	0.3%	0.0%
80	Ballinger	<100	2,171	1,425	152%	112%	110%	112%	2%	0.0%	0.0%
82	Balmorhea	<6	18	47	38%	98%	75%	80%	5%	-8.1%	-1.5%
83	Bandera	<100	2,118	1,260	168%	114%	115%	114%	-1%	-0.4%	-0.2%
84	Bangs	<100	1,693	906	187%	113%	95%	100%	5%	1.6%	0.0%
90	Bartlett	<100	2,142	995	215%	120%	100%	105%	5%	1.3%	0.0%
91	Bartonville	<11	791	474	167%	106%	85%	90%	5%	1.9%	0.0%
92	Bastrop	>100	11,058	9,361	118%	106%	118%	113%	-5%	2.5%	0.0%
94	Bay City	>100	10,542	9,136	115%	107%	121%	116%	-5%	-0.3%	-0.1%
93	Bayou Vista	<11	556	315	177%	109%	80%	85%	5%	1.0%	0.0%
96	Baytown	>100	75,380	82,764	91%	93%	97%	93%	-4%	2.0%	0.0%
98	Beaumont	>100	84,209	84,395	100%	100%	95%	100%	5%	-0.1%	0.0%
100	Bedford	>100	29,540	20,946	141%	122%	80%	85%	5%	0.0%	0.0%
101	Bee Cave	<100	6,116	5,027	122%	105%	95%	100%	5%	2.3%	0.0%
102	Beeville	>100	6,982	4,714	148%	119%	101%	106%	5%	-0.9%	-0.4%
106	Bellaire	>100	17,688	13,076	135%	113%	95%	100%	5%	-0.2%	-0.1%
109	Bellmead	<100	8,520	5,317	160%	120%	115%	120%	5%	1.5%	0.0%
110	Bells	<16	696	428	163%	110%	85%	90%	5%	3.9%	0.0%
112	Bellville	<100	2,664	2,882	92%	98%	110%	105%	-5%	-0.6%	-0.2%
114	Belton	>100	13,497	9,520	142%	118%	114%	118%	4%	1.8%	0.0%
118	Benbrook	>100	16,152	13,209	122%	106%	85%	90%	5%	0.9%	0.0%
121	Berryville	<6	62	93	67%	99%	75%	80%	5%	1.7%	0.0%
123	Bertram	<100	806	500	161%	110%	90%	95%	5%	5.6%	0.0%
124	Big Lake	<100	1,705	1,721	99%	100%	110%	105%	-5%	2.6%	0.0%
126	Big Sandy	<11	1,163	433	269%	129%	85%	90%	5%	-0.2%	-0.1%
128	Big Spring	>100	18,719	13,874	135%	119%	116%	119%	3%	-1.0%	-0.4%
132	Bishop	<100	1,607	666	241%	127%	115%	120%	5%	0.3%	0.0%
134	Blanco	<100	2,303	1,039	222%	125%	95%	100%	5%	3.0%	0.0%
140	Blooming Grove	<6	209	213	98%	100%	75%	80%	5%	-0.2%	0.0%
142	Blossom	<6	-	210	0%	100%	75%	80%	5%	0.3%	0.0%

Texas Municipal Retirement System

City Number	City Name	Active Count	Terminations Weighted by Liability		A/E Ratio		Current City Load	Proposed City Load	Change	Population	
			Actual	Expected	Raw	Credibility Adj.				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
143	Blue Mound	<16	2,928	1,140	257%	135%	85%	90%	5%	2.9%	0.0%
144	Blue Ridge	<11	457	366	125%	103%	75%	80%	5%	4.3%	0.0%
148	Boerne	>100	19,068	24,414	78%	91%	80%	85%	5%	2.7%	0.0%
150	Bogata	<6	421	302	139%	104%	80%	80%	0%	-2.1%	-1.0%
152	Bonham	>100	9,765	5,319	184%	134%	125%	125%	0%	0.1%	0.0%
154	Booker	<11	709	622	114%	102%	85%	90%	5%	-1.0%	-0.5%
156	Borger	>100	17,009	13,175	129%	112%	105%	110%	5%	0.9%	0.0%
158	Bovina	<11	812	434	187%	113%	85%	90%	5%	3.4%	0.0%
160	Bowie	<100	6,985	4,771	146%	114%	95%	100%	5%	-0.3%	-0.1%
162	Boyd	<100	1,743	961	181%	115%	95%	100%	5%	2.6%	0.0%
166	Brady	<100	9,385	5,278	178%	133%	115%	120%	5%	1.0%	0.0%
170	Brazoria	<100	2,496	1,473	169%	113%	110%	113%	3%	-0.2%	-0.1%
172	Breckenridge	<100	4,332	2,538	171%	127%	115%	120%	5%	-2.0%	-0.9%
174	Bremond	<11	514	301	171%	107%	85%	90%	5%	-1.2%	-0.6%
176	Brenham	>100	11,625	10,509	111%	105%	112%	107%	-5%	-0.3%	-0.1%
177	Bridge City	<100	5,608	4,517	124%	105%	115%	110%	-5%	0.8%	0.0%
178	Bridgeport	<100	8,071	5,350	151%	115%	115%	115%	0%	-0.7%	-0.3%
180	Bronte	<6	58	61	96%	100%	75%	80%	5%	0.4%	0.0%
182	Brookshire	<100	4,228	2,112	200%	125%	110%	115%	5%	2.3%	0.0%
184	Brownfield	<100	5,055	3,997	126%	108%	110%	108%	-2%	0.5%	0.0%
186	Brownsboro	<11	375	97	386%	127%	80%	85%	5%	0.0%	0.0%
10188	Brownsville	>100	71,481	95,582	75%	78%	75%	78%	3%	0.0%	0.0%
20188	Brownsville PUB	>100	32,473	49,722	65%	81%	75%	80%	5%	1.4%	0.0%
10190	Brownwood	>100	19,179	15,443	124%	113%	125%	120%	-5%	-0.1%	0.0%
30190	Brownwood Health Dept.	<100	755	895	84%	98%	85%	90%	5%	5.0%	0.0%
20190	Brownwood Public Library	<11	122	147	83%	98%	75%	80%	5%	6.5%	0.0%
195	Bruceville-Eddy	<100	1,626	1,042	156%	109%	95%	100%	5%	1.8%	0.0%
192	Bryan	>100	69,036	81,994	84%	87%	105%	100%	-5%	0.6%	0.0%
193	Bryson	<6	91	186	49%	97%	75%	80%	5%	0.0%	0.0%
194	Buda	>100	12,322	9,575	129%	110%	105%	110%	5%	7.6%	0.0%
196	Buffalo	<100	647	492	132%	104%	95%	100%	5%	-0.5%	-0.2%
198	Bullard	<100	1,873	1,591	118%	103%	95%	100%	5%	5.1%	0.0%
203	Bulverde	<100	3,952	1,948	203%	120%	105%	110%	5%	2.3%	0.0%
199	Bunker Hill Village	<11	681	566	120%	102%	75%	80%	5%	0.1%	0.0%
200	Burkburnett	<100	7,003	4,244	165%	119%	115%	119%	4%	0.0%	0.0%

| City Number | City Name | Active Count | Terminations Weighted by Liability | | A/E Ratio | | Current City Load | Proposed City Load | Change | Population | |
			Actual	Expected	Raw	Credibility Adj.				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
202	Burleson	>100	29,854	32,087	93%	97%	105%	100%	-5%	1.9%	0.0%
204	Burnet	>100	15,796	8,786	180%	131%	125%	125%	0%	1.1%	0.0%
205	Byers	<6	47	27	172%	103%	75%	80%	5%	0.0%	0.0%
207	Cactus	<100	3,157	2,633	120%	105%	105%	105%	0%	8.5%	0.0%
208	Caddo Mills	<100	1,315	852	154%	109%	95%	100%	5%	6.3%	0.0%
210	Caldwell	<100	2,965	2,207	134%	108%	104%	108%	4%	0.5%	0.0%
211	Callisburg	<6	-	6	0%	100%	75%	80%	5%	0.0%	0.0%
212	Calvert	<16	1,246	371	336%	141%	95%	100%	5%	3.1%	0.0%
214	Cameron	<100	2,842	1,796	158%	115%	115%	115%	0%	0.3%	0.0%
216	Campbell	<6	-	-	100%	100%	75%	80%	5%	0.0%	0.0%
220	Canadian	<100	660	1,965	34%	92%	95%	92%	-3%	0.4%	0.0%
221	Caney City	<6	303	91	334%	120%	75%	80%	5%	0.0%	0.0%
222	Canton	<100	5,408	3,959	137%	110%	115%	110%	-5%	1.1%	0.0%
224	Canyon	>100	7,831	7,406	106%	102%	105%	102%	-3%	3.6%	0.0%
227	Carmine	<6	-	46	0%	100%	75%	80%	5%	-1.4%	-0.6%
228	Carrizo Springs	<100	3,532	2,121	166%	119%	106%	111%	5%	1.7%	0.0%
230	Carrollton	>100	65,846	66,333	99%	99%	105%	100%	-5%	0.1%	0.0%
232	Carthage	<100	6,211	5,956	104%	101%	110%	105%	-5%	-0.7%	-0.3%
231	Castle Hills	<100	5,723	3,956	145%	111%	115%	111%	-4%	-0.5%	-0.2%
234	Castroville	<100	3,818	2,168	176%	121%	115%	120%	5%	3.3%	0.0%
238	Cedar Hill	>100	27,607	29,149	95%	98%	100%	98%	-2%	0.6%	0.0%
239	Cedar Park	>100	40,780	41,161	99%	99%	102%	99%	-3%	2.8%	0.0%
240	Celeste	<6	362	105	344%	127%	75%	80%	5%	0.0%	0.0%
242	Celina	>100	11,812	9,620	123%	108%	105%	108%	3%	14.5%	0.0%
244	Center	<100	6,813	5,063	135%	110%	115%	110%	-5%	0.5%	0.0%
246	Centerville	<11	143	177	81%	99%	75%	80%	5%	1.0%	0.0%
247	Chandler	<100	958	911	105%	101%	85%	90%	5%	17.2%	0.0%
248	Charlotte	<16	294	321	92%	99%	85%	90%	5%	2.9%	0.0%
249	Chester	<6	32	8	383%	108%	75%	80%	5%	-4.8%	-1.5%
245	Chico	<11	182	131	139%	102%	85%	90%	5%	-2.7%	-1.3%
250	Childress	<100	4,671	3,302	141%	112%	115%	112%	-3%	0.3%	0.0%
251	Chillicothe	<11	270	97	278%	113%	80%	85%	5%	0.0%	0.0%
253	Chireno	<11	162	726	22%	96%	75%	80%	5%	1.8%	0.0%
254	Christine	<6	13	44	29%	98%	75%	80%	5%	2.1%	0.0%
255	Cibolo	>100	13,018	9,645	135%	113%	125%	120%	-5%	5.9%	0.0%

Texas Municipal Retirement System

City Number	City Name	Active Count	Terminations Weighted by Liability		A/E Ratio		Current City Load	Proposed City Load	Change	Population	
			Actual	Expected	Raw	Credibility Adj.				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
256	Cisco	<100	2,898	1,526	190%	123%	115%	120%	5%	0.7%	0.0%
258	Clarendon	<16	669	337	199%	115%	105%	100%	-5%	-1.2%	-0.6%
259	Clarksville	<100	2,525	1,037	244%	136%	115%	120%	5%	-3.3%	-1.5%
260	Clarksville City	<6	336	388	87%	99%	75%	80%	5%	1.1%	0.0%
263	Clear Lake Shores	<16	2,824	1,314	215%	118%	105%	100%	-5%	1.7%	0.0%
264	Cleburne	>100	26,316	22,160	119%	111%	100%	105%	5%	-0.4%	-0.2%
266	Cleveland	>100	6,906	4,499	154%	118%	115%	118%	3%	1.0%	0.0%
268	Clifton	<100	1,141	875	130%	105%	110%	105%	-5%	0.1%	0.0%
271	Clute	>100	12,968	7,230	179%	130%	115%	120%	5%	-0.1%	0.0%
272	Clyde	<100	3,315	2,062	161%	115%	115%	115%	0%	1.8%	0.0%
274	Coahoma	<6	72	380	19%	98%	75%	80%	5%	0.1%	0.0%
276	Cockrell Hill	<100	3,864	2,290	169%	115%	115%	115%	0%	0.8%	0.0%
278	Coleman	<100	6,223	3,620	172%	121%	115%	120%	5%	-2.3%	-1.1%
280	College Station	>100	86,644	83,452	104%	104%	96%	101%	5%	0.9%	0.0%
281	Colleyville	>100	19,152	14,800	129%	112%	103%	108%	5%	0.2%	0.0%
282	Collinsville	<16	214	363	59%	98%	85%	90%	5%	1.5%	0.0%
283	Colmesneil	<6	133	146	91%	99%	75%	80%	5%	1.1%	0.0%
284	Colorado City	<100	4,539	1,980	229%	138%	115%	120%	5%	-1.2%	-0.6%
286	Columbus	<100	3,376	2,683	126%	104%	115%	110%	-5%	-0.3%	-0.1%
288	Comanche	<100	2,717	1,103	246%	131%	105%	110%	5%	0.9%	0.0%
289	Combes	<100	434	312	139%	105%	75%	80%	5%	0.0%	0.0%
290	Commerce	<100	7,362	3,772	195%	135%	115%	120%	5%	-0.4%	-0.2%
294	Conroe	>100	37,123	43,063	86%	91%	95%	91%	-4%	2.2%	0.0%
295	Converse	>100	21,344	11,204	191%	145%	125%	125%	0%	1.6%	0.0%
298	Cooper	<16	207	407	51%	96%	75%	80%	5%	-0.1%	0.0%
299	Coppell	>100	37,579	37,827	99%	100%	92%	97%	5%	0.2%	0.0%
297	Copper Canyon	<6	207	182	114%	101%	75%	80%	5%	2.2%	0.0%
300	Copperas Cove	>100	22,210	14,020	158%	135%	125%	125%	0%	-0.1%	0.0%
301	Corinth	>100	22,336	13,545	165%	126%	115%	120%	5%	0.6%	0.0%
302	Corpus Christi	>100	153,793	146,977	105%	105%	96%	101%	5%	0.3%	0.0%
304	Corrigan	<100	1,733	1,023	169%	118%	105%	110%	5%	1.4%	0.0%
306	Corsicana	>100	14,667	11,348	129%	112%	106%	111%	5%	-3.0%	-1.5%
307	Cottonwood Shores	<100	366	188	194%	109%	75%	80%	5%	0.0%	0.0%
308	Cotulla	<100	1,927	1,743	111%	103%	115%	110%	-5%	4.9%	0.0%
311	Covington	<6	98	23	427%	117%	75%	80%	5%	0.0%	0.0%

City Number	City Name	Active Count	Terminations Weighted by Liability		A/E Ratio		Current City Load	Proposed City Load	Change	Population	
			Actual	Expected	Raw	Credibility Adj.				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
310	Crandall	<100	4,718	2,377	198%	122%	115%	120%	5%	2.7%	0.0%
312	Crane	<100	2,893	2,247	129%	105%	104%	105%	1%	1.5%	0.0%
314	Crawford	<6	671	220	305%	121%	75%	80%	5%	3.1%	0.0%
315	Creedmoor	<6	-	39	0%	100%	75%	80%	5%	0.0%	0.0%
316	Crockett	<100	5,017	2,889	174%	124%	115%	120%	5%	-2.1%	-1.0%
318	Crosbyton	<11	883	493	179%	110%	85%	90%	5%	0.8%	0.0%
320	Cross Plains	<11	279	428	65%	98%	80%	85%	5%	2.8%	0.0%
321	Cross Roads	<16	730	685	106%	101%	80%	85%	5%	0.0%	0.0%
322	Crowell	<11	146	104	140%	103%	75%	80%	5%	0.0%	0.0%
323	Crowley	>100	10,504	7,658	137%	113%	125%	120%	-5%	2.0%	0.0%
324	Crystal City	<100	3,714	2,234	166%	125%	115%	120%	5%	-1.0%	-0.5%
326	Cuero	<100	5,450	5,547	98%	100%	115%	110%	-5%	1.1%	0.0%
328	Cumby	<11	983	373	264%	131%	85%	90%	5%	-1.3%	-0.6%
332	Daingerfield	<100	1,276	796	160%	110%	110%	110%	0%	0.5%	0.0%
334	Daisetta	<11	324	189	171%	109%	85%	90%	5%	-4.1%	-1.5%
336	Dalhart	<100	5,118	3,204	160%	121%	110%	115%	5%	1.0%	0.0%
339	Dalworthington Gardens	<100	4,906	2,429	202%	119%	105%	110%	5%	-1.2%	-0.6%
340	Danbury	<11	829	377	220%	116%	85%	90%	5%	-2.2%	-1.0%
341	Darrouzett	<6	184	140	131%	102%	75%	80%	5%	0.2%	0.0%
344	Dayton	<100	10,309	5,606	184%	136%	115%	120%	5%	2.0%	0.0%
352	De Leon	<16	879	446	197%	116%	100%	100%	0%	-1.0%	-0.4%
10366	DeSoto	>100	39,371	29,434	134%	120%	103%	108%	5%	1.3%	0.0%
346	Decatur	>100	10,760	7,536	143%	114%	117%	114%	-3%	1.0%	0.0%
348	Deer Park	>100	26,083	31,212	84%	92%	75%	80%	5%	1.2%	0.0%
350	Dekalb	<16	1,165	602	194%	114%	100%	100%	0%	-0.4%	-0.2%
354	Del Rio	>100	20,893	15,954	131%	124%	105%	110%	5%	0.8%	0.0%
353	Dell City	<6	155	67	230%	108%	75%	80%	5%	-2.9%	-1.4%
356	Denison	>100	21,408	15,222	141%	121%	115%	120%	5%	0.8%	0.0%
358	Denton	>100	124,330	131,074	95%	95%	95%	95%	0%	2.0%	0.0%
360	Denver City	<100	3,721	1,772	210%	126%	95%	100%	5%	-0.6%	-0.3%
362	Deport	<6	264	106	250%	115%	75%	80%	5%	8.6%	0.0%
370	Devine	<100	1,977	1,841	107%	101%	95%	100%	5%	-0.1%	0.0%
371	Diboll	<100	6,042	3,142	192%	125%	115%	120%	5%	-2.0%	-1.0%
372	Dickens	<6	96	113	84%	99%	75%	80%	5%	-0.3%	-0.1%
373	Dickinson	>100	11,522	6,333	182%	132%	115%	120%	5%	2.3%	0.0%

Texas Municipal Retirement System

City Number	City Name	Active Count	Terminations Weighted by Liability		A/E Ratio		Current City Load	Proposed City Load	Change	Population	
			Actual	Expected	Raw	Credibility Adj.				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
374	Dilley	<100	3,011	1,688	178%	122%	115%	120%	5%	3.8%	0.0%
376	Dimmitt	<100	1,620	1,137	142%	109%	110%	109%	-1%	-1.4%	-0.7%
382	Donna	>100	8,425	7,195	117%	107%	120%	115%	-5%	5.6%	0.0%
379	Double Oak	<16	1,009	540	187%	108%	85%	90%	5%	0.6%	0.0%
383	Dripping Springs	<100	2,671	1,355	197%	120%	85%	90%	5%	15.0%	0.0%
385	Driscoll	<11	362	200	181%	110%	80%	85%	5%	0.0%	0.0%
384	Dublin	<100	4,138	2,426	171%	121%	115%	120%	5%	1.0%	0.0%
386	Dumas	>100	9,397	6,683	141%	116%	120%	116%	-4%	0.0%	0.0%
388	Duncanville	>100	20,882	16,173	129%	114%	118%	114%	-4%	0.9%	0.0%
394	Eagle Lake	<100	3,556	1,593	223%	131%	115%	120%	5%	-1.1%	-0.5%
396	Eagle Pass	>100	20,853	21,254	98%	99%	100%	99%	-1%	0.8%	0.0%
397	Early	<100	1,090	1,313	83%	97%	105%	100%	-5%	2.7%	0.0%
399	Earth	<6	274	197	139%	104%	80%	80%	0%	-1.2%	-0.5%
393	East Bernard	<6	183	142	128%	101%	75%	80%	5%	0.0%	0.0%
401	East Mountain	<6	861	268	321%	120%	75%	80%	5%	-0.2%	-0.1%
395	East Tawakoni	<16	816	487	168%	109%	80%	85%	5%	2.5%	0.0%
398	Eastland	<100	2,576	1,892	136%	109%	110%	109%	-1%	1.1%	0.0%
402	Ector	<6	41	95	43%	98%	75%	80%	5%	2.7%	0.0%
406	Eden	<16	330	348	95%	100%	85%	90%	5%	-2.4%	-1.2%
408	Edgewood	<16	312	363	86%	99%	85%	90%	5%	0.7%	0.0%
410	Edinburg	>100	62,377	60,337	103%	103%	109%	104%	-5%	3.3%	0.0%
412	Edna	<100	3,770	1,851	204%	122%	115%	120%	5%	-1.0%	-0.4%
414	El Campo	>100	8,800	7,302	121%	106%	100%	105%	5%	0.7%	0.0%
416	Eldorado	<100	1,328	1,233	108%	102%	100%	102%	2%	-0.3%	-0.1%
418	Electra	<100	1,794	796	225%	132%	105%	110%	5%	-0.5%	-0.2%
420	Elgin	<100	9,675	5,497	176%	124%	115%	120%	5%	2.5%	0.0%
422	Elkhart	<11	735	398	184%	111%	85%	90%	5%	1.7%	0.0%
427	Elmendorf	<100	768	669	115%	102%	80%	85%	5%	6.9%	0.0%
432	Emory	<100	1,330	1,033	129%	104%	95%	100%	5%	3.1%	0.0%
436	Ennis	>100	13,450	17,321	78%	93%	75%	80%	5%	1.0%	0.0%
437	Escobares	<6	186	37	504%	117%	75%	80%	5%	0.0%	0.0%
439	Euless	>100	25,209	37,316	68%	86%	80%	85%	5%	0.1%	0.0%
440	Eustace	<11	1,925	693	278%	131%	85%	90%	5%	-1.2%	-0.5%
441	Everman	<100	2,963	2,406	123%	106%	115%	110%	-5%	1.9%	0.0%
443	Fair Oaks Ranch	<100	6,830	5,888	116%	104%	105%	104%	-1%	5.3%	0.0%

City Number	City Name	Active Count	Terminations Weighted by Liability		A/E Ratio		Current City Load	Proposed City Load	Change	Population	
			Actual	Expected	Raw	Credibility Adj.				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
442	Fairfield	<100	3,540	2,256	157%	113%	105%	110%	5%	-0.4%	-0.1%
445	Fairview	<100	7,553	6,140	123%	105%	105%	105%	0%	5.7%	0.0%
20444	Falfurrias	<100	2,266	1,372	165%	117%	105%	110%	5%	1.3%	0.0%
446	Falls City	<6	206	229	90%	99%	75%	80%	5%	1.3%	0.0%
448	Farmers Branch	>100	46,899	47,694	98%	99%	90%	95%	5%	-0.3%	-0.1%
450	Farmersville	<100	2,344	2,131	110%	102%	115%	110%	-5%	3.5%	0.0%
451	Farwell	<11	672	496	135%	104%	85%	90%	5%	-0.6%	-0.2%
452	Fate	<100	7,763	4,470	174%	121%	95%	100%	5%	13.8%	0.0%
454	Fayetteville	<6	76	101	75%	99%	75%	80%	5%	5.1%	0.0%
456	Ferris	<100	4,806	2,145	224%	138%	115%	120%	5%	2.3%	0.0%
458	Flatonia	<100	2,487	1,427	174%	111%	85%	90%	5%	0.6%	0.0%
460	Florence	<16	728	512	142%	105%	90%	95%	5%	2.7%	0.0%
20462	Floresville	<100	4,639	3,870	120%	105%	115%	110%	-5%	1.1%	0.0%
463	Flower Mound	>100	38,578	46,303	83%	87%	110%	105%	-5%	2.1%	0.0%
464	Floydada	<100	1,938	1,199	162%	112%	105%	110%	5%	0.1%	0.0%
465	Follett	<6	82	21	384%	115%	75%	80%	5%	0.0%	0.0%
468	Forest Hill	<100	14,879	7,929	188%	130%	115%	120%	5%	-0.4%	-0.1%
470	Forney	>100	19,407	17,442	111%	104%	97%	102%	5%	6.1%	0.0%
472	Fort Stockton	>100	9,911	7,002	142%	118%	120%	118%	-2%	2.0%	0.0%
476	Franklin	<16	1,132	743	152%	109%	95%	100%	5%	2.1%	0.0%
478	Frankston	<16	380	420	91%	99%	75%	80%	5%	1.4%	0.0%
480	Fredericksburg	>100	10,280	10,984	94%	98%	80%	85%	5%	1.0%	0.0%
482	Freeport	>100	17,408	10,242	170%	131%	125%	125%	0%	1.0%	0.0%
481	Freer	<100	990	595	166%	111%	105%	110%	5%	-0.6%	-0.2%
483	Friendswood	>100	19,687	20,779	95%	98%	85%	90%	5%	1.0%	0.0%
484	Friona	<100	1,437	1,055	136%	106%	115%	110%	-5%	-0.4%	-0.2%
486	Frisco	>100	110,864	139,614	79%	81%	80%	81%	1%	3.6%	0.0%
487	Fritch	<100	3,304	1,491	222%	128%	105%	110%	5%	0.3%	0.0%
488	Frost	<6	199	67	295%	114%	75%	80%	5%	-6.9%	-1.5%
491	Fulshear	<100	4,856	3,564	136%	108%	80%	85%	5%	0.0%	0.0%
493	Fulton	<11	308	266	116%	101%	75%	80%	5%	0.0%	0.0%
492	Gainesville	>100	14,790	9,978	148%	126%	125%	125%	0%	-0.4%	-0.2%
494	Galena Park	<100	11,971	5,449	220%	144%	115%	120%	5%	0.5%	0.0%
498	Ganado	<11	1,164	678	171%	107%	85%	90%	5%	-1.2%	-0.6%
499	Garden Ridge	<100	2,591	1,376	188%	116%	105%	110%	5%	1.1%	0.0%

Texas Municipal Retirement System

City Number	City Name	Active Count	Terminations Weighted by Liability		A/E Ratio		Current City Load	Proposed City Load	Change	Population	
			Actual	Expected	Raw	Credibility Adj.				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
500	Garland	>100	128,328	181,079	71%	71%	75%	75%	0%	0.2%	0.0%
501	Garrett	<11	-	20	0%	100%	75%	80%	5%	0.0%	0.0%
502	Garrison	<11	904	616	147%	105%	85%	90%	5%	-2.2%	-1.0%
503	Gary	<6	-	250	0%	100%	75%	80%	5%	-0.7%	-0.3%
504	Gatesville	<100	6,175	5,266	117%	105%	110%	105%	-5%	1.2%	0.0%
505	George West	<100	3,870	1,564	247%	142%	95%	100%	5%	1.9%	0.0%
506	Georgetown	>100	55,205	69,781	79%	87%	80%	85%	5%	4.0%	0.0%
510	Giddings	<100	6,301	3,909	161%	117%	115%	117%	2%	0.2%	0.0%
512	Gilmer	<100	3,669	2,712	135%	108%	110%	108%	-2%	0.0%	0.0%
514	Gladewater	<100	6,690	2,553	262%	157%	115%	120%	5%	1.3%	0.0%
516	Glen Rose	<100	2,275	1,991	114%	102%	103%	102%	-1%	0.3%	0.0%
517	Glenn Heights	<100	7,347	4,212	174%	127%	115%	120%	5%	2.0%	0.0%
518	Godley	<100	966	552	175%	111%	90%	95%	5%	5.4%	0.0%
519	Goldsmith	<6	122	118	103%	100%	75%	80%	5%	0.7%	0.0%
520	Goldthwaite	<16	796	955	83%	98%	75%	80%	5%	-1.0%	-0.4%
522	Goliad	<16	1,302	706	185%	113%	95%	100%	5%	1.3%	0.0%
524	Gonzales	>100	8,633	5,606	154%	122%	125%	122%	-3%	1.1%	0.0%
527	Gordon	<6	37	93	40%	98%	75%	80%	5%	0.0%	0.0%
530	Gorman	<6	183	108	169%	105%	80%	80%	0%	0.0%	0.0%
532	Graford	<6	234	72	326%	110%	75%	80%	5%	-0.2%	-0.1%
10534	Graham	<100	5,479	4,388	125%	108%	115%	110%	-5%	-0.8%	-0.4%
536	Granbury	>100	15,769	13,891	114%	106%	105%	106%	1%	1.2%	0.0%
540	Grand Prairie	>100	112,905	143,404	79%	79%	80%	79%	-1%	1.3%	0.0%
542	Grand Saline	<100	2,379	1,123	212%	123%	115%	120%	5%	-0.8%	-0.4%
544	Grandview	<100	2,403	1,109	217%	122%	95%	100%	5%	4.4%	0.0%
546	Granger	<16	645	357	181%	110%	85%	90%	5%	2.0%	0.0%
547	Granite Shoals	<100	3,644	1,906	191%	121%	105%	110%	5%	3.6%	0.0%
548	Grapeland	<16	1,123	372	302%	137%	85%	90%	5%	1.2%	0.0%
550	Grapevine	>100	51,676	56,225	92%	95%	80%	85%	5%	0.4%	0.0%
552	Greenville	>100	20,786	22,169	94%	97%	110%	105%	-5%	0.2%	0.0%
551	Gregory	<100	1,182	543	218%	118%	90%	95%	5%	7.2%	0.0%
553	Grey Forest	<100	3,140	5,212	60%	94%	85%	90%	5%	1.5%	0.0%
556	Groesbeck	<100	1,237	908	136%	107%	105%	107%	2%	-1.0%	-0.5%
558	Groom	<6	112	169	66%	98%	75%	80%	5%	-0.1%	0.0%
559	Groves	>100	6,846	6,733	102%	100%	85%	90%	5%	-0.3%	-0.1%

City Number	City Name	Active Count	Terminations Weighted by Liability		A/E Ratio		Current City Load	Proposed City Load	Change	Population	
			Actual	Expected	Raw	Credibility Adj.				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
560	Groveton	<11	122	168	72%	97%	75%	80%	5%	1.5%	0.0%
562	Gruver	<6	930	385	241%	114%	75%	80%	5%	1.5%	0.0%
563	Gun Barrel City	<100	4,860	2,060	236%	139%	110%	115%	5%	0.1%	0.0%
564	Gunter	<16	1,379	589	234%	120%	82%	87%	5%	5.0%	0.0%
568	Hale Center	<16	593	461	129%	104%	90%	95%	5%	2.4%	0.0%
570	Hallettsville	<100	1,964	1,635	120%	103%	82%	87%	5%	-0.5%	-0.2%
572	Hallsville	<100	949	631	150%	109%	95%	100%	5%	2.9%	0.0%
574	Haltom City	>100	20,614	22,153	93%	97%	105%	100%	-5%	-0.7%	-0.3%
576	Hamilton	<100	3,040	1,679	181%	119%	107%	112%	5%	3.6%	0.0%
578	Hamlin	<100	988	929	106%	101%	100%	101%	1%	1.1%	0.0%
580	Happy	<6	54	195	28%	98%	75%	80%	5%	0.0%	0.0%
581	Harker Heights	>100	18,140	14,058	129%	113%	125%	120%	-5%	1.8%	0.0%
10582	Harlingen	>100	8,747	8,810	99%	100%	102%	100%	-2%	1.4%	0.0%
20582	Harlingen Waterworks Sys	>100	4,772	5,645	85%	95%	87%	92%	5%	0.5%	0.0%
583	Hart	<6	268	173	155%	103%	75%	80%	5%	2.1%	0.0%
586	Haskell	<100	1,445	954	152%	111%	105%	110%	5%	2.2%	0.0%
587	Haslet	<100	2,028	1,878	108%	101%	105%	101%	-4%	4.8%	0.0%
588	Hawkins	<11	775	488	159%	106%	85%	90%	5%	-1.4%	-0.7%
590	Hearne	<100	4,670	3,818	122%	106%	110%	106%	-4%	0.2%	0.0%
591	Heath	<100	6,729	4,455	151%	111%	105%	110%	5%	2.3%	0.0%
592	Hedley	<6	206	71	289%	121%	75%	80%	5%	-5.4%	-1.5%
595	Hedwig Village	<100	1,978	1,316	150%	108%	105%	108%	3%	-0.3%	-0.1%
593	Helotes	<100	5,358	4,094	131%	108%	95%	100%	5%	4.6%	0.0%
594	Hemphill	<100	1,500	1,034	145%	108%	115%	110%	-5%	-0.1%	0.0%
596	Hempstead	<100	4,812	3,262	147%	113%	115%	113%	-2%	2.9%	0.0%
598	Henderson	>100	13,243	10,983	121%	107%	105%	107%	2%	1.3%	0.0%
600	Henrietta	<100	987	1,200	82%	98%	115%	110%	-5%	-0.5%	-0.2%
602	Hereford	<100	7,001	7,453	94%	98%	90%	95%	5%	0.8%	0.0%
605	Hewitt	<100	7,405	6,621	112%	104%	110%	105%	-5%	1.6%	0.0%
609	Hickory Creek	<100	2,382	2,329	102%	100%	95%	100%	5%	-0.2%	0.0%
606	Hico	<16	1,876	650	289%	132%	95%	100%	5%	1.4%	0.0%
607	Hidalgo	>100	17,963	9,723	185%	137%	125%	125%	0%	-1.0%	-0.4%
608	Higgins	<6	29	41	71%	99%	75%	80%	5%	0.0%	0.0%
610	Highland Park	>100	7,515	10,590	71%	94%	75%	80%	5%	-0.1%	0.0%
611	Highland Village	>100	16,304	13,751	119%	106%	115%	110%	-5%	1.3%	0.0%

Texas Municipal Retirement System

City Number	City Name	Active Count	Terminations Weighted by Liability		A/E Ratio		Current City Load	Proposed City Load	Change	Population	
			Actual	Expected	Raw	Credibility Adj.				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
613	Hill Country Village	<100	1,176	720	163%	109%	85%	90%	5%	-0.2%	-0.1%
612	Hillsboro	>100	6,613	4,697	141%	113%	125%	120%	-5%	-0.6%	-0.2%
619	Hilshire Village	<6	79	37	216%	105%	75%	80%	5%	0.0%	0.0%
614	Hitchcock	<100	3,730	1,781	209%	131%	115%	120%	5%	2.1%	0.0%
615	Holland	<11	322	265	122%	102%	80%	85%	5%	0.7%	0.0%
616	Holliday	<11	453	403	112%	101%	85%	90%	5%	-1.3%	-0.6%
617	Hollywood Park	<100	3,394	2,353	144%	109%	105%	109%	4%	1.8%	0.0%
618	Hondo	>100	9,739	6,051	161%	125%	120%	125%	5%	0.5%	0.0%
620	Honey Grove	<16	837	348	240%	119%	85%	90%	5%	2.2%	0.0%
622	Hooks	<16	1,402	697	201%	113%	100%	100%	0%	0.4%	0.0%
623	Horizon City	<100	1,523	1,538	99%	100%	75%	80%	5%	0.0%	0.0%
626	Howe	<100	921	749	123%	103%	105%	103%	-2%	1.0%	0.0%
627	Hubbard	<16	1,410	464	304%	134%	100%	100%	0%	-0.2%	0.0%
628	Hudson	<100	668	700	95%	99%	91%	96%	5%	-0.9%	-0.4%
629	Hudson Oaks	<100	3,345	2,740	122%	103%	105%	103%	-2%	0.8%	0.0%
630	Hughes Springs	<16	367	532	69%	98%	85%	90%	5%	0.1%	0.0%
632	Humble	>100	13,968	20,069	70%	91%	75%	80%	5%	0.8%	0.0%
633	Hunters Creek Village	<11	544	679	80%	99%	80%	85%	5%	-0.2%	0.0%
634	Huntington	<100	1,405	1,318	107%	101%	110%	105%	-5%	1.8%	0.0%
636	Huntsville	>100	19,773	18,165	109%	104%	105%	104%	-1%	0.2%	0.0%
637	Hurst	>100	21,150	30,824	69%	85%	80%	85%	5%	0.2%	0.0%
638	Hutchins	<100	8,707	4,770	183%	125%	115%	120%	5%	2.3%	0.0%
640	Hutto	>100	28,628	12,576	228%	157%	105%	110%	5%	2.9%	0.0%
641	Huxley	<11	352	321	109%	101%	85%	90%	5%	1.2%	0.0%
642	Idalou	<16	1,652	715	231%	124%	100%	100%	0%	1.1%	0.0%
643	Ingleside	<100	5,188	3,518	147%	115%	110%	115%	5%	2.8%	0.0%
646	Ingram	<11	1,564	630	248%	127%	95%	90%	-5%	1.4%	0.0%
647	Iowa Colony	<100	1,184	571	207%	114%	80%	85%	5%	0.0%	0.0%
644	Iowa Park	<100	2,545	2,802	91%	98%	105%	100%	-5%	0.1%	0.0%
645	Iraan	<11	40	260	15%	96%	75%	80%	5%	0.7%	0.0%
648	Irving	>100	102,754	138,784	74%	77%	75%	77%	2%	0.3%	0.0%
650	Italy	<100	1,663	743	224%	128%	95%	100%	5%	1.4%	0.0%
652	Itasca	<100	2,813	1,218	231%	126%	95%	100%	5%	1.7%	0.0%
654	Jacinto City	<100	3,799	2,807	135%	109%	110%	109%	-1%	2.3%	0.0%
656	Jacksboro	<100	4,930	2,921	169%	117%	115%	117%	2%	-0.2%	0.0%

City Number	City Name	Active Count	Terminations Weighted by Liability		A/E Ratio		Current City Load	Proposed City Load	Change	Population	
			Actual	Expected	Raw	Credibility Adj.				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
658	Jacksonville	>100	12,216	7,579	161%	124%	125%	124%	-1%	-0.4%	-0.2%
660	Jasper	>100	7,546	5,877	128%	110%	109%	110%	1%	0.3%	0.0%
664	Jefferson	<100	1,027	582	176%	113%	105%	110%	5%	-2.6%	-1.2%
665	Jersey Village	>100	15,444	9,164	169%	124%	115%	120%	5%	0.8%	0.0%
666	Jewett	<6	199	405	49%	98%	75%	80%	5%	-4.8%	-1.5%
668	Joaquin	<6	421	183	231%	113%	85%	80%	-5%	0.8%	0.0%
670	Johnson City	<16	1,361	963	141%	105%	100%	100%	0%	0.4%	0.0%
673	Jones Creek	<11	129	259	50%	97%	75%	80%	5%	5.0%	0.0%
675	Jonestown	<100	2,939	1,442	204%	121%	105%	110%	5%	1.9%	0.0%
677	Josephine	<100	987	638	155%	106%	75%	80%	5%	10.4%	0.0%
671	Joshua	<100	3,779	2,148	176%	119%	115%	119%	4%	4.6%	0.0%
672	Jourdanton	<100	3,022	1,369	221%	130%	110%	115%	5%	0.7%	0.0%
674	Junction	<100	3,077	1,446	213%	122%	115%	120%	5%	2.0%	0.0%
676	Justin	<100	3,229	2,261	143%	110%	105%	110%	5%	5.8%	0.0%
678	Karnes City	<100	1,098	1,396	79%	97%	75%	80%	5%	2.4%	0.0%
680	Katy	>100	25,768	23,067	112%	105%	85%	90%	5%	5.2%	0.0%
682	Kaufman	<100	5,632	3,915	144%	112%	110%	112%	2%	1.4%	0.0%
683	Keene	<100	8,627	3,731	231%	138%	115%	120%	5%	0.8%	0.0%
681	Keller	>100	33,956	26,057	130%	115%	100%	105%	5%	-0.6%	-0.3%
685	Kemah	<100	5,363	2,183	246%	134%	105%	110%	5%	0.2%	0.0%
684	Kemp	<100	1,956	1,023	191%	120%	90%	95%	5%	0.6%	0.0%
689	Kempner	<6	52	59	88%	99%	75%	80%	5%	0.0%	0.0%
686	Kenedy	<100	3,827	2,176	176%	123%	107%	112%	5%	6.9%	0.0%
688	Kennedale	<100	12,399	5,646	220%	136%	115%	120%	5%	-1.1%	-0.5%
690	Kerens	<16	473	320	148%	104%	75%	80%	5%	0.0%	0.0%
692	Kermit	<100	4,199	3,563	118%	106%	115%	110%	-5%	2.2%	0.0%
10694	Kerrville	>100	24,212	21,914	110%	105%	110%	105%	-5%	0.3%	0.0%
20694	Kerrville PUB	<100	4,569	7,317	62%	93%	100%	95%	-5%	0.0%	0.0%
10696	Kilgore	>100	12,515	10,880	115%	106%	125%	120%	-5%	-0.7%	-0.3%
698	Killeen	>100	71,523	53,123	135%	135%	113%	118%	5%	0.7%	0.0%
700	Kingsville	>100	20,803	14,861	140%	123%	125%	123%	-2%	0.6%	0.0%
701	Kirby	<100	7,086	3,444	206%	135%	115%	120%	5%	-0.1%	0.0%
702	Kirbyville	<100	1,245	828	150%	111%	115%	111%	-4%	0.4%	0.0%
704	Knox City	<11	369	232	159%	106%	75%	80%	5%	1.0%	0.0%
706	Kosse	<11	119	111	107%	100%	75%	80%	5%	0.0%	0.0%

Texas Municipal Retirement System

City Number	City Name	Active Count	Terminations Weighted by Liability Actual	Terminations Weighted by Liability Expected	A/E Ratio Raw	A/E Ratio Credibility Adj.	Current City Load	Proposed City Load	Change	Population Actual Annual Rate of Change	Population Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
708	Kountze	<100	1,466	835	176%	119%	95%	100%	5%	0.2%	0.0%
699	Krugerville	<16	1,089	546	199%	110%	85%	90%	5%	8.1%	0.0%
707	Krum	<100	3,298	1,926	171%	115%	105%	110%	5%	4.0%	0.0%
710	Kyle	>100	23,564	20,798	113%	106%	95%	100%	5%	8.2%	0.0%
725	La Coste	<11	170	183	93%	99%	75%	80%	5%	2.7%	0.0%
714	La Feria	<100	4,647	2,488	187%	125%	115%	120%	5%	0.6%	0.0%
716	La Grange	<100	3,533	3,364	105%	101%	100%	101%	1%	1.3%	0.0%
723	La Grulla	<100	1,827	840	218%	123%	105%	110%	5%	2.7%	0.0%
732	La Joya	<100	3,167	1,320	240%	147%	80%	85%	5%	0.0%	0.0%
721	La Marque	>100	17,872	9,489	188%	140%	125%	125%	0%	0.9%	0.0%
728	La Porte	>100	34,035	28,521	119%	111%	115%	111%	-4%	0.3%	0.0%
731	La Vernia	<100	1,196	870	138%	106%	95%	100%	5%	18.5%	0.0%
711	Lacy-Lakeview	<100	5,647	3,382	167%	117%	106%	111%	5%	1.1%	0.0%
712	Ladonia	<6	208	115	182%	106%	75%	80%	5%	1.8%	0.0%
713	Lago Vista	<100	6,648	5,072	131%	110%	115%	110%	-5%	2.1%	0.0%
705	Laguna Vista	<100	1,460	651	224%	120%	95%	100%	5%	3.5%	0.0%
717	Lake Dallas	<100	6,839	2,720	251%	136%	115%	120%	5%	0.5%	0.0%
718	Lake Jackson	>100	17,094	13,564	126%	114%	118%	114%	-4%	0.4%	0.0%
719	Lake Worth	>100	10,418	7,104	147%	113%	115%	113%	-2%	0.7%	0.0%
727	Lakeport	<11	122	198	61%	98%	80%	85%	5%	-0.1%	0.0%
715	Lakeside	<100	804	635	127%	103%	90%	95%	5%	5.4%	0.0%
729	Lakeside City	<6	96	136	71%	98%	75%	80%	5%	2.1%	0.0%
720	Lakeway	>100	13,808	10,230	135%	112%	120%	115%	-5%	2.8%	0.0%
722	Lamesa	<100	7,805	4,195	186%	133%	115%	120%	5%	1.5%	0.0%
724	Lampasas	>100	7,023	7,783	90%	97%	105%	100%	-5%	1.8%	0.0%
726	Lancaster	>100	37,541	23,990	156%	133%	125%	125%	0%	-0.1%	0.0%
730	Laredo	>100	113,557	174,161	65%	65%	80%	75%	-5%	1.1%	0.0%
733	Lavon	<100	1,200	903	133%	104%	95%	100%	5%	3.1%	0.0%
736	League City	>100	52,696	48,575	108%	106%	115%	110%	-5%	2.4%	0.0%
737	Leander	>100	24,102	26,945	89%	95%	98%	95%	-3%	8.2%	0.0%
735	Lefors	<11	271	145	187%	110%	75%	80%	5%	0.0%	0.0%
739	Leon Valley	>100	9,385	7,616	123%	107%	101%	106%	5%	0.2%	0.0%
738	Leonard	<100	1,544	692	223%	123%	105%	110%	5%	1.7%	0.0%
740	Levelland	<100	7,820	6,889	114%	104%	107%	104%	-3%	1.5%	0.0%
742	Lewisville	>100	69,450	73,431	95%	96%	80%	85%	5%	1.3%	0.0%

City Number	City Name	Active Count	Terminations Weighted by Liability		A/E Ratio		Current City Load	Proposed City Load	Change	Population	
			Actual	Expected	Raw	Credibility Adj.				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
744	Lexington	<11	1,932	825	234%	124%	90%	90%	0%	0.8%	0.0%
746	Liberty	<100	9,701	5,258	185%	135%	115%	120%	5%	-0.8%	-0.4%
745	Liberty Hill	<100	3,226	2,240	144%	109%	95%	100%	5%	13.8%	0.0%
748	Lindale	<100	3,803	3,422	111%	103%	105%	103%	-2%	1.5%	0.0%
750	Linden	<100	650	382	170%	110%	95%	100%	5%	1.7%	0.0%
749	Lindsay	<6	-	74	0%	100%	75%	80%	5%	0.0%	0.0%
755	Lipan	<6	20	70	28%	97%	75%	80%	5%	3.3%	0.0%
751	Little Elm	>100	28,015	24,811	113%	106%	114%	109%	-5%	5.2%	0.0%
752	Littlefield	<100	5,622	2,731	206%	132%	115%	120%	5%	0.5%	0.0%
753	Live Oak	>100	11,784	7,905	149%	115%	107%	112%	5%	0.3%	0.0%
757	Liverpool	<6	361	193	187%	106%	75%	80%	5%	0.0%	0.0%
754	Livingston	<100	4,637	7,941	58%	91%	80%	85%	5%	0.8%	0.0%
756	Llano	<100	4,747	2,506	189%	123%	115%	120%	5%	-0.7%	-0.3%
758	Lockhart	>100	13,444	7,793	173%	130%	125%	125%	0%	0.0%	0.0%
760	Lockney	<16	289	243	119%	101%	80%	85%	5%	4.0%	0.0%
764	Lone Oak	<11	-	27	0%	100%	75%	80%	5%	0.0%	0.0%
765	Lone Star	<11	800	432	185%	112%	90%	90%	0%	-2.0%	-1.0%
766	Longview	>100	44,348	43,417	102%	102%	106%	102%	-4%	0.1%	0.0%
768	Loraine	<6	391	163	240%	117%	75%	80%	5%	0.6%	0.0%
769	Lorena	<100	735	723	102%	100%	105%	100%	-5%	1.8%	0.0%
770	Lorenzo	<11	1,268	455	279%	124%	85%	90%	5%	3.8%	0.0%
771	Los Fresnos	<100	2,473	2,160	115%	104%	105%	104%	-1%	2.0%	0.0%
773	Lott	<6	693	287	241%	119%	85%	80%	-5%	-4.6%	-1.5%
774	Lovelady	<6	129	191	68%	99%	75%	80%	5%	0.0%	0.0%
778	Lubbock	>100	154,923	162,988	95%	95%	93%	95%	2%	0.9%	0.0%
779	Lucas	<100	3,446	3,510	98%	100%	105%	100%	-5%	6.5%	0.0%
782	Lufkin	>100	25,537	22,477	114%	108%	105%	108%	3%	-0.9%	-0.4%
784	Luling	<100	6,783	3,884	175%	126%	115%	120%	5%	0.9%	0.0%
785	Lumberton	<100	3,712	3,021	123%	104%	105%	104%	-1%	0.9%	0.0%
786	Lyford	<16	624	315	198%	116%	100%	100%	0%	0.9%	0.0%
787	Lytle	<100	983	1,207	81%	98%	100%	98%	-2%	3.7%	0.0%
790	Madisonville	<100	3,496	1,724	203%	125%	115%	120%	5%	0.9%	0.0%
791	Magnolia	<100	2,196	1,417	155%	113%	105%	110%	5%	3.3%	0.0%
792	Malakoff	<100	1,204	1,340	90%	99%	100%	99%	-1%	1.4%	0.0%
796	Manor	<100	5,550	3,987	139%	110%	95%	100%	5%	6.6%	0.0%

City Number	City Name	Active Count	Terminations Weighted by Liability Actual	Terminations Weighted by Liability Expected	A/E Ratio Raw	A/E Ratio Credibility Adj.	Current City Load	Proposed City Load	Change	Population Actual Annual Rate of Change	Population Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
798	Mansfield	>100	47,699	52,796	90%	95%	80%	85%	5%	0.1%	0.0%
799	Manvel	<100	3,925	3,276	120%	105%	103%	105%	2%	9.2%	0.0%
800	Marble Falls	>100	9,051	7,079	128%	110%	115%	110%	-5%	0.2%	0.0%
802	Marfa	<100	1,647	1,371	120%	104%	110%	105%	-5%	5.2%	0.0%
804	Marion	<11	745	436	171%	109%	95%	90%	-5%	0.2%	0.0%
806	Marlin	<100	5,486	2,923	188%	130%	115%	120%	5%	1.2%	0.0%
808	Marquez	<6	-	22	0%	100%	75%	80%	5%	0.0%	0.0%
810	Marshall	>100	17,403	14,233	122%	109%	85%	90%	5%	-0.9%	-0.4%
812	Mart	<16	1,726	675	256%	128%	100%	100%	0%	-0.2%	-0.1%
813	Martindale	<11	278	108	257%	112%	75%	80%	5%	0.0%	0.0%
814	Mason	<100	1,816	1,323	137%	107%	110%	107%	-3%	0.9%	0.0%
816	Matador	<6	170	71	239%	110%	75%	80%	5%	1.1%	0.0%
818	Mathis	<100	6,570	2,783	236%	155%	115%	120%	5%	1.5%	0.0%
820	Maud	<11	408	164	248%	120%	75%	80%	5%	0.0%	0.0%
822	Maypearl	<11	505	159	318%	131%	85%	90%	5%	2.8%	0.0%
824	McAllen	>100	102,139	93,434	109%	109%	100%	105%	5%	1.1%	0.0%
826	McCamey	<16	377	764	49%	95%	75%	80%	5%	3.7%	0.0%
828	McGregor	<100	3,435	3,139	109%	102%	115%	110%	-5%	1.0%	0.0%
830	McKinney	>100	106,306	119,984	89%	90%	85%	90%	5%	3.4%	0.0%
832	McLean	<11	202	194	104%	100%	85%	90%	5%	0.7%	0.0%
833	McLendon-Chisholm	<16	592	249	238%	112%	80%	85%	5%	0.0%	0.0%
834	Meadow	<6	274	115	238%	111%	75%	80%	5%	0.0%	0.0%
831	Meadowlakes	<100	999	871	115%	103%	95%	100%	5%	1.8%	0.0%
835	Meadows Place	<100	2,048	1,699	121%	103%	115%	110%	-5%	1.4%	0.0%
837	Melissa	<100	5,919	3,747	158%	115%	105%	110%	5%	5.6%	0.0%
1501	Memorial Villages PD	<100	5,153	3,435	150%	110%	105%	110%	5%	0.5%	0.0%
840	Memphis	<100	1,067	668	160%	110%	100%	105%	5%	-0.2%	-0.1%
842	Menard	<11	177	324	55%	96%	85%	90%	5%	0.1%	0.0%
844	Mercedes	>100	15,381	8,303	185%	136%	100%	105%	5%	1.7%	0.0%
846	Meridian	<16	687	455	151%	106%	85%	90%	5%	2.5%	0.0%
848	Merkel	<100	1,736	1,177	148%	108%	100%	105%	5%	2.0%	0.0%
852	Mertzon	<6	744	302	247%	120%	75%	80%	5%	0.5%	0.0%
854	Mesquite	>100	72,392	81,175	89%	90%	80%	85%	5%	0.5%	0.0%
856	Mexia	<100	12,083	6,477	187%	133%	115%	120%	5%	-1.4%	-0.7%
858	Miami	<6	96	17	556%	114%	75%	80%	5%	0.0%	0.0%

Texas Municipal Retirement System

City Number	City Name	Active Count	Terminations Weighted by Liability		A/E Ratio		Current City Load	Proposed City Load	Change	Population	
			Actual	Expected	Raw	Credibility Adj.				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
860	Midland	>100	85,981	71,303	121%	121%	114%	119%	5%	0.8%	0.0%
862	Midlothian	>100	22,173	21,768	102%	101%	107%	102%	-5%	4.3%	0.0%
863	Milano	<6	30	9	314%	106%	75%	80%	5%	0.0%	0.0%
864	Miles	<11	387	154	251%	114%	75%	80%	5%	7.9%	0.0%
865	Milford	<11	522	379	138%	104%	75%	80%	5%	-2.1%	-1.0%
868	Mineola	<100	3,392	2,384	142%	111%	115%	111%	-4%	0.6%	0.0%
870	Mineral Wells	>100	12,791	9,448	135%	116%	125%	120%	-5%	0.5%	0.0%
874	Mission	>100	35,814	36,734	97%	98%	99%	98%	-1%	2.4%	0.0%
875	Missouri City	>100	32,023	27,193	118%	110%	104%	109%	5%	1.2%	0.0%
876	Monahans	<100	6,044	4,115	147%	113%	115%	113%	-2%	1.5%	0.0%
887	Mont Belvieu	>100	12,984	12,044	108%	103%	91%	96%	5%	9.3%	0.0%
877	Montgomery	<100	2,967	1,854	160%	111%	105%	110%	5%	4.8%	0.0%
878	Moody	<16	734	352	208%	115%	90%	95%	5%	1.5%	0.0%
883	Morgan's Point	<16	397	978	41%	96%	100%	96%	-4%	-1.0%	-0.4%
882	Morgan's Point Resort	<100	2,363	2,170	109%	101%	115%	110%	-5%	0.9%	0.0%
884	Morton	<11	483	440	110%	101%	85%	90%	5%	-0.5%	-0.2%
886	Moulton	<11	1,378	514	268%	126%	85%	90%	5%	-0.5%	-0.2%
890	Mount Enterprise	<6	136	81	167%	103%	75%	80%	5%	0.0%	0.0%
892	Mt. Pleasant	>100	14,833	12,052	123%	109%	116%	111%	-5%	1.5%	0.0%
894	Mt. Vernon	<100	1,903	1,367	139%	107%	115%	110%	-5%	0.1%	0.0%
896	Muenster	<16	544	572	95%	99%	85%	90%	5%	1.7%	0.0%
898	Muleshoe	<100	3,025	1,708	177%	117%	110%	115%	5%	-0.8%	-0.4%
901	Munday	<11	288	235	122%	102%	80%	85%	5%	0.0%	0.0%
903	Murphy	>100	19,017	10,364	183%	132%	120%	125%	5%	1.0%	0.0%
10904	Nacogdoches	>100	16,167	20,381	79%	91%	105%	100%	-5%	-0.1%	0.0%
906	Naples	<11	426	333	128%	103%	75%	80%	5%	-2.4%	-1.2%
907	Nash	<100	2,832	1,553	182%	114%	100%	105%	5%	1.0%	0.0%
905	Nassau Bay	<100	3,852	3,032	127%	105%	95%	100%	5%	0.0%	0.0%
909	Natalia	<16	775	334	232%	122%	90%	95%	5%	10.7%	0.0%
908	Navasota	<100	5,858	4,566	128%	109%	110%	109%	-1%	0.4%	0.0%
910	Nederland	>100	6,608	9,202	72%	94%	75%	80%	5%	1.2%	0.0%
912	Needville	<100	778	584	133%	104%	104%	104%	0%	2.8%	0.0%
914	New Boston	<100	2,278	1,253	182%	120%	115%	120%	5%	2.4%	0.0%
10916	New Braunfels	>100	54,030	57,643	94%	95%	100%	95%	-5%	3.1%	0.0%
20916	New Braunfels Utilities	>100	25,686	32,036	80%	91%	80%	85%	5%	3.7%	0.0%

Texas Municipal Retirement System

City Number	City Name	Active Count	Terminations Weighted by Liability Actual	Terminations Weighted by Liability Expected	A/E Ratio Raw	A/E Ratio Credibility Adj.	Current City Load	Proposed City Load	Change	Population Actual Annual Rate of Change	Population Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
915	New Deal	<6	230	158	145%	103%	75%	80%	5%	-1.6%	-0.8%
923	New Fairview	<6	149	155	96%	100%	75%	80%	5%	0.0%	0.0%
918	New London	<6	613	249	246%	114%	80%	80%	0%	-3.9%	-1.5%
919	New Summerfield	<16	974	740	132%	104%	85%	90%	5%	1.1%	0.0%
917	New Waverly	<6	147	174	84%	100%	75%	80%	5%	0.0%	0.0%
913	Newark	<11	192	199	96%	100%	75%	80%	5%	0.0%	0.0%
920	Newton	<100	1,637	1,759	93%	99%	85%	90%	5%	1.7%	0.0%
922	Nixon	<100	1,356	784	173%	116%	95%	100%	5%	5.4%	0.0%
924	Nocona	<100	746	971	77%	96%	110%	105%	-5%	-2.9%	-1.4%
925	Nolanville	<100	1,475	763	193%	118%	80%	85%	5%	0.0%	0.0%
928	Normangee	<11	652	334	195%	112%	75%	80%	5%	6.1%	0.0%
931	North Richland Hills	>100	42,281	48,194	88%	93%	86%	91%	5%	0.2%	0.0%
930	Northlake	<100	3,034	3,306	92%	98%	105%	100%	-5%	11.3%	0.0%
935	O'Donnell	<6	178	106	169%	105%	75%	80%	5%	0.7%	0.0%
936	Oak Point	<100	4,293	2,042	210%	123%	105%	110%	5%	5.9%	0.0%
937	Oak Ridge North	<100	3,421	4,391	78%	96%	107%	102%	-5%	-0.2%	-0.1%
942	Odem	<100	1,124	693	162%	110%	95%	100%	5%	3.4%	0.0%
944	Odessa	>100	74,229	58,512	127%	125%	116%	121%	5%	0.7%	0.0%
945	Oglesby	<6	71	69	103%	100%	75%	80%	5%	-2.9%	-1.4%
949	Old River-Winfree	<6	-	16	0%	100%	75%	80%	5%	-4.8%	-1.5%
950	Olmos Park	<100	3,401	1,897	179%	120%	115%	120%	5%	0.5%	0.0%
951	Olney	<100	1,689	1,027	164%	111%	105%	110%	5%	-0.8%	-0.3%
953	Omaha	<11	120	145	83%	99%	85%	90%	5%	0.8%	0.0%
954	Onalaska	<100	1,345	622	216%	121%	85%	90%	5%	4.8%	0.0%
958	Orange	>100	10,511	12,674	83%	95%	85%	90%	5%	0.4%	0.0%
960	Orange Grove	<16	943	572	165%	109%	75%	80%	5%	0.1%	0.0%
957	Orchard	<6	-	2	0%	100%	75%	80%	5%	0.0%	0.0%
959	Ore City	<11	712	370	193%	112%	85%	90%	5%	-0.3%	-0.1%
962	Overton	<100	1,253	758	165%	112%	115%	112%	-3%	0.8%	0.0%
961	Ovilla	<100	3,069	1,779	173%	114%	105%	110%	5%	2.3%	0.0%
963	Oyster Creek	<100	2,453	1,468	167%	112%	92%	97%	5%	1.5%	0.0%
964	Paducah	<11	546	420	130%	104%	85%	90%	5%	-2.1%	-1.0%
966	Palacios	<100	4,832	2,122	228%	133%	115%	120%	5%	0.6%	0.0%
968	Palestine	>100	17,239	10,770	160%	129%	125%	125%	0%	0.1%	0.0%
970	Palmer	<100	2,733	2,120	129%	106%	105%	106%	1%	1.0%	0.0%

City Number	City Name	Active Count	Terminations Weighted by Liability		A/E Ratio		Current City Load	Proposed City Load	Change	Population	
			Actual	Expected	Raw	Credibility Adj.				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
969	Palmhurst	<100	2,194	1,509	145%	110%	95%	100%	5%	7.0%	0.0%
971	Palmview	<100	3,774	2,369	159%	118%	95%	100%	5%	0.0%	0.0%
972	Pampa	>100	15,571	11,484	136%	116%	115%	116%	1%	0.5%	0.0%
974	Panhandle	<100	1,054	813	130%	104%	110%	105%	-5%	0.1%	0.0%
973	Panorama Village	<16	501	491	102%	100%	95%	100%	5%	1.8%	0.0%
975	Pantego	<100	7,779	3,535	220%	133%	115%	120%	5%	0.7%	0.0%
976	Paris	>100	14,116	11,137	127%	113%	110%	113%	3%	-0.5%	-0.2%
977	Parker	<100	1,960	1,782	110%	101%	85%	90%	5%	2.6%	0.0%
978	Pasadena	>100	59,803	83,688	71%	78%	80%	78%	-2%	-0.1%	0.0%
983	Pearland	>100	74,919	67,013	112%	109%	120%	115%	-5%	3.5%	0.0%
984	Pearsall	<100	3,930	2,831	139%	113%	115%	113%	-2%	1.4%	0.0%
988	Pecos City	>100	9,750	7,282	134%	115%	114%	115%	1%	2.4%	0.0%
989	Pelican Bay	<16	562	304	185%	112%	80%	85%	5%	0.0%	0.0%
991	Penitas	<100	2,128	1,444	147%	110%	80%	85%	5%	0.0%	0.0%
994	Perryton	<100	6,210	5,063	123%	107%	111%	107%	-4%	0.6%	0.0%
1000	Pflugerville	>100	40,726	29,592	138%	122%	116%	121%	5%	3.9%	0.0%
1002	Pharr	>100	42,868	38,860	110%	108%	98%	103%	5%	3.7%	0.0%
1004	Pilot Point	<100	5,440	3,386	161%	116%	105%	110%	5%	4.9%	0.0%
1005	Pinehurst	<100	1,769	1,721	103%	100%	115%	110%	-5%	-0.2%	-0.1%
1003	Pineland	<11	789	459	172%	109%	75%	80%	5%	0.5%	0.0%
1001	Piney Point Village	<6	333	318	105%	100%	80%	80%	0%	1.0%	0.0%
1006	Pittsburg	<100	3,493	2,405	145%	110%	115%	110%	-5%	0.0%	0.0%
1007	Plains	<11	396	463	85%	98%	85%	90%	5%	2.5%	0.0%
1008	Plainview	>100	11,187	10,141	110%	104%	117%	112%	-5%	-0.5%	-0.2%
1010	Plano	>100	166,403	224,713	74%	74%	75%	75%	0%	0.5%	0.0%
1012	Pleasanton	>100	10,722	8,394	128%	110%	120%	115%	-5%	1.8%	0.0%
1013	Point	<16	1,454	708	205%	117%	90%	95%	5%	2.3%	0.0%
1017	Ponder	<16	321	591	54%	97%	90%	95%	5%	4.0%	0.0%
1014	Port Aransas	>100	7,686	7,731	99%	100%	125%	120%	-5%	1.5%	0.0%
11016	Port Arthur	>100	32,076	37,139	86%	93%	80%	85%	5%	0.5%	0.0%
1018	Port Isabel	<100	5,181	3,302	157%	120%	115%	120%	5%	-0.9%	-0.4%
1020	Port Lavaca	<100	7,809	4,387	178%	133%	115%	120%	5%	0.3%	0.0%
1022	Port Neches	<100	5,084	7,818	65%	93%	76%	81%	5%	0.3%	0.0%
1019	Portland	>100	13,363	8,764	152%	121%	120%	121%	1%	2.6%	0.0%
1024	Post	<100	1,056	937	113%	102%	105%	102%	-3%	4.8%	0.0%

City Number	City Name	Active Count	Terminations Weighted by Liability Actual	Expected	A/E Ratio Raw	Credibility Adj.	Current City Load	Proposed City Load	Change	Population Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1026	Poteet	<100	1,255	909	138%	109%	115%	110%	-5%	1.8%	0.0%
1028	Poth	<11	636	409	156%	108%	85%	90%	5%	0.9%	0.0%
1030	Pottsboro	<100	1,606	1,119	144%	106%	95%	100%	5%	1.2%	0.0%
1031	Prairie View	<100	1,036	476	218%	120%	80%	85%	5%	0.0%	0.0%
1032	Premont	<100	1,438	599	240%	132%	95%	100%	5%	1.0%	0.0%
1029	Presidio	<100	2,036	1,370	149%	111%	105%	110%	5%	2.5%	0.0%
1033	Primera	<100	793	547	145%	108%	95%	100%	5%	4.5%	0.0%
1034	Princeton	>100	6,855	6,442	106%	102%	115%	110%	-5%	10.2%	0.0%
1036	Prosper	>100	22,051	19,992	110%	104%	105%	104%	-1%	12.7%	0.0%
1037	Providence Village	<16	184	394	47%	97%	75%	80%	5%	0.0%	0.0%
1042	Quanah	<16	537	537	100%	100%	100%	100%	0%	-2.4%	-1.2%
1045	Queen City	<16	744	460	162%	109%	100%	100%	0%	1.2%	0.0%
1044	Quinlan	<100	1,767	1,207	146%	107%	85%	90%	5%	6.4%	0.0%
1047	Quintana	<11	356	268	133%	103%	75%	80%	5%	16.8%	0.0%
1046	Quitaque	<6	21	65	32%	98%	75%	80%	5%	2.1%	0.0%
1048	Quitman	<100	1,459	1,327	110%	101%	95%	100%	5%	0.9%	0.0%
1050	Ralls	<11	843	431	196%	113%	90%	90%	0%	-0.4%	-0.1%
1051	Rancho Viejo	<16	880	909	97%	100%	75%	80%	5%	1.8%	0.0%
1052	Ranger	<100	3,179	1,230	259%	141%	115%	120%	5%	0.3%	0.0%
1054	Rankin	<6	175	172	102%	100%	75%	80%	5%	0.1%	0.0%
1055	Ransom Canyon	<16	454	669	68%	98%	75%	80%	5%	0.7%	0.0%
1058	Raymondville	<100	4,313	3,636	119%	106%	110%	106%	-4%	0.2%	0.0%
1061	Red Oak	>100	7,880	6,240	126%	108%	115%	110%	-5%	3.1%	0.0%
1062	Redwater	<11	565	386	146%	105%	85%	90%	5%	2.7%	0.0%
1064	Refugio	<100	1,179	1,015	116%	103%	115%	110%	-5%	1.0%	0.0%
1065	Reklaw	<6	492	413	119%	101%	75%	80%	5%	-0.9%	-0.4%
1066	Reno (Lamar County)	<16	403	631	64%	97%	100%	97%	-3%	4.1%	0.0%
1069	Reno (Parker County)	<100	1,341	642	209%	120%	95%	100%	5%	7.7%	0.0%
1067	Rhome	<100	2,338	938	249%	126%	88%	93%	5%	3.3%	0.0%
1068	Rice	<16	674	388	174%	112%	75%	80%	5%	5.0%	0.0%
1070	Richardson	>100	70,251	93,102	75%	81%	80%	81%	1%	-0.3%	-0.1%
1073	Richland Hills	<100	12,498	6,048	207%	134%	115%	120%	5%	0.1%	0.0%
1074	Richland Springs	<6	36	31	114%	100%	75%	80%	5%	0.0%	0.0%
1076	Richmond	>100	13,176	12,289	107%	103%	100%	103%	3%	1.3%	0.0%
1077	Richwood	<100	2,663	1,492	178%	115%	95%	100%	5%	1.8%	0.0%

City Number	City Name	Active Count	Terminations Weighted by Liability Actual	Terminations Weighted by Liability Expected	A/E Ratio Raw	A/E Ratio Credibility Adj.	Current City Load	Proposed City Load	Change	Population Actual Annual Rate of Change	Population Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1072	Riesel	<11	166	307	54%	96%	85%	90%	5%	11.3%	0.0%
1075	Rio Grande City	>100	10,564	7,654	138%	117%	110%	115%	5%	2.7%	0.0%
1079	Rio Vista	<11	1,268	400	317%	134%	85%	90%	5%	-1.7%	-0.8%
1080	Rising Star	<11	592	222	267%	126%	85%	90%	5%	1.0%	0.0%
1082	River Oaks	<100	6,020	3,839	157%	115%	115%	115%	0%	0.9%	0.0%
1084	Roanoke	>100	11,137	14,442	77%	95%	90%	95%	5%	1.9%	0.0%
1088	Robert Lee	<6	566	198	286%	123%	75%	80%	5%	0.1%	0.0%
1089	Robinson	<100	6,292	4,538	139%	110%	115%	110%	-5%	1.1%	0.0%
21090	Robstown	<100	10,460	6,191	169%	125%	125%	120%	-5%	-0.3%	-0.1%
11090	Robstown Utility Systems	<100	2,510	2,045	123%	106%	100%	105%	5%	-0.6%	-0.3%
1092	Roby	<6	143	172	83%	99%	75%	80%	5%	-5.1%	-1.5%
1096	Rockdale	<100	3,673	2,149	171%	119%	115%	119%	4%	0.0%	0.0%
1098	Rockport	>100	10,294	8,058	128%	110%	108%	110%	2%	1.4%	0.0%
1100	Rocksprings	<11	560	368	152%	107%	75%	80%	5%	-0.2%	-0.1%
1102	Rockwall	>100	29,447	28,240	104%	102%	75%	80%	5%	1.9%	0.0%
1104	Rogers	<11	656	486	135%	105%	85%	90%	5%	-0.9%	-0.4%
1105	Rollingwood	<100	3,010	1,037	290%	132%	95%	100%	5%	2.7%	0.0%
1106	Roma	>100	6,489	4,979	130%	111%	100%	105%	5%	1.3%	0.0%
1109	Roscoe	<11	145	245	59%	97%	75%	80%	5%	-1.1%	-0.5%
1112	Rosebud	<16	694	384	181%	112%	95%	100%	5%	0.2%	0.0%
1114	Rosenberg	>100	25,315	23,128	109%	104%	120%	115%	-5%	1.4%	0.0%
1116	Rotan	<11	94	183	51%	96%	75%	80%	5%	-0.6%	-0.2%
1118	Round Rock	>100	79,272	96,994	82%	85%	83%	85%	2%	1.8%	0.0%
1119	Rowlett	>100	35,459	31,756	112%	107%	120%	115%	-5%	1.8%	0.0%
1120	Royse City	>100	6,981	6,193	113%	104%	105%	104%	-1%	3.9%	0.0%
1122	Rule	<6	660	159	415%	130%	75%	80%	5%	-2.0%	-0.9%
1123	Runaway Bay	<100	1,864	548	340%	153%	105%	110%	5%	0.9%	0.0%
1124	Runge	<6	140	95	148%	103%	75%	80%	5%	1.3%	0.0%
1126	Rusk	<100	2,834	1,793	158%	111%	112%	111%	-1%	-0.3%	-0.1%
1128	Sabinal	<16	495	389	127%	105%	100%	100%	0%	-0.8%	-0.3%
1129	Sachse	>100	17,261	11,938	145%	117%	125%	120%	-5%	2.2%	0.0%
1131	Saginaw	>100	15,403	11,588	133%	112%	85%	90%	5%	1.3%	0.0%
1130	Saint Jo	<11	1,238	559	221%	119%	85%	90%	5%	1.1%	0.0%
1133	Salado	<16	1,535	511	300%	132%	85%	90%	5%	3.9%	0.0%
1132	San Angelo	>100	49,993	47,904	104%	104%	121%	116%	-5%	-0.1%	0.0%

| City Number | City Name | Active Count | Terminations Weighted by Liability | | A/E Ratio | | Current City Load | Proposed City Load | Change | Population | |
			Actual	Expected	Raw	Credibility Adj.				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
21136	San Antonio	>100	412,113	492,755	84%	84%	81%	84%	3%	1.1%	0.0%
11136	San Antonio Water System	>100	45,719	52,550	87%	87%	80%	85%	5%	0.5%	0.0%
1138	San Augustine	<100	2,957	1,936	153%	111%	115%	111%	-4%	-0.4%	-0.2%
1140	San Benito	>100	7,209	6,090	118%	108%	111%	108%	-3%	0.1%	0.0%
1144	San Felipe	<6	297	133	223%	109%	75%	80%	5%	-0.8%	-0.4%
1148	San Juan	>100	14,662	9,283	158%	133%	120%	125%	5%	1.9%	0.0%
1150	San Marcos	>100	57,723	63,167	91%	94%	95%	94%	-1%	2.6%	0.0%
1152	San Saba	<100	3,445	2,478	139%	108%	95%	100%	5%	0.4%	0.0%
1146	Sanger	<100	5,744	4,153	138%	109%	115%	110%	-5%	1.7%	0.0%
1153	Sansom Park	<100	6,717	2,333	288%	161%	115%	120%	5%	2.8%	0.0%
1155	Santa Fe	<100	7,287	4,291	170%	121%	115%	120%	5%	0.1%	0.0%
1158	Savoy	<6	375	156	241%	115%	75%	80%	5%	-2.6%	-1.2%
1159	Schertz	>100	35,505	32,581	109%	105%	90%	95%	5%	2.4%	0.0%
1160	Schulenburg	<100	2,773	2,673	104%	101%	105%	101%	-4%	0.3%	0.0%
1161	Seabrook	>100	7,412	8,740	85%	96%	80%	85%	5%	1.1%	0.0%
1162	Seadrift	<100	393	415	95%	100%	75%	80%	5%	5.5%	0.0%
1164	Seagoville	>100	6,129	5,677	108%	102%	115%	110%	-5%	1.0%	0.0%
1166	Seagraves	<100	1,633	872	187%	117%	90%	95%	5%	3.6%	0.0%
1167	Sealy	<100	6,669	5,327	125%	106%	115%	110%	-5%	2.1%	0.0%
1168	Seguin	>100	34,182	27,405	125%	115%	119%	115%	-4%	2.7%	0.0%
1169	Selma	<100	10,160	8,805	115%	104%	105%	104%	-1%	0.9%	0.0%
1170	Seminole	<100	6,128	4,544	135%	110%	115%	110%	-5%	0.7%	0.0%
1171	Seven Points	<16	2,979	1,131	263%	141%	110%	105%	-5%	0.3%	0.0%
1172	Seymour	<100	1,513	1,035	146%	110%	115%	110%	-5%	-1.5%	-0.7%
1165	Shady Shores	<6	32	141	22%	98%	75%	80%	5%	0.0%	0.0%
1177	Shallowater	<100	704	872	81%	98%	100%	98%	-2%	2.8%	0.0%
1174	Shamrock	<16	950	602	158%	109%	115%	110%	-5%	-1.2%	-0.5%
1173	Shavano Park	<100	6,930	4,433	156%	112%	115%	112%	-3%	0.8%	0.0%
1175	Shenandoah	<100	8,922	6,016	148%	110%	98%	103%	5%	-1.7%	-0.8%
1181	Shepherd	<11	591	429	138%	105%	75%	80%	5%	0.6%	0.0%
1176	Sherman	>100	35,557	35,670	100%	100%	95%	100%	5%	1.4%	0.0%
1178	Shiner	<100	823	1,060	78%	97%	99%	97%	-2%	1.4%	0.0%
1179	Shoreacres	<11	1,581	575	275%	128%	100%	95%	-5%	-2.2%	-1.1%
1180	Silsbee	<100	6,501	4,723	138%	110%	100%	105%	5%	0.6%	0.0%
1182	Silverton	<6	417	229	182%	107%	75%	80%	5%	1.5%	0.0%

City Number	City Name	Active Count	Terminations Weighted by Liability		A/E Ratio		Current City Load	Proposed City Load	Change	Population	
			Actual	Expected	Raw	Credibility Adj.				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1183	Simonton	<6	26	61	43%	98%	75%	80%	5%	0.0%	0.0%
1184	Sinton	<100	6,231	3,691	169%	120%	115%	120%	5%	-0.3%	-0.1%
1185	Skellytown	<11	506	253	200%	112%	80%	85%	5%	2.7%	0.0%
1186	Slaton	<100	3,266	2,530	129%	106%	115%	110%	-5%	-1.3%	-0.6%
1188	Smithville	<100	3,088	2,593	119%	106%	115%	110%	-5%	1.4%	0.0%
1189	Smyer	<6	27	50	54%	99%	75%	80%	5%	3.5%	0.0%
1190	Snyder	<100	11,086	7,875	141%	113%	115%	113%	-2%	0.1%	0.0%
1191	Somerset	<16	746	514	145%	107%	90%	95%	5%	2.7%	0.0%
1192	Somerville	<16	1,070	565	189%	115%	100%	100%	0%	-0.9%	-0.4%
1194	Sonora	<100	2,585	1,631	158%	113%	115%	113%	-2%	1.0%	0.0%
1196	Sour Lake	<16	1,115	580	192%	115%	90%	95%	5%	1.0%	0.0%
1198	South Houston	>100	6,294	5,173	122%	107%	110%	107%	-3%	0.2%	0.0%
1199	South Padre Island	>100	21,934	14,989	146%	120%	100%	105%	5%	1.6%	0.0%
1197	Southlake	>100	40,812	29,745	137%	121%	107%	112%	5%	2.0%	0.0%
1200	Southmayd	<11	214	231	92%	99%	80%	85%	5%	0.0%	0.0%
1202	Southside Place	<100	2,149	1,782	121%	103%	104%	103%	-1%	0.7%	0.0%
1204	Spearman	<100	3,264	1,878	174%	116%	115%	116%	1%	0.5%	0.0%
1201	Splendora	<100	1,259	991	127%	104%	75%	80%	5%	0.0%	0.0%
1205	Spring Valley Village	<100	4,358	2,906	150%	110%	104%	109%	5%	0.7%	0.0%
1203	Springtown	<100	7,308	3,161	231%	141%	105%	110%	5%	1.4%	0.0%
1206	Spur	<11	388	269	144%	105%	90%	90%	0%	-0.2%	-0.1%
1207	Stafford	>100	19,420	16,669	116%	106%	85%	90%	5%	2.7%	0.0%
1208	Stamford	<100	1,320	745	177%	114%	115%	114%	-1%	-3.3%	-1.5%
1210	Stanton	<100	910	1,111	82%	98%	110%	105%	-5%	1.3%	0.0%
1211	Star Harbor	<6	531	235	226%	111%	75%	80%	5%	-3.1%	-1.5%
1212	Stephenville	>100	12,227	11,008	111%	104%	80%	85%	5%	1.9%	0.0%
1213	Sterling City	<11	59	197	30%	96%	75%	80%	5%	1.1%	0.0%
1214	Stinnett	<100	1,255	841	149%	109%	90%	95%	5%	2.5%	0.0%
1216	Stockdale	<11	74	133	56%	98%	75%	80%	5%	0.0%	0.0%
1218	Stratford	<16	941	751	125%	103%	100%	100%	0%	0.9%	0.0%
1224	Sudan	<11	584	226	259%	111%	75%	80%	5%	0.0%	0.0%
1225	Sugar Land	>100	75,993	78,012	97%	98%	88%	93%	5%	2.3%	0.0%
1223	Sullivan City	<100	336	87	386%	127%	75%	80%	5%	0.0%	0.0%
1226	Sulphur Springs	>100	7,475	7,789	96%	99%	89%	94%	5%	0.6%	0.0%
1228	Sundown	<16	1,157	840	138%	105%	100%	100%	0%	-0.7%	-0.3%

City Number	City Name	Active Count	Terminations Weighted by Liability		A/E Ratio		Current City Load	Proposed City Load	Change	Population	
			Actual	Expected	Raw	Credibility Adj.				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1229	Sunnyvale	<100	8,085	3,934	205%	128%	105%	110%	5%	7.8%	0.0%
1230	Sunray	<16	2,997	990	303%	136%	100%	100%	0%	0.4%	0.0%
1227	Sunrise Beach Village	<16	645	543	119%	103%	85%	90%	5%	8.1%	0.0%
1231	Sunset Valley	<100	4,513	3,252	139%	107%	105%	107%	2%	-0.4%	-0.2%
1233	Surfside Beach	<100	1,823	867	210%	127%	105%	110%	5%	3.3%	0.0%
1232	Sweeny	<100	4,051	1,759	230%	127%	105%	110%	5%	1.9%	0.0%
1234	Sweetwater	>100	9,773	8,195	119%	107%	106%	107%	1%	0.4%	0.0%
1264	TMRS	>100	9,861	16,514	60%	91%	75%	80%	5%	4.0%	0.0%
1236	Taft	<100	5,152	1,731	298%	161%	115%	120%	5%	1.4%	0.0%
1238	Tahoka	<100	1,300	721	180%	114%	95%	100%	5%	3.2%	0.0%
1240	Talty	<11	95	60	159%	104%	75%	80%	5%	0.0%	0.0%
1241	Tatum	<11	804	390	206%	115%	85%	90%	5%	0.5%	0.0%
1246	Taylor	>100	14,063	10,236	137%	115%	115%	115%	0%	0.8%	0.0%
1248	Teague	<100	3,199	1,453	220%	128%	115%	120%	5%	-1.4%	-0.6%
1252	Temple	>100	57,185	52,143	110%	108%	90%	95%	5%	1.3%	0.0%
1254	Tenaha	<6	859	335	256%	126%	85%	80%	-5%	-3.0%	-1.4%
1256	Terrell	>100	14,599	15,918	92%	97%	80%	85%	5%	1.2%	0.0%
1258	Terrell Hills	<100	5,936	4,056	146%	111%	115%	111%	-4%	0.2%	0.0%
31263	Texas Health Benefits Pool	>100	13,563	11,829	115%	106%	100%	105%	5%	1.0%	0.0%
21263	Tex Municipal League IRP	>100	15,117	35,436	43%	84%	75%	80%	5%	0.3%	0.0%
21260	Texarkana	>100	17,592	13,019	135%	117%	113%	117%	4%	-1.4%	-0.6%
11260	Texarkana Police Dept	<100	9,035	10,368	87%	97%	85%	90%	5%	-0.5%	-0.2%
31260	Texarkana Water Utilities	>100	11,702	12,476	94%	98%	95%	98%	3%	0.1%	0.0%
1262	Texas City	>100	31,466	34,638	91%	94%	100%	95%	-5%	0.1%	0.0%
11263	Texas Municipal League	<100	2,751	3,583	77%	97%	95%	97%	2%	0.3%	0.0%
1267	The Colony	>100	23,063	29,812	77%	89%	95%	90%	-5%	2.4%	0.0%
1269	Thompsons	<6	-	40	0%	100%	75%	80%	5%	-2.9%	-1.4%
1268	Thorndale	<11	561	346	162%	106%	85%	90%	5%	0.9%	0.0%
1272	Thrall	<11	243	117	207%	109%	75%	80%	5%	0.0%	0.0%
1274	Three Rivers	<100	3,146	2,367	133%	107%	85%	90%	5%	-0.7%	-0.3%
1276	Throckmorton	<6	256	291	88%	99%	75%	80%	5%	0.0%	0.0%
1277	Tiki Island	<11	530	333	159%	105%	85%	90%	5%	0.9%	0.0%
1278	Timpson	<11	607	375	162%	107%	75%	80%	5%	-1.3%	-0.6%
1280	Tioga	<11	325	277	117%	102%	75%	80%	5%	4.3%	0.0%
1283	Tolar	<11	705	384	184%	108%	75%	80%	5%	2.3%	0.0%

Texas Municipal Retirement System

City Number	City Name	Active Count	Terminations Weighted by Liability Actual	Expected	A/E Ratio Raw	Credibility Adj.	Current City Load	Proposed City Load	Change	Population Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1286	Tom Bean	<11	531	261	203%	113%	80%	85%	5%	-0.3%	-0.1%
1284	Tomball	>100	20,081	16,348	123%	109%	115%	110%	-5%	2.3%	0.0%
1290	Trent	<6	-	21	0%	100%	75%	80%	5%	0.0%	0.0%
1292	Trenton	<11	354	193	183%	109%	75%	80%	5%	1.1%	0.0%
1293	Trinidad	<11	730	256	285%	125%	75%	80%	5%	-0.5%	-0.2%
1294	Trinity	<100	2,134	1,230	174%	119%	115%	119%	4%	0.4%	0.0%
1295	Trophy Club	<100	15,185	6,948	219%	137%	115%	120%	5%	-0.5%	-0.2%
1296	Troup	<100	842	1,109	76%	96%	115%	110%	-5%	0.7%	0.0%
1297	Troy	<16	689	683	101%	100%	80%	85%	5%	6.2%	0.0%
1298	Tulia	<100	3,862	2,169	178%	119%	105%	110%	5%	0.9%	0.0%
1299	Turkey	<6	39	97	41%	97%	75%	80%	5%	2.1%	0.0%
1300	Tuscola	<6	15	30	50%	98%	75%	80%	5%	0.0%	0.0%
1301	Tye	<16	1,742	562	310%	133%	95%	100%	5%	1.7%	0.0%
1304	Tyler	>100	49,185	50,793	97%	98%	105%	100%	-5%	0.9%	0.0%
1307	Uhland	<6	-	30	0%	100%	75%	80%	5%	0.0%	0.0%
1305	Universal City	>100	13,435	10,529	128%	109%	120%	115%	-5%	0.6%	0.0%
1306	University Park	>100	9,700	13,684	71%	92%	80%	85%	5%	0.5%	0.0%
1308	Uvalde	>100	10,798	8,110	133%	115%	120%	115%	-5%	0.7%	0.0%
1312	Valley Mills	<11	456	242	188%	111%	80%	85%	5%	0.0%	0.0%
1313	Valley View	<11	782	195	401%	130%	80%	85%	5%	0.0%	0.0%
1314	Van	<100	1,838	943	195%	118%	105%	110%	5%	2.1%	0.0%
1316	Van Alstyne	<100	7,346	3,019	243%	143%	115%	120%	5%	4.5%	0.0%
1318	Van Horn	<100	1,189	1,086	110%	101%	98%	101%	3%	-1.0%	-0.4%
1320	Vega	<6	860	398	216%	112%	75%	80%	5%	-1.3%	-0.6%
1324	Venus	<100	3,435	1,712	201%	119%	105%	110%	5%	7.5%	0.0%
1326	Vernon	<100	11,486	6,079	189%	135%	115%	120%	5%	-0.9%	-0.4%
1328	Victoria	>100	50,369	37,631	134%	127%	125%	125%	0%	0.0%	0.0%
1329	Vidor	<100	6,923	5,402	128%	107%	105%	107%	2%	0.4%	0.0%
1500	Village Fire Department	<100	5,028	3,221	156%	111%	105%	110%	5%	-0.1%	0.0%
1327	Village of the Hills	<6	-	-	100%	100%	75%	80%	5%	0.0%	0.0%
1330	Waco	>100	84,581	94,997	89%	89%	105%	100%	-5%	0.2%	0.0%
1332	Waelder	<100	1,437	746	193%	116%	85%	90%	5%	1.2%	0.0%
1334	Wake Village	<100	2,839	1,711	166%	113%	115%	113%	-2%	1.1%	0.0%
1336	Waller	<100	3,077	1,612	191%	122%	104%	109%	5%	3.7%	0.0%
1337	Wallis	<100	1,045	617	169%	110%	90%	95%	5%	2.4%	0.0%

Texas Municipal Retirement System

City Number	City Name	Active Count	Terminations Weighted by Liability Actual	Terminations Weighted by Liability Expected	A/E Ratio Raw	A/E Ratio Credibility Adj.	Current City Load	Proposed City Load	Change	Population Actual Annual Rate of Change	Population Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1338	Walnut Springs	<6	14	106	13%	97%	75%	80%	5%	2.3%	0.0%
1340	Waskom	<16	1,561	716	218%	119%	105%	100%	-5%	-1.2%	-0.5%
1341	Watauga	>100	15,134	12,235	124%	110%	119%	114%	-5%	-1.6%	-0.8%
1342	Waxahachie	>100	19,997	22,074	91%	96%	105%	100%	-5%	2.8%	0.0%
1344	Weatherford	>100	29,533	32,231	92%	95%	95%	95%	0%	0.4%	0.0%
1345	Webster	>100	16,586	15,695	106%	102%	79%	84%	5%	0.5%	0.0%
1346	Weimar	<100	2,532	1,743	145%	107%	93%	98%	5%	0.6%	0.0%
1350	Wellington	<11	358	355	101%	100%	84%	89%	5%	-1.7%	-0.8%
1352	Wells	<11	278	202	138%	103%	75%	80%	5%	5.2%	0.0%
1354	Weslaco	>100	15,832	13,076	121%	111%	109%	111%	2%	-0.3%	-0.1%
1356	West	<100	935	874	107%	101%	115%	110%	-5%	0.2%	0.0%
1358	West Columbia	<100	3,467	1,576	220%	130%	115%	120%	5%	0.0%	0.0%
1359	West Lake Hills	<100	5,692	3,199	178%	114%	96%	101%	5%	-0.7%	-0.3%
1361	West Orange	<100	2,325	1,673	139%	105%	96%	101%	5%	-0.1%	0.0%
1365	West Tawakoni	<16	1,066	626	170%	112%	105%	100%	-5%	-2.4%	-1.2%
1364	West University Place	>100	11,770	10,627	111%	103%	110%	105%	-5%	1.2%	0.0%
1363	Westlake	<100	5,280	4,133	128%	105%	105%	105%	0%	5.2%	0.0%
1362	Westover Hills	<100	2,360	1,156	204%	118%	105%	110%	5%	1.4%	0.0%
1366	Westworth Village	<100	6,996	3,507	199%	127%	115%	120%	5%	1.1%	0.0%
1368	Wharton	<100	8,378	4,855	173%	125%	115%	120%	5%	1.0%	0.0%
1370	Wheeler	<11	628	620	101%	100%	75%	80%	5%	1.2%	0.0%
1372	White Deer	<6	250	266	94%	99%	75%	80%	5%	-2.1%	-1.0%
1377	White Oak	<100	3,641	3,044	120%	104%	110%	105%	-5%	-0.3%	-0.1%
1378	White Settlement	>100	12,353	8,339	148%	119%	125%	120%	-5%	0.3%	0.0%
1374	Whiteface	<6	157	149	106%	100%	75%	80%	5%	0.0%	0.0%
1375	Whitehouse	<100	4,663	2,363	197%	124%	115%	120%	5%	0.9%	0.0%
1376	Whitesboro	<100	1,911	1,969	97%	99%	100%	99%	-1%	1.0%	0.0%
1380	Whitewright	<100	2,067	960	215%	125%	110%	115%	5%	1.0%	0.0%
1382	Whitney	<100	1,455	637	228%	125%	110%	115%	5%	0.6%	0.0%
1384	Wichita Falls	>100	54,375	55,208	98%	98%	105%	100%	-5%	0.0%	0.0%
1386	Willis	<100	4,565	2,643	173%	117%	115%	117%	2%	2.1%	0.0%
1387	Willow Park	<100	4,416	2,551	173%	119%	95%	100%	5%	10.5%	0.0%
1388	Wills Point	<100	2,927	1,689	173%	119%	105%	110%	5%	-1.4%	-0.7%
1390	Wilmer	<100	3,630	2,295	158%	116%	115%	116%	1%	3.9%	0.0%
1392	Wimberley	<16	684	377	181%	111%	85%	90%	5%	6.7%	0.0%

Texas Municipal Retirement System

City Number	City Name	Active Count	Terminations Weighted by Liability		A/E Ratio		Current City Load	Proposed City Load	Change	Population	
			Actual	Expected	Raw	Credibility Adj.				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1393	Windcrest	<100	6,027	4,147	145%	112%	115%	112%	-3%	2.4%	0.0%
1395	Winfield	<6	386	132	293%	117%	75%	80%	5%	0.0%	0.0%
1396	Wink	<16	758	591	128%	103%	80%	85%	5%	5.3%	0.0%
1398	Winnsboro	<100	3,712	2,150	173%	118%	115%	118%	3%	0.3%	0.0%
1399	Winona	<6	1,605	553	290%	125%	75%	80%	5%	-2.9%	-1.4%
1400	Winters	<100	1,026	762	135%	105%	100%	105%	5%	-0.5%	-0.2%
1403	Wolfforth	<100	3,023	1,898	159%	113%	103%	108%	5%	4.2%	0.0%
1409	Woodcreek	<6	212	51	416%	119%	75%	80%	5%	10.2%	0.0%
1404	Woodsboro	<16	529	562	94%	99%	90%	95%	5%	1.2%	0.0%
1406	Woodville	<100	1,257	2,664	47%	92%	96%	92%	-4%	-0.1%	0.0%
1407	Woodway	<100	6,276	7,299	86%	96%	105%	100%	-5%	1.7%	0.0%
1408	Wortham	<11	339	664	51%	96%	80%	85%	5%	-1.1%	-0.5%
1410	Wylie	>100	29,854	32,030	93%	96%	95%	96%	1%	4.2%	0.0%
1412	Yoakum	<100	7,172	5,040	142%	114%	105%	110%	5%	0.0%	0.0%
1414	Yorktown	<11	484	346	140%	105%	100%	95%	-5%	-3.3%	-1.5%
1415	Zavalla	<11	1,002	459	218%	119%	80%	85%	5%	-0.7%	-0.3%

APPENDIX B

ESTIMATED ACTUARIAL IMPACT BY CITY

Texas Municipal Retirement System

City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes	City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
4	Abernathy	3.57%	3.58%	0.01%	66	Aubrey	5.63%	5.68%	0.05%
6	Abilene	10.25%	10.29%	0.04%	67	Aurora	13.56%	13.49%	-0.07%
7	Addison	16.95%	17.03%	0.08%	72	Avery	1.50%	1.47%	-0.03%
8	Agua Dulce	9.58%	9.21%	-0.37%	74	Avinger	1.78%	1.65%	-0.13%
10	Alamo	6.00%	6.14%	0.14%	75	Azle	17.49%	17.99%	0.50%
12	Alamo Heights	16.84%	16.77%	-0.07%	77	Baird	0.90%	0.88%	-0.02%
14	Alba	13.07%	12.69%	-0.38%	78	Balch Springs	15.11%	15.81%	0.70%
16	Albany	4.67%	4.62%	-0.05%	79	Balcones Heights	10.91%	11.06%	0.15%
17	Aledo	10.97%	10.88%	-0.09%	80	Ballinger	17.62%	17.57%	-0.05%
18	Alice	4.52%	4.82%	0.30%	82	Balmorhea	0.00%	0.00%	0.00%
19	Allen	15.19%	15.52%	0.33%	83	Bandera	9.64%	9.99%	0.35%
20	Alpine	1.77%	1.76%	-0.01%	84	Bangs	10.21%	10.27%	0.06%
22	Alto	11.04%	10.70%	-0.34%	90	Bartlett	7.66%	7.87%	0.21%
23	Alton	11.69%	11.31%	-0.38%	91	Bartonville	13.67%	13.58%	-0.09%
24	Alvarado	6.50%	6.63%	0.13%	92	Bastrop	9.95%	10.05%	0.10%
26	Alvin	17.42%	17.57%	0.15%	94	Bay City	9.94%	9.67%	-0.27%
28	Alvord	5.01%	4.93%	-0.08%	93	Bayou Vista	3.00%	3.00%	0.00%
30	Amarillo	11.30%	11.30%	0.00%	96	Baytown	18.62%	18.95%	0.33%
32	Amherst	0.00%	0.00%	0.00%	98	Beaumont	21.04%	20.61%	-0.43%
34	Anahuac	7.46%	7.70%	0.24%	100	Bedford	17.00%	17.16%	0.16%
36	Andrews	16.08%	15.32%	-0.76%	101	Bee Cave	9.71%	9.56%	-0.15%
38	Angleton	11.83%	12.05%	0.22%	102	Beeville	1.24%	1.03%	-0.21%
40	Anna	14.25%	14.76%	0.51%	106	Bellaire	22.12%	21.90%	-0.22%
41	Annetta	8.04%	7.84%	-0.20%	109	Bellmead	12.08%	11.75%	-0.33%
44	Anson	1.55%	1.57%	0.02%	110	Bells	4.14%	4.09%	-0.05%
45	Anthony	10.29%	10.32%	0.03%	112	Bellville	17.52%	17.50%	-0.02%
48	Aransas Pass	10.06%	10.51%	0.45%	114	Belton	10.70%	10.78%	0.08%
50	Archer City	4.94%	4.90%	-0.04%	118	Benbrook	17.07%	17.07%	0.00%
49	Arcola	2.96%	2.93%	-0.03%	120	Benjamin	11.25%	10.95%	-0.30%
51	Argyle	10.42%	10.69%	0.27%	121	Berryville	2.42%	2.20%	-0.22%
52	Arlington	10.74%	11.16%	0.42%	123	Bertram	4.44%	4.44%	0.00%
54	Arp	10.17%	10.33%	0.16%	119	Beverly Hills	2.08%	2.10%	0.02%
60	Aspermont	0.00%	0.00%	0.00%	124	Big Lake	19.84%	20.40%	0.56%
62	Athens	16.90%	17.11%	0.21%	126	Big Sandy	6.47%	6.27%	-0.20%
64	Atlanta	6.18%	6.20%	0.02%	128	Big Spring	18.48%	18.19%	-0.29%

Texas Municipal Retirement System

City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes	City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
132	Bishop	3.69%	3.57%	-0.12%	198	Bullard	12.78%	13.02%	0.24%
134	Blanco	6.06%	6.13%	0.07%	203	Bulverde	9.07%	9.26%	0.19%
140	Blooming Grove	12.64%	12.68%	0.04%	199	Bunker Hill Village	10.97%	10.87%	-0.10%
142	Blossom	4.83%	4.65%	-0.18%	200	Burkburnett	10.74%	10.79%	0.05%
143	Blue Mound	5.61%	5.69%	0.08%	202	Burleson	17.44%	17.98%	0.54%
144	Blue Ridge	1.77%	1.68%	-0.09%	204	Burnet	12.52%	12.88%	0.36%
148	Boerne	19.23%	19.38%	0.15%	205	Byers	6.57%	6.57%	0.00%
150	Bogata	0.00%	0.00%	0.00%	207	Cactus	9.53%	10.03%	0.50%
152	Bonham	9.20%	9.50%	0.30%	208	Caddo Mills	5.72%	5.70%	-0.02%
154	Booker	6.48%	6.22%	-0.26%	210	Caldwell	7.65%	7.56%	-0.09%
156	Borger	15.22%	15.15%	-0.07%	211	Callisburg	7.25%	7.14%	-0.11%
158	Bovina	0.52%	0.34%	-0.18%	212	Calvert	13.82%	13.78%	-0.04%
160	Bowie	9.53%	9.32%	-0.21%	214	Cameron	12.05%	12.09%	0.04%
162	Boyd	3.16%	2.83%	-0.33%	216	Campbell	23.11%	23.06%	-0.05%
166	Brady	9.55%	9.17%	-0.38%	220	Canadian	19.50%	19.67%	0.17%
170	Brazoria	5.14%	4.95%	-0.19%	221	Caney City	2.17%	2.14%	-0.03%
172	Breckenridge	6.40%	6.26%	-0.14%	222	Canton	11.29%	11.77%	0.48%
174	Bremond	12.86%	11.93%	-0.93%	224	Canyon	13.80%	14.03%	0.23%
176	Brenham	17.73%	17.95%	0.22%	227	Carmine	0.00%	0.00%	0.00%
177	Bridge City	19.92%	20.44%	0.52%	228	Carrizo Springs	4.38%	4.18%	-0.20%
178	Bridgeport	14.27%	14.53%	0.26%	230	Carrollton	11.62%	11.78%	0.16%
180	Bronte	8.67%	7.98%	-0.69%	232	Carthage	21.48%	21.32%	-0.16%
182	Brookshire	8.98%	9.33%	0.35%	231	Castle Hills	12.85%	13.03%	0.18%
184	Brownfield	1.71%	2.02%	0.31%	234	Castroville	8.47%	8.52%	0.05%
186	Brownsboro	11.28%	11.24%	-0.04%	238	Cedar Hill	15.62%	15.99%	0.37%
10188	Brownsville	18.10%	18.23%	0.13%	239	Cedar Park	17.30%	17.81%	0.51%
20188	Brownsville PUB	18.35%	18.25%	-0.10%	240	Celeste	2.46%	2.50%	0.04%
10190	Brownwood	14.46%	14.73%	0.27%	242	Celina	11.93%	12.25%	0.32%
30190	Brownwood Health Dept.	9.61%	9.61%	0.00%	244	Center	11.14%	11.65%	0.51%
20190	Brownwood Public Library	0.00%	0.00%	0.00%	246	Centerville	12.91%	8.84%	-4.07%
195	Bruceville-Eddy	4.76%	4.54%	-0.22%	247	Chandler	9.12%	9.02%	-0.10%
192	Bryan	9.46%	9.84%	0.38%	248	Charlotte	3.41%	3.42%	0.01%
193	Bryson	0.00%	0.00%	0.00%	249	Chester	0.00%	0.00%	0.00%
194	Buda	12.80%	13.09%	0.29%	245	Chico	5.05%	4.70%	-0.35%
196	Buffalo	3.88%	3.91%	0.03%	250	Childress	16.76%	17.16%	0.40%

City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes	City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
251	Chillicothe	1.79%	1.77%	-0.02%	306	Corsicana	15.55%	15.30%	-0.25%
253	Chireno	21.89%	21.36%	-0.53%	307	Cottonwood Shores	5.50%	5.56%	0.06%
254	Christine	0.00%	0.00%	0.00%	308	Cotulla	5.80%	5.87%	0.07%
255	Cibolo	12.75%	13.26%	0.51%	311	Covington	3.51%	3.40%	-0.11%
256	Cisco	7.49%	7.50%	0.01%	310	Crandall	10.30%	10.56%	0.26%
258	Clarendon	0.90%	0.87%	-0.03%	312	Crane	8.47%	8.90%	0.43%
259	Clarksville	2.22%	1.98%	-0.24%	314	Crawford	0.96%	0.77%	-0.19%
260	Clarksville City	3.81%	3.24%	-0.57%	315	Creedmoor	5.11%	5.14%	0.03%
263	Clear Lake Shores	9.30%	10.06%	0.76%	316	Crockett	15.13%	14.96%	-0.17%
264	Cleburne	16.99%	16.71%	-0.28%	318	Crosbyton	1.23%	1.29%	0.06%
266	Cleveland	10.04%	10.14%	0.10%	320	Cross Plains	6.15%	5.01%	-1.14%
268	Clifton	6.87%	7.00%	0.13%	321	Cross Roads	7.89%	7.92%	0.03%
271	Clute	10.42%	10.77%	0.35%	322	Crowell	4.04%	4.02%	-0.02%
272	Clyde	13.54%	13.92%	0.38%	323	Crowley	11.98%	12.46%	0.48%
274	Coahoma	6.29%	6.34%	0.05%	324	Crystal City	2.01%	1.82%	-0.19%
276	Cockrell Hill	8.89%	9.67%	0.78%	326	Cuero	9.52%	9.86%	0.34%
278	Coleman	18.89%	18.30%	-0.59%	328	Cumby	2.49%	2.46%	-0.03%
280	College Station	13.05%	13.04%	-0.01%	332	Daingerfield	6.10%	6.28%	0.18%
281	Colleyville	10.22%	10.46%	0.24%	334	Daisetta	0.63%	0.50%	-0.13%
282	Collinsville	5.04%	4.63%	-0.41%	336	Dalhart	4.05%	3.84%	-0.21%
283	Colmesneil	8.66%	8.49%	-0.17%	1502	Dallas Police and Fire PS	9.09%	9.03%	-0.06%
284	Colorado City	7.07%	6.96%	-0.11%	339	Dalworthington Gardens	24.22%	24.42%	0.20%
286	Columbus	10.40%	10.14%	-0.26%	340	Danbury	5.37%	5.40%	0.03%
288	Comanche	10.91%	10.35%	-0.56%	341	Darrouzett	5.43%	5.19%	-0.24%
289	Combes	5.42%	5.39%	-0.03%	344	Dayton	18.35%	18.79%	0.44%
290	Commerce	8.90%	8.87%	-0.03%	352	De Leon	3.32%	3.28%	-0.04%
294	Conroe	16.95%	17.37%	0.42%	10366	DeSoto	11.34%	11.45%	0.11%
295	Converse	13.84%	14.27%	0.43%	346	Decatur	15.47%	15.77%	0.30%
298	Cooper	6.10%	5.78%	-0.32%	348	Deer Park	14.05%	14.10%	0.05%
299	Coppell	17.79%	17.87%	0.08%	350	Dekalb	5.03%	4.86%	-0.17%
297	Copper Canyon	9.13%	9.07%	-0.06%	354	Del Rio	7.05%	7.01%	-0.04%
300	Copperas Cove	13.74%	13.72%	-0.02%	353	Dell City	14.75%	14.06%	-0.69%
301	Corinth	15.01%	15.13%	0.12%	356	Denison	11.11%	10.89%	-0.22%
302	Corpus Christi	16.57%	16.43%	-0.14%	358	Denton	18.66%	18.77%	0.11%
304	Corrigan	3.35%	3.23%	-0.12%	360	Denver City	7.06%	6.51%	-0.55%

Texas Municipal Retirement System

City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes	City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
362	Deport	1.73%	1.54%	-0.19%	437	Escobares	5.93%	5.91%	-0.02%
370	Devine	17.90%	17.84%	-0.06%	439	Euless	18.66%	18.51%	-0.15%
371	Diboll	14.43%	14.46%	0.03%	440	Eustace	9.55%	9.37%	-0.18%
372	Dickens	2.04%	1.96%	-0.08%	441	Everman	8.83%	9.28%	0.45%
373	Dickinson	10.12%	10.46%	0.34%	443	Fair Oaks Ranch	12.23%	12.77%	0.54%
374	Dilley	8.00%	8.18%	0.18%	442	Fairfield	6.70%	6.52%	-0.18%
376	Dimmitt	4.63%	4.98%	0.35%	445	Fairview	13.12%	13.50%	0.38%
382	Donna	10.80%	11.52%	0.72%	20444	Falfurrias	2.25%	2.08%	-0.17%
379	Double Oak	8.54%	8.46%	-0.08%	446	Falls City	7.12%	7.10%	-0.02%
383	Dripping Springs	5.71%	5.75%	0.04%	448	Farmers Branch	20.02%	19.58%	-0.44%
385	Driscoll	1.81%	1.76%	-0.05%	450	Farmersville	8.97%	9.16%	0.19%
384	Dublin	12.81%	13.16%	0.35%	451	Farwell	8.21%	8.52%	0.31%
386	Dumas	13.75%	14.01%	0.26%	452	Fate	9.89%	10.11%	0.22%
388	Duncanville	6.34%	5.43%	-0.91%	454	Fayetteville	2.78%	2.47%	-0.31%
394	Eagle Lake	9.54%	9.01%	-0.53%	456	Ferris	7.62%	7.78%	0.16%
396	Eagle Pass	9.35%	9.20%	-0.15%	458	Flatonia	14.22%	13.70%	-0.52%
397	Early	3.31%	3.60%	0.29%	460	Florence	4.57%	4.64%	0.07%
399	Earth	4.20%	4.05%	-0.15%	20462	Floresville	9.62%	9.86%	0.24%
393	East Bernard	5.23%	4.80%	-0.43%	463	Flower Mound	11.30%	11.79%	0.49%
401	East Mountain	12.95%	13.15%	0.20%	464	Floydada	10.72%	10.57%	-0.15%
395	East Tawakoni	5.66%	5.45%	-0.21%	465	Follett	22.71%	22.42%	-0.29%
398	Eastland	8.08%	8.30%	0.22%	468	Forest Hill	13.98%	14.40%	0.42%
402	Ector	1.56%	1.35%	-0.21%	470	Forney	14.04%	14.35%	0.31%
406	Eden	3.79%	3.75%	-0.04%	472	Fort Stockton	9.78%	10.15%	0.37%
408	Edgewood	5.84%	5.76%	-0.08%	476	Franklin	5.84%	5.63%	-0.21%
410	Edinburg	14.86%	15.53%	0.67%	478	Frankston	1.39%	1.38%	-0.01%
412	Edna	11.62%	11.41%	-0.21%	480	Fredericksburg	22.33%	22.33%	0.00%
414	El Campo	14.27%	14.15%	-0.12%	482	Freeport	15.33%	15.77%	0.44%
416	Eldorado	9.12%	8.28%	-0.84%	481	Freer	5.33%	5.22%	-0.11%
418	Electra	1.28%	1.23%	-0.05%	483	Friendswood	17.06%	17.21%	0.15%
420	Elgin	12.96%	13.24%	0.28%	484	Friona	9.92%	10.05%	0.13%
422	Elkhart	2.39%	2.23%	-0.16%	486	Frisco	14.33%	14.77%	0.44%
427	Elmendorf	1.42%	1.41%	-0.01%	487	Fritch	5.23%	5.02%	-0.21%
432	Emory	6.33%	6.30%	-0.03%	488	Frost	8.86%	8.06%	-0.80%
436	Ennis	18.55%	18.56%	0.01%	491	Fulshear	7.14%	7.14%	0.00%

City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes	City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
493	Fulton	6.15%	6.22%	0.07%	551	Gregory	4.61%	4.66%	0.05%
492	Gainesville	9.63%	9.73%	0.10%	553	Grey Forest	16.14%	15.30%	-0.84%
494	Galena Park	10.89%	10.99%	0.10%	556	Groesbeck	1.86%	1.78%	-0.08%
498	Ganado	13.73%	12.61%	-1.12%	558	Groom	3.18%	3.16%	-0.02%
499	Garden Ridge	7.84%	7.84%	0.00%	559	Groves	7.99%	7.94%	-0.05%
500	Garland	11.14%	10.81%	-0.33%	560	Groveton	1.06%	0.94%	-0.12%
501	Garrett	4.77%	4.76%	-0.01%	562	Gruver	11.17%	10.17%	-1.00%
502	Garrison	6.69%	6.75%	0.06%	563	Gun Barrel City	9.35%	9.75%	0.40%
503	Gary	22.86%	23.06%	0.20%	564	Gunter	14.50%	14.88%	0.38%
504	Gatesville	15.33%	15.62%	0.29%	568	Hale Center	6.44%	6.43%	-0.01%
505	George West	5.33%	5.40%	0.07%	570	Hallettsville	13.82%	12.96%	-0.86%
506	Georgetown	12.47%	12.72%	0.25%	572	Hallsville	5.91%	5.89%	-0.02%
510	Giddings	18.93%	19.01%	0.08%	574	Haltom City	20.73%	20.85%	0.12%
512	Gilmer	14.46%	14.68%	0.22%	576	Hamilton	14.47%	14.35%	-0.12%
514	Gladewater	7.70%	7.75%	0.05%	578	Hamlin	5.12%	4.48%	-0.64%
516	Glen Rose	16.19%	16.46%	0.27%	580	Happy	6.92%	6.64%	-0.28%
517	Glenn Heights	4.44%	4.48%	0.04%	581	Harker Heights	15.47%	16.00%	0.53%
518	Godley	1.90%	1.86%	-0.04%	10582	Harlingen	8.21%	7.81%	-0.40%
519	Goldsmith	1.23%	1.07%	-0.16%	20582	Harlingen Waterworks Sys	9.59%	9.29%	-0.30%
520	Goldthwaite	28.09%	26.85%	-1.24%	583	Hart	4.28%	4.35%	0.07%
522	Goliad	5.22%	5.17%	-0.05%	586	Haskell	0.00%	0.00%	0.00%
524	Gonzales	9.70%	9.88%	0.18%	587	Haslet	8.31%	8.52%	0.21%
527	Gordon	2.39%	2.30%	-0.09%	588	Hawkins	6.01%	6.07%	0.06%
530	Gorman	7.50%	7.49%	-0.01%	590	Hearne	14.29%	14.64%	0.35%
532	Graford	2.14%	2.02%	-0.12%	591	Heath	11.65%	11.87%	0.22%
10534	Graham	11.04%	11.15%	0.11%	592	Hedley	0.39%	0.84%	0.45%
536	Granbury	17.32%	17.53%	0.21%	595	Hedwig Village	7.93%	7.90%	-0.03%
540	Grand Prairie	12.19%	12.49%	0.30%	593	Helotes	6.33%	6.31%	-0.02%
542	Grand Saline	9.56%	9.43%	-0.13%	594	Hemphill	7.42%	7.46%	0.04%
544	Grandview	11.04%	11.17%	0.13%	596	Hempstead	7.66%	7.96%	0.30%
546	Granger	7.17%	7.17%	0.00%	598	Henderson	16.71%	16.95%	0.24%
547	Granite Shoals	5.81%	5.81%	0.00%	600	Henrietta	14.66%	15.06%	0.40%
548	Grapeland	3.23%	3.14%	-0.09%	602	Hereford	10.22%	9.63%	-0.59%
550	Grapevine	20.06%	20.04%	-0.02%	605	Hewitt	16.89%	17.50%	0.61%
552	Greenville	16.64%	16.93%	0.29%	609	Hickory Creek	15.16%	15.24%	0.08%

City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes	City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
606	Hico	7.81%	8.19%	0.38%	645	Iraan	10.90%	10.47%	-0.43%
607	Hidalgo	11.80%	12.15%	0.35%	648	Irving	10.02%	10.19%	0.17%
608	Higgins	4.89%	4.04%	-0.85%	650	Italy	8.46%	8.45%	-0.01%
610	Highland Park	13.20%	12.91%	-0.29%	652	Itasca	8.58%	8.89%	0.31%
611	Highland Village	14.15%	14.52%	0.37%	654	Jacinto City	17.47%	17.69%	0.22%
613	Hill Country Village	3.30%	3.13%	-0.17%	656	Jacksboro	14.12%	14.36%	0.24%
612	Hillsboro	11.42%	11.59%	0.17%	658	Jacksonville	10.21%	10.44%	0.23%
619	Hilshire Village	5.26%	5.29%	0.03%	660	Jasper	7.80%	7.65%	-0.15%
614	Hitchcock	6.37%	6.44%	0.07%	664	Jefferson	0.25%	0.11%	-0.14%
615	Holland	4.08%	3.99%	-0.09%	665	Jersey Village	14.70%	14.16%	-0.54%
616	Holliday	9.89%	9.80%	-0.09%	666	Jewett	16.75%	16.49%	-0.26%
617	Hollywood Park	14.87%	15.06%	0.19%	668	Joaquin	5.09%	5.01%	-0.08%
618	Hondo	14.09%	14.07%	-0.02%	670	Johnson City	9.03%	9.07%	0.04%
620	Honey Grove	5.71%	5.69%	-0.02%	673	Jones Creek	5.15%	4.81%	-0.34%
622	Hooks	13.94%	13.92%	-0.02%	675	Jonestown	6.82%	6.73%	-0.09%
623	Horizon City	5.30%	5.34%	0.04%	677	Josephine	9.15%	9.29%	0.14%
621	Horseshoe Bay	8.02%	8.01%	-0.01%	671	Joshua	5.81%	5.86%	0.05%
626	Howe	5.42%	5.65%	0.23%	672	Jourdanton	5.72%	5.73%	0.01%
627	Hubbard	2.98%	2.95%	-0.03%	674	Junction	9.72%	9.47%	-0.25%
628	Hudson	4.12%	3.95%	-0.17%	676	Justin	7.21%	7.36%	0.15%
629	Hudson Oaks	13.31%	13.90%	0.59%	678	Karnes City	8.78%	8.81%	0.03%
630	Hughes Springs	8.77%	8.76%	-0.01%	680	Katy	13.87%	14.13%	0.26%
632	Humble	13.86%	13.75%	-0.11%	682	Kaufman	13.46%	13.73%	0.27%
633	Hunters Creek Village	21.11%	20.92%	-0.19%	683	Keene	12.12%	12.29%	0.17%
634	Huntington	16.01%	16.46%	0.45%	681	Keller	16.42%	16.53%	0.11%
636	Huntsville	19.91%	19.70%	-0.21%	685	Kemah	6.14%	6.20%	0.06%
637	Hurst	12.91%	12.95%	0.04%	684	Kemp	10.10%	10.13%	0.03%
638	Hutchins	7.32%	7.47%	0.15%	689	Kempner	1.19%	1.21%	0.02%
640	Hutto	12.24%	12.60%	0.36%	686	Kenedy	10.04%	10.17%	0.13%
641	Huxley	3.01%	2.91%	-0.10%	688	Kennedale	15.72%	16.15%	0.43%
642	Idalou	4.17%	4.40%	0.23%	690	Kerens	12.33%	12.19%	-0.14%
643	Ingleside	7.57%	7.78%	0.21%	692	Kermit	13.86%	13.68%	-0.18%
646	Ingram	5.56%	5.93%	0.37%	10694	Kerrville	10.48%	10.90%	0.42%
647	Iowa Colony	10.52%	10.77%	0.25%	20694	Kerrville PUB	12.56%	12.09%	-0.47%
644	Iowa Park	10.42%	10.44%	0.02%	10696	Kilgore	15.95%	16.27%	0.32%

Texas Municipal Retirement System

City Number (1)	City Name (2)	2024 Full Rate (3)	Experience Study (4)	Impact of Changes (5)	City Number (6)	City Name (7)	2024 Full Rate (8)	Experience Study (9)	Impact of Changes (10)
698	Killeen	14.25%	14.36%	0.11%	737	Leander	12.00%	12.52%	0.52%
700	Kingsville	9.09%	9.17%	0.08%	735	Lefors	4.13%	4.06%	-0.07%
701	Kirby	15.60%	15.75%	0.15%	739	Leon Valley	19.43%	19.12%	-0.31%
702	Kirbyville	5.46%	5.60%	0.14%	738	Leonard	4.80%	4.65%	-0.15%
704	Knox City	1.64%	1.32%	-0.32%	740	Levelland	10.14%	10.35%	0.21%
706	Kosse	1.59%	1.62%	0.03%	742	Lewisville	17.57%	17.52%	-0.05%
708	Kountze	3.11%	3.14%	0.03%	744	Lexington	9.87%	9.40%	-0.47%
699	Krugerville	7.29%	7.28%	-0.01%	746	Liberty	14.66%	14.48%	-0.18%
707	Krum	6.36%	6.33%	-0.03%	745	Liberty Hill	6.58%	6.58%	0.00%
710	Kyle	13.11%	13.50%	0.39%	748	Lindale	15.42%	15.68%	0.26%
725	La Coste	1.36%	1.21%	-0.15%	750	Linden	0.97%	0.84%	-0.13%
714	La Feria	15.69%	15.59%	-0.10%	749	Lindsay	5.08%	5.11%	0.03%
716	La Grange	14.83%	14.83%	0.00%	755	Lipan	1.62%	1.66%	0.04%
723	La Grulla	4.91%	4.93%	0.02%	751	Little Elm	13.37%	14.02%	0.65%
732	La Joya	5.00%	4.95%	-0.05%	752	Littlefield	6.45%	6.50%	0.05%
721	La Marque	14.42%	14.68%	0.26%	753	Live Oak	19.28%	19.24%	-0.04%
728	La Porte	17.05%	17.16%	0.11%	757	Liverpool	1.76%	1.78%	0.02%
731	La Vernia	4.97%	4.93%	-0.04%	754	Livingston	16.71%	16.01%	-0.70%
711	Lacy-Lakeview	13.66%	13.89%	0.23%	756	Llano	11.96%	12.17%	0.21%
712	Ladonia	3.88%	3.87%	-0.01%	758	Lockhart	13.06%	13.10%	0.04%
713	Lago Vista	8.67%	9.09%	0.42%	760	Lockney	0.00%	0.00%	0.00%
705	Laguna Vista	3.86%	3.89%	0.03%	761	Log Cabin	5.72%	5.65%	-0.07%
717	Lake Dallas	13.79%	14.02%	0.23%	764	Lone Oak	5.17%	5.07%	-0.10%
718	Lake Jackson	12.26%	11.99%	-0.27%	765	Lone Star	2.88%	2.51%	-0.37%
719	Lake Worth	17.20%	17.66%	0.46%	766	Longview	12.43%	12.74%	0.31%
727	Lakeport	0.05%	0.00%	-0.05%	768	Loraine	2.85%	2.83%	-0.02%
715	Lakeside	10.80%	10.69%	-0.11%	769	Lorena	10.31%	10.77%	0.46%
729	Lakeside City	5.52%	5.42%	-0.10%	770	Lorenzo	1.46%	1.20%	-0.26%
720	Lakeway	13.67%	14.24%	0.57%	771	Los Fresnos	6.64%	6.81%	0.17%
722	Lamesa	4.07%	3.96%	-0.11%	772	Los Indios	4.21%	4.25%	0.04%
724	Lampasas	16.74%	17.14%	0.40%	773	Lott	2.01%	2.10%	0.09%
726	Lancaster	14.25%	14.50%	0.25%	774	Lovelady	7.39%	6.96%	-0.43%
730	Laredo	21.10%	21.52%	0.42%	778	Lubbock	17.91%	17.84%	-0.07%
733	Lavon	17.26%	17.56%	0.30%	779	Lucas	12.20%	12.70%	0.50%
736	League City	15.09%	15.61%	0.52%	782	Lufkin	16.64%	16.78%	0.14%

Texas Municipal Retirement System

City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes	City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
784	Luling	6.68%	6.44%	-0.24%	842	Menard	0.27%	0.00%	-0.27%
785	Lumberton	16.41%	16.66%	0.25%	844	Mercedes	15.51%	15.64%	0.13%
786	Lyford	1.46%	1.44%	-0.02%	846	Meridian	3.22%	3.23%	0.01%
787	Lytle	9.37%	9.61%	0.24%	848	Merkel	13.75%	13.14%	-0.61%
790	Madisonville	7.41%	7.34%	-0.07%	852	Mertzon	11.12%	10.99%	-0.13%
791	Magnolia	4.66%	4.55%	-0.11%	854	Mesquite	19.01%	19.07%	0.06%
792	Malakoff	5.22%	5.22%	0.00%	856	Mexia	10.50%	10.71%	0.21%
796	Manor	7.91%	7.94%	0.03%	858	Miami	8.81%	7.82%	-0.99%
798	Mansfield	17.69%	17.92%	0.23%	860	Midland	15.28%	15.15%	-0.13%
799	Manvel	8.53%	8.58%	0.05%	862	Midlothian	15.48%	16.05%	0.57%
800	Marble Falls	14.22%	14.60%	0.38%	863	Milano	3.30%	3.20%	-0.10%
802	Marfa	2.70%	2.74%	0.04%	864	Miles	0.73%	0.59%	-0.14%
804	Marion	3.52%	3.71%	0.19%	865	Milford	5.56%	4.84%	-0.72%
806	Marlin	7.40%	7.49%	0.09%	868	Mineola	10.56%	10.90%	0.34%
808	Marquez	26.85%	26.41%	-0.44%	870	Mineral Wells	7.95%	7.92%	-0.03%
810	Marshall	16.50%	16.31%	-0.19%	874	Mission	8.12%	8.37%	0.25%
812	Mart	2.70%	2.68%	-0.02%	875	Missouri City	10.08%	9.98%	-0.10%
813	Martindale	5.47%	5.56%	0.09%	876	Monahans	6.52%	5.71%	-0.81%
814	Mason	6.50%	6.18%	-0.32%	887	Mont Belvieu	13.08%	13.37%	0.29%
816	Matador	0.90%	0.84%	-0.06%	877	Montgomery	10.01%	10.20%	0.19%
818	Mathis	3.92%	4.01%	0.09%	878	Moody	1.71%	1.28%	-0.43%
820	Maud	3.19%	3.07%	-0.12%	883	Morgan's Point	9.73%	9.74%	0.01%
822	Maypearl	1.25%	1.14%	-0.11%	882	Morgan's Point Resort	11.84%	12.28%	0.44%
824	McAllen	8.61%	8.51%	-0.10%	884	Morton	4.98%	4.70%	-0.28%
826	McCamey	1.83%	1.43%	-0.40%	886	Moulton	16.71%	16.51%	-0.20%
828	McGregor	13.18%	13.57%	0.39%	890	Mount Enterprise	4.92%	5.07%	0.15%
830	McKinney	15.48%	15.73%	0.25%	892	Mt. Pleasant	15.19%	15.62%	0.43%
832	McLean	1.95%	1.90%	-0.05%	894	Mt. Vernon	9.85%	9.84%	-0.01%
833	McLendon-Chisholm	7.93%	7.92%	-0.01%	896	Muenster	2.09%	1.91%	-0.18%
834	Meadow	3.10%	3.03%	-0.07%	898	Muleshoe	24.06%	23.84%	-0.22%
831	Meadowlakes	2.07%	2.12%	0.05%	901	Munday	3.77%	3.73%	-0.04%
835	Meadows Place	12.05%	12.02%	-0.03%	903	Murphy	14.06%	14.25%	0.19%
837	Melissa	16.01%	16.35%	0.34%	899	Mustang Ridge	2.26%	2.27%	0.01%
1501	Memorial Villages PD	11.15%	10.93%	-0.22%	10904	Nacogdoches	14.88%	15.19%	0.31%
840	Memphis	11.31%	11.15%	-0.16%	906	Naples	1.26%	1.12%	-0.14%

Texas Municipal Retirement System

City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes	City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
907	Nash	18.77%	18.53%	-0.24%	957	Orchard	10.66%	10.50%	-0.16%
905	Nassau Bay	9.71%	9.69%	-0.02%	959	Ore City	1.37%	1.30%	-0.07%
909	Natalia	2.22%	2.16%	-0.06%	962	Overton	3.64%	3.78%	0.14%
908	Navasota	5.91%	5.89%	-0.02%	961	Ovilla	11.52%	11.73%	0.21%
910	Nederland	7.50%	7.62%	0.12%	963	Oyster Creek	10.24%	10.50%	0.26%
912	Needville	3.91%	3.99%	0.08%	964	Paducah	0.00%	0.00%	0.00%
914	New Boston	6.70%	6.57%	-0.13%	966	Palacios	8.06%	8.10%	0.04%
10916	New Braunfels	17.55%	18.11%	0.56%	968	Palestine	14.07%	14.24%	0.17%
20916	New Braunfels Utilities	18.92%	18.96%	0.04%	967	Palm Valley	4.16%	4.13%	-0.03%
915	New Deal	0.58%	0.45%	-0.13%	970	Palmer	12.15%	12.73%	0.58%
923	New Fairview	8.05%	7.99%	-0.06%	969	Palmhurst	5.29%	5.33%	0.04%
918	New London	3.55%	3.62%	0.07%	971	Palmview	1.64%	1.65%	0.01%
919	New Summerfield	8.06%	8.15%	0.09%	972	Pampa	20.34%	20.43%	0.09%
917	New Waverly	15.20%	14.50%	-0.70%	974	Panhandle	10.93%	11.14%	0.21%
913	Newark	1.25%	1.20%	-0.05%	973	Panorama Village	3.04%	3.00%	-0.04%
920	Newton	17.58%	17.36%	-0.22%	975	Pantego	15.80%	15.81%	0.01%
922	Nixon	0.54%	0.40%	-0.14%	976	Paris	5.36%	5.33%	-0.03%
924	Nocona	10.25%	10.58%	0.33%	977	Parker	13.70%	13.84%	0.14%
925	Nolanville	4.83%	4.83%	0.00%	978	Pasadena	13.53%	13.43%	-0.10%
928	Normangee	4.23%	4.15%	-0.08%	983	Pearland	13.44%	14.05%	0.61%
931	North Richland Hills	17.91%	17.90%	-0.01%	984	Pearsall	3.84%	3.47%	-0.37%
930	Northlake	9.60%	10.17%	0.57%	988	Pecos City	6.16%	6.48%	0.32%
935	O'Donnell	5.20%	4.62%	-0.58%	989	Pelican Bay	4.49%	4.56%	0.07%
936	Oak Point	8.69%	8.69%	0.00%	991	Penitas	3.85%	3.91%	0.06%
937	Oak Ridge North	12.57%	12.71%	0.14%	994	Perryton	10.46%	10.44%	-0.02%
942	Odem	6.05%	5.82%	-0.23%	1000	Pflugerville	14.24%	14.53%	0.29%
944	Odessa	14.64%	14.57%	-0.07%	1002	Pharr	11.71%	11.96%	0.25%
945	Oglesby	1.30%	0.94%	-0.36%	1004	Pilot Point	10.17%	10.34%	0.17%
949	Old River-Winfree	0.00%	0.00%	0.00%	1005	Pinehurst	18.67%	19.26%	0.59%
950	Olmos Park	2.53%	2.28%	-0.25%	1003	Pineland	4.16%	3.96%	-0.20%
951	Olney	5.87%	5.95%	0.08%	1001	Piney Point Village	8.27%	7.98%	-0.29%
953	Omaha	2.74%	2.45%	-0.29%	1006	Pittsburg	10.94%	11.27%	0.33%
954	Onalaska	8.41%	8.89%	0.48%	1007	Plains	4.09%	3.46%	-0.63%
958	Orange	16.03%	15.83%	-0.20%	1008	Plainview	11.64%	11.16%	-0.48%
960	Orange Grove	8.05%	7.87%	-0.18%	1010	Plano	17.64%	17.68%	0.04%

Texas Municipal Retirement System

City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes	City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1012	Pleasanton	15.70%	16.34%	0.64%	1065	Reklaw	12.43%	10.19%	-2.24%
1013	Point	9.77%	10.03%	0.26%	1066	Reno (Lamar County)	5.02%	5.29%	0.27%
1017	Ponder	5.24%	5.22%	-0.02%	1069	Reno (Parker County)	3.63%	3.63%	0.00%
1014	Port Aransas	15.29%	15.91%	0.62%	1067	Rhome	6.14%	6.09%	-0.05%
11016	Port Arthur	14.67%	14.41%	-0.26%	1068	Rice	1.50%	1.48%	-0.02%
1018	Port Isabel	9.89%	9.51%	-0.38%	1070	Richardson	16.05%	15.40%	-0.65%
1020	Port Lavaca	6.13%	5.74%	-0.39%	1073	Richland Hills	17.33%	17.20%	-0.13%
1022	Port Neches	15.00%	15.00%	0.00%	1074	Richland Springs	0.00%	0.00%	0.00%
1019	Portland	18.16%	18.40%	0.24%	1076	Richmond	15.43%	15.55%	0.12%
1024	Post	16.68%	17.00%	0.32%	1077	Richwood	12.38%	12.37%	-0.01%
1026	Poteet	2.56%	2.85%	0.29%	1072	Riesel	5.66%	5.54%	-0.12%
1028	Poth	4.26%	4.00%	-0.26%	1075	Rio Grande City	7.21%	7.38%	0.17%
1030	Pottsboro	6.33%	6.25%	-0.08%	1078	Rio Hondo	9.28%	9.27%	-0.01%
1031	Prairie View	2.40%	2.40%	0.00%	1079	Rio Vista	3.65%	3.46%	-0.19%
1032	Premont	1.44%	1.23%	-0.21%	1080	Rising Star	0.49%	0.46%	-0.03%
1029	Presidio	2.05%	2.06%	0.01%	1082	River Oaks	14.17%	14.41%	0.24%
1033	Primera	4.22%	4.29%	0.07%	1084	Roanoke	17.63%	17.95%	0.32%
1034	Princeton	11.37%	12.08%	0.71%	1088	Robert Lee	3.83%	3.69%	-0.14%
1036	Prosper	14.29%	14.80%	0.51%	1089	Robinson	14.92%	15.55%	0.63%
1037	Providence Village	5.87%	5.75%	-0.12%	21090	Robstown	4.87%	5.03%	0.16%
1042	Quanah	2.70%	2.78%	0.08%	11090	Robstown Utility Systems	20.77%	20.05%	-0.72%
1045	Queen City	8.54%	8.74%	0.20%	1092	Roby	5.66%	5.01%	-0.65%
1044	Quinlan	10.14%	10.22%	0.08%	1096	Rockdale	8.64%	8.57%	-0.07%
1047	Quintana	8.75%	8.69%	-0.06%	1098	Rockport	18.89%	19.07%	0.18%
1046	Quitaque	0.61%	0.50%	-0.11%	1100	Rocksprings	1.63%	1.42%	-0.21%
1048	Quitman	5.33%	5.03%	-0.30%	1102	Rockwall	15.63%	15.83%	0.20%
1050	Ralls	6.41%	6.09%	-0.32%	1104	Rogers	8.23%	7.85%	-0.38%
1051	Rancho Viejo	4.79%	4.49%	-0.30%	1105	Rollingwood	12.49%	12.85%	0.36%
1052	Ranger	6.93%	7.16%	0.23%	1106	Roma	9.58%	9.59%	0.01%
1054	Rankin	2.73%	2.59%	-0.14%	1109	Roscoe	1.33%	1.15%	-0.18%
1055	Ransom Canyon	9.12%	9.31%	0.19%	1112	Rosebud	1.80%	1.79%	-0.01%
1058	Raymondville	2.04%	1.87%	-0.17%	1114	Rosenberg	16.73%	17.29%	0.56%
1061	Red Oak	6.46%	6.58%	0.12%	1116	Rotan	0.00%	0.00%	0.00%
1062	Redwater	2.29%	2.17%	-0.12%	1118	Round Rock	16.98%	17.25%	0.27%
1064	Refugio	0.00%	0.00%	0.00%	1119	Rowlett	13.29%	13.78%	0.49%

City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes	City Number	City Name	2024 Full Rate	Experience Study	Impact of Changes
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1120	Royse City	15.65%	16.18%	0.53%	1171	Seven Points	3.44%	3.92%	0.48%
1122	Rule	0.51%	0.09%	-0.42%	1172	Seymour	7.49%	7.20%	-0.29%
1123	Runaway Bay	1.71%	1.72%	0.01%	1165	Shady Shores	9.76%	9.64%	-0.12%
1124	Runge	11.77%	10.59%	-1.18%	1177	Shallowater	4.75%	5.00%	0.25%
1126	Rusk	6.46%	6.71%	0.25%	1174	Shamrock	6.05%	5.83%	-0.22%
1128	Sabinal	2.32%	2.32%	0.00%	1173	Shavano Park	14.05%	14.53%	0.48%
1129	Sachse	14.56%	15.09%	0.53%	1175	Shenandoah	19.64%	19.77%	0.13%
1131	Saginaw	20.85%	21.07%	0.22%	1181	Shepherd	2.91%	2.92%	0.01%
1135	Saint Hedwig	3.26%	3.24%	-0.02%	1176	Sherman	14.09%	14.09%	0.00%
1130	Saint Jo	5.95%	6.18%	0.23%	1178	Shiner	11.12%	10.88%	-0.24%
1133	Salado	6.16%	6.27%	0.11%	1179	Shoreacres	4.59%	4.76%	0.17%
1132	San Angelo	17.65%	17.81%	0.16%	1180	Silsbee	19.17%	19.02%	-0.15%
21136	San Antonio	12.79%	12.83%	0.04%	1182	Silverton	5.91%	5.32%	-0.59%
11136	San Antonio Water System	3.89%	3.76%	-0.13%	1183	Simonton	11.04%	10.96%	-0.08%
1138	San Augustine	8.61%	8.95%	0.34%	1184	Sinton	13.35%	12.62%	-0.73%
1140	San Benito	4.75%	4.82%	0.07%	1185	Skellytown	2.47%	2.34%	-0.13%
1144	San Felipe	3.71%	3.67%	-0.04%	1186	Slaton	6.97%	6.77%	-0.20%
1148	San Juan	4.28%	4.35%	0.07%	1188	Smithville	11.12%	11.40%	0.28%
1150	San Marcos	19.00%	19.27%	0.27%	1189	Smyer	5.89%	5.46%	-0.43%
1152	San Saba	9.33%	9.21%	-0.12%	1193	Snook	1.84%	1.61%	-0.23%
1145	Sandy Oaks	2.54%	2.56%	0.02%	1190	Snyder	14.18%	14.28%	0.10%
1146	Sanger	12.65%	13.10%	0.45%	1191	Somerset	2.44%	2.22%	-0.22%
1153	Sansom Park	10.41%	10.88%	0.47%	1192	Somerville	6.54%	6.65%	0.11%
1155	Santa Fe	19.42%	19.65%	0.23%	1194	Sonora	8.22%	8.40%	0.18%
1158	Savoy	1.92%	1.80%	-0.12%	1196	Sour Lake	5.57%	5.35%	-0.22%
1159	Schertz	16.59%	16.89%	0.30%	1198	South Houston	10.12%	9.77%	-0.35%
1160	Schulenburg	18.98%	18.80%	-0.18%	1199	South Padre Island	13.00%	13.23%	0.23%
1161	Seabrook	16.37%	16.41%	0.04%	1197	Southlake	12.49%	12.67%	0.18%
1162	Seadrift	2.08%	2.04%	-0.04%	1200	Southmayd	3.29%	3.09%	-0.20%
1164	Seagoville	11.59%	12.08%	0.49%	1202	Southside Place	10.78%	11.11%	0.33%
1166	Seagraves	8.89%	8.75%	-0.14%	1204	Spearman	10.07%	10.25%	0.18%
1167	Sealy	13.72%	14.32%	0.60%	1201	Splendora	10.43%	10.38%	-0.05%
1168	Seguin	22.48%	22.87%	0.39%	1205	Spring Valley Village	6.17%	5.67%	-0.50%
1169	Selma	15.97%	16.41%	0.44%	1203	Springtown	9.79%	10.22%	0.43%
1170	Seminole	13.42%	13.28%	-0.14%	1206	Spur	5.02%	4.98%	-0.04%

City Number (1)	City Name (2)	2024 Full Rate (3)	Experience Study (4)	Impact of Changes (5)	City Number (6)	City Name (7)	2024 Full Rate (8)	Experience Study (9)	Impact of Changes (10)
1207	Stafford	14.09%	14.22%	0.13%	21260	Texarkana	16.44%	16.32%	-0.12%
1208	Stamford	2.97%	2.82%	-0.15%	11260	Texarkana Police Dept	16.20%	16.34%	0.14%
1210	Stanton	5.75%	5.53%	-0.22%	31260	Texarkana Water Utilities	16.97%	16.69%	-0.28%
1211	Star Harbor	10.38%	9.49%	-0.89%	1262	Texas City	18.24%	18.47%	0.23%
1212	Stephenville	6.80%	6.97%	0.17%	11263	Texas Municipal League	15.11%	14.74%	-0.37%
1213	Sterling City	1.13%	0.94%	-0.19%	1267	The Colony	13.51%	13.99%	0.48%
1214	Stinnett	0.00%	0.00%	0.00%	1269	Thompsons	7.02%	6.75%	-0.27%
1216	Stockdale	3.56%	3.44%	-0.12%	1268	Thorndale	7.37%	7.31%	-0.06%
1218	Stratford	10.06%	10.13%	0.07%	1272	Thrall	3.29%	3.26%	-0.03%
1220	Strawn	6.93%	6.82%	-0.11%	1274	Three Rivers	26.80%	26.95%	0.15%
1224	Sudan	1.13%	1.12%	-0.01%	1276	Throckmorton	8.45%	7.66%	-0.79%
1225	Sugar Land	14.59%	14.78%	0.19%	1277	Tiki Island	3.47%	3.29%	-0.18%
1223	Sullivan City	2.47%	2.52%	0.05%	1278	Timpson	1.01%	0.74%	-0.27%
1226	Sulphur Springs	7.19%	7.03%	-0.16%	1280	Tioga	4.35%	4.40%	0.05%
1228	Sundown	12.70%	12.89%	0.19%	1285	Todd Mission	7.62%	7.58%	-0.04%
1229	Sunnyvale	12.30%	12.60%	0.30%	1283	Tolar	7.20%	7.13%	-0.07%
1230	Sunray	11.72%	11.92%	0.20%	1286	Tom Bean	2.71%	2.72%	0.01%
1227	Sunrise Beach Village	1.48%	1.37%	-0.11%	1284	Tomball	13.51%	14.09%	0.58%
1231	Sunset Valley	10.71%	10.82%	0.11%	1287	Tool	3.58%	3.63%	0.05%
1233	Surfside Beach	5.51%	5.46%	-0.05%	1290	Trent	3.97%	3.70%	-0.27%
1232	Sweeny	14.78%	14.14%	-0.64%	1292	Trenton	3.83%	3.89%	0.06%
1234	Sweetwater	17.62%	17.50%	-0.12%	1293	Trinidad	15.89%	15.11%	-0.78%
1264	TMRS	15.73%	15.73%	0.00%	1294	Trinity	5.87%	6.23%	0.36%
1236	Taft	11.49%	11.46%	-0.03%	1295	Trophy Club	12.90%	13.09%	0.19%
1238	Tahoka	2.59%	2.54%	-0.05%	1296	Troup	8.86%	9.18%	0.32%
1240	Talty	9.37%	9.21%	-0.16%	1297	Troy	9.43%	9.57%	0.14%
1241	Tatum	1.47%	1.41%	-0.06%	1298	Tulia	9.62%	9.57%	-0.05%
1246	Taylor	12.94%	13.30%	0.36%	1299	Turkey	5.46%	5.22%	-0.24%
1248	Teague	7.88%	7.52%	-0.36%	1300	Tuscola	6.51%	6.43%	-0.08%
1252	Temple	17.42%	17.44%	0.02%	1301	Tye	5.69%	5.52%	-0.17%
1254	Tenaha	0.00%	0.00%	0.00%	1304	Tyler	21.58%	21.81%	0.23%
1256	Terrell	17.84%	17.94%	0.10%	1307	Uhland	12.40%	12.11%	-0.29%
1258	Terrell Hills	15.81%	16.33%	0.52%	1305	Universal City	19.59%	20.01%	0.42%
31263	Texas Health Benefits Pool	8.45%	8.47%	0.02%	1306	University Park	8.59%	8.27%	-0.32%
21263	Tex Municipal League IRP	11.51%	10.87%	-0.64%	1308	Uvalde	8.94%	9.32%	0.38%

City Number (1)	City Name (2)	2024 Full Rate (3)	Experience Study (4)	Impact of Changes (5)	City Number (6)	City Name (7)	2024 Full Rate (8)	Experience Study (9)	Impact of Changes (10)
1312	Valley Mills	1.45%	1.45%	0.00%	1362	Westover Hills	5.63%	5.38%	-0.25%
1313	Valley View	4.51%	4.52%	0.01%	1366	Westworth Village	9.74%	9.97%	0.23%
1314	Van	6.95%	7.25%	0.30%	1368	Wharton	5.78%	5.65%	-0.13%
1316	Van Alstyne	12.65%	12.99%	0.34%	1370	Wheeler	10.83%	9.59%	-1.24%
1318	Van Horn	8.24%	8.00%	-0.24%	1372	White Deer	8.91%	8.50%	-0.41%
1320	Vega	9.97%	10.19%	0.22%	1377	White Oak	15.44%	15.60%	0.16%
1324	Venus	10.69%	11.01%	0.32%	1378	White Settlement	18.07%	18.54%	0.47%
1326	Vernon	12.30%	11.60%	-0.70%	1374	Whiteface	2.34%	2.25%	-0.09%
1328	Victoria	17.27%	17.31%	0.04%	1375	Whitehouse	7.58%	7.68%	0.10%
1329	Vidor	15.13%	15.58%	0.45%	1376	Whitesboro	5.66%	5.76%	0.10%
1500	Village Fire Department	6.11%	5.47%	-0.64%	1380	Whitewright	2.83%	2.91%	0.08%
1327	Village of the Hills	12.77%	12.65%	-0.12%	1382	Whitney	2.99%	3.09%	0.10%
1325	Von Ormy	8.92%	8.90%	-0.02%	1384	Wichita Falls	16.50%	15.77%	-0.73%
1330	Waco	13.92%	14.08%	0.16%	1386	Willis	8.12%	8.40%	0.28%
1332	Waelder	1.98%	1.90%	-0.08%	1387	Willow Park	6.66%	6.58%	-0.08%
1334	Wake Village	14.08%	13.83%	-0.25%	1388	Wills Point	11.27%	10.49%	-0.78%
1336	Waller	10.64%	10.60%	-0.04%	1390	Wilmer	5.14%	5.29%	0.15%
1337	Wallis	2.38%	2.43%	0.05%	1392	Wimberley	5.47%	5.46%	-0.01%
1338	Walnut Springs	2.51%	2.19%	-0.32%	1393	Windcrest	11.46%	12.04%	0.58%
1340	Waskom	24.12%	24.82%	0.70%	1395	Winfield	0.0251	0.0249	-0.0002
1341	Watauga	16.53%	16.93%	0.40%	1396	Wink	5.92%	5.90%	-0.02%
1342	Waxahachie	16.71%	17.18%	0.47%	1398	Winnsboro	9.31%	8.82%	-0.49%
1344	Weatherford	14.53%	14.69%	0.16%	1399	Winona	5.87%	5.99%	0.12%
1345	Webster	18.59%	18.73%	0.14%	1400	Winters	7.58%	7.48%	-0.10%
1346	Weimar	12.90%	11.78%	-1.12%	1403	Wolfforth	10.92%	11.05%	0.13%
1350	Wellington	3.22%	2.46%	-0.76%	1409	Woodcreek	8.54%	8.57%	0.03%
1352	Wells	3.44%	3.36%	-0.08%	1404	Woodsboro	7.65%	7.65%	0.00%
1354	Weslaco	8.18%	8.07%	-0.11%	1406	Woodville	17.56%	17.36%	-0.20%
1356	West	5.00%	5.45%	0.45%	1407	Woodway	17.97%	18.28%	0.31%
1358	West Columbia	3.88%	4.15%	0.27%	1408	Wortham	6.27%	6.12%	-0.15%
1359	West Lake Hills	18.27%	18.18%	-0.09%	1410	Wylie	15.30%	15.75%	0.45%
1361	West Orange	18.10%	17.72%	-0.38%	1412	Yoakum	19.32%	18.44%	-0.88%
1365	West Tawakoni	5.68%	6.16%	0.48%	1414	Yorktown	0.00%	0.00%	0.00%
1364	West University Place	12.24%	12.63%	0.39%	1415	Zavalla	2.19%	2.26%	0.07%
1363	Westlake	12.04%	12.35%	0.31%					