Texas Municipal Retirement System

Actuarial Experience Investigation Study
as of December 31, 2018

October 15, 2019

Board of Trustees
Texas Municipal Retirement System
Austin, Texas

Dear Members of the Board:

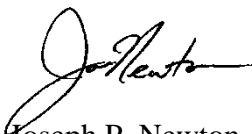**Subject:** **Results of the 2019 Experience Study**

We are pleased to present our report of the 2019 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 Actuarial Services, and the entire TMRS staff for their assistance in this project.

Sincerely,

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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 Use of outdated or inappropriate assumptions can result in understated costs which will lead to higher future contribution requirements or perhaps an inability to pay benefits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, 2014 actuarial valuation. For this experience study, we have added TMRS' experience for the four-year period from December 31, 2014 through December 31, 2018 (FY 2015 – FY 2018).

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	5 Years	This assumption reacts the quickest to changing trends. More years were used to analyze the rate of improvement over time.
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 15% 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.

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 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 actuarial assumptions and methods. Finally, tables summarizing the analysis of the assumptions are in Section VI. Appendix A provides the detail for the termination load and population decline assumption by City, and Appendix B provides the impact on individual employer's contribution rates.

Section VI Exhibits

The exhibits in Section VI should generally be self-explanatory. For example, on page VI-10, we show an exhibit analyzing the termination rates for members with 10 or more years of service. The second column shows the total number of members (weighted by salary) with at least 10 years of service who terminated during the study period. This excludes members who died, became disabled or retired. Column (3), labeled "Exposure Weighted by Salary" shows the total exposures of this group. This is the number of members who meet the criteria who could have terminated during any of the years. On this exhibit, the exposures exclude anyone eligible for retirement. A member is counted in each year they could have terminated, so the total shown is the total exposures for the ten-year period. Column (4) shows the probability of termination based on the raw data. That is, it is the result of dividing the actual number of terminations (col. 2) by the number exposed (col. 3). Column (5) shows the current termination rates and column (6) shows the new recommended termination rates. Columns (7) and (8) show the expected numbers of terminations based on the current and proposed termination assumptions. Columns (9) and (10) show the Actual-to-Expected ratios under the current and proposed termination assumptions.

SECTION II

SUMMARY OF RECOMMENDATIONS

Summary of Recommendations

Aside from the change to the Updated Service Credit (USC) methodology, this study makes minor changes to the assumption set as a whole. The average contribution rate for retirement would increase by 0.28% of payroll based on all recommended assumptions and methods. The impact from the USC method increases the average rate by 0.31%, meaning the net of all the other changes decreases the average contribution rate by 0.03%. 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. We find the current nominal investment return assumption of 6.75% reasonable. Based on our analysis and the Alternative Portfolio 3 adopted by the Board at the September meeting, the median expected geometric return (50th percentile) over the next 20 years for the current asset allocation is between 6.42% and 6.80%, with an arithmetic mean of 6.95%.

3. No change to the current ultimate salary increase of 3.50% for long service members. Modify the existing step rate portion of the salary scale assumption based on recent trends and experience. The net impact is an approximate 0.18% increase in the average annual increase throughout a member's career.

4. Introduce a 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. Decrease the current payroll growth rate assumption from 3.00% to 2.75% to recognize some revenue pressure from a maturing population and changes in the property tax provisions. The payroll growth assumption does not impact the liabilities, only the development of the amortization of the unfunded actuarial accrued liability. 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.

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

7. We recommend updating the base mortality tables for non-disabled retirees with client-specific mortality tables developed using the actual mortality experience in TMRS data through December 31, 2018. Continue to assume that mortality rates will improve in the future using a fully generational approach, but update the projection scale to the ultimate rates of the MP Scales (1% per year for most ages).
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. No change to the adjustments for females. Recommend adjusting the set-forward from three years to four years and increasing the minimum to 3.5% for males.

9. No change to the assumption that members who become disabled will choose a 50% Joint and Survivor payment option.

10. Update the pre-retirement mortality tables to be the PUB(10) active employee tables published by the Society of Actuaries, using the Public Safety table for males and the General Employee table for females.

11. For valuation purposes, we will assume 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

12. Recommend simplifying the assumptions for retirement probabilities from the current tables which are based on age, entry age, and gender to one table based on age. Update the modifiers per benefit provisions based on experience. Overall will have lower probabilities of retirement.

13. Recommend slightly increasing the rates of termination. Make 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. Overall, these changes increase the expected number of terminations.

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

15. Recommend reducing the rates of disability.

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

17. Recommend modifying the assumption that all healthy members choose the Life Only option at retirement to all members choosing the 50% Survivor Option.

Actuarial Methods and Policies

18. 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. Recommend decreasing the 15% corridor limit to 12% to approximate one standard deviation of the expected annual investment performance.

19. No change to the use of the Entry Age Normal Cost Method.
20. No change to the use of closed amortization periods for experience gains and losses for underfunded plans. For amortization loss bases created after December 31, 2019, recommend lowering the amortization period from 25 years to 20 years. This will bring the policies into industry best practices and eliminate any impact from negative amortization.

21. No change to the provision that once a plan reaches overfunded status, all prior closed non ad hoc bases are erased. Recommend eliminating any prior ad hoc bases as well and changing from the use of a 25-year open amortization policy for overfunded plans 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 a shorter, level dollar amortization policy for ad hoc benefit enhancements. Recommend lowering the period for ad hoc enhancements from 15 to 12 years.

23. Supplemental Death Benefit Fund: Recommend the premiums for retirees immediately be increased to be based on the full $7,500 benefit and instead allow for a credit against premiums for active employees equal to 2% of the trust balance as of the valuation date, expressed as a percentage of covered payroll for participating employers.

Summary of System-wide Results
($ millions)

	Current (1)	Proposed (2)	Difference (2) - (1)
1. Actuarial accrued liability (AAL)	$ 33,731	$ 33,819	$ 88
2. Actuarial value of assets	29,385	29,385	-
3. UAAL (1 - 2)	$ 4,346	$ 4,434	$ 88
4. Funded Ratio	87.1%	86.9%	-0.2%
5. a. Normal cost	8.61%	8.71%	0.10%
b. Prior service	4.97%	5.15%	0.18%
c. Full retirement rate	13.58%	13.86%	0.28%

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-Year Averages Ending December 31
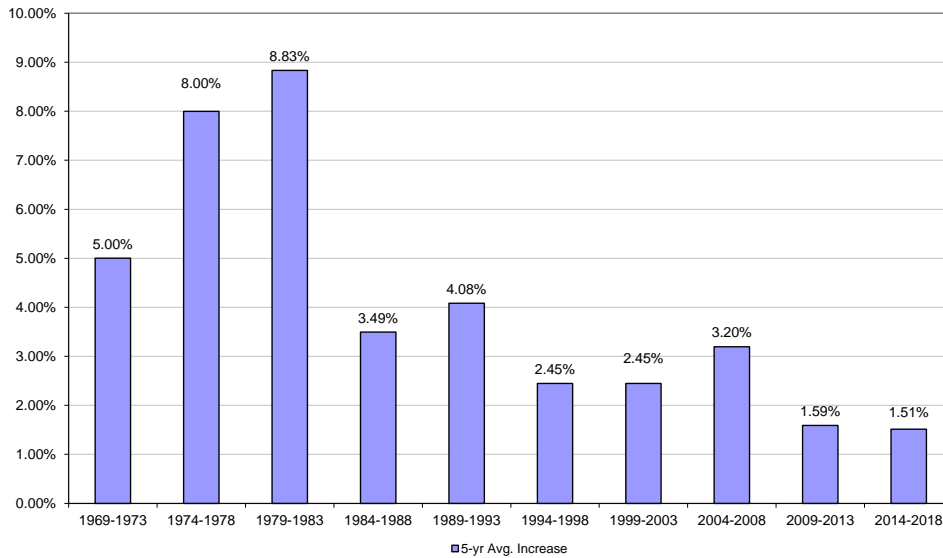
Source: Bureau of Labor Statistics, CPI-U, all items, average during calendar year

The table below shows the average inflation over various periods, ending December 2018.

Periods Ending Dec. 2018	Average Annual Increase in CPI-U
Last five (5) years	1.51%
Last ten (10) years	1.55%
Last fifteen (15) years	2.10%
Last twenty (20) years	2.18%
Last twenty-five (25) years	2.24%
Last thirty (30) years	2.54%
Since 1913 (first available year)	3.12%

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

Forecasts from Investment Consulting Firms

Most of the investment consulting firms forecast inflation when setting their capital market assumptions. For instance TMRS' investment consultant, RV Kuhns, is forecasting that the average inflation for the next 10-year period will be 2.5%. Of the fourteen used in our model, the average is 2.18% with a range of 1.7% to 2.5%.

Forecasts from Social Security Administration

In the Social Security Administration's 2018 Trustees Report, the Office of the Chief Actuary is projecting a long-term average annual inflation rate of 2.6% under the intermediate cost assumption. The Chief Actuary for the Social Security Administration kept this assumption unchanged from the prior year and the low cost and high cost scenarios are 2.0% and 3.2%, respectively.

Expectations Implied in the Bond Market

Another source of information about future inflation is the market for U.S. Treasury bonds. The difference between the yield for an inflation indexed Treasury bond and a non-indexed U.S. Treasury bond is known as the Treasury Breakeven Inflation (TBI) Curve. These are approximate expectations of the bond market for expected inflation over varying time horizons.

The following chart shows the historical market implied inflation from January 1, 2003 through December 31, 2018.

Market Implied Inflation - US Treasury Bond Market
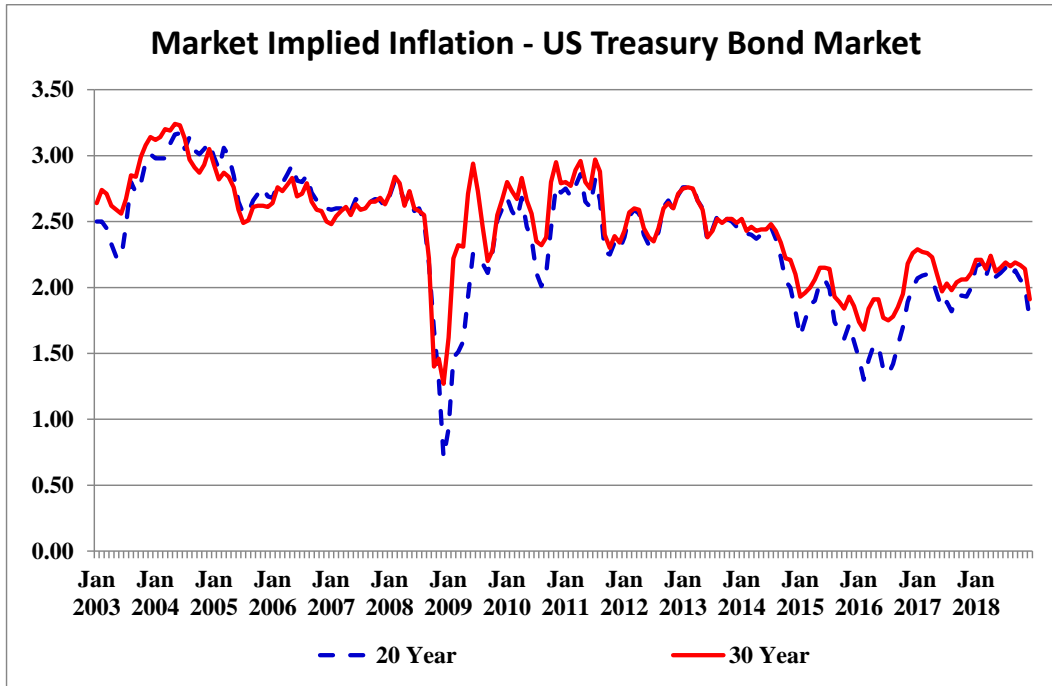
As the chart shows, the bond market is predicting that average inflation to be approximately 2% for both the 20 and 30 year time horizons. The specific values are 1.75% for the 20 year and 1.91% for the 30 year.

Survey of Professional Forecasters

The Philadelphia Federal Reserve conducts a quarterly survey of the Society of Professional Forecasters. Their forecast for the fourth quarter of 2018 was for inflation over the next ten years (2019 to 2028) to average 2.21%. Additionally, the Fed has openly stated that they have a target 2.00% inflation rate.

Comparison of Inflation Expectations from 2015 to 2019

Finally, the following table provides a comparison of the inflation expectations documented in the 2015 experience study report and the current inflation expectations.

| | Inflation Expectations | | |
Source	2015	2019	Change
(1)	(2)	(3)	(4)
TMRS' Investment Consultant	2.50%	2.50%	0.00%
GRS Survey of Investment Consultants	2.27%	2.18%	-0.09%
Implied Inflation 20-Year Treasuries	1.78%	1.75%	-0.03%
Social Security Administration Trustees Report	2.70%	2.60%	-0.10%
Survey of Professional Forecasters	2.10%	2.21%	+0.11%

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, 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 RVK (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. Based on information from the 2018 CAFR, we have estimated administrative expenses to be 0.07% of assets.

INVESTMENT RETURN

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 plans. Even a small change to this assumption can produce significant changes to the liabilities and contribution rates. Currently (used in the 2018 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.

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. 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%
Int. Duration Fixed Income	10%
Non-Core Fixed Income	20%
Custom Real Return	10%
Custom Real Estate	10%
Absolute Return	10%
Private Equity	5%
Cash Equivalents	0%
Total	100.0%

Because GRS is a benefits consulting firm and does not develop or maintain our own capital market assumptions, we utilized the forward-looking return expectations developed by fourteen 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)

Investment Consultant	Distribution of 10-Year Average Geometric Net Nominal Return			Probability of exceeding 6.75%
	40th	50th	60th	
(1)	(2)	(3)	(4)	(5)
1	4.12%	5.04%	5.97%	32.16%
2	4.56%	5.44%	6.32%	35.28%
3	4.79%	5.67%	6.56%	37.88%
4	5.12%	5.80%	6.48%	36.23%
5	5.43%	6.17%	6.92%	42.25%
6	5.38%	6.31%	7.24%	45.23%
7	5.53%	6.37%	7.22%	45.48%
8	5.59%	6.46%	7.33%	46.61%
9	5.54%	6.48%	7.42%	47.10%
10	5.68%	6.53%	7.39%	47.42%
11	5.85%	6.63%	7.42%	48.46%
12	5.88%	6.76%	7.64%	50.08%
13	6.10%	6.90%	7.70%	51.84%
14	6.74%	7.45%	8.16%	59.91%
Average	**5.45%**	**6.29%**	**7.13%**	**44.71%**

As shown, the average geometric return from the survey is 6.29%, with a 44.71% probability of achieving 6.75% over the next 10 years. There is a significant range, however, from 5.04% to 7.45%. The arithmetic average (straight average of the return in one year without taking volatility into account) is 6.80% and becomes the top end of the range for our analysis.

The capital market assumptions provided by the investment consultants and used in the analysis above are based on 7 to 10 year investment horizon. Investment consultants develop their forecast assumptions with this time horizon in part because most pension investment management teams use this time period for developing and monitoring their investment strategies. However, much of the liabilities of TMRS have a longer time horizon than 10 years. The duration of the liability stream for current members is approximately 17 years (meaning the average amount of time before the average discount weighted benefit payment will occur), and we prefer to use that as an appropriate timeframe for the investment return assumption.

Four of the firms develop capital market assumptions with a 20 to 30-year investment horizon. On average the difference between their expectations from short term to longer term is 0.37%. Adding the same difference across the broader survey, the 6.29% above would become 6.66%, and we are comfortable using this as our long term geometric mean for the current portfolio. A 17 year time horizon would fall in between these two values, meaning the preferred range is from 6.29% to 6.66%, with a midpoint of 6.48%.

Asset Allocation Study

TMRS investment staff and RVK performed a study to assess the prospective asset allocation and a new target asset allocation was adopted at the September meeting. The following table provides the differences between the allocations:

ASSET CLASS	Old Target Portfolio	New Target Portfolio
Global Equity	35%	30%
Int. Duration Fixed Income	10%	10%
Non-Core Fixed Income	20%	20%
Custom Real Return	10%	10%
Custom Real Estate	10%	10%
Absolute Return	10%	10%
Private Equity	5%	10%
Cash Equivalents	0%	0%
Total	100.0%	100.0%
Arithmetic Mean	6.80%	6.95%
Standard Deviation	10.7%	10.6%
50% over 10 Years	6.29%	6.42%
50% over 25 Years	6.66%	6.80%

As shown, the new portfolio has higher expectations and a larger gap between the 6.75% assumption and the arithmetic mean of 6.95%. The case for a 6.75% assumption is stronger based on the new portfolio, with a preferred range from 6.42% to 6.80%.

Based on this analysis, we find the current 6.75% in the reasonable range and are not recommending that TMRS change its investment return assumption of 6.75% at this time.

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 10.50% for a new member's first increase to 3.50% for members with 25 years of service. 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. The average pay increases for members active in both valuations with more than one year of service are as follows:

Period	Increase	Inflation	Increase Above Inflation
CY 2008 to CY 2009	6.7%	-0.4%	7.1%
CY 2009 to CY 2010	2.1%	1.6%	0.5%
CY 2010 to CY 2011	3.7%	3.2%	0.5%
CY 2011 to CY 2012	4.3%	2.1%	2.2%
CY 2012 to CY 2013	5.5%	1.5%	4.0%
CY 2013 to CY 2014	6.2%	1.6%	4.6%
CY 2014 to CY 2015	7.4%	0.1%	7.3%
CY 2015 to CY 2016	4.6%	1.3%	3.3%
CY 2016 to CY 2017	6.4%	2.1%	4.3%
CY 2017 to CY 2018	5.8%	2.4%	3.4%
Weighted Average	5.24%	1.76%	3.48%

The average increase is 5.24%, or 3.48% above inflation. The expected increase above inflation was 2.28%, meaning the actual increases have been higher than expected on real terms when the difference in inflation has been removed.

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 3.14%, or 1.38% above inflation, which shows there are merit and promotional increases even for long service employees.

While the 3.14% is lower than the currently assumed 3.50% on a nominal basis, it is higher when looked at on a real (net of inflation) basis. However, the difference is heavily driven by a very low inflation experience and most decisions on salary increases are based on nominal expectations and perceived inflation, instead of actual inflation in real time. In addition, the 3.14% includes fiscal years 2009 and 2010 that had very low increases compared to actual inflation. Projecting forward what the data will look like in the next experience study, it is likely the nominal experience is higher than the 3.50%. For now, we are recommending no change to the long term individual merit and promotion component of 1.00%. This is an assumption that we are watching and could need adjustment in the next experience study.

The net impact of the inflation assumption of 2.50% and a long service productivity component of 1.00% over inflation computes to 3.50% per year assumed salary increase for long service members (no change from current).
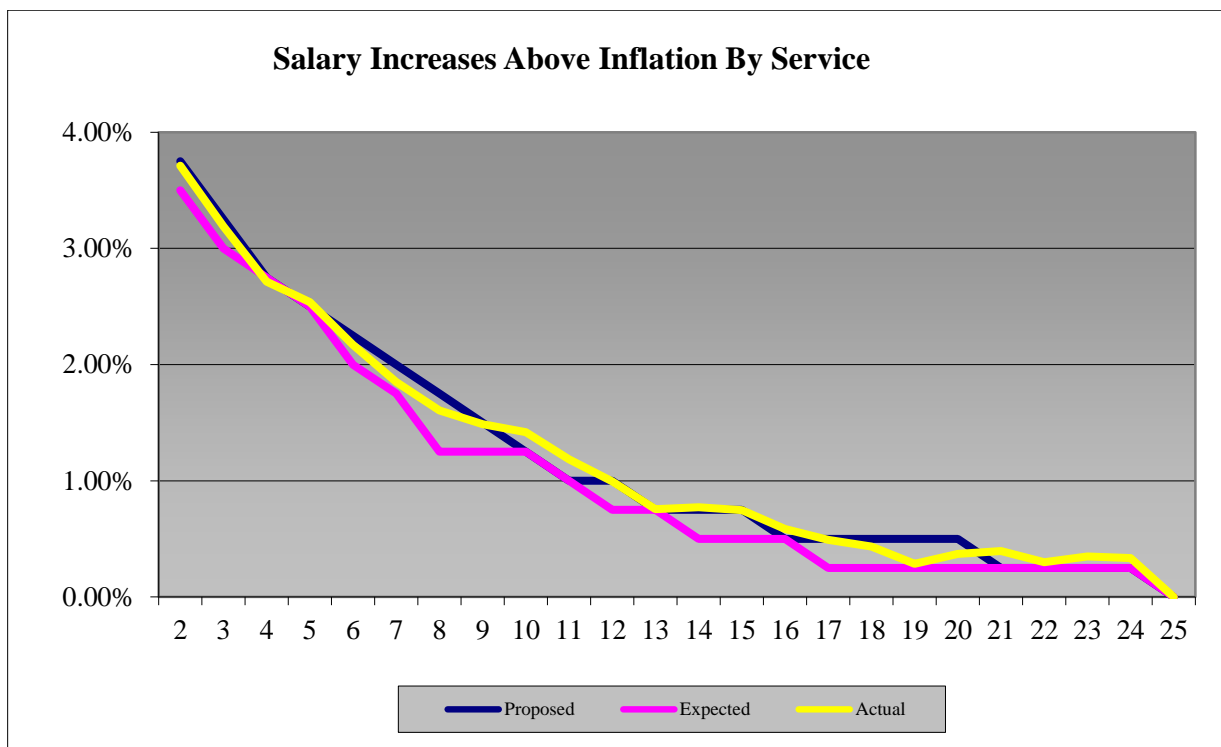
The above exhibit models the portion of the salary increases for short term members that exceeded the salary increases for long term members based on the current assumptions, the actual experience, and a set of new proposed assumptions. You can see that the actual increases were slightly higher than the current assumption. We have increased some of the step rates accordingly.

Based on the new schedule, the cumulative increases from service 1 to 25 adds approximately 0.18% per year. This would create an increase in the normal cost and unfunded liability.

Additional results of the analysis regarding this assumption are provided in Section VI on page VI-1.

PAYROLL GROWTH RATE

The salary increase rates discussed above are assumptions applied to individuals. They are used in projecting future benefits. We also use a separate payroll growth assumption, currently 3.00%, 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.

Historically, in the general economy, wage inflation almost always exceeds price inflation. This is because wage inflation is in theory the result of (a) price inflation, and (b) productivity gains being passed through to wages. For the last ten years, for the economy as a whole, wage inflation has been about 2.22%, and 3.08% for the last twenty years.
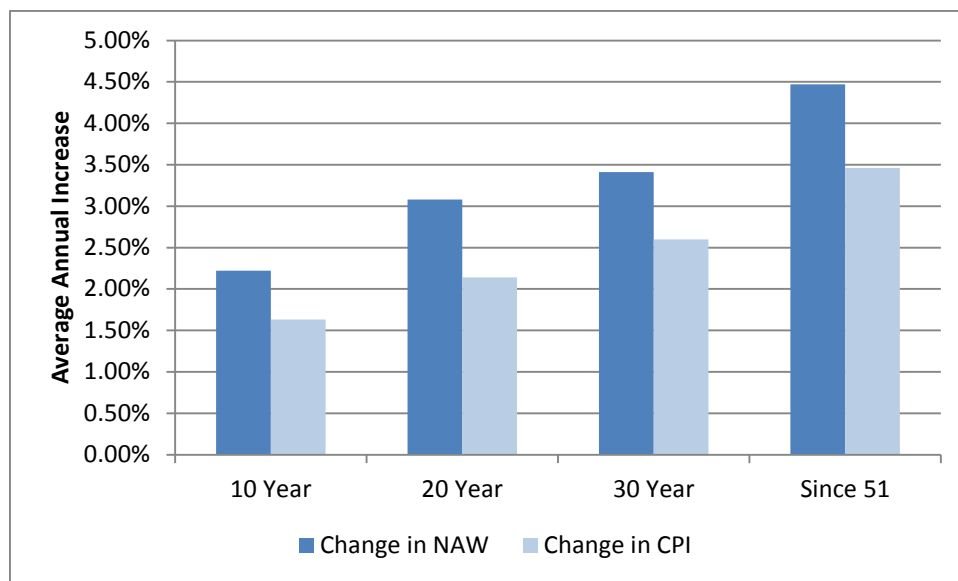
An interesting pattern has been that as inflation has decreased, so too have the productivity gains passed on to employees. The impact of technology and globalization are apparent and will continue to be moving forward. Also impacting the spread is the aging of the population, as half of TMRS active members will be eligible to retire in the next 10 years and younger employees tend to be hired at lower salary points than the members they replace.

Due to the imposing of property tax revenue caps in the 2019 legislation session, we are recommending a decrease of 0.25% to this assumption. If revenue growth is dampened, it is likely that new hire salaries will be one of the values impacted, and that is a significant driver of overall payroll growth over time. This change will take pressure off of increasing contribution rates for cities with unfunded liabilities if revenue growth is dampened.

Adjustment for population growth

We prefer to not anticipate membership growth in setting the payroll 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 2018 for each city. If a city had a net overall decrease in membership during the last decade, 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% 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. Thus, some cities already have a population decline adjustment. The net change compared to the current assumption is a net increase in the number of cities that will have the adjustment but a smaller adjustment on average.

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.

UPDATED SERVICE CREDIT

Updated Service Credit (USC) is an optional benefit feature of the TMRS retirement plan. 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.

The last few valuations, as salary increases have returned to more historically normal levels, 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.

Under current procedures, we believe this is creating a bias that is not incorporated into the contribution rates and thus is 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 are recommending 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.

To determine the appropriate load, we performed a stochastic analysis on a hypothetical member who works 30 years and retires, randomly pulling actual increases received by members from the 2017 to the 2018 data. We simulated 1,000 careers and observed the difference between the mean outcome and the median outcome.

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
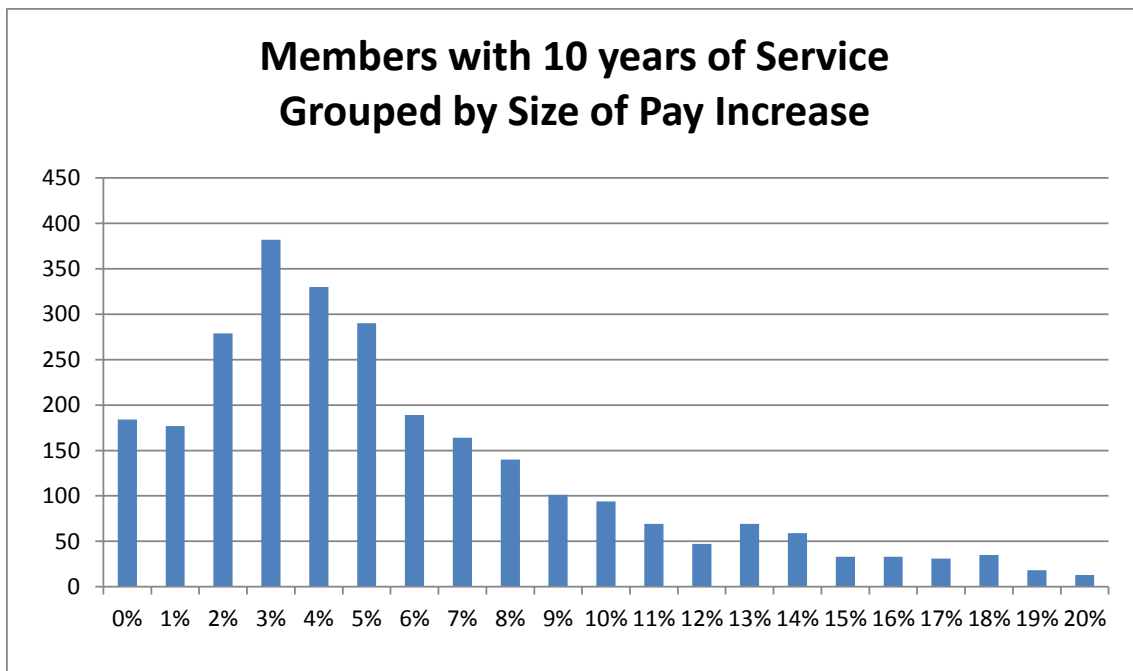
For the data above, the average increase was 5.85%, however, only 40% of the population received pay increases greater than 5.85%. The median (50th percentile) was 4.70%. This type of pattern is called a lognormal distribution.

Typically, in this type of analysis, when the distribution is skewed in this way, a stochastic simulation will create outcomes where the median outcome is less than the mean (average). This shows in the salary outcomes created by the simulation. The following is a graphical representation of the projected salary growth created by the simulations. Notice that the median outcome is slightly lower than the mean (approximately 5% lower after 30 years).

Individual Salary Growth
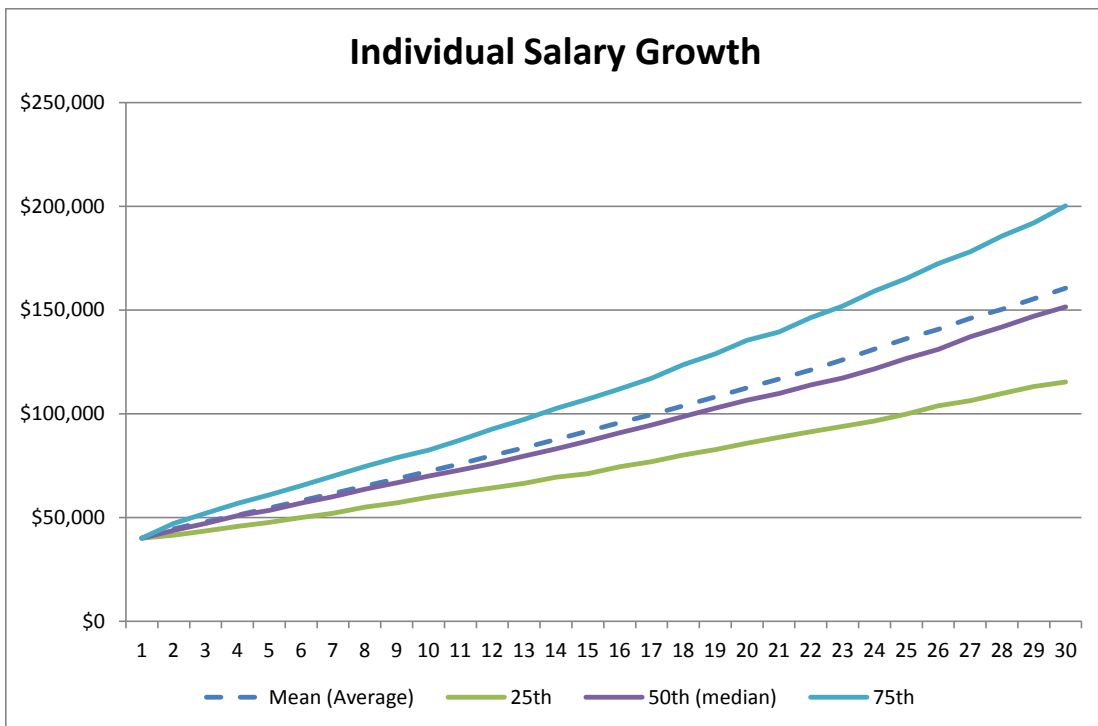
Without the USC provision, the simulated account balances (ultimately used to determine the annuitized benefit) show the same pattern, ultimately with a median that is 3.7% lower than the mean.

Sum of Member Accumlation Balances
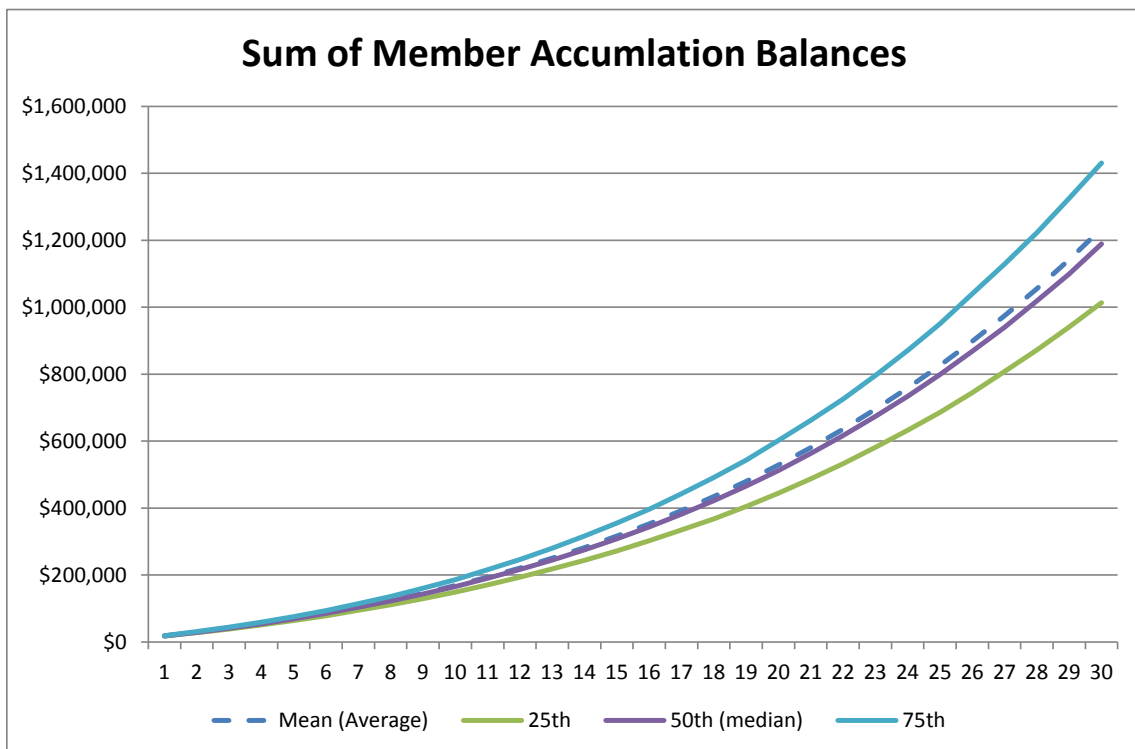
However, when the USC provision is incorporated, the median is <u>higher</u> than the mean, meaning the volatility in the simulation is creating more liability than expected.

Sum of Member Accumlation Balances (With USC)
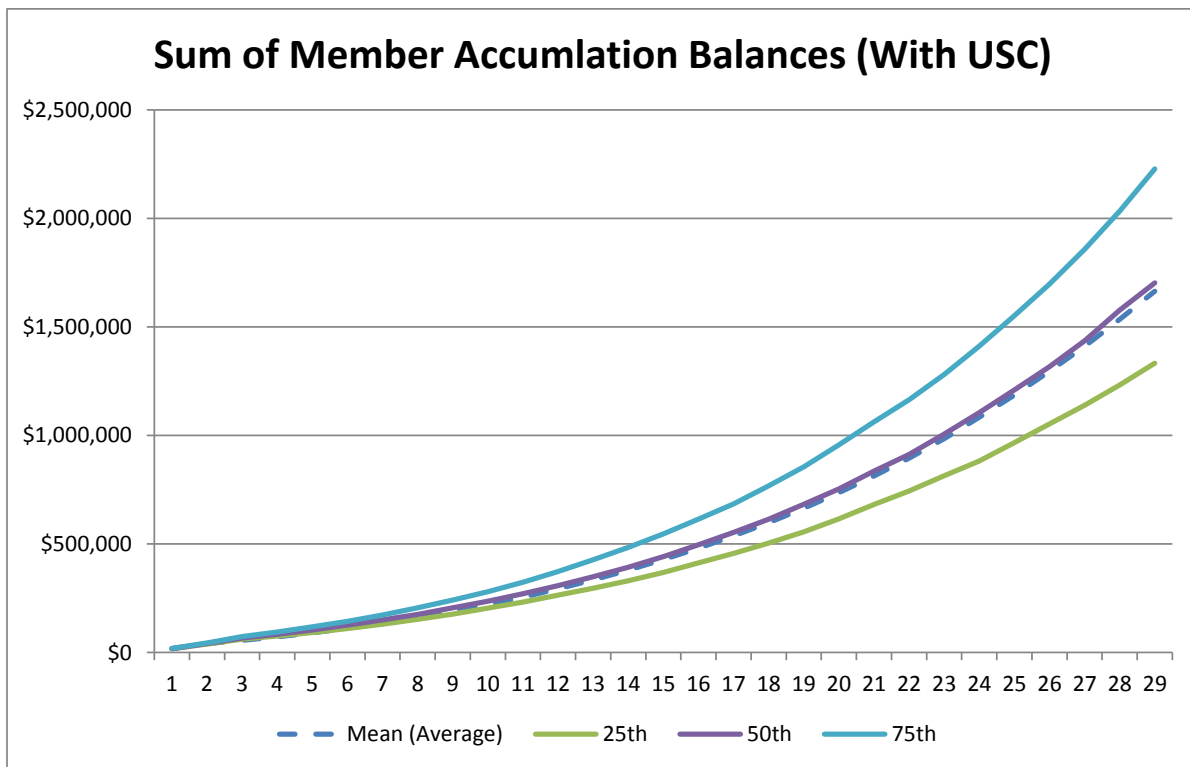
While this difference is small (approximately 2.7%), it is inverse to the salary simulations and will create losses over time if not incorporated into the model.

Thus, we are recommending the addition of a load in the USC calculation itself that gets larger the longer the time horizon for potential promotions or large salary increases. The load will be 0.1% per year (2.7% divided by 30 is 0.09% per year) into the future the calculation occurs. An argument could be made the load should be based on the 2.7% plus the 3.7% to fully normalize back to the no USC model. However, this analysis was performed only using one year of distributed data and other types of models, (varying ages of entry, including a dependency variable for promotion cycles, or evaluating if getting higher increases in the past would increase the likelihood of getting larger increases in the future) could have created different results. We believe the 0.1% is a reasonable starting point and we will monitor the annual gain/loss calculations going forward to determine if a larger load is necessary. This will have more impact on the normal cost because that is calculated from a new entrant and thus has a longer time horizon.

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. Notice the recent uptrend in female longevity after almost two decades of relatively minimal improvement. 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
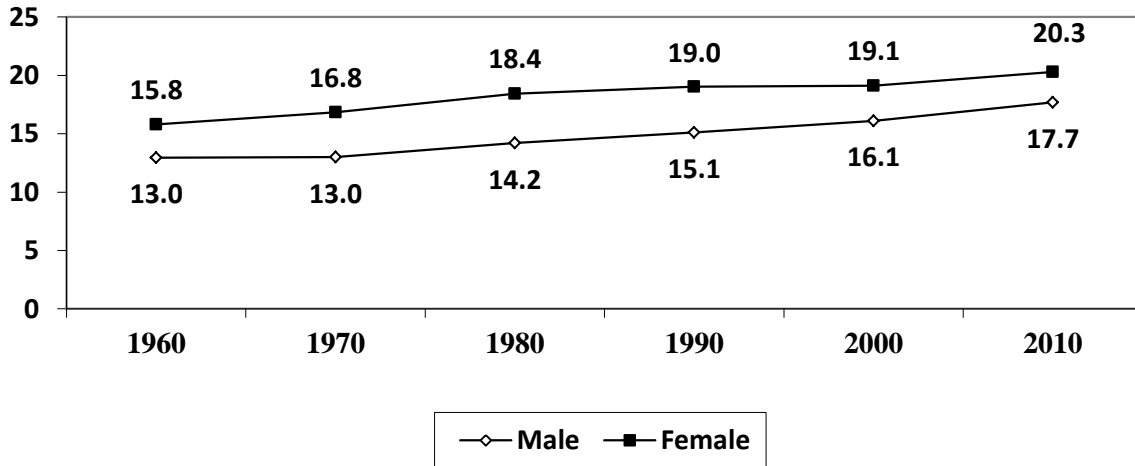
National Vital Statistics Reports, Vol 58, No 21, June 2010
National Vital Statistics Reports, Vol 60, No 4, January 2011

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 updated Municipal Retirees of Texas mortality table as of 2019 (which will be developed in the next section).

Proposed Life Expectancy for an Age 65 Retiree (in Years)					
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.

T MRS S PECIFIC A NALYSIS

The current post-retirement mortality assumption was developed in 2013 and set to be 109% and 103% of the RP-2000 Blue Collar Mortality Tables for males and females respectively, generationally projected with Scale BB. Both the RP-2000 tables and the Scale BB projection scales were the most recently published assumptions at the time of the analysis.

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 plan 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 10 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. Based on a practice note issued by the American Academy of Actuaries in the Fall of 2011, a dataset needs 96 expected deaths for each gender to be within +/- 20% of the actual pattern with 95% confidence. We believe +/- 20% is a rather large range to be considered fully credible. Other sources state higher requirements, such as 1,000 deaths per gender, which would have 90% confidence that the data is within +/- 5% of the actual pattern. TMRS had 4,172 male deaths during the 5-year period and 1,202 female deaths, clearly indicating a highly credible group for males and credible group for females. However, as discussed below for the females, not all experience is necessarily reflective of future expectations.

For this analysis, we have weighted the analysis by the amount of the member's monthly annuity. This is consistent with the development of all national tables as data shows a clear correlation between income and longevity, and more importantly, the larger the annuity the more impact the member will have on the actuarial model. By weighting the data by annuity amounts, we are giving more weight to members who have larger annuities (and thus have larger liabilities).

Our strategy will be to update the base tables with each experience study to keep the data as recent as possible, and to allow for small, more frequent adjustments in comparison to a long period of no adjustments followed by a large one-time adjustment.

The updated base mortality assumptions are based on TMRS's experience for the five-year period ending December 31, 2018. We intentionally used a five-year period for developing a mortality assumption because this is the most recent experience and reflects the most recent improvements in longevity. Using a longer experience period would temper real changes that have occurred in the mortality assumption due to real changes, or improvements, observed in this assumption.

Even though the female data is credible based on size, we have reservations whether the current experience is possibly biased towards very recently retired members and thus may not be the best estimate of future experience of a more mature retiree population. The number of female retirees has increased dramatically over the last five years.   In fact, more than half of the exposures in the data retired in the last five years. Thus, much of the data is made up of members who have very recently retired, many of whom will be working part time elsewhere. Analysis regularly shows that active members of a given age will have lower rates of mortality than retired members of the same age. Based on the significant increases in exposures in this dataset, it is very likely that the current experience is biased towards members very recently retired and not necessarily reflective of longer term trends once the data becomes more balanced.

Thus, to develop this analysis, we have incorporated female data from the 2017 Experience study performed for the Employees Retirement System of Texas. The job classifications for state employee females should be very similar to municipal female employees. This added over 4,000 deaths to the data set. We also verified this data by comparing TMRS experience for members who had been retired for at least 5 years to the ERS data and they were basically a match.

To develop the recommended mortality assumptions, mortality rates for ages after 60 and before 90 are based on the System's experience, using an exponential model to provide a smooth fit to the experience. Mortality rates for ages under age 60 were smoothed into most recently published Pub2010 combined healthy annuitant mortality assumptions (adjusted back to the central point of the experience period).

The final step in the creation of the base mortality assumption was to project the preliminary table from the center point of the analysis period (i.e., 2015) to the year 2019 using the recommended projection scale below. This set of tables will be labeled the Municipal Retirees of Texas mortality table as of 2019.

Recommended Mortality Improvement Assumption

Currently, mortality is assumed to improve in accordance with Scale BB which was published in 2012 by the Society of Actuaries.

There are currently three commonly discussed mortality improvement assumptions used by pension actuaries for valuing pension plan liabilities, each released by the Society of Actuaries. These mortality improvement assumptions include: Scale AA, Scale BB, and Scale MP (which has had five releases in 2014, 2015, 2016, 2017, and 2018).

Scale AA is based upon a blend of mortality improvement trends among Civil Service Retirement System (CSRS) and Social Security Administration participants between 1977 and 1993. The Society of Actuaries' Retirement Plans Experience Committee (RPEC) initiated a pension mortality study in 2010. At an early stage of its analysis, RPEC noticed that mortality experience since 2000 has improved at a faster rate than

anticipated by Scale AA. As a result, RPEC issued another mortality improvement scale, Scale BB, in the year 2012 as an alternative mortality improvement assumption for pension actuaries to use to bring the tables from 2000 to 2012.

In October 2014, RPEC issued final reports of the mortality study that was originally initiated in 2010. These final reports included the release of another mortality improvement assumption, Scale MP-2014. A significant difference between the MP-2014 improvement scales and the prior improvement scales is that the MP tables are a two-dimensional improvement assumption that is a function of the age and calendar year, whereas prior scales were only a function of age.

In 2015, 2016, 2017, and 2018 the RPEC issued updates to the mortality improvement assumption called Scale MP-2015, Scale MP-2016, etc. In each update, projection rates were materially decreased, meaning the original MP-2014 table was found to be too conservative. In addition, it has been stated that new projection scales are going to continue to be published each year.

Scale BB was created to bring Scale AA from the year 2000 to the year 2012 and was based on a very specific time period, during which rates of mortality improvement were very high. Based on experience since 2012, and longer time horizons, the approximate 1.5% per year improvement in Scale BB is likely to be too conservative.

After approximately 15 years, all of the versions of the MP tables reflect the same improvement rate at each future calendar year (the ultimate mortality improvement rates) at approximately 1% per year. In order to balance the two objectives of reflecting the most recent data available, while maintaining stability of results from year to year, GRS is recommending the use of the ultimate mortality improvement rates in the MP tables for all years. This is labeled the "UMP" projection scales.

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 three year set-forward is applied, meaning a member who is age 60 will be valued as if they are 63. In addition, a 3% minimum mortality rate is applied to reflect the impairment for younger members that become disabled. These adjustments appear to still be appropriate for females but we are recommending a 4 year set forward for males with a 3.5% minimum. Please refer to the exhibits on pages VI-4 and VI-5 for additional information.

ACTIVE MORTALITY RATES

This is another minor assumption with little impact on the employer contribution rates. We recommend utilizing the recently published PUB(10) mortality tables, using the public safety table for males and the general employee table for females.

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 8 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. Based on the gender distribution of over 17,000 current active members with 10 to 15 years of service, the current 70% male, 30% female unisex blend of the mortality tables is still appropriate.

This is a policy that we believe would be beneficial for the Board to develop and adopt in writing, outlining whether it is the intent for the annuity purchase rates to be actuarially equivalent to the valuation assumptions, how often changes would be considered, and how changes would be implemented.

DISABILITY RATES

Disability is also a minor assumption.

The results of the analysis are shown on page VI-8. The reconciliation process produced approximately 44 incidence of disability per year. However, analysis of the retiree data file as of December 31, 2018 indicates approximately 62 new disabled members per year. Thus, there is a lag created by processing the new disabilities (which is normal). Even with this lag accounted for, the actual number of disabilities has been much lower than assumed (approximately 100 per year). We have recommended a 75% multiplier to the current assumption.

TERMINATION RATES

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 sex, and we want to continue this practice. The ultimate assumption is based on the member's time until retirement eligibility and gender, and we would also like to continue that practice. We have analyzed the two assumption periods separately. Probabilities are turned off once a member reaches retirement eligibility.

Each employer has a multiplier applied to the base tables based on their own experience between 75% and 125% and an additional multiplier is 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 salary, meaning instead of counting members and the portion of members that terminate, we have counted payrolls and the portion of the payroll that terminates. A higher paid member 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 plan. Also, traditionally, higher paid members are hired into positions that have lower turnover versus lower paid members. Using salary weighting instead of count weighting made a 12% difference in the A/E for males and 7% for the females. The impact is largest in the first year, which has a material impact on the normal cost under the entry age normal funding method.

Select Period

This type of structure recognizes the 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. Using a simple average among all members can overestimate the cost for the younger members and underestimate the cost for the older members. The larger the employer, the less difference there is between the using a structure by age as well versus service only since there will be a consistent number of members in each category. However, the smaller the employer gets, the more likely the population may not be as evenly spread out and therefore a mismatch can occur between the assumption and the actual experience, potentially creating a bias.

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. Traditionally, ultimate assumptions have been based on age, meaning that all members who are a given age and have more than 10 years of service will have the same termination rate. For some defined benefit retirement plans that are designed to base the retirement eligibility solely on age, this is typically a reasonable approach. However, 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,

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so service only can have a bias as well. Also, some employers have retirement eligibilities at 20 years of service while others 25. The following exhibit provides the experience for males in the ultimate period measured by years until retirement.
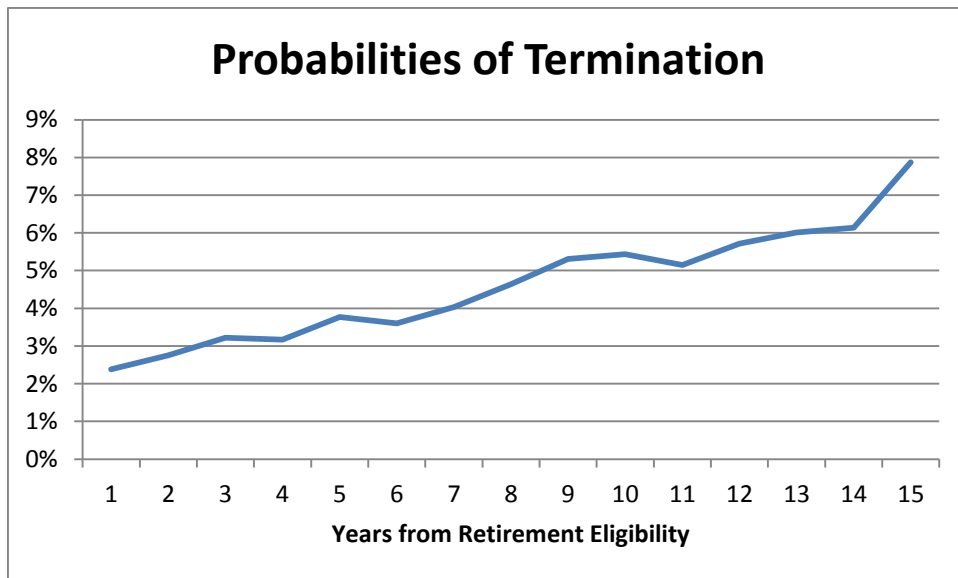
Member Category

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.
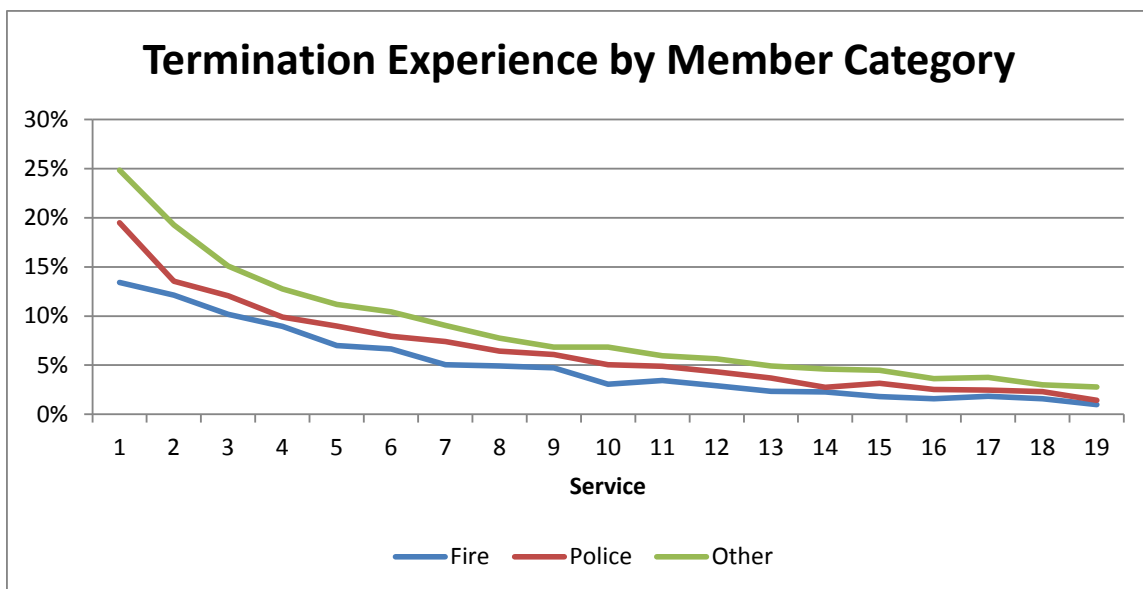
We believe this structure provides for a more objective distinction in the termination pattern between employers than other structures which would apply the same pattern to all individual members. For example, some employers have separate pension plans for their firefighters, so their TMRS population 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.

Therefore, we are recommending the following multipliers (which are slightly different than the current) 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	Select Period	Ultimate Period
Police	86%	83%
Fire	68%	54%
Other	108%	113%

Employer Multiplier

Generally, employers were ranked objectively based on a weighted A/E ratio. The ratio was determined by taking 1/3 of the A/E ratio during the select period and 2/3 of the A/E ratio during the ultimate period. The ultimate period was given a higher proportion because this segment of the termination assumption has a larger impact on the actuarial liability calculations.

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 115% for employers with less than 100 active members, 100% for employers with between 11 and 15 active members, 85% for employers with between 6 and 10 active members, and 75% for employers with less than 6 active members.

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 (86% load), and the individual employer has a multiplier of 90%, then the termination decrement used in the valuation will be 10% * 86% * 90% = 7.7%.

Final Results

Detailed analysis results are shown in Section VI on pages VI-9 & VI-10. In the aggregate, the current assumptions produce an A/E ratio of 106% during the select period and 110% during the ultimate period. For this assumption, A/E ratios over 100% are conservative. Based on our proposed recommended assumptions, the overall A/E is 101% during the select and 104% during the ultimate period. Changes in this assumption will decrease the liabilities and contribution requirements for most employers.

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. In the last experience study, we decreased the forfeiture rates for vested members not eligible for retirement and added a provision to base the rates on age rather than service and also introduced adjustments based on the employer match. The overall salary-weighted forfeiture rate over the study period was approximately 33% for members in cities with a 2-to-1 match which increased to almost 41% 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 suggests the forfeiture rates are reasonably close, but need to be reduced further. We have subtracted 1% off of the previous assumption across all ages. This is consistent with lower expected earnings on investments as members will place more value on the guaranteed 5% return. This change will increase the normal cost and the liabilities for all employers.

RETIREMENT RATES

We currently use rates of retirement that vary by age, gender, and entry age range. 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.

The analysis was performed weighted by the liability of the individual member. Experience showed that approximately 86% of members retired compared to current assumptions. The experience also showed that the differences based on gender and entry age were not significant enough to warrant separate assumptions. Thus, we have created one age based table. The A/E ratio based on the proposed assumptions of 92% indicates a relatively good fit overall as shown on the following graph.

− Actual Experience	Current Assumptions	Proposed Assumptions
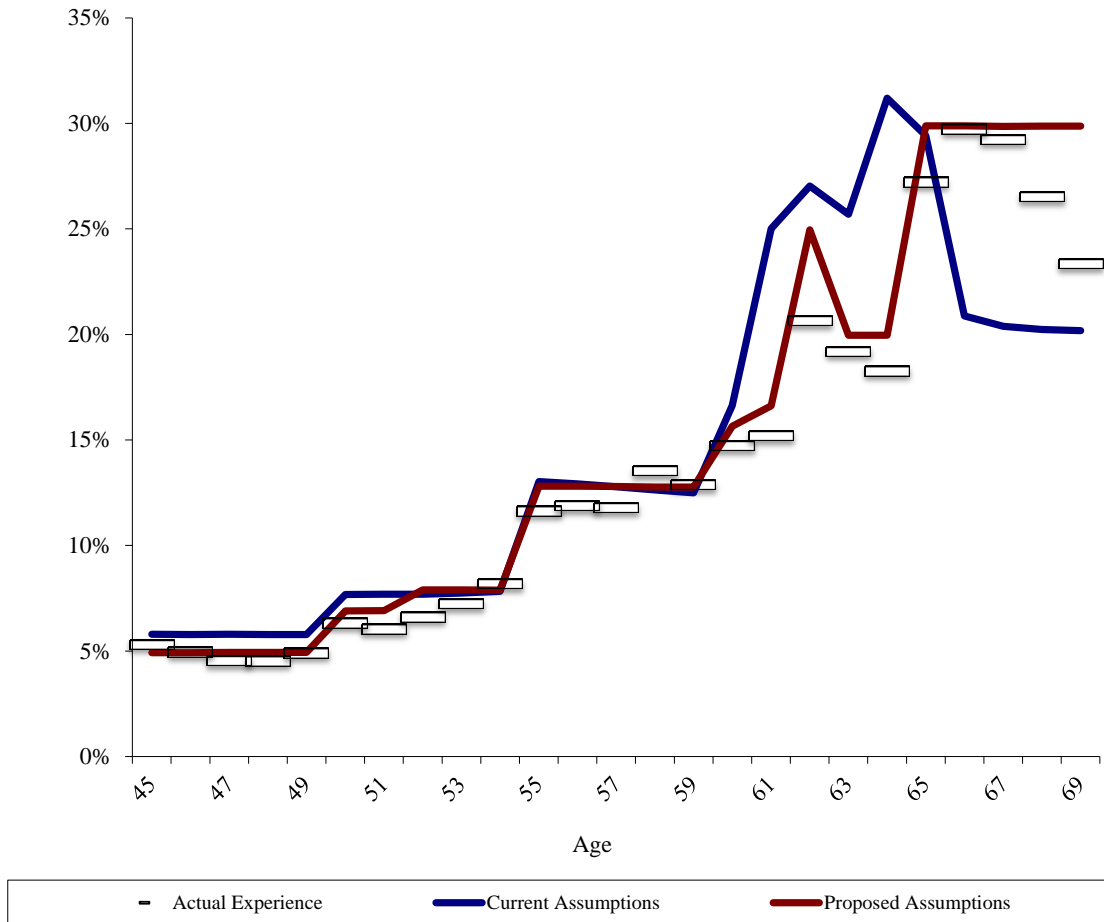
We are also recommending small changes to the current factors based on plan provisions. Additional details are shown on pages VI-12 and VI-13.

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 only one change, 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 Savings Fund (ESF) balance at retirement. Over the study period, retirees took PLSDs equal to approximately 40.1% of their total ESF 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 (changed from life only) and disabled (no change) 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.

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 25 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 non ad hoc bases are erased and the surplus for overfunded cities is amortized over a 25 year open period.

Ad hoc benefit enhancements are amortized over individual 15 year periods using a level dollar policy.

While the current policies are within acceptable practices, we are recommending the following changes to bring them into industry best practices or to manage some of the room for improvement pointed out in the asset liability study:

1. The maximum period for any new loss base will be no longer than 20 years. The asset liability study discussed this issue at length, but essentially a 20 year period will eliminate the use of negative amortization from the funding policy and provide much stronger downside protection to the funding ratio.
2. The amortization of any surplus will be over all future years, not just the next 25. The current policy pushes the funded status of overfunded cities back towards 100%, where the risk of being underfunded is much greater as well as the risk of a substantial increase in contribution.   While still providing a credit, the proposed method would aim for holding the funding ratio at its current level.
3. Ad hoc benefit enhancements would be amortized over 12 years. However, if the non-ad hoc (level percent) amortization factor is smaller due to a shorter amortization period based on the employer's size, ad hoc enhancements will be amortized the same as any other loss. The asset liability study found that the current policy for providing ad hoc benefit enhancements produces outcomes where the funded status of the city is not expected to improve and where the asset accumulation is falling substantially behind the liability growth. This change will improve this trajectory.

Again, these are not issues of moving from an unacceptable to an acceptable practice. This is an issue of attempting to remain in industry best practices and to strengthen the resiliency of the System. Therefore,

we do not believe it is necessary to refinance any of the current amortization bases that exist. Instead, we recommend adopting these policies for future experience that may unfold.

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 15% corridor around the market value of assets, if necessary. We are recommending slightly lowering this to 12% to be 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 this provision.

SUPPLEMENTAL DEATH FUND

The Supplemental Death Fund 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 an age rated premium based on its own demographics. Over time the Fund is supposed to be financed on a pay-as-you-go basis, meaning no assets are anticipated to be accumulated. However, due to long periods of mortality rates being less than assumed a material asset balance was created. To begin paying down this balance, the current policy only charges premiums for the retiree death benefit based on a $2,500 benefit. This has been decreasing the trust balance over time and is not a sustainable strategy as the assets will only cover the current subsidies for another decade or so, at which time the contribution would be forced to reflect the full amount.

In addition, with the changes to the accounting rules, it would be much simpler if the contributions for retirees were approximately equal to the expected benefit payments for retirees. Thus, we are recommending the premiums for retirees be immediately increased to be based on the full $7,500.

We do believe it is appropriate for the current assets to allow for some credit towards city premiums, and recommend doing so against the active premiums. We recommend an approach that would be expected to allow for the same credit as a percentage of payroll in perpetuity, thus all generations would benefit equally. To accomplish this, we will allow for a credit of 2% of the fund balance as of the valuation date to be spread evenly based on payroll across all participating cities. By crediting 2%, 3% of the 5% total credit would remain and grow the balance by 3% for next year's credit. This should keep the credit consistent from year to year.

The following table provides the impact of these changes as a percentage of payroll.

Group	Change in Aggregate Contribution Rate
Active Benefits	-0.03%
Retiree Benefits	0.08%
Total	0.05%

SECTION IV

ACTUARIAL IMPACT OF RECOMMENDATIONS

Actuarial Impact of Recommendations
(Based on the December 31, 2018 valuation)

Summary of System-wide Results
($ millions)

	Current (1)	Proposed (2)	Difference (2) - (1)
1. Actuarial accrued liability (AAL)	$ 33,731	$ 33,819	$ 88
2. Actuarial value of assets	29,385	29,385	-
3. UAAL (1 - 2)	$ 4,346	$ 4,434	$ 88
4. Funded Ratio	87.1%	86.9%	-0.2%
5. a. Normal cost	8.61%	8.71%	0.10%
b. Prior service	4.97%	5.15%	0.18%
c. Full retirement rate	13.58%	13.86%	0.28%

Change in Contribution Rate from Recommendations

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 2018, the payroll growth is decreased by half the annual percentage decrease in the count capped at a 1.0% 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	11.50%
2	7.25%
3	6.75%
4	6.25%
5	6.00%
6	5.75%
7	5.50%
8	5.25%
9	5.00%
10	4.75%
11-12	4.50%
13-15	4.25%
16-20	4.00%
21-24	3.75%
25 +	3.50%

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

F. Load for Updated Service Credit – 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. For the first 10 years of service, the base table rates vary by gender, entry age, and length of service. For each city the base table is then multiplied by 75% to 125%. A further multiplier is applied depending on an employee's classification: 1) Fire – 68%, 2) Police – 86%, or 3) Other – 108%. A sample of the base rates follows:

Males

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

Females

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

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

Years from Retirement	Male	Female
1	1.82%	2.34%
2	2.43%	3.15%
3	2.87%	3.75%
4	3.24%	4.25%
5	3.55%	4.67%
6	3.83%	5.06%
7	4.08%	5.40%
8	4.32%	5.72%
9	4.53%	6.02%
10	4.74%	6.30%
11	4.93%	6.57%
12	5.11%	6.82%
13	5.28%	7.06%
14	5.45%	7.28%
15	5.60%	7.50%

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 below. 4% is added to the rates for 1-1½-to-1 cities, and 8% is added for 1-to-1 cities.

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

Forfeiture rates end at first eligibility for retirement.

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. The rates are projected on a fully generational basis by Scale UMP 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				
	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

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 Scale UMP 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 the Public Safety table used for males and the General Employee table used for females. The rates are projected on a fully generational basis by Scale UMP to account for future mortality improvements.

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	0.000003
25	0.000019
30	0.000074
35	0.000194
40	0.000371
45	0.000603
50	0.000891
55	0.001235
60	0.001635
65	0.002090

H.   Service Retirement Rates, applied to both Active and Inactive Members

The base table rates vary by age. These rates are adjusted then multiplied by 2 factors based on 1) employee contribution rate and employer match and 2) if the city has a recurring COLA.

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

Note: For cities without a 20-year/any age retirement provision, the rates are loaded by 50% for ages 60 & below with 25 or more years of service.

Plan Design Factors Applied to Base Retirement Rates

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

Recurring COLA: 100%
No Recurring COLA: 95%

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. For cities with twenty or more employees new experience losses are amortized over individual periods of not more than 25 years. Beginning December 31, 2020, new loss bases will be 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 75% for employers with less than 6 members, 85% for employers with 6 to 10 members, 100% for employers with 11 to 15 members, and 110% 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 plans, the maximum period for amortizing losses is decreased by 1 year for each active member less than the 20 member threshold. For example, an employer with 8 active members and a current maximum amortization period of 25 will use (25-(20-8)) = 13 year amortization period for the gain or loss in that year's valuation. Under this policy, the lowest amortization period will be 25-(20-1) = 6 years. Once the plan is overfunded, the amortization period will revert back to the standard policy. Beginning December 31, 2020, the member threshold will be lowered to 15 to be consistent with the decrease in the standard amortization period to 20.

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 the expected term cost.   Due the significant reserve in the Supplemental Death Benefit Fund, the SDB rate for active coverage is equal to the expected term cost minus a credit of 2% of the fund balance as of the valuation date, expressed as a percentage of covered payroll for the participating employers.

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.

SECTION VI

SUMMARY OF DATA AND EXPERIENCE

List of Tables

SALARY EXPERIENCE

Years of Service	Current Salary Scale		2009 - 2018 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	10.50%	7.00%	11.12%	9.37%	7.99%	11.50%	8.00%
2	7.00%	3.50%	6.85%	5.09%	3.71%	7.25%	3.75%
3	6.50%	3.00%	6.33%	4.57%	3.19%	6.75%	3.25%
4	6.25%	2.75%	5.85%	4.09%	2.71%	6.25%	2.75%
5	6.00%	2.50%	5.67%	3.92%	2.54%	6.00%	2.50%
6	5.50%	2.00%	5.31%	3.55%	2.17%	5.75%	2.25%
7	5.25%	1.75%	4.99%	3.23%	1.85%	5.50%	2.00%
8	4.75%	1.25%	4.74%	2.99%	1.61%	5.25%	1.75%
9	4.75%	1.25%	4.62%	2.87%	1.49%	5.00%	1.50%
10	4.75%	1.25%	4.56%	2.80%	1.42%	4.75%	1.25%
11	4.50%	1.00%	4.32%	2.57%	1.18%	4.50%	1.00%
12	4.25%	0.75%	4.13%	2.37%	0.99%	4.50%	1.00%
13	4.25%	0.75%	3.89%	2.14%	0.76%	4.25%	0.75%
14	4.00%	0.50%	3.91%	2.15%	0.77%	4.25%	0.75%
15	4.00%	0.50%	3.88%	2.13%	0.75%	4.25%	0.75%
16	4.00%	0.50%	3.72%	1.96%	0.58%	4.00%	0.50%
17	3.75%	0.25%	3.63%	1.87%	0.49%	4.00%	0.50%
18	3.75%	0.25%	3.57%	1.82%	0.43%	4.00%	0.50%
19	3.75%	0.25%	3.42%	1.67%	0.29%	4.00%	0.50%
20	3.75%	0.25%	3.51%	1.75%	0.37%	4.00%	0.50%
21	3.75%	0.25%	3.53%	1.78%	0.39%	3.75%	0.25%
22	3.75%	0.25%	3.44%	1.68%	0.30%	3.75%	0.25%
23	3.75%	0.25%	3.49%	1.73%	0.35%	3.75%	0.25%
24	3.75%	0.25%	3.47%	1.72%	0.33%	3.75%	0.25%
25	3.50%	0.00%	3.14%	1.38%	0.00%	3.50%	0.00%

Current Inflation Assumption	2.50%	Proposed Inflation Assumption	2.50%
Current Productivity Component	1.00%	Proposed Productivity Component	1.00%
Actual CPI-U Inflation for Dec/08 - Dec/18	1.76%		
Apparent Productivity Component	1.38%		

GRS

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

				Assumed Rate		Expected Deaths		Actual / Expected	
	Actual	Total	Actual					Current	Proposed
Age	Deaths	Count	Rate	Current	Proposed	Current	Proposed	(2) / (7)	(2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
50-54	933	208,151	0.0045	0.0033	0.0036	682	753	137%	124%
55-59	3,395	478,176	0.0071	0.0059	0.0059	2,845	2,819	119%	120%
60-64	7,472	753,069	0.0099	0.0104	0.0097	7,856	7,305	95%	102%
65-69	11,269	797,604	0.0141	0.0171	0.0158	13,606	12,621	83%	89%
70-74	13,118	489,388	0.0268	0.0273	0.0258	13,347	12,643	98%	104%
75-79	13,212	277,476	0.0476	0.0448	0.0433	12,442	12,011	106%	110%
80-84	11,706	162,276	0.0721	0.0729	0.0715	11,827	11,604	99%	101%
85-89	7,437	63,338	0.1174	0.1175	0.1173	7,442	7,431	100%	100%
90-94	3,961	15,849	0.2499	0.1869	0.1877	2,962	2,975	134%	133%
95-99	729	2,073	0.3517	0.2861	0.3113	593	646	123%	113%
100 +	43	83	0.5178	0.3696	0.4792	31	40	140%	108%
Totals	73,276	3,247,483				73,634	70,849	100%	103%
Male + Females	137,798	7,652,578				147,283	134,805	94%	102%

*Columns may not add due to rounding.
*Columns (5) and (6) represent the rate at the age mid-point for the quintile group

GRS

NON-DISABLED RETIREES
POST-RETIREMENT MORTALITY - FEMALES
WEIGHTED BY AMOUNT OF ANNUITY

| Age | Actual Deaths | Total Count | Actual Rate | Assumed Rate | | Expected Deaths | | Actual / Expected | |
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
50-54	364	245,681	0.0015	0.0023	0.0016	569	396	64%	92%
55-59	2,474	715,625	0.0035	0.0033	0.0027	2,352	1,967	105%	126%
60-64	5,500	1,099,284	0.0050	0.0061	0.0048	6,662	5,272	83%	104%
65-69	7,835	1,009,312	0.0078	0.0113	0.0083	11,368	8,417	69%	93%
70-74	9,099	605,974	0.0150	0.0195	0.0147	11,815	8,913	77%	102%
75-79	8,943	344,510	0.0260	0.0314	0.0263	10,826	9,052	83%	99%
80-84	9,740	205,797	0.0473	0.0513	0.0468	10,556	9,641	92%	101%
85-89	10,177	117,614	0.0865	0.0863	0.0830	10,152	9,757	100%	104%
90-94	7,274	48,322	0.1505	0.1383	0.1442	6,684	6,966	109%	104%
95-99	2,629	11,302	0.2326	0.1991	0.2528	2,250	2,857	117%	92%
100 +	486	1,675	0.2905	0.2472	0.4289	414	718	118%	68%
Totals	64,522	4,405,095				73,648	63,956	88%	101%

*Columns may not add due to rounding.
*Columns (5) and (6) represent the rate at the age mid-point for the quintile group

GRS

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

Age	Actual Deaths	Total Count	Actual Rate	Assumed Rate		Expected Deaths		Actual / Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
50-54	114	4,358	0.0262	0.0300	0.0350	131	153	87%	75%
55-59	275	7,229	0.0380	0.0300	0.0350	217	253	127%	109%
60-64	253	9,096	0.0278	0.0300	0.0350	273	318	93%	79%
65-69	436	8,092	0.0539	0.0300	0.0350	243	283	180%	154%
70-74	491	6,820	0.0720	0.0375	0.0401	255	273	192%	180%
75-79	298	3,768	0.0791	0.0607	0.0649	229	244	130%	122%
80-84	249	2,381	0.1046	0.0979	0.1068	233	254	107%	98%
85-89	127	664	0.1918	0.1551	0.1691	103	112	124%	113%
90-94	27	186	0.1451	0.2611	0.3038	48	56	56%	48%
95-99	25	42	0.5874	0.3437	0.4647	15	20	171%	126%
100 +	4	4	1.0000	0.4350	0.9274	2	3	230%	108%
Totals	2,299	42,640				1,748	1,971	132%	117%
Male + Females	2,791	56,675				2,241	2,392	125%	117%

*Columns may not add due to rounding.
*Columns (5) and (6) represent the rate at the age mid-point for the quintile group

GRS

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

Age	Actual Deaths	Total Count	Actual Rate	Assumed Rate		Expected Deaths		Actual / Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
50-54	3	1,261	0.0025	0.0300	0.0300	38	38	8%	8%
55-59	53	2,836	0.0186	0.0300	0.0300	85	85	62%	62%
60-64	96	3,296	0.0292	0.0300	0.0300	99	99	97%	97%
65-69	55	2,479	0.0220	0.0300	0.0300	74	74	73%	73%
70-74	88	2,108	0.0417	0.0300	0.0300	64	63	138%	139%
75-79	68	1,051	0.0646	0.0421	0.0300	44	32	155%	215%
80-84	88	672	0.1306	0.0714	0.0300	47	20	186%	435%
85-89	36	283	0.1274	0.1193	0.0300	34	9	107%	425%
90-94	7	49	0.1365	0.1812	0.0300	8	1	82%	457%
95-99	0	0	N/A	0.2338	0.0300	0	0	N/A	N/A
100 +	0	0	N/A	0.3019	0.0300	0	0	N/A	N/A
Totals	493	14,035				493	421	100%	117%

*Columns may not add due to rounding.
*Columns (5) and (6) represent the rate at the age mid-point for the quintile group

GRS

MALE PRE-RETIREMENT MORTALITY

Age	Actual Deaths	Total Count	Actual Rate	Assumed Rate		Expected Deaths		Actual / Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	0	0	N/A	0.0002	0.0003	-	-	N/A	N/A
20-24	0	374	N/A	0.0002	0.0004	-	-	N/A	N/A
25-29	1	9,319	0.0001	0.0002	0.0004	2	4	50%	25%
30-34	4	26,207	0.0002	0.0005	0.0004	12	11	33%	36%
35-39	9	33,531	0.0003	0.0007	0.0005	21	17	43%	53%
40-44	8	38,921	0.0002	0.0008	0.0007	31	26	26%	31%
45-49	28	41,593	0.0007	0.0011	0.0010	44	39	64%	72%
50-54	44	39,535	0.0011	0.0016	0.0014	63	55	70%	80%
55-59	77	33,907	0.0023	0.0031	0.0021	98	68	79%	113%
60-64	80	20,537	0.0039	0.0059	0.0032	104	61	77%	131%
65-69	44	7,208	0.0061	0.0107	0.0053	60	33	73%	133%
70-74	9	1,770	0.0051	0.0177	0.0098	24	15	38%	60%
75 and over	5	0	N/A	0.0290	0.0184	-	-	N/A	N/A
Totals	309	252,902				459	329	67%	94%
Male + Females	405	353,746				594	431	68%	94%

*Columns may not add due to rounding.
*Columns (5) and (6) represent the rate at the age mid-point for the quintile group

GRS

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	-	-	N/A	N/A
20-24	0	101	0.0000	0.0001	0.0001	-	-	N/A	N/A
25-29	2	2,725	0.0007	0.0001	0.0001	-	-	N/A	N/A
30-34	0	8,426	0.0000	0.0002	0.0002	2	2	0%	0%
35-39	1	11,532	0.0001	0.0003	0.0003	4	3	25%	33%
40-44	1	13,588	0.0001	0.0006	0.0004	7	6	14%	17%
45-49	8	15,717	0.0005	0.0008	0.0007	13	10	62%	80%
50-54	10	16,315	0.0006	0.0012	0.0010	18	16	56%	63%
55-59	22	16,124	0.0014	0.0018	0.0014	26	22	85%	100%
60-64	21	10,996	0.0019	0.0035	0.0022	32	23	66%	91%
65-69	19	4,248	0.0045	0.0069	0.0036	23	14	83%	136%
70-74	7	1,072	0.0065	0.0120	0.0060	10	6	70%	117%
75 and over	5	0	N/A	0.0192	0.0099	-	-	N/A	N/A
Totals	96	100,844				135	102	71%	94%

*Columns may not add due to rounding.
*Columns (5) and (6) represent the rate at the age mid-point for the quintile group

GRS

MALE AND FEMALE DISABILITY EXPERIENCE

Age	Actual Disabilities	Total Count	Actual Rate	Assumed Rate		Expected Disabilities		Actual / Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	0	553	0.0000	-	-	0	0	N/A	N/A
20-24	0	20,542	0.0000	-	-	0	0	N/A	N/A
25-29	1	53,589	0.0000	0.0001	0.0000	3	2	33%	50%
30-34	5	66,795	0.0001	0.0002	0.0001	11	8	45%	63%
35-39	18	66,961	0.0003	0.0003	0.0003	23	17	78%	106%
40-44	30	69,252	0.0004	0.0006	0.0005	43	32	70%	94%
45-49	40	71,843	0.0006	0.0009	0.0007	68	51	59%	78%
50-54	35	68,393	0.0005	0.0014	0.0010	93	70	38%	50%
55-59	77	60,125	0.0013	0.0018	0.0014	111	83	69%	93%
60-64	12	37,139	0.0003	0.0024	0.0018	88	66	14%	18%
65-69	4	13,310	0.0003	0.0030	0.0023	40	30	10%	13%
70-74	0	3,531	0.0000	0.0037	0.0028	13	10	0%	0%
75 and over	0	1,045	0.0000	0.0048	0.0038	5	4	0%	0%
Processing Delay	90								
Totals	312	533,078				498	373	63%	84%

*Columns may not add due to rounding.
*Columns (5) and (6) represent the rate at the age mid-point for the quintile group

GRS

ALL EMPLOYEES
SELECT TERMINATION EXPERIENCE
WEIGHTED BY SALARY

Service	Terminations Weighted by Salary	Exposure Weighted by Salary	Crude Rates	Sample Rates		Expected Terminations Weighted by Salary		A/E	
				Current	Proposed	Current	Proposed	Current	Proposed
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	$ 80,336,304	$ 351,282,113	0.2287	0.2476	0.2588	$ 86,982,982	$ 90,915,236	92%	88%
2	734,915,524	3,297,970,712	0.2228	0.2081	0.2175	686,305,627	717,340,956	107%	102%
3	543,514,863	3,147,912,395	0.1727	0.1648	0.1722	518,908,891	542,199,145	105%	100%
4	391,469,949	2,729,521,562	0.1434	0.1366	0.1427	372,904,752	389,488,547	105%	101%
5	286,785,284	2,417,650,012	0.1186	0.1120	0.1170	270,670,295	282,890,708	106%	101%
6	218,109,146	2,113,357,286	0.1032	0.1031	0.1077	217,816,855	227,635,469	100%	96%
7	192,534,285	1,983,847,093	0.0971	0.0901	0.0942	178,834,082	186,909,350	108%	103%
8	162,629,639	1,899,082,602	0.0856	0.0786	0.0821	149,209,697	155,923,331	109%	104%
9	139,435,444	1,862,977,976	0.0748	0.0692	0.0723	128,892,413	134,670,236	108%	104%
10	123,184,581	1,841,741,745	0.0669	0.0609	0.0637	112,165,079	117,267,369	110%	105%
Totals	2,872,915,020	21,645,343,495	0.1327	0.1258	0.1314	2,722,690,672	2,845,240,347	106%	101%
1-5	$ 2,037,021,924	$ 11,944,336,794	0.1705	0.1621	0.1694	$ 1,935,772,546	$ 2,022,834,593	105%	101%
6-10	835,893,096	9,701,006,701	0.0862	0.0811	0.0848	786,918,126	822,405,754	106%	102%
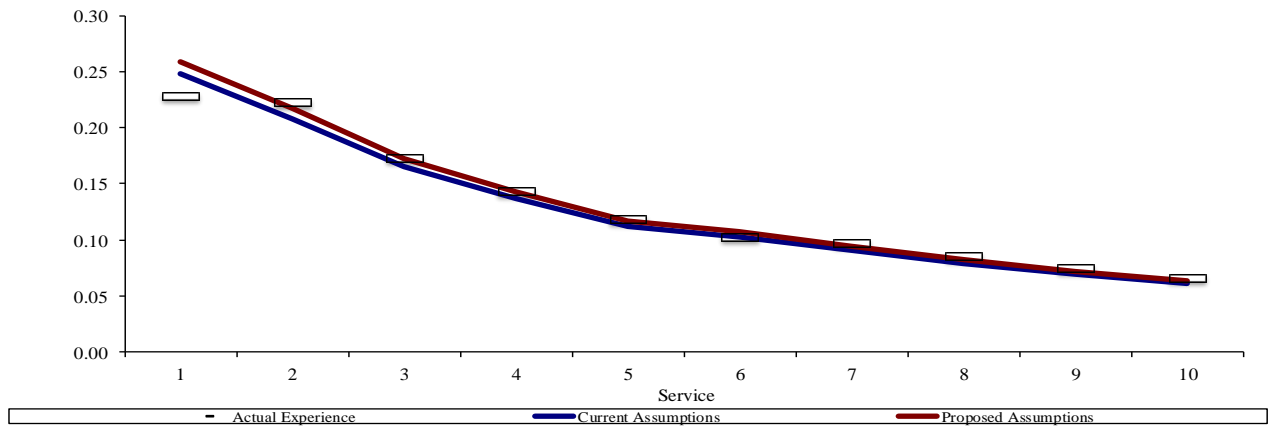
*Columns may not add due to rounding.

ALL EMPLOYEES
ULTIMATE TERMINATION EXPERIENCE
WEIGHTED BY SALARY

Years Until Retirement Eligibility	Terminations Weighted by Salary	Exposure Weighted by Salary	Crude Rates	Sample Rates		Expected Terminations Weighted by Salary		A/E	
				Current	Proposed	Current	Proposed	Current	Proposed
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	$ 30,152,345	$ 1,238,310,718	0.0243	0.0194	0.0206	$ 24,028,207	$ 25,469,899	125%	118%
2	38,060,406	1,241,984,217	0.0306	0.0260	0.0275	32,233,465	34,167,473	118%	111%
3	43,391,166	1,253,801,712	0.0346	0.0308	0.0326	38,590,067	40,905,471	112%	106%
4	42,675,854	1,269,815,092	0.0336	0.0347	0.0368	44,107,008	46,753,429	97%	91%
5	51,640,310	1,281,672,276	0.0403	0.0381	0.0404	48,852,905	51,784,079	106%	100%
6	51,553,735	1,290,060,602	0.0400	0.0411	0.0436	53,009,630	56,190,208	97%	92%
7	57,165,395	1,291,295,012	0.0443	0.0438	0.0465	56,607,813	60,004,282	101%	95%
8	66,648,608	1,339,426,161	0.0498	0.0464	0.0492	62,115,838	65,842,788	107%	101%
9	78,812,431	1,354,843,152	0.0582	0.0487	0.0516	65,969,637	69,927,816	119%	113%
10	81,295,587	1,366,127,692	0.0595	0.0509	0.0539	69,511,836	73,682,547	117%	110%
11	5,610,483	98,058,860	0.0572	0.0531	0.0563	5,209,120	5,521,667	108%	102%
12	6,187,838	98,133,593	0.0631	0.0549	0.0582	5,391,871	5,715,383	115%	108%
13	6,865,827	99,076,625	0.0693	0.0567	0.0601	5,613,867	5,950,699	122%	115%
14	6,927,706	102,803,565	0.0674	0.0583	0.0618	5,994,092	6,353,737	116%	109%
15	7,770,347	100,838,830	0.0771	0.0601	0.0637	6,059,811	6,423,400	128%	121%
Totals	574,758,037	13,426,248,106	0.0432	0.0559	0.0425	523,295,168	554,692,878	110%	104%
1-5	$ 205,920,081	$ 6,285,584,015	0.0328	0.0299	0.0317	$ 187,811,652	$ 199,080,351	110%	103%
6-10	335,475,756	6,641,752,619	0.0505	0.0463	0.0490	307,214,755	325,647,640	109%	103%
11-15	33,362,200	498,911,472	0.0669	0.0567	0.0601	28,268,761	29,964,887	118%	111%

*Columns may not add due to rounding.

ALL EMPLOYEES
REFUND EXPERIENCE
WEIGHTED BY SALARY

Age	Refunds Weighted by Salary	Terminations Weighted by Salary	Crude Rates	Sample Rates		Expected Refunds Weighted by Salary		A/E	
				Current	Proposed	Current	Proposed	Current	Proposed
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
22	$ -	$ -	NA	0.4120	0.4020	$ -	$ -	NA	NA
23	985,226	1,256,421	0.7842	0.4120	0.4020	517,903	505,339	190%	195%
24	2,318,483	3,577,775	0.6480	0.4120	0.4020	1,474,777	1,438,999	157%	161%
25	4,307,141	7,456,145	0.5777	0.4120	0.4020	3,073,460	2,998,899	140%	144%
26	7,182,199	13,087,582	0.5488	0.4120	0.4020	5,394,767	5,263,891	133%	136%
27	9,710,802	20,873,637	0.4652	0.4120	0.4020	8,604,218	8,395,481	113%	116%
28	11,694,783	26,830,779	0.4359	0.4120	0.4020	11,059,781	10,791,473	106%	108%
29	12,901,893	33,619,989	0.3838	0.4120	0.4020	13,858,328	13,522,128	93%	95%
30	16,098,973	42,751,240	0.3766	0.4120	0.4020	17,622,275	17,194,762	91%	94%
31	17,295,027	44,622,137	0.3876	0.4120	0.4020	18,393,468	17,947,247	94%	96%
32	17,325,928	47,319,002	0.3662	0.4120	0.4020	19,505,129	19,031,939	89%	91%
33	17,644,091	48,947,867	0.3605	0.4120	0.4020	20,176,556	19,687,077	87%	90%
34	16,639,169	50,092,849	0.3322	0.4120	0.4020	20,648,523	20,147,594	81%	83%
35	16,760,401	48,068,012	0.3487	0.4120	0.4020	19,813,875	19,333,195	85%	87%
36	17,998,075	51,476,607	0.3496	0.4120	0.4020	21,218,915	20,704,149	85%	87%
37	17,988,935	53,224,660	0.3380	0.4120	0.4020	21,939,471	21,407,224	82%	84%
38	16,160,787	47,910,022	0.3373	0.4010	0.3910	19,229,885	18,750,785	84%	86%
39	15,851,451	51,452,882	0.3081	0.3910	0.3810	20,094,666	19,580,137	79%	81%
40	14,769,342	47,809,930	0.3089	0.3800	0.3700	18,154,148	17,676,048	81%	84%
41	13,582,086	43,315,245	0.3136	0.3690	0.3590	15,978,344	15,545,192	85%	87%
42	14,235,155	45,022,073	0.3162	0.3580	0.3480	16,120,378	15,670,158	88%	91%
43	12,922,014	43,301,144	0.2984	0.3470	0.3370	15,035,240	14,602,228	86%	88%
44	13,633,146	41,660,027	0.3272	0.3360	0.3260	14,014,225	13,597,625	97%	100%
45	11,191,743	37,175,259	0.3011	0.3260	0.3160	12,102,963	11,731,211	92%	95%
46	10,938,079	34,789,288	0.3144	0.3150	0.3050	10,949,407	10,601,514	100%	103%
47	9,839,539	33,616,433	0.2927	0.3040	0.2940	10,216,202	9,880,038	96%	100%
48	8,861,382	29,149,140	0.3040	0.2930	0.2830	8,542,884	8,251,393	104%	107%
49	8,658,605	27,282,351	0.3174	0.2820	0.2720	7,700,307	7,427,484	112%	117%
50	9,009,112	28,169,789	0.3198	0.2710	0.2610	7,645,703	7,364,005	118%	122%
51	9,542,116	29,052,946	0.3284	0.2610	0.2510	7,570,762	7,280,232	126%	131%
52	6,917,366	27,066,278	0.2556	0.2500	0.2400	6,759,938	6,489,275	102%	107%
53	6,802,021	24,374,786	0.2791	0.2390	0.2290	5,823,746	5,579,998	117%	122%
54	5,236,287	21,657,930	0.2418	0.2280	0.2180	4,940,066	4,723,486	106%	111%
55	4,817,145	22,621,947	0.2129	0.2170	0.2070	4,914,957	4,688,738	98%	103%
56	5,258,497	21,040,897	0.2499	0.2060	0.1960	4,343,578	4,133,169	121%	127%
57	4,394,237	19,784,999	0.2221	0.1960	0.1860	3,870,045	3,672,195	114%	120%
58	2,906,933	17,951,969	0.1619	0.1850	0.1750	3,317,075	3,137,555	88%	93%
59	2,305,881	16,500,530	0.1397	0.1740	0.1640	2,870,185	2,705,179	80%	85%
Totals	$ 394,684,050	$ 1,203,910,567	0.3278	0.3518	0.3418	$ 423,496,147	$ 411,457,041	93%	96%

*Experience is based on cities with a 2-to-1 match
*Columns may not add due to rounding.

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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)
45&Under	175,539	3,298,524	0.0532	0.0579	0.0491	191,023	162,118	92%	108%
46	67,471	1,362,432	0.0495	0.0579	0.0491	78,842	66,891	86%	101%
47	71,148	1,567,935	0.0454	0.0579	0.0490	90,819	76,847	78%	93%
48	78,931	1,746,722	0.0452	0.0578	0.0490	100,998	85,508	78%	92%
49	92,773	1,896,816	0.0489	0.0578	0.0489	109,705	92,710	85%	100%
50	130,612	2,063,338	0.0633	0.0768	0.0684	158,494	141,111	82%	93%
51	131,808	2,182,129	0.0604	0.0770	0.0682	167,946	148,864	78%	89%
52	156,382	2,368,118	0.0660	0.0769	0.0779	182,096	184,554	86%	85%
53	180,276	2,483,388	0.0726	0.0774	0.0779	192,305	193,419	94%	93%
54	210,537	2,574,542	0.0818	0.0782	0.0779	201,403	200,568	105%	105%
55	306,373	2,633,600	0.1163	0.1302	0.1265	343,003	333,120	89%	92%
56	302,635	2,546,480	0.1188	0.1292	0.1262	329,081	321,410	92%	94%
57	284,096	2,410,995	0.1178	0.1278	0.1261	308,207	304,121	92%	93%
58	309,987	2,290,725	0.1353	0.1263	0.1264	289,238	289,508	107%	107%
59	266,695	2,067,771	0.1290	0.1250	0.1265	258,476	261,519	103%	102%
60	352,018	2,388,149	0.1474	0.1663	0.1559	397,190	372,387	89%	95%
61	324,925	2,135,381	0.1522	0.2501	0.1662	533,993	354,908	61%	92%
62	385,073	1,865,181	0.2065	0.2703	0.2495	504,066	465,442	76%	83%
63	291,054	1,516,302	0.1920	0.2570	0.1996	389,637	302,683	75%	96%
64	225,571	1,235,330	0.1826	0.3120	0.1996	385,367	246,608	59%	91%
65	271,942	999,726	0.2720	0.2942	0.2989	294,074	298,774	92%	91%
66	221,548	745,459	0.2972	0.2087	0.2988	155,585	222,776	142%	99%
67	152,596	521,752	0.2925	0.2038	0.2985	106,348	155,766	143%	98%
68	102,329	385,871	0.2652	0.2023	0.2986	78,054	115,238	131%	89%
69	67,094	287,480	0.2334	0.2018	0.2987	58,017	85,870	116%	78%
70	62,407	216,773	0.2879	0.2232	0.2989	48,375	64,791	129%	96%
71	42,107	153,526	0.2743	0.2250	0.2986	34,537	45,847	122%	92%
72	32,250	114,374	0.2820	0.2268	0.2986	25,940	34,152	124%	94%
73	16,349	75,966	0.2152	0.2303	0.2989	17,495	22,703	93%	72%
74	11,199	56,017	0.1999	0.2390	0.2985	13,389	16,719	84%	67%
75&Over	41,495	183,797	0.2258	0.9792	0.9952	179,974	182,924	23%	23%
Totals	5,365,219	46,374,601				6,223,677	5,849,855	86%	92%

*Columns may not add due to rounding.

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RETIREMENT EXPERIENCE BY PLAN DESIGN ELEMENT

Retirement Expectations by Employer Match						
Employer Match	Exposures	Actual	Current Assumptions		New Assumptions	
			Expected	A/E Ratio	Expected	A/E Ratio
1 - 1	491	39	46	85%	43	91%
1.5 - 1	769	67	84	79%	77	87%
2 - 1	37,756	3,670	4,061	90%	3,746	98%

Retirement Expectation by Recurring COLA %						
Recurring COLA%	Exposures	Actual	Current Assumptions		New Assumptions	
			Expected	A/E Ratio	Expected	A/E Ratio
No COLA	10,510	1,039	1,063	98%	1,017	102%
30%	1,883	191	204	94%	186	103%
40%	625	33	73	46%	66	50%
50%	5,789	634	633	100%	577	110%
70%	20,208	1,878	2,219	85%	2,020	93%

Retirement Expectation by Employee Contribution Rate						
Employee Contribution Rate	Exposures	Actual	Current Assumptions		New Assumptions	
			Expected	A/E Ratio	Expected	A/E Ratio
3%	300	23	27	87%	24	96%
5%	1,769	157	192	82%	178	88%
6%	4,315	392	446	88%	421	93%
7%	32,632	3,204	3,526	91%	3,242	99%

Retirement Expectations by Retirement Eligibility						
Employer Match	Exposures	Actual	Current Assumptions		New Assumptions	
			Expected	A/E Ratio	Expected	A/E Ratio
20 & Out	34,940	3,014	3,281	92%	3,133	96%
25 & Out	438	67	54	124%	57	118%

*Data used for analyses of Retirement Experience by Employer Match and Retirement Experience by Employee Contribution Rate are employees who were aged 61 or younger as of valuation date during the study period.

* Data used for analysis of Retirement Experience by Recurring COLA% are employees who were aged 61 or younger as of valuation date during the study period and were employed by cities that either had no COLA or had an unchanged COLA during study period.

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APPENDIX A

TERMINATION AND POPULATION EXPERIENCE BY CITY

The exhibit on the following pages show the termination and population experience for each city during the study period. The termination experience is presented separately for the select and ultimate periods. We have also shown the experience on a combined basis using a weighted A/E ratio. For most cities, this is the standard A/E ratio calculated on the combined select and ultimate experience. However, for cities with significant experience in the ultimate period, the calculation gives three times the weight to the ultimate experience in the calculation.

City Number	City Name	Active Count	Expected Termination Weighted by Salary Select ($)	Ultimate ($)	Actual Termination Weighted by Salary Select ($)	Ultimate ($)	Weighted A/E Ratio	Current City Load	Proposed City Load	Population Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
4	Abernathy	< 100	368,150	94,996	827,006	83,617	119.2%	105%	110%	2.4%	0.0%
6	Abilene	> 100	23,280,418	4,011,114	24,371,768	4,636,002	99.9%	102%	100%	0.2%	0.0%
7	Addison	> 100	7,853,381	1,519,478	8,739,032	2,437,956	128.5%	95%	100%	0.1%	0.0%
8	Agua Dulce	< 6	8,638	974	0	0	0.0%	75%	75%	-	-
10	Alamo	> 100	2,601,847	318,503	3,290,786	668,569	162.5%	115%	120%	3.1%	0.0%
12	Alamo Heights	< 100	2,461,100	442,656	3,766,402	1,369,442	229.6%	115%	115%	-0.3%	-0.1%
14	Alba	< 6	107,195	17,723	130,340	0	36.2%	75%	75%	0.0%	0.0%
16	Albany	< 100	488,006	42,951	939,510	0	57.3%	95%	90%	2.8%	0.0%
17	Aledo	< 16	423,918	25,995	732,810	158,556	414.3%	90%	95%	3.7%	0.0%
18	Alice	> 100	5,553,802	771,385	6,229,739	1,330,747	136.0%	125%	125%	-0.8%	-0.4%
19	Allen	> 100	20,100,476	4,244,697	19,712,078	4,359,843	90.3%	106%	101%	2.2%	0.0%
20	Alpine	< 100	1,949,943	165,644	2,869,868	120,528	87.1%	115%	110%	3.2%	0.0%
22	Alto	< 16	407,610	724	676,945	0	49.4%	85%	80%	1.7%	0.0%
23	Alton	< 100	1,996,499	199,362	3,749,310	286,955	141.5%	115%	115%	5.6%	0.0%
24	Alvarado	< 100	1,829,202	173,159	2,763,837	437,167	195.1%	115%	115%	1.6%	0.0%
26	Alvin	> 100	6,141,099	941,057	7,896,256	1,372,718	125.0%	110%	115%	0.4%	0.0%
28	Alvord	< 11	245,454	26,184	321,395	164,687	413.1%	85%	85%	-0.8%	-0.4%
30	Amarillo	> 100	44,438,600	6,676,844	51,363,587	6,993,978	96.7%	106%	101%	1.2%	0.0%
32	Amherst	< 6	164,436	4,147	329,722	43,831	688.4%	75%	75%	-6.8%	-1.0%
34	Anahuac	< 16	383,554	41,062	1,041,626	179,221	340.4%	100%	100%	-2.3%	-1.0%
36	Andrews	< 100	2,193,145	471,280	2,104,861	175,994	50.8%	90%	85%	2.7%	0.0%
38	Angleton	> 100	3,407,684	491,111	3,700,437	917,997	143.5%	114%	119%	0.6%	0.0%
40	Anna	< 100	1,603,629	248,687	2,082,566	504,342	159.3%	100%	105%	8.0%	0.0%
41	Annetta	< 6	47,078	2,552	101,863	65,376	1588.4%	75%	75%	-	-
44	Anson	< 100	593,595	48,197	1,266,436	0	63.5%	100%	95%	3.5%	0.0%
45	Anthony	< 100	826,583	81,441	1,144,171	125,863	133.1%	90%	95%	3.4%	0.0%
48	Aransas Pass	> 100	3,460,700	238,394	5,698,280	466,150	165.3%	125%	125%	1.3%	0.0%
50	Archer City	< 100	581,708	29,290	895,839	44,559	136.3%	80%	85%	4.0%	0.0%
49	Arcola	< 16	104,475	1,068	313,681	0	89.3%	75%	80%	-	-
51	Argyle	< 100	539,835	151,961	839,394	375,762	193.4%	115%	115%	1.9%	0.0%
52	Arlington	> 100	72,547,579	16,728,835	50,017,218	13,625,328	69.0%	100%	95%	0.5%	0.0%
54	Arp	< 11	197,795	40,422	415,946	43,680	126.8%	80%	85%	0.4%	0.0%
60	Aspermont	< 11	178,753	37,633	208,645	0	34.7%	80%	75%	-1.2%	-0.5%
62	Athens	> 100	3,002,840	555,518	3,448,777	953,914	136.3%	103%	108%	0.6%	0.0%
64	Atlanta	< 100	848,121	141,890	719,850	296,959	149.8%	100%	105%	-0.9%	-0.4%

Texas Municipal Retirement System   *Termination Experience by City*

City Number	City Name	Active Count	Expected Termination Weighted by Salary Select ($)	Ultimate ($)	Actual Termination Weighted by Salary Select ($)	Ultimate ($)	Weighted A/E Ratio	Current City Load	Proposed City Load	Population Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
66	Aubrey	< 100	1,301,230	240,140	2,231,202	607,704	201.6%	115%	115%	1.3%	0.0%
74	Avinger	< 6	1,413	6,587	0	0	0.0%	75%	75%	7.2%	0.0%
75	Azle	> 100	3,073,645	607,307	4,329,763	874,867	127.6%	125%	125%	1.3%	0.0%
77	Baird	< 16	372,557	23,406	477,367	66,791	207.9%	85%	90%	2.1%	0.0%
78	Balch Springs	> 100	4,887,118	754,251	4,480,829	1,150,011	118.0%	120%	118%	2.0%	0.0%
79	Balcones Heights	< 100	1,437,875	157,461	1,608,058	359,823	169.2%	115%	115%	0.9%	0.0%
80	Ballinger	< 100	969,373	25,383	1,229,147	89,299	247.0%	105%	110%	0.9%	0.0%
82	Balmorhea	< 6	73,254	2,320	159,024	0	64.6%	75%	75%	-11.1%	-1.0%
83	Bandera	< 100	493,052	41,687	1,294,961	89,719	206.2%	115%	115%	1.6%	0.0%
84	Bangs	< 16	448,275	13,084	889,231	34,089	214.0%	90%	95%	3.1%	0.0%
90	Bartlett	< 16	602,690	29,878	1,252,036	183,732	427.6%	100%	100%	-1.1%	-0.5%
91	Bartonville	< 11	121,422	49,544	115,020	147,266	205.0%	85%	85%	0.9%	0.0%
92	Bastrop	> 100	3,404,379	748,791	3,495,404	1,105,269	118.4%	120%	118%	2.6%	0.0%
94	Bay City	> 100	5,006,452	716,133	6,568,082	991,436	121.4%	125%	121%	-0.3%	-0.1%
93	Bayou Vista	< 11	211,518	1,455	470,269	68,028	2847.2%	75%	80%	0.3%	0.0%
96	Baytown	> 100	22,573,467	4,149,280	21,300,176	4,338,218	90.3%	102%	97%	2.2%	0.0%
98	Beaumont	> 100	26,412,346	4,983,822	25,381,576	4,682,944	84.5%	100%	95%	-0.2%	-0.1%
100	Bedford	> 100	7,243,720	1,689,711	7,737,835	1,746,354	93.3%	85%	80%	-	-
101	Bee Cave	< 100	1,745,439	183,499	2,309,985	486,581	197.1%	90%	95%	1.5%	0.0%
102	Beeville	> 100	3,121,311	324,486	4,514,875	1,080,790	241.2%	96%	101%	-1.2%	-0.6%
106	Bellaire	> 100	3,470,167	776,088	4,171,654	1,324,211	137.3%	90%	95%	0.0%	0.0%
109	Bellmead	< 100	1,958,171	303,099	2,713,753	852,307	208.5%	115%	115%	2.2%	0.0%
110	Bells	< 11	266,705	14,868	716,151	145,223	660.9%	90%	85%	4.7%	0.0%
112	Bellville	< 100	1,169,985	264,131	1,419,553	71,688	52.2%	115%	110%	-0.5%	-0.2%
114	Belton	> 100	4,708,042	526,293	5,763,789	696,549	115.2%	109%	114%	2.2%	0.0%
118	Benbrook	> 100	2,711,533	924,549	2,397,594	1,085,539	96.1%	80%	85%	1.2%	0.0%
121	Berryville	< 6	81,108	0	110,861	0	85.3%	75%	75%	-3.1%	-1.0%
123	Bertram	< 16	273,741	40,302	721,399	123,838	261.2%	85%	90%	2.8%	0.0%
124	Big Lake	< 100	743,569	34,627	900,759	0	36.0%	115%	110%	2.7%	0.0%
126	Big Sandy	< 11	308,142	23,872	825,007	69,289	252.3%	100%	85%	-0.1%	0.0%
128	Big Spring	> 100	6,807,304	612,662	11,223,680	691,404	116.2%	120%	116%	-1.5%	-0.7%
132	Bishop	< 100	533,771	44,960	819,786	154,976	250.7%	115%	115%	0.2%	0.0%
134	Blanco	< 100	562,958	12,988	1,086,305	46,776	271.6%	90%	95%	5.6%	0.0%
140	Blooming Grove	< 6	107,916	13,363	31,655	37,294	174.8%	75%	75%	1.8%	0.0%
142	Blossom	< 6	65,033	19,870	0	26,400	79.0%	75%	75%	0.0%	0.0%

Texas Municipal Retirement System

City Number	City Name	Active Count	Expected Termination Weighted by Salary		Actual Termination Weighted by Salary		Weighted A/E Ratio	Current City Load	Proposed City Load	Population	
			Select ($)	Ultimate ($)	Select ($)	Ultimate ($)				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
143	Blue Mound	< 100	749,228	13,283	1,539,851	0	61.1%	90%	85%	4.3%	0.0%
144	Blue Ridge	< 6	251,871	1,458	394,645	33,899	1430.1%	75%	75%	5.0%	0.0%
148	Boerne	> 100	6,099,596	1,292,785	4,107,235	928,586	62.8%	85%	80%	3.0%	0.0%
150	Bogata	< 11	243,987	2,450	282,244	0	34.4%	85%	80%	0.9%	0.0%
152	Bonham	> 100	2,602,185	554,283	4,284,176	1,109,907	168.1%	125%	125%	-0.2%	0.0%
154	Booker	< 11	289,602	67,386	410,939	70,949	104.8%	80%	85%	-0.9%	-0.4%
156	Borger	> 100	4,820,750	494,504	5,758,603	586,196	106.1%	100%	105%	2.2%	0.0%
158	Bovina	< 16	345,781	17,807	830,605	0	71.5%	90%	85%	5.1%	0.0%
160	Bowie	< 100	2,328,157	300,220	3,030,015	268,038	91.8%	100%	95%	-1.6%	-0.8%
162	Boyd	< 100	518,121	28,309	1,312,063	190,723	476.1%	90%	95%	1.5%	0.0%
166	Brady	< 100	2,749,960	312,152	5,192,899	517,873	154.9%	115%	115%	1.3%	0.0%
170	Brazoria	< 100	621,191	139,581	971,722	140,515	106.4%	115%	110%	0.2%	0.0%
172	Breckenridge	< 100	2,097,483	80,519	3,847,193	138,017	156.5%	115%	115%	-1.4%	-0.6%
174	Bremond	< 11	192,778	23,599	464,481	27,021	139.8%	85%	85%	0.4%	0.0%
176	Brenham	> 100	5,264,583	915,863	5,535,306	1,360,835	119.7%	107%	112%	-0.1%	0.0%
177	Bridge City	< 100	1,620,117	191,929	1,414,216	456,839	167.6%	115%	115%	0.7%	0.0%
178	Bridgeport	< 100	2,548,019	273,840	4,189,783	487,091	154.7%	115%	115%	-3.8%	-1.0%
180	Bronte	< 6	26,436	18,741	56,818	0	63.9%	75%	75%	-2.8%	-1.0%
182	Brookshire	< 100	1,090,525	111,213	1,827,150	81,497	93.4%	115%	110%	2.5%	0.0%
184	Brownfield	< 100	2,148,597	202,773	2,882,802	21,307	46.2%	115%	110%	1.0%	0.0%
186	Brownsboro	< 11	21,756	0	86,490	0	162.9%	75%	80%	-	-
10188	Brownsville	> 100	21,951,740	6,109,242	17,002,877	3,252,501	54.7%	75%	75%	0.3%	0.0%
20188	Brownsville PUB	> 100	12,507,237	2,800,401	8,044,517	1,444,147	49.8%	75%	75%	2.4%	0.0%
10190	Brownwood	> 100	5,823,345	900,115	7,223,904	1,349,454	126.1%	125%	125%	0.0%	0.0%
30190	Brownwood Health Dept.	< 16	339,019	24,881	209,236	52,572	144.1%	80%	85%	1.0%	0.0%
20190	Brownwood Public Library	< 11	93,158	17,946	116,835	0	37.3%	80%	75%	14.6%	0.0%
195	Bruceville-Eddy	< 100	424,253	25,701	593,674	82,778	233.2%	90%	95%	4.6%	0.0%
192	Bryan	> 100	25,904,183	4,950,561	22,039,657	4,970,283	85.0%	110%	105%	0.6%	0.0%
193	Bryson	< 6	87,307	7,518	111,987	0	38.2%	75%	75%	1.6%	0.0%
194	Buda	> 100	2,807,798	198,892	2,904,478	486,384	176.2%	100%	105%	8.4%	0.0%
196	Buffalo	< 100	343,878	24,926	354,517	37,999	121.4%	90%	95%	-1.9%	-0.9%
198	Bullard	< 100	674,731	57,626	1,018,540	78,731	126.2%	90%	95%	6.0%	0.0%
203	Bulverde	< 100	672,094	101,517	929,321	444,756	301.8%	100%	105%	2.0%	0.0%
199	Bunker Hill Village	< 11	127,174	103,570	134,964	0	31.6%	80%	75%	-0.5%	-0.2%
200	Burkburnett	< 100	1,719,834	242,947	1,888,151	633,008	187.7%	115%	115%	0.4%	0.0%

City Number	City Name	Active Count	Expected Termination Weighted by Salary Select ($)	Ultimate ($)	Actual Termination Weighted by Salary Select ($)	Ultimate ($)	Weighted A/E Ratio	Current City Load	Proposed City Load	Population Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
202	Burleson	> 100	8,471,941	2,242,848	6,830,816	2,865,311	100.0%	110%	105%	1.3%	0.0%
204	Burnet	> 100	3,390,468	458,415	4,521,170	888,380	155.0%	125%	125%	0.3%	0.0%
206	Burton	< 6	0	2,168	0	0	22.3%	75%	75%	-	-
207	Cactus	< 100	1,118,484	61,631	1,448,743	224,817	255.5%	100%	105%	9.5%	0.0%
208	Caddo Mills	< 16	485,332	18,670	776,225	83,498	313.6%	90%	95%	2.8%	0.0%
210	Caldwell	< 100	1,102,418	164,374	1,598,199	176,613	107.0%	99%	104%	-0.3%	-0.1%
212	Calvert	< 16	317,369	2,050	922,204	34,595	1090.4%	90%	95%	3.9%	0.0%
214	Cameron	< 100	1,029,117	107,948	1,860,214	206,498	167.6%	115%	115%	-0.6%	-0.2%
216	Campbell	< 6	0	0	0	0	N/A	75%	75%	-	-
220	Canadian	< 100	726,653	95,413	758,498	103,320	95.5%	100%	95%	0.6%	0.0%
221	Caney City	< 6	38,345	0	46,040	0	80.3%	75%	75%	-	-
222	Canton	< 100	1,673,713	209,311	2,136,134	388,912	148.5%	115%	115%	0.3%	0.0%
224	Canyon	> 100	2,121,578	323,158	1,643,681	511,630	117.2%	100%	105%	3.1%	0.0%
227	Carmine	< 6	18,211	3,599	19,655	0	32.1%	75%	75%	-1.9%	-0.9%
228	Carrizo Springs	< 100	1,166,984	117,248	2,070,002	278,511	194.1%	101%	106%	0.0%	0.0%
230	Carrollton	> 100	19,385,107	4,954,931	18,027,452	5,700,810	96.1%	110%	105%	-0.2%	-0.1%
232	Carthage	< 100	2,613,418	236,599	2,930,628	304,215	109.8%	115%	110%	-0.9%	-0.4%
231	Castle Hills	< 100	1,573,202	233,051	2,425,304	296,426	121.5%	115%	115%	0.6%	0.0%
234	Castroville	< 100	1,225,126	137,692	2,145,203	503,629	269.7%	115%	115%	2.7%	0.0%
238	Cedar Hill	> 100	8,591,573	1,792,200	7,627,130	1,945,393	91.0%	105%	100%	0.8%	0.0%
239	Cedar Park	> 100	11,354,506	2,615,155	9,614,399	3,371,926	101.9%	100%	102%	3.2%	0.0%
240	Celeste	< 6	103,710	0	271,938	0	122.6%	75%	75%	-	-
242	Celina	> 100	2,428,181	201,235	2,920,807	974,790	324.0%	100%	105%	14.0%	0.0%
244	Center	< 100	1,725,953	287,587	1,553,498	499,456	130.1%	110%	115%	0.4%	0.0%
246	Centerville	< 6	114,810	17,329	97,828	0	25.3%	75%	75%	0.9%	0.0%
247	Chandler	< 100	556,722	11,791	640,051	44,363	258.0%	80%	85%	22.7%	0.0%
248	Charlotte	< 11	159,313	31,087	183,275	35,826	102.8%	80%	85%	1.0%	0.0%
249	Chester	< 6	0	3,921	0	11,336	194.3%	75%	75%	-4.0%	-1.0%
245	Chico	< 11	137,698	35,500	142,724	42,744	102.5%	80%	85%	-1.3%	-0.6%
250	Childress	< 100	1,284,141	107,343	1,768,617	138,570	117.8%	115%	115%	1.2%	0.0%
251	Chillicothe	< 11	28,521	4,364	0	77,003	1049.7%	75%	80%	-	-
253	Chireno	< 11	154,320	52,008	61,353	0	11.8%	80%	75%	0.0%	0.0%
254	Christine	< 6	39,394	0	12,754	0	54.2%	75%	75%	0.0%	0.0%
255	Cibolo	> 100	3,244,410	373,784	4,365,373	755,620	160.3%	125%	125%	6.0%	0.0%
256	Cisco	< 100	943,896	23,714	1,813,202	62,560	214.1%	115%	115%	1.1%	0.0%

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			Select ($)	Ultimate ($)	Select ($)	Ultimate ($)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
258	Clarendon	< 100	282,672	17,060	365,833	77,943	310.3%	100%	105%	0.8%	0.0%
259	Clarksville	< 100	678,214	78,648	1,527,133	286,225	283.5%	115%	115%	-2.0%	-0.9%
260	Clarksville City	< 6	160,220	0	187,412	0	79.4%	75%	75%	0.2%	0.0%
263	Clear Lake Shores	< 100	500,229	71,821	871,983	90,958	127.2%	100%	105%	2.9%	0.0%
264	Cleburne	> 100	7,640,860	1,491,548	7,613,526	2,567,889	132.1%	95%	100%	-0.6%	-0.2%
266	Cleveland	< 100	2,535,973	251,225	3,892,127	426,628	146.7%	115%	115%	-0.6%	-0.2%
268	Clifton	< 100	801,454	68,479	1,260,170	54,920	94.5%	115%	110%	0.1%	0.0%
271	Clute	< 100	3,193,381	277,736	5,434,680	804,965	223.0%	115%	115%	-0.9%	-0.4%
272	Clyde	< 100	791,541	72,258	1,276,373	133,248	157.7%	115%	115%	0.9%	0.0%
274	Coahoma	< 6	157,883	23,872	35,580	0	6.7%	75%	75%	0.2%	0.0%
276	Cockrell Hill	< 100	1,117,450	95,992	1,464,700	220,687	175.8%	115%	115%	1.2%	0.0%
278	Coleman	< 100	1,491,075	262,577	2,209,580	419,273	139.1%	115%	115%	-0.6%	-0.3%
280	College Station	> 100	25,523,546	4,382,646	24,548,645	4,993,614	96.4%	95%	96%	1.3%	0.0%
281	Colleyville	> 100	4,487,659	1,203,597	5,813,293	2,435,834	158.9%	98%	103%	-0.2%	0.0%
282	Collinsville	< 11	191,462	10,986	63,053	125,388	688.8%	85%	85%	-0.1%	0.0%
283	Colmesneil	< 6	74,465	22,143	101,769	0	40.7%	75%	75%	3.3%	0.0%
284	Colorado City	< 100	1,318,416	86,104	2,376,393	402,062	331.4%	115%	115%	-1.0%	-0.5%
286	Columbus	< 100	988,386	157,507	996,651	317,633	150.0%	110%	115%	0.1%	0.0%
288	Comanche	< 100	625,996	72,865	933,976	254,310	252.0%	100%	105%	-1.0%	-0.5%
289	Combes	< 100	52,815	2,153	105,605	0	59.5%	75%	75%	-	-
290	Commerce	< 100	2,018,906	202,106	3,052,677	953,946	325.8%	115%	115%	-1.1%	-0.5%
294	Conroe	> 100	12,064,049	2,625,362	12,598,233	2,555,316	89.0%	100%	95%	1.5%	0.0%
295	Converse	> 100	4,376,111	397,891	6,630,954	966,664	189.6%	125%	125%	1.1%	0.0%
298	Cooper	< 16	183,672	43,031	133,598	29,394	62.3%	80%	75%	0.1%	0.0%
299	Coppell	> 100	9,129,257	2,918,824	8,177,792	3,130,996	90.5%	97%	92%	0.5%	0.0%
297	Copper Canyon	< 6	59,226	1,614	34,153	38,337	1430.6%	75%	75%	0.0%	0.0%
300	Copperas Cove	> 100	5,432,388	1,157,087	8,856,718	2,211,279	162.2%	125%	125%	-0.9%	-0.4%
301	Corinth	> 100	3,200,251	1,349,839	4,552,060	2,522,992	153.5%	110%	115%	-0.3%	-0.1%
302	Corpus Christi	> 100	58,820,770	10,530,580	61,677,861	11,428,962	95.8%	100%	96%	-0.9%	-0.4%
304	Corrigan	< 100	771,203	60,021	1,980,534	103,813	179.3%	100%	105%	2.5%	0.0%
306	Corsicana	> 100	4,569,580	925,516	5,350,997	1,232,070	114.0%	101%	106%	-1.9%	-0.9%
308	Cotulla	< 100	1,155,177	51,517	2,010,964	87,162	152.4%	115%	115%	5.3%	0.0%
310	Crandall	< 100	965,560	77,931	1,793,835	259,699	253.5%	115%	115%	1.1%	0.0%
312	Crane	< 100	722,070	96,555	1,161,415	183,394	160.8%	99%	104%	1.8%	0.0%
314	Crawford	< 6	114,719	28,036	192,946	36,144	126.7%	75%	75%	3.2%	0.0%

Texas Municipal Retirement System

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
316	Crockett	< 100	1,562,147	167,238	2,735,974	303,670	160.1%	115%	115%	-2.5%	-1.0%
318	Crosbyton	< 11	309,647	29,640	674,496	31,374	127.8%	90%	85%	0.1%	0.0%
320	Cross Plains	< 11	202,691	22,542	218,860	0	32.1%	85%	80%	3.4%	0.0%
321	Cross Roads	< 16	141,294	11,965	59,931	68,323	352.3%	75%	80%	-	-
322	Crowell	< 11	N/A	N/A	N/A	N/A	N/A	75%	75%	-	-
323	Crowley	> 100	2,780,152	438,798	3,274,265	933,832	161.6%	125%	125%	2.1%	0.0%
324	Crystal City	< 100	1,411,582	103,081	3,755,416	178,843	182.3%	115%	115%	-2.1%	-1.0%
326	Cuero	< 100	2,660,431	376,658	2,362,121	816,451	155.4%	120%	115%	1.5%	0.0%
328	Cumby	< 11	345,658	17,814	819,867	85,443	355.9%	90%	85%	0.4%	0.0%
332	Daingerfield	< 100	531,974	59,098	907,558	47,219	98.3%	115%	110%	-0.2%	0.0%
334	Daisetta	< 11	236,580	7,350	467,991	30,366	304.6%	85%	85%	-3.1%	-1.0%
336	Dalhart	< 100	1,880,394	221,063	3,006,810	222,001	107.3%	115%	110%	2.0%	0.0%
339	Dalworthington Gardens	< 100	872,161	161,094	1,249,313	337,682	167.3%	100%	105%	-1.3%	-0.6%
340	Danbury	< 11	296,548	29,738	638,048	52,448	168.9%	85%	85%	1.0%	0.0%
341	Darrouzett	< 6	97,628	0	181,404	0	99.9%	75%	75%	-0.6%	-0.2%
344	Dayton	< 100	2,538,996	223,323	3,435,101	437,105	156.7%	115%	115%	3.1%	0.0%
352	De Leon	< 16	388,090	66,359	630,163	256,202	278.0%	100%	100%	-1.3%	-0.6%
10366	DeSoto	> 100	8,565,757	2,040,458	9,740,072	3,769,799	143.7%	98%	103%	1.1%	0.0%
346	Decatur	> 100	2,529,566	540,555	3,105,255	1,420,040	192.8%	112%	117%	0.4%	0.0%
348	Deer Park	> 100	8,446,991	1,731,762	7,399,334	1,219,172	67.9%	75%	75%	1.3%	0.0%
350	Dekalb	< 16	415,588	38,064	748,694	131,950	259.8%	100%	100%	0.5%	0.0%
354	Del Rio	> 100	11,217,419	1,220,347	13,356,905	2,395,636	152.2%	100%	105%	0.7%	0.0%
353	Dell City	< 6	41,676	17,324	88,262	0	63.0%	75%	75%	-0.3%	-0.1%
356	Denison	> 100	4,984,983	997,400	5,240,131	1,730,679	134.5%	110%	115%	0.3%	0.0%
358	Denton	> 100	31,581,966	8,265,074	24,830,670	7,263,812	75.7%	100%	95%	2.2%	0.0%
360	Denver City	< 100	705,572	174,719	1,434,952	116,428	100.1%	90%	95%	-2.3%	-1.0%
362	Deport	< 6	85,034	0	173,348	0	105.3%	75%	75%	17.6%	0.0%
370	Devine	< 100	753,034	135,074	873,477	127,125	90.5%	100%	95%	0.7%	0.0%
371	Diboll	< 100	1,146,556	160,416	1,830,192	287,175	154.0%	115%	115%	-2.4%	-1.0%
372	Dickens	< 6	72,114	0	125,347	0	96.3%	75%	75%	-0.4%	-0.1%
373	Dickinson	> 100	2,749,514	359,969	3,815,393	696,610	156.4%	115%	115%	0.6%	0.0%
374	Dilley	< 100	974,025	59,887	2,188,408	172,915	238.6%	115%	115%	4.7%	0.0%
376	Dimmitt	< 100	631,516	38,120	870,286	25,967	81.5%	115%	110%	0.3%	0.0%
382	Donna	> 100	2,933,457	282,772	3,625,718	537,847	149.9%	115%	120%	7.0%	0.0%
379	Double Oak	< 16	269,620	50,415	291,615	112,975	165.5%	80%	85%	1.7%	0.0%

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
383	Dripping Springs	< 100	384,376	85,051	596,602	68,464	94.1%	80%	85%	13.9%	0.0%
385	Driscoll	< 11	208,289	1,638	588,298	30,831	1203.4%	75%	80%	-	-
384	Dublin	< 100	1,054,777	75,072	1,984,973	150,596	175.3%	115%	115%	3.2%	0.0%
386	Dumas	> 100	3,742,145	465,128	5,489,208	685,991	131.4%	115%	120%	0.3%	0.0%
388	Duncanville	> 100	7,079,735	1,136,130	8,033,758	1,830,621	129.6%	113%	118%	1.1%	0.0%
394	Eagle Lake	< 100	808,449	117,899	1,885,067	274,974	208.1%	115%	115%	-0.7%	-0.3%
396	Eagle Pass	> 100	7,646,043	1,301,881	7,134,025	1,630,716	102.3%	95%	100%	0.8%	0.0%
397	Early	< 100	693,194	54,413	739,867	95,113	135.7%	100%	105%	0.8%	0.0%
399	Earth	< 11	121,212	13,991	213,670	34,717	200.0%	75%	80%	-0.9%	-0.4%
393	East Bernard	< 6	54,993	0	0	0	44.6%	75%	75%	-	-
401	East Mountain	< 6	117,950	0	299,398	0	120.1%	75%	75%	-10.2%	-1.0%
395	East Tawakoni	< 11	238,964	6,738	356,664	0	44.4%	85%	80%	1.3%	0.0%
398	Eastland	< 100	916,931	93,789	1,621,388	52,063	85.6%	115%	110%	1.2%	0.0%
402	Ector	< 6	75,509	4,394	87,096	0	34.3%	75%	75%	5.9%	0.0%
406	Eden	< 11	271,595	40,463	361,123	80,703	158.2%	100%	85%	-5.8%	-1.0%
408	Edgewood	< 16	213,305	15,690	256,153	38,566	181.9%	80%	85%	1.0%	0.0%
410	Edinburg	> 100	18,621,636	2,872,545	18,211,147	3,842,637	108.7%	110%	109%	2.8%	0.0%
412	Edna	< 100	922,812	173,731	1,205,274	558,849	230.2%	115%	115%	-1.5%	-0.7%
414	El Campo	> 100	2,799,916	465,457	2,948,172	688,133	119.3%	95%	100%	0.7%	0.0%
416	Eldorado	< 100	694,829	48,759	1,186,359	0	50.8%	105%	100%	1.3%	0.0%
418	Electra	< 100	881,290	54,412	1,788,503	188,756	266.7%	100%	105%	-1.2%	-0.6%
420	Elgin	< 100	1,942,723	245,348	2,093,600	792,449	224.2%	115%	115%	2.5%	0.0%
422	Elkhart	< 11	230,767	3,816	432,921	53,710	893.0%	85%	85%	-1.0%	-0.5%
427	Elmendorf	< 100	442,475	12,842	668,628	0	44.9%	85%	80%	8.6%	0.0%
432	Emory	< 100	499,512	41,618	435,441	87,453	150.9%	90%	95%	3.4%	0.0%
436	Ennis	> 100	3,316,186	945,644	2,323,515	964,560	81.5%	75%	75%	1.4%	0.0%
439	Euless	> 100	7,961,103	2,734,054	5,890,177	1,744,410	60.0%	85%	80%	0.1%	0.0%
440	Eustace	< 11	328,554	26,767	791,297	29,125	136.4%	100%	85%	-5.2%	-1.0%
441	Everman	< 100	1,173,463	83,481	1,559,451	216,027	193.5%	115%	115%	2.4%	0.0%
443	Fair Oaks Ranch	< 100	1,656,418	198,746	1,872,603	350,172	138.4%	100%	105%	5.8%	0.0%
442	Fairfield	< 100	1,221,537	164,133	1,613,339	650,429	275.0%	100%	105%	-1.9%	-0.9%
445	Fairview	< 100	1,913,486	278,743	1,770,907	510,566	136.5%	100%	105%	7.9%	0.0%
20444	Falfurrias	< 100	968,048	66,190	1,539,415	293,930	311.5%	100%	105%	3.0%	0.0%
446	Falls City	< 6	126,457	0	241,755	0	101.5%	75%	75%	-0.7%	-0.3%
448	Farmers Branch	> 100	10,113,736	4,512,076	9,580,122	4,882,029	92.5%	85%	90%	-0.4%	-0.2%

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
450	Farmersville	< 100	1,052,105	97,703	1,085,710	221,556	165.6%	115%	115%	4.8%	0.0%
451	Farwell	< 11	196,354	31,368	382,668	40,343	134.5%	85%	85%	0.6%	0.0%
452	Fate	< 100	1,189,693	129,156	1,902,003	542,191	297.3%	90%	95%	13.8%	0.0%
454	Fayetteville	< 6	27,163	13,072	0	0	0.0%	75%	75%	14.9%	0.0%
456	Ferris	< 100	1,385,750	82,377	2,930,511	222,686	223.7%	115%	115%	0.8%	0.0%
458	Flatonia	< 100	399,044	88,896	624,430	0	46.5%	90%	85%	1.6%	0.0%
460	Florence	< 16	292,302	21,282	590,917	90,187	312.2%	85%	90%	1.6%	0.0%
20462	Floresville	< 100	1,720,924	212,667	1,911,673	440,156	156.2%	115%	115%	2.1%	0.0%
463	Flower Mound	> 100	15,828,764	3,059,799	14,708,845	3,563,968	96.9%	115%	110%	2.6%	0.0%
464	Floydada	< 100	453,662	100,307	871,613	87,779	109.2%	100%	105%	-0.8%	-0.3%
468	Forest Hill	< 100	2,675,291	419,914	3,852,186	1,195,182	212.2%	112%	115%	0.0%	0.0%
470	Forney	> 100	4,300,414	649,039	3,617,601	1,219,794	136.8%	92%	97%	5.6%	0.0%
472	Fort Stockton	> 100	4,200,381	291,491	6,007,927	790,282	203.8%	115%	120%	3.0%	0.0%
476	Franklin	< 16	499,335	38,030	840,934	79,306	174.2%	90%	95%	2.7%	0.0%
478	Frankston	< 16	340,169	14,870	401,399	0	35.1%	80%	75%	1.9%	0.0%
480	Fredericksburg	> 100	3,363,387	827,348	2,330,777	583,643	62.6%	85%	80%	0.2%	0.0%
482	Freeport	> 100	4,608,611	382,430	7,174,426	992,535	200.7%	125%	125%	1.0%	0.0%
481	Freer	< 100	523,793	21,333	897,135	71,020	249.0%	100%	105%	-1.6%	-0.8%
483	Friendswood	> 100	5,264,628	1,418,495	4,253,209	1,647,491	93.1%	80%	85%	0.8%	0.0%
484	Friona	< 100	547,866	67,042	790,425	122,855	151.9%	115%	115%	-0.9%	-0.4%
486	Frisco	> 100	30,675,789	7,438,593	21,622,124	7,070,829	77.5%	85%	80%	4.2%	0.0%
487	Fritch	< 100	927,096	37,520	2,177,355	233,430	440.0%	100%	105%	-0.2%	0.0%
488	Frost	< 6	99,461	5,578	143,862	32,586	390.6%	75%	75%	-5.0%	-1.0%
491	Fulshear	< 100	1,111,238	55,657	1,198,048	245,758	294.8%	75%	80%	-	-
493	Fulton	< 6	102,572	0	176,484	0	95.8%	75%	75%	-	-
492	Gainesville	> 100	5,151,429	989,033	7,151,966	1,585,897	136.7%	125%	125%	-0.6%	-0.2%
494	Galena Park	< 100	2,093,486	243,905	3,070,513	517,973	170.0%	115%	115%	1.1%	0.0%
498	Ganado	< 11	211,729	72,274	361,758	68,873	107.5%	85%	85%	-1.3%	-0.6%
499	Garden Ridge	< 100	667,655	126,023	873,117	242,885	153.6%	100%	105%	2.2%	0.0%
500	Garland	> 100	47,332,324	13,467,075	30,530,817	10,063,721	63.6%	75%	75%	0.2%	0.0%
502	Garrison	< 11	147,375	42,933	245,462	44,923	111.8%	80%	85%	0.3%	0.0%
503	Gary	< 6	89,112	26,647	0	0	0.0%	75%	75%	-1.0%	-0.4%
504	Gatesville	< 100	1,727,885	261,000	1,466,976	254,515	83.3%	115%	110%	0.8%	0.0%
505	George West	< 100	1,112,233	69,283	2,332,237	370,805	380.8%	90%	95%	1.6%	0.0%
506	Georgetown	> 100	18,411,584	3,687,962	13,220,226	3,445,116	76.9%	85%	80%	4.4%	0.0%

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
510	Giddings	< 100	1,612,693	180,348	1,746,336	423,850	172.0%	115%	115%	0.3%	0.0%
512	Gilmer	< 100	1,129,977	120,609	1,411,619	125,532	99.1%	115%	110%	0.0%	0.0%
514	Gladewater	< 100	1,704,249	91,267	3,452,371	462,319	361.6%	115%	115%	2.4%	0.0%
516	Glen Rose	< 100	627,874	93,841	663,847	333,511	242.9%	98%	103%	4.1%	0.0%
517	Glenn Heights	< 100	2,399,842	333,704	3,824,280	1,008,631	227.2%	115%	115%	2.6%	0.0%
518	Godley	< 16	400,912	23,274	655,828	183,602	518.0%	85%	90%	5.3%	0.0%
519	Goldsmith	< 6	21,561	38,732	0	45,207	69.4%	75%	75%	0.0%	0.0%
520	Goldthwaite	< 16	329,800	53,320	409,711	6,500	44.2%	80%	75%	-1.4%	-0.7%
522	Goliad	< 16	422,511	13,171	989,538	91,168	481.4%	90%	95%	1.0%	0.0%
524	Gonzales	> 100	3,024,977	369,167	5,099,980	691,154	161.5%	120%	125%	1.4%	0.0%
527	Gordon	< 6	N/A	N/A	N/A	N/A	N/A	75%	75%	-	-
530	Gorman	< 11	18,283	3,765	61,286	0	99.7%	75%	80%	-	-
532	Graford	< 6	108,117	975	58,813	0	16.2%	75%	75%	0.9%	0.0%
10534	Graham	< 100	2,214,375	253,356	2,847,644	360,932	123.0%	115%	115%	-0.5%	-0.2%
536	Granbury	> 100	4,200,197	756,634	4,468,816	1,153,657	122.4%	100%	105%	0.6%	0.0%
540	Grand Prairie	> 100	31,814,092	11,390,129	26,585,393	7,777,263	65.5%	85%	80%	1.3%	0.0%
542	Grand Saline	< 100	668,785	80,413	1,312,491	160,082	176.8%	115%	115%	-1.6%	-0.7%
544	Grandview	< 100	521,874	71,084	1,081,179	164,691	199.5%	90%	95%	4.5%	0.0%
546	Granger	< 11	285,578	12,422	544,872	83,307	455.7%	85%	85%	-0.7%	-0.3%
547	Granite Shoals	< 100	1,186,136	72,802	1,834,772	147,058	166.2%	100%	105%	2.6%	0.0%
548	Grapeland	< 11	249,629	35,993	589,809	232,643	454.8%	90%	85%	-4.0%	-1.0%
550	Grapevine	> 100	13,676,203	3,821,318	10,736,506	3,290,123	74.6%	85%	80%	0.7%	0.0%
552	Greenville	> 100	7,692,288	1,698,004	6,706,945	1,694,308	85.3%	115%	110%	-0.1%	0.0%
551	Gregory	< 16	345,772	16,389	810,420	78,043	353.0%	85%	90%	5.9%	0.0%
553	Grey Forest	< 100	1,237,574	295,993	750,291	102,595	38.7%	90%	85%	2.8%	0.0%
556	Groesbeck	< 100	755,008	81,723	915,365	242,982	212.9%	100%	105%	-2.1%	-1.0%
558	Groom	< 6	128,944	5,959	137,460	36,015	391.3%	75%	75%	1.9%	0.0%
559	Groves	> 100	2,103,249	459,976	1,381,257	913,579	137.7%	80%	85%	-0.5%	-0.2%
560	Groveton	< 16	110,805	27,004	93,776	0	25.2%	80%	75%	6.0%	0.0%
562	Gruver	< 6	250,778	36,133	414,619	88,188	194.4%	75%	75%	1.7%	0.0%
563	Gun Barrel City	< 100	1,194,740	155,667	1,751,166	432,521	208.9%	105%	110%	-1.5%	-0.7%
564	Gunter	< 11	369,279	4,018	1,018,489	0	82.0%	85%	82%	2.0%	0.0%
568	Hale Center	< 16	344,180	20,858	473,852	59,476	210.6%	85%	90%	3.3%	0.0%
570	Hallettsville	< 100	502,336	140,716	402,064	84,937	59.7%	87%	82%	0.4%	0.0%
572	Hallsville	< 100	582,501	22,278	1,163,685	224,276	658.3%	90%	95%	4.6%	0.0%

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
574	Haltom City	> 100	5,648,663	1,776,759	5,181,135	2,573,697	113.5%	100%	105%	-1.1%	-0.5%
576	Hamilton	< 100	448,282	37,073	713,970	96,091	201.6%	102%	107%	3.6%	0.0%
578	Hamlin	< 16	417,445	52,291	542,573	77,993	127.4%	100%	100%	-0.4%	-0.2%
580	Happy	< 6	71,243	11,098	60,259	0	25.2%	75%	75%	-4.0%	-1.0%
581	Harker Heights	> 100	5,369,829	668,403	6,283,305	1,234,540	144.7%	125%	125%	2.3%	0.0%
10582	Harlingen	> 100	2,204,404	1,783,654	1,952,934	1,915,482	90.2%	107%	102%	-8.4%	-1.0%
20582	Harlingen Waterworks Sys	> 100	3,063,660	546,917	3,607,722	377,493	76.1%	92%	87%	0.4%	0.0%
583	Hart	< 6	100,899	14,615	63,453	31,185	145.6%	75%	75%	5.2%	0.0%
586	Haskell	< 100	623,646	20,572	1,390,647	59,639	238.8%	100%	105%	-0.3%	-0.1%
587	Haslet	< 100	590,273	142,862	724,904	332,765	175.1%	100%	105%	4.8%	0.0%
588	Hawkins	< 11	156,476	35,915	85,142	41,266	84.5%	90%	85%	-2.7%	-1.0%
585	Hays	< 6	15,189	1,399	20,800	0	40.7%	75%	75%	-6.7%	-1.0%
590	Hearne	< 100	1,578,580	176,381	2,015,849	193,347	103.2%	115%	110%	0.6%	0.0%
591	Heath	< 100	1,170,154	386,303	1,494,096	533,019	120.1%	100%	105%	1.7%	0.0%
592	Hedley	< 6	68,323	2,625	246,399	28,200	746.4%	75%	75%	-5.4%	-1.0%
595	Hedwig Village	< 100	791,949	115,929	939,041	218,984	147.6%	100%	105%	-0.3%	-0.1%
593	Helotes	< 100	1,459,782	235,628	1,384,785	408,077	131.2%	90%	95%	6.7%	0.0%
594	Hemphill	< 100	541,844	122,862	564,253	225,769	140.3%	114%	115%	0.7%	0.0%
596	Hempstead	< 100	1,900,524	133,709	2,523,064	169,607	114.9%	115%	115%	4.1%	0.0%
598	Henderson	> 100	3,324,997	737,962	3,042,987	817,854	93.2%	110%	105%	0.8%	0.0%
600	Henrietta	< 100	564,011	25,113	586,956	162,246	415.3%	115%	115%	-0.5%	-0.2%
602	Hereford	< 100	2,603,334	629,516	2,308,044	644,055	87.2%	95%	90%	0.9%	0.0%
605	Hewitt	< 100	2,037,879	375,310	2,425,182	289,485	81.3%	115%	110%	1.8%	0.0%
609	Hickory Creek	< 100	759,177	131,179	665,511	253,864	141.2%	90%	95%	-1.9%	-0.9%
606	Hico	< 16	327,247	2,497	662,717	0	60.2%	100%	95%	2.2%	0.0%
607	Hidalgo	> 100	4,158,122	534,912	5,587,017	1,305,457	185.2%	120%	125%	-0.7%	-0.3%
608	Higgins	< 6	28,035	5,365	38,501	0	40.8%	75%	75%	3.9%	0.0%
610	Highland Park	> 100	2,914,828	1,190,166	1,439,461	816,291	55.5%	75%	75%	-0.2%	0.0%
611	Highland Village	> 100	4,268,138	850,047	4,249,140	1,509,928	135.3%	110%	115%	2.0%	0.0%
613	Hill Country Village	< 16	331,955	109,815	583,880	45,922	77.2%	90%	85%	-0.2%	0.0%
612	Hillsboro	> 100	2,408,016	391,160	3,425,372	676,908	145.3%	125%	125%	-0.6%	-0.2%
619	Hilshire Village	< 6	13,233	0	32,084	0	116.7%	75%	75%	-	-
614	Hitchcock	< 100	1,412,994	111,234	2,912,023	168,503	151.4%	115%	115%	2.0%	0.0%
615	Holland	< 11	118,587	23,102	127,995	37,080	127.6%	75%	80%	0.6%	0.0%
616	Holliday	< 11	208,199	68,018	312,442	82,756	117.0%	85%	85%	-1.2%	-0.6%

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
617	Hollywood Park	< 100	881,889	149,873	1,371,730	188,258	121.0%	100%	105%	2.4%	0.0%
618	Hondo	> 100	2,874,595	278,821	3,475,322	752,497	196.5%	115%	120%	1.0%	0.0%
620	Honey Grove	< 11	243,566	18,789	464,558	47,441	206.9%	95%	85%	0.1%	0.0%
622	Hooks	< 16	292,437	82,006	346,454	162,834	153.4%	100%	100%	1.9%	0.0%
623	Horizon City	< 100	N/A	N/A	N/A	N/A	N/A	75%	75%	-	-
626	Howe	< 100	368,755	27,464	685,034	40,053	142.0%	100%	105%	-0.2%	0.0%
627	Hubbard	< 16	303,730	43,024	574,995	180,936	306.5%	100%	100%	-0.8%	-0.4%
628	Hudson	< 16	441,901	78,933	480,815	77,489	90.8%	90%	91%	0.2%	0.0%
629	Hudson Oaks	< 100	795,374	147,722	663,128	387,592	180.9%	100%	105%	0.7%	0.0%
630	Hughes Springs	< 16	104,597	73,372	44,042	0	12.5%	90%	85%	-1.2%	-0.6%
632	Humble	> 100	4,936,027	1,301,311	3,242,466	823,419	57.2%	75%	75%	0.6%	0.0%
633	Hunters Creek Village	< 11	192,942	61,909	224,843	0	34.7%	85%	80%	1.3%	0.0%
634	Huntington	< 100	512,150	57,974	994,491	30,837	89.4%	115%	110%	1.6%	0.0%
636	Huntsville	> 100	6,869,287	1,152,331	7,268,302	1,586,806	113.4%	100%	105%	-0.7%	-0.3%
637	Hurst	> 100	9,116,277	2,270,754	6,096,548	1,283,923	53.5%	85%	80%	2.0%	0.0%
638	Hutchins	< 100	1,817,459	283,757	3,260,291	786,121	218.2%	115%	115%	1.3%	0.0%
640	Hutto	> 100	3,626,088	578,075	5,220,357	1,881,117	236.4%	100%	105%	5.4%	0.0%
641	Huxley	< 11	273,375	24,768	379,700	41,797	141.7%	85%	85%	2.0%	0.0%
642	Idalou	< 16	591,940	28,588	1,003,252	60,255	175.8%	100%	100%	1.0%	0.0%
643	Ingleside	< 100	1,662,014	235,926	2,904,244	71,889	70.1%	115%	110%	1.9%	0.0%
646	Ingram	< 16	273,069	51,686	647,902	111,486	198.9%	90%	95%	1.8%	0.0%
647	Iowa Colony	< 11	104,408	0	198,645	0	101.2%	75%	80%	-	-
644	Iowa Park	< 100	1,017,589	177,102	1,184,398	135,400	80.1%	110%	105%	-0.3%	-0.1%
645	Iraan	< 11	117,223	20,818	83,978	0	21.3%	80%	75%	0.4%	0.0%
648	Irving	> 100	34,643,225	10,403,046	22,964,061	8,092,207	66.0%	76%	75%	0.0%	0.0%
650	Italy	< 100	687,429	36,582	1,658,111	143,914	305.8%	90%	95%	2.2%	0.0%
652	Itasca	< 100	560,807	23,965	1,474,731	67,057	244.7%	90%	95%	1.7%	0.0%
654	Jacinto City	< 100	1,491,784	208,824	1,672,898	233,821	100.0%	115%	110%	1.2%	0.0%
656	Jacksboro	< 100	1,313,761	93,153	1,674,819	344,116	257.7%	115%	115%	0.2%	0.0%
658	Jacksonville	> 100	3,115,556	432,344	3,600,061	690,823	129.4%	120%	125%	-0.3%	-0.1%
660	Jasper	> 100	2,817,338	454,836	3,694,529	439,016	96.4%	114%	109%	0.3%	0.0%
664	Jefferson	< 100	496,574	29,730	1,123,875	168,949	405.4%	100%	105%	-1.7%	-0.8%
665	Jersey Village	< 100	2,421,093	710,684	2,881,305	1,754,605	182.3%	110%	115%	0.4%	0.0%
666	Jewett	< 6	163,144	40,058	141,849	44,284	91.6%	85%	75%	-5.7%	-1.0%
668	Joaquin	< 11	176,896	4,410	228,647	49,703	708.9%	80%	85%	3.4%	0.0%

City Number	City Name	Active Count	Expected Termination Weighted by Salary Select ($)	Ultimate ($)	Actual Termination Weighted by Salary Select ($)	Ultimate ($)	Weighted A/E Ratio	Current City Load	Proposed City Load	Population Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
670	Johnson City	< 16	394,712	97,775	541,170	192,205	157.7%	100%	100%	1.6%	0.0%
673	Jones Creek	< 11	94,169	14,386	107,788	0	34.0%	75%	75%	4.8%	0.0%
675	Jonestown	< 100	853,159	78,880	942,472	233,774	209.2%	100%	105%	1.7%	0.0%
677	Josephine	< 11	101,336	24,441	196,519	0	57.7%	75%	75%	5.5%	0.0%
671	Joshua	< 100	960,179	216,185	1,465,052	384,980	151.3%	115%	115%	2.9%	0.0%
672	Jourdanton	< 100	958,019	51,537	1,718,913	20,434	77.0%	115%	110%	3.4%	0.0%
674	Junction	< 100	448,759	63,765	803,259	160,894	203.3%	115%	115%	1.6%	0.0%
676	Justin	< 100	1,099,749	137,123	1,802,848	294,153	176.4%	100%	105%	2.9%	0.0%
678	Karnes City	< 100	737,740	111,215	450,108	73,540	57.5%	80%	75%	4.6%	0.0%
680	Katy	> 100	4,423,460	983,082	3,593,693	1,170,720	95.0%	80%	85%	5.6%	0.0%
682	Kaufman	< 100	1,369,770	219,165	2,387,839	211,446	109.2%	115%	110%	-0.3%	-0.1%
683	Keene	< 100	1,406,948	291,188	2,055,807	595,702	165.2%	115%	115%	0.8%	0.0%
681	Keller	> 100	7,623,587	2,126,956	8,623,990	3,624,170	135.0%	95%	100%	-1.0%	-0.4%
685	Kemah	< 100	850,565	260,005	1,220,344	581,400	175.7%	100%	105%	-0.5%	-0.2%
684	Kemp	< 100	566,254	12,069	1,330,248	75,816	443.6%	85%	90%	1.6%	0.0%
686	Kenedy	< 100	1,028,148	144,913	1,623,660	193,982	126.6%	102%	107%	9.0%	0.0%
688	Kennedale	< 100	2,106,172	273,062	3,042,945	876,180	233.9%	115%	115%	-0.1%	0.0%
690	Kerens	< 16	54,955	15,999	119,417	0	64.6%	75%	75%	-	-
692	Kermit	< 100	1,398,721	210,566	2,687,532	405,544	171.7%	115%	115%	2.7%	0.0%
10694	Kerrville	> 100	8,119,199	1,457,278	9,102,651	1,792,071	106.5%	115%	110%	0.0%	0.0%
20694	Kerrville PUB	< 100	1,995,259	482,438	1,369,359	395,136	69.1%	105%	100%	-0.2%	-0.1%
10696	Kilgore	> 100	4,010,041	583,350	4,569,775	1,078,745	143.9%	125%	125%	0.0%	0.0%
698	Killeen	> 100	23,182,285	4,464,602	27,161,497	6,721,856	124.4%	108%	113%	0.8%	0.0%
700	Kingsville	> 100	6,562,046	890,275	8,415,541	2,038,358	174.4%	125%	125%	0.8%	0.0%
701	Kirby	< 100	1,436,515	147,562	3,000,718	240,191	159.0%	115%	115%	2.0%	0.0%
702	Kirbyville	< 100	669,290	47,073	1,333,631	81,852	162.7%	115%	115%	-0.2%	-0.1%
704	Knox City	< 11	213,214	1,240	366,401	0	51.1%	80%	75%	1.2%	0.0%
706	Kosse	< 6	12,999	348	0	0	0.0%	75%	75%	-	-
708	Kountze	< 100	791,612	93,222	1,954,607	33,437	94.8%	100%	95%	0.8%	0.0%
709	Kress	< 6	22,480	5,021	100,740	0	133.3%	75%	75%	-9.9%	-1.0%
699	Krugerville	< 11	213,013	24,175	360,816	49,074	171.1%	80%	85%	10.4%	0.0%
707	Krum	< 100	859,010	102,329	1,551,453	355,939	260.6%	100%	105%	3.0%	0.0%
710	Kyle	> 100	6,138,899	710,773	5,831,519	783,603	93.8%	100%	95%	8.6%	0.0%
725	La Coste	< 11	111,268	33,244	63,924	0	17.1%	80%	75%	2.9%	0.0%
714	La Feria	< 100	1,281,978	178,288	2,006,783	248,444	129.5%	115%	115%	0.8%	0.0%

City Number	City Name	Active Count	Expected Termination Weighted by Salary Select ($)	Ultimate ($)	Actual Termination Weighted by Salary Select ($)	Ultimate ($)	Weighted A/E Ratio	Current City Load	Proposed City Load	Population Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
716	La Grange	< 100	1,069,319	224,406	877,334	156,920	66.0%	105%	100%	2.7%	0.0%
723	La Grulla	< 100	528,144	26,735	906,172	25,658	108.1%	100%	105%	5.3%	0.0%
732	La Joya	< 100	913,106	81,564	2,323,640	219,726	236.0%	75%	80%	-	-
721	La Marque	> 100	3,845,145	459,723	5,733,128	1,380,167	222.9%	125%	125%	-0.7%	-0.3%
728	La Porte	> 100	9,253,627	2,088,715	9,986,647	2,908,276	114.9%	110%	115%	0.3%	0.0%
731	La Vernia	< 100	527,297	10,973	744,547	58,777	360.7%	90%	95%	24.9%	0.0%
711	Lacy-Lakeview	< 100	1,242,468	144,776	1,404,554	77,285	65.4%	111%	106%	1.6%	0.0%
712	Ladonia	< 6	81,505	0	177,534	0	109.4%	75%	75%	-0.4%	-0.2%
713	Lago Vista	< 100	2,425,860	169,975	2,999,030	229,510	117.1%	110%	115%	3.1%	0.0%
705	Laguna Vista	< 100	465,261	40,405	554,249	124,260	218.4%	90%	95%	4.1%	0.0%
717	Lake Dallas	< 100	1,167,102	156,849	1,689,651	467,392	220.3%	115%	115%	-0.2%	0.0%
718	Lake Jackson	> 100	5,579,417	953,722	6,774,622	1,432,648	125.5%	113%	118%	0.2%	0.0%
719	Lake Worth	< 100	2,005,356	620,886	2,063,461	951,051	121.7%	114%	115%	0.2%	0.0%
727	Lakeport	< 11	105,742	23,029	180,198	45,983	169.5%	75%	80%	1.7%	0.0%
715	Lakeside	< 100	331,632	35,954	553,923	282,790	517.6%	85%	90%	5.6%	0.0%
729	Lakeside City	< 6	36,935	46,659	22,488	46,218	77.0%	75%	75%	3.3%	0.0%
720	Lakeway	> 100	3,347,951	490,780	3,167,438	1,036,651	153.8%	115%	120%	3.3%	0.0%
722	Lamesa	< 100	2,209,896	286,728	4,169,551	552,835	170.8%	115%	115%	0.1%	0.0%
724	Lampasas	> 100	2,707,989	367,218	2,431,843	244,755	66.4%	110%	105%	2.1%	0.0%
726	Lancaster	> 100	8,927,733	1,289,194	12,617,603	2,778,290	170.2%	125%	125%	-0.5%	-0.2%
730	Laredo	> 100	40,706,910	11,338,505	29,296,332	6,991,836	58.1%	85%	80%	0.7%	0.0%
733	Lavon	< 100	509,598	66,644	629,231	236,602	247.9%	90%	95%	0.9%	0.0%
736	League City	> 100	16,381,624	2,513,791	17,128,112	3,565,689	115.5%	120%	115%	2.2%	0.0%
737	Leander	> 100	6,688,783	1,007,857	5,027,938	1,279,490	97.9%	95%	98%	7.9%	0.0%
735	Lefors	< 6	54,821	8,446	200,769	0	108.9%	75%	75%	-	-
739	Leon Valley	> 100	2,085,035	409,246	2,532,340	631,637	127.9%	96%	101%	0.6%	0.0%
738	Leonard	< 100	513,410	32,452	970,595	195,565	414.7%	100%	105%	2.3%	0.0%
740	Levelland	< 100	2,754,075	280,820	2,425,708	348,604	100.0%	112%	107%	1.8%	0.0%
742	Lewisville	> 100	16,696,575	4,872,034	13,754,358	4,126,815	74.9%	85%	80%	1.4%	0.0%
744	Lexington	< 16	448,611	13,113	974,812	43,682	262.8%	85%	90%	3.1%	0.0%
746	Liberty	< 100	3,192,941	266,283	6,155,221	666,415	206.2%	115%	115%	-1.6%	-0.8%
745	Liberty Hill	< 100	662,878	14,786	1,084,576	0	48.7%	100%	95%	12.4%	0.0%
748	Lindale	< 100	1,260,564	229,914	1,363,661	286,072	106.2%	100%	105%	1.5%	0.0%
750	Linden	< 16	267,851	38,059	480,752	76,250	172.6%	90%	95%	0.6%	0.0%
755	Lipan	< 6	67,199	15,799	25,680	0	11.4%	75%	75%	3.2%	0.0%

City Number (1)	City Name (2)	Active Count (3)	Expected Termination Weighted by Salary Select ($) (4)	Expected Termination Weighted by Salary Ultimate ($) (5)	Actual Termination Weighted by Salary Select ($) (6)	Actual Termination Weighted by Salary Ultimate ($) (7)	Weighted A/E Ratio (7)	Current City Load (8)	Proposed City Load (9)	Population Actual Annual Rate of Change (10)	Population Proposed Annual Rate of Change (11)
751	Little Elm	> 100	6,444,833	927,540	6,936,030	1,559,380	132.0%	109%	114%	5.0%	0.0%
752	Littlefield	< 100	1,417,508	145,521	1,894,876	511,979	249.1%	115%	115%	0.4%	0.0%
753	Live Oak	> 100	2,181,088	585,537	2,168,634	630,477	93.6%	112%	107%	0.0%	0.0%
757	Liverpool	< 6	118,690	0	189,745	0	92.2%	75%	75%	-	-
754	Livingston	< 100	1,770,688	513,658	922,196	314,301	51.9%	85%	80%	0.6%	0.0%
756	Llano	< 100	942,289	217,367	1,125,651	365,893	135.7%	115%	115%	-0.2%	-0.1%
758	Lockhart	> 100	3,700,133	403,793	6,039,643	841,732	172.6%	125%	125%	-0.1%	0.0%
760	Lockney	< 11	180,939	4,611	265,599	52,999	727.5%	75%	80%	-1.0%	-0.4%
765	Lone Star	< 16	279,032	51,185	615,973	71,745	149.0%	85%	90%	-0.1%	0.0%
766	Longview	> 100	17,511,242	2,691,755	17,543,961	2,197,396	78.4%	111%	106%	0.7%	0.0%
768	Loraine	< 6	112,014	2,874	302,335	29,867	698.6%	75%	75%	-1.8%	-0.9%
769	Lorena	< 100	366,345	24,238	347,647	92,276	254.7%	100%	105%	3.1%	0.0%
770	Lorenzo	< 11	256,769	6,344	376,948	33,006	353.2%	80%	85%	8.6%	0.0%
771	Los Fresnos	< 100	1,255,153	131,129	1,718,181	197,419	130.3%	100%	105%	1.6%	0.0%
773	Lott	< 11	344,057	4,199	755,135	99,724	1478.2%	85%	85%	-0.7%	-0.3%
774	Lovelady	< 6	87,413	2,170	126,706	0	43.1%	75%	75%	-	-
778	Lubbock	> 100	45,683,054	8,319,803	41,382,844	9,285,022	93.3%	93%	93%	0.8%	0.0%
779	Lucas	< 100	974,141	106,138	650,929	390,972	239.0%	100%	105%	8.0%	0.0%
782	Lufkin	> 100	8,625,686	1,371,914	9,519,877	1,288,255	88.7%	110%	105%	0.1%	0.0%
784	Luling	< 100	1,964,726	264,632	2,776,146	469,492	147.6%	115%	115%	1.6%	0.0%
785	Lumberton	< 100	840,507	156,951	653,566	340,939	152.4%	100%	105%	0.8%	0.0%
786	Lyford	< 100	169,207	54,735	337,711	56,712	121.0%	95%	100%	3.8%	0.0%
787	Lytle	< 100	467,461	102,163	431,814	42,532	52.2%	105%	100%	2.5%	0.0%
790	Madisonville	< 100	999,830	91,143	1,760,558	158,088	155.6%	115%	115%	1.6%	0.0%
791	Magnolia	< 100	841,880	88,577	1,556,340	407,135	328.4%	100%	105%	2.4%	0.0%
792	Malakoff	< 100	591,437	96,008	520,176	75,290	72.8%	105%	100%	3.2%	0.0%
796	Manor	< 100	1,725,537	165,245	1,691,318	138,038	78.9%	100%	95%	7.4%	0.0%
798	Mansfield	> 100	12,712,305	3,591,236	10,618,692	2,136,859	60.2%	85%	80%	0.4%	0.0%
799	Manvel	< 100	1,100,005	141,108	1,641,058	139,407	103.1%	100%	103%	6.2%	0.0%
800	Marble Falls	> 100	3,016,342	550,311	3,466,879	720,597	112.1%	120%	115%	-1.0%	-0.4%
802	Marfa	< 100	777,142	47,167	861,680	51,288	97.7%	115%	110%	6.5%	0.0%
804	Marion	< 16	211,041	55,710	222,670	91,738	129.3%	90%	95%	1.5%	0.0%
806	Marlin	< 100	1,773,337	61,256	3,339,905	270,758	319.0%	115%	115%	1.9%	0.0%
808	Marquez	< 6	N/A	N/A	N/A	N/A	N/A	75%	75%	-	-
810	Marshall	> 100	4,209,521	869,272	4,370,383	937,380	95.0%	80%	85%	-1.2%	-0.6%

Texas Municipal Retirement System   *Termination Experience by City*

City Number	City Name	Active Count	Expected Termination Weighted by Salary Select ($)	Expected Termination Weighted by Salary Ultimate ($)	Actual Termination Weighted by Salary Select ($)	Actual Termination Weighted by Salary Ultimate ($)	Weighted A/E Ratio	Current City Load	Proposed City Load	Population Actual Annual Rate of Change	Population Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
812	Mart	< 16	503,077	12,499	1,302,838	111,583	608.1%	100%	100%	0.0%	0.0%
813	Martindale	< 6	53,623	9,938	184,335	30,019	281.9%	75%	75%	-	-
814	Mason	< 100	852,552	54,702	1,027,135	87,042	130.5%	105%	110%	1.0%	0.0%
816	Matador	< 6	54,813	11,873	31,234	0	16.9%	75%	75%	-1.3%	-0.6%
818	Mathis	< 100	1,884,730	73,694	4,694,612	428,278	419.8%	115%	115%	2.3%	0.0%
820	Maud	< 11	119,753	7,476	204,983	0	50.9%	75%	75%	-	-
822	Maypearl	< 11	135,173	16,763	290,528	68,444	306.8%	85%	85%	-0.3%	-0.1%
824	McAllen	> 100	36,991,429	7,169,389	32,436,819	10,473,799	113.0%	95%	100%	1.2%	0.0%
826	McCamey	< 16	221,350	49,515	220,785	0	29.7%	80%	75%	5.6%	0.0%
828	McGregor	< 100	1,483,979	136,998	1,902,964	431,958	225.7%	115%	115%	2.1%	0.0%
830	McKinney	> 100	25,383,959	7,005,047	20,751,064	8,861,201	99.6%	80%	85%	3.3%	0.0%
832	McLean	< 11	199,791	23,359	335,893	48,339	173.1%	85%	85%	0.3%	0.0%
833	McLendon-Chisholm	< 11	8,909	0	50,657	0	213.7%	75%	80%	-	-
834	Meadow	< 11	30,604	0	24,324	0	68.3%	75%	75%	-	-
831	Meadowlakes	< 100	730,991	8,186	1,077,870	0	43.9%	100%	95%	1.1%	0.0%
835	Meadows Place	< 100	640,655	119,201	632,082	292,962	175.6%	115%	115%	0.4%	0.0%
837	Melissa	< 100	921,599	252,194	1,031,366	392,230	125.8%	100%	105%	5.2%	0.0%
1501	Memorial Villages PD	< 100	1,162,143	353,035	1,896,031	479,827	129.4%	100%	105%	0.3%	0.0%
840	Memphis	< 100	321,495	21,047	707,167	0	65.4%	105%	100%	0.2%	0.0%
842	Menard	< 11	145,890	30,436	184,447	57,504	150.0%	85%	85%	-1.2%	-0.5%
844	Mercedes	> 100	2,665,072	301,902	3,123,036	595,670	152.2%	95%	100%	0.4%	0.0%
846	Meridian	< 11	237,547	38,253	509,809	69,239	171.5%	85%	85%	1.8%	0.0%
848	Merkel	< 16	489,352	34,691	878,859	173,754	351.4%	100%	100%	2.5%	0.0%
852	Mertzon	< 6	235,661	5,578	553,181	42,855	526.9%	80%	75%	0.0%	0.0%
854	Mesquite	> 100	24,601,842	6,422,653	19,863,175	4,794,514	68.4%	85%	80%	0.5%	0.0%
856	Mexia	< 100	2,809,369	292,251	4,666,296	359,085	122.5%	115%	115%	-0.3%	-0.1%
858	Miami	< 6	2,497	0	0	0	44.6%	75%	75%	-	-
860	Midland	> 100	25,751,420	3,280,331	33,433,828	5,427,620	137.1%	109%	114%	0.7%	0.0%
862	Midlothian	> 100	5,799,469	870,547	5,737,457	1,193,049	111.0%	102%	107%	4.2%	0.0%
863	Milano	< 6	10,871	0	33,000	0	134.9%	75%	75%	-	-
864	Miles	< 6	123,657	9,768	241,591	36,802	282.2%	75%	75%	6.3%	0.0%
865	Milford	< 11	117,125	18,878	228,525	0	58.0%	75%	75%	-2.7%	-1.0%
868	Mineola	< 100	1,332,359	148,329	1,578,867	271,846	144.3%	115%	115%	0.5%	0.0%
870	Mineral Wells	> 100	4,560,246	468,262	5,005,920	808,824	135.4%	120%	125%	0.3%	0.0%
874	Mission	> 100	12,896,312	2,619,449	10,927,018	3,142,113	96.6%	104%	99%	2.7%	0.0%

Texas Municipal Retirement System

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
875	Missouri City	> 100	10,715,487	1,861,034	10,642,389	3,125,702	129.5%	99%	104%	1.1%	0.0%
876	Monahans	< 100	1,987,494	342,388	2,853,276	489,490	127.8%	115%	115%	1.9%	0.0%
887	Mont Belvieu	< 100	2,445,981	516,804	2,403,757	489,904	85.6%	96%	91%	4.3%	0.0%
877	Montgomery	< 100	733,693	44,660	1,396,616	228,236	360.6%	100%	105%	3.3%	0.0%
878	Moody	< 16	277,879	23,609	427,285	35,943	136.3%	85%	90%	3.1%	0.0%
883	Morgan's Point	< 16	341,037	90,292	305,956	225,885	175.5%	100%	100%	-2.5%	-1.0%
882	Morgan's Point Resort	< 100	802,997	48,291	968,554	186,036	265.1%	115%	115%	0.0%	0.0%
884	Morton	< 11	96,050	86,991	65,472	108,718	94.6%	85%	85%	-0.3%	-0.1%
886	Moulton	< 11	239,704	36,525	541,644	170,396	344.7%	90%	85%	-0.7%	-0.3%
890	Mount Enterprise	< 6	32,109	11,997	46,566	0	43.1%	75%	75%	-1.8%	-0.8%
892	Mt. Pleasant	> 100	3,916,399	493,716	4,381,400	777,570	127.0%	111%	116%	1.3%	0.0%
894	Mt. Vernon	< 100	552,631	99,314	931,026	156,505	143.9%	115%	115%	0.5%	0.0%
896	Muenster	< 16	425,702	6,566	607,395	0	42.4%	90%	85%	2.2%	0.0%
898	Muleshoe	< 100	702,372	93,818	1,158,222	89,879	106.0%	115%	110%	-0.3%	-0.1%
901	Munday	< 11	191,172	2,548	252,295	37,341	911.0%	75%	80%	-	-
903	Murphy	> 100	3,096,745	693,624	4,265,087	2,278,302	236.4%	115%	120%	1.9%	0.0%
10904	Nacogdoches	> 100	6,486,609	1,516,875	5,782,363	1,076,927	68.8%	110%	105%	0.1%	0.0%
906	Naples	< 11	249,519	20,084	486,837	0	58.0%	80%	75%	0.3%	0.0%
907	Nash	< 100	469,188	119,815	633,103	121,451	100.4%	105%	100%	1.3%	0.0%
905	Nassau Bay	< 100	956,590	300,155	1,162,301	319,168	99.4%	90%	95%	-0.7%	-0.3%
909	Natalia	< 16	306,077	36,608	567,778	81,013	186.8%	85%	90%	15.4%	0.0%
908	Navasota	< 100	2,246,325	440,241	3,021,542	413,225	95.8%	115%	110%	-0.8%	-0.4%
910	Nederland	> 100	2,123,350	714,068	956,280	807,486	80.7%	75%	75%	1.3%	0.0%
912	Needville	< 100	257,607	40,905	396,025	40,345	104.4%	100%	104%	2.9%	0.0%
914	New Boston	< 100	864,801	93,002	1,267,163	273,148	218.3%	114%	115%	1.9%	0.0%
10916	New Braunfels	> 100	14,265,751	2,951,915	12,594,016	3,635,345	99.5%	95%	100%	3.1%	0.0%
20916	New Braunfels Utilities	> 100	8,107,619	1,136,131	6,678,656	911,869	72.2%	85%	80%	3.2%	0.0%
915	New Deal	< 6	97,729	21,902	119,318	0	36.3%	75%	75%	-1.2%	-0.5%
923	New Fairview	< 6	31,899	25,051	32,340	0	30.2%	75%	75%	-	-
918	New London	< 11	170,787	33,135	215,480	0	37.5%	85%	80%	-1.1%	-0.5%
919	New Summerfield	< 11	366,638	11,086	577,068	32,333	220.3%	85%	85%	-0.5%	-0.2%
917	New Waverly	< 6	54,368	32,831	0	33,672	61.0%	75%	75%	-1.0%	-0.5%
913	Newark	< 11	77,749	0	55,407	0	65.8%	75%	75%	-	-
920	Newton	< 100	536,782	105,121	489,344	0	27.1%	90%	85%	0.9%	0.0%
922	Nixon	< 100	572,926	28,757	1,102,962	50,034	160.8%	90%	95%	4.1%	0.0%

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
924	Nocona	< 100	540,287	92,524	1,049,304	66,788	100.7%	115%	110%	-4.4%	-1.0%
925	Nolanville	< 100	330,469	2,620	644,106	30,884	759.2%	75%	80%	-	-
928	Normangee	< 6	194,472	3,137	674,901	34,205	751.9%	80%	75%	2.2%	0.0%
931	North Richland Hills	> 100	12,210,048	3,214,905	9,690,139	2,459,117	69.1%	91%	86%	0.3%	0.0%
930	Northlake	< 100	775,555	175,788	834,126	295,338	131.9%	100%	105%	9.2%	0.0%
935	O'Donnell	< 6	77,874	1,651	119,741	28,797	1083.6%	75%	75%	-3.0%	-1.0%
936	Oak Point	< 100	642,360	198,151	1,407,645	537,666	226.6%	100%	105%	4.8%	0.0%
937	Oak Ridge North	< 100	1,347,347	334,068	1,694,702	305,857	91.9%	112%	107%	0.2%	0.0%
942	Odem	< 16	318,589	16,657	447,674	52,149	228.0%	90%	95%	0.8%	0.0%
944	Odessa	> 100	24,617,056	2,679,782	31,279,308	3,069,948	105.9%	121%	116%	1.0%	0.0%
945	Oglesby	< 6	32,285	762	41,093	0	37.9%	75%	75%	0.0%	0.0%
949	Old River-Winfree	< 6	18,006	4,722	20,831	0	34.4%	75%	75%	-6.7%	-1.0%
950	Olmos Park	< 100	1,041,307	165,687	2,279,296	397,480	207.8%	115%	115%	0.6%	0.0%
951	Olney	< 100	557,559	42,413	825,400	240,247	381.0%	100%	105%	-2.6%	-1.0%
953	Omaha	< 11	108,256	11,728	85,047	30,000	175.5%	85%	85%	0.0%	0.0%
954	Onalaska	< 16	345,033	40,948	707,235	138,539	262.2%	80%	85%	2.8%	0.0%
958	Orange	> 100	3,302,091	795,243	2,623,222	912,580	91.9%	80%	85%	0.1%	0.0%
960	Orange Grove	< 11	301,852	45,438	667,067	0	65.7%	80%	75%	-0.7%	-0.3%
959	Ore City	< 11	306,949	10,485	432,569	53,759	346.9%	80%	85%	0.4%	0.0%
962	Overton	< 100	504,021	80,601	870,619	91,899	119.2%	115%	115%	3.2%	0.0%
961	Ovilla	< 100	635,488	76,595	1,145,943	293,747	281.8%	100%	105%	1.2%	0.0%
963	Oyster Creek	< 100	466,540	99,978	543,658	39,295	58.0%	97%	92%	3.1%	0.0%
964	Paducah	< 11	287,512	14,580	489,830	65,850	319.4%	90%	85%	-8.7%	-1.0%
966	Palacios	< 100	1,038,083	72,077	1,973,075	91,820	132.3%	115%	115%	0.2%	0.0%
968	Palestine	> 100	5,146,899	446,818	6,473,069	1,149,894	190.5%	125%	125%	0.8%	0.0%
970	Palmer	< 100	838,402	96,620	1,237,320	289,782	222.3%	100%	105%	1.3%	0.0%
969	Palmhurst	< 100	862,007	48,771	1,695,347	73,537	148.2%	90%	95%	8.7%	0.0%
971	Palmview	< 100	1,427,649	176,275	1,544,185	599,795	234.6%	90%	95%	-	-
972	Pampa	> 100	4,596,124	472,046	6,025,693	522,520	104.8%	120%	115%	0.4%	0.0%
974	Panhandle	< 100	384,093	115,070	527,580	226,154	157.8%	105%	110%	-0.4%	-0.1%
973	Panorama Village	< 16	165,077	34,556	161,486	41,417	100.4%	90%	95%	0.9%	0.0%
975	Pantego	< 100	1,504,459	229,431	3,191,855	939,385	306.7%	115%	115%	0.6%	0.0%
976	Paris	> 100	5,838,640	1,062,212	5,329,360	1,384,562	104.7%	115%	110%	-0.7%	-0.3%
977	Parker	< 100	552,980	174,672	589,507	145,247	81.2%	90%	85%	2.9%	0.0%
978	Pasadena	> 100	22,411,741	5,636,269	15,196,055	3,876,460	61.1%	85%	80%	0.4%	0.0%

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
983	Pearland	> 100	19,568,049	3,216,079	19,876,232	4,947,249	121.7%	115%	120%	3.8%	0.0%
984	Pearsall	< 100	1,972,036	145,097	3,748,862	312,235	184.6%	115%	115%	1.3%	0.0%
988	Pecos City	> 100	4,172,519	301,469	6,421,374	343,270	113.5%	110%	114%	1.3%	0.0%
989	Pelican Bay	< 16	35,187	0	45,040	0	82.7%	75%	80%	-	-
991	Penitas	< 100	321,274	15,786	580,367	23,259	141.4%	75%	80%	-	-
994	Perryton	< 100	2,280,447	210,114	3,575,810	225,938	110.6%	115%	111%	1.5%	0.0%
1000	Pflugerville	> 100	8,917,394	1,633,985	8,344,128	2,454,320	117.2%	111%	116%	4.5%	0.0%
1002	Pharr	> 100	13,783,608	2,119,869	12,005,866	2,555,297	97.6%	98%	98%	2.6%	0.0%
1004	Pilot Point	< 100	1,178,947	134,308	2,039,145	433,172	243.3%	100%	105%	3.6%	0.0%
1005	Pinehurst	< 100	532,430	139,608	603,187	231,026	132.1%	115%	115%	-0.3%	-0.1%
1003	Pineland	< 16	197,613	10,819	222,078	0	33.4%	80%	75%	2.9%	0.0%
1001	Piney Point Village	< 11	191,239	38,887	257,605	71,248	149.1%	75%	80%	1.9%	0.0%
1006	Pittsburg	< 100	975,307	116,232	1,863,676	141,904	129.5%	115%	115%	0.0%	0.0%
1007	Plains	< 11	124,715	54,810	201,944	37,164	88.5%	85%	85%	1.6%	0.0%
1008	Plainview	> 100	3,161,363	897,954	3,773,045	1,088,845	107.6%	122%	117%	-0.8%	-0.3%
1010	Plano	> 100	51,264,663	13,527,981	40,799,408	8,454,957	60.9%	75%	75%	0.7%	0.0%
1012	Pleasanton	> 100	3,015,664	389,135	3,522,982	812,247	158.9%	115%	120%	1.4%	0.0%
1013	Point	< 16	269,414	8,208	552,421	99,037	778.8%	85%	90%	5.6%	0.0%
1017	Ponder	< 16	294,477	31,565	229,980	37,215	93.4%	85%	90%	4.2%	0.0%
1014	Port Aransas	> 100	3,480,285	285,918	4,373,978	534,635	148.6%	125%	125%	1.1%	0.0%
11016	Port Arthur	> 100	12,870,307	3,040,901	8,154,508	2,943,207	76.4%	85%	80%	0.0%	0.0%
1018	Port Isabel	< 100	2,062,193	246,766	3,074,974	614,247	192.4%	115%	115%	0.1%	0.0%
1020	Port Lavaca	< 100	2,798,391	261,253	5,286,699	788,003	235.6%	115%	115%	-0.1%	0.0%
1022	Port Neches	< 100	1,993,912	497,683	1,390,693	460,382	75.8%	75%	76%	0.2%	0.0%
1019	Portland	> 100	3,243,366	425,579	4,589,267	959,265	176.2%	115%	120%	1.6%	0.0%
1024	Post	< 100	375,440	43,464	373,314	134,105	213.1%	100%	105%	3.8%	0.0%
1026	Poteet	< 100	745,631	36,882	1,759,049	131,838	282.8%	115%	115%	3.4%	0.0%
1028	Poth	< 11	261,108	39,852	428,579	35,613	102.0%	80%	85%	1.5%	0.0%
1030	Pottsboro	< 100	481,154	93,930	513,164	98,855	94.3%	100%	95%	1.9%	0.0%
1031	Prairie View	< 100	60,049	7,412	87,222	47,402	423.7%	75%	80%	-	-
1032	Premont	< 100	420,573	62,946	941,598	208,039	263.2%	90%	95%	-0.4%	-0.2%
1029	Presidio	< 100	1,080,698	116,622	1,338,244	390,326	235.9%	100%	105%	4.1%	0.0%
1033	Primera	< 100	373,652	39,964	616,573	29,826	93.5%	100%	95%	4.3%	0.0%
1034	Princeton	< 100	1,742,899	175,083	1,868,397	431,226	178.4%	115%	115%	9.7%	0.0%
1036	Prosper	> 100	3,916,640	733,554	3,716,353	2,131,973	201.1%	100%	105%	12.7%	0.0%

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
1037	Providence Village	< 11	123,603	0	0	0	44.6%	75%	75%	-	-
1042	Quanah	< 16	201,110	61,991	182,654	39,231	64.7%	114%	100%	-2.9%	-1.0%
1045	Queen City	< 16	346,549	24,045	759,236	64,012	223.5%	100%	100%	-0.2%	0.0%
1044	Quinlan	< 100	450,580	46,994	898,492	32,001	99.8%	80%	85%	6.5%	0.0%
1047	Quintana	< 6	128,640	0	253,070	0	103.1%	75%	75%	11.0%	0.0%
1046	Quitaque	< 6	29,776	11,351	22,008	0	22.0%	75%	75%	2.9%	0.0%
1048	Quitman	< 100	612,985	84,610	910,115	43,672	74.9%	100%	95%	0.9%	0.0%
1050	Ralls	< 16	362,051	17,432	668,133	73,800	306.7%	85%	90%	0.9%	0.0%
1051	Rancho Viejo	< 11	273,591	46,243	163,202	0	17.7%	80%	75%	1.3%	0.0%
1052	Ranger	< 100	744,956	25,678	2,582,060	44,320	205.8%	115%	115%	-0.7%	-0.3%
1054	Rankin	< 6	86,445	24,811	195,913	0	67.4%	75%	75%	0.4%	0.0%
1055	Ransom Canyon	< 16	247,837	52,683	127,913	0	15.4%	80%	75%	0.6%	0.0%
1058	Raymondville	< 100	1,650,304	242,098	2,678,683	221,118	102.6%	115%	110%	0.4%	0.0%
1061	Red Oak	< 100	2,755,073	365,499	3,130,537	739,362	154.1%	115%	115%	2.4%	0.0%
1062	Redwater	< 11	224,273	13,082	314,715	54,029	287.4%	85%	85%	1.6%	0.0%
1064	Refugio	< 100	930,282	106,536	1,556,679	142,176	129.2%	115%	115%	0.4%	0.0%
1065	Reklaw	< 6	107,915	37,175	117,548	40,301	96.9%	75%	75%	-0.4%	-0.2%
1066	Reno (Lamar County)	< 16	291,249	38,977	333,581	99,377	185.7%	100%	100%	4.0%	0.0%
1069	Reno (Parker County)	< 100	521,393	6,058	991,749	34,988	400.2%	90%	95%	7.4%	0.0%
1067	Rhome	< 100	395,111	16,218	808,583	170,036	684.6%	83%	88%	3.9%	0.0%
1068	Rice	< 16	262,564	20,978	530,403	0	60.1%	80%	75%	5.0%	0.0%
1070	Richardson	> 100	19,175,325	10,978,632	13,241,694	6,763,311	57.2%	85%	80%	0.2%	0.0%
1073	Richland Hills	< 100	1,803,775	333,201	2,532,271	938,861	209.4%	115%	115%	0.4%	0.0%
1074	Richland Springs	< 6	9,850	0	0	0	44.6%	85%	75%	-6.7%	-1.0%
1076	Richmond	> 100	3,636,556	606,317	3,710,619	681,184	97.2%	105%	100%	1.8%	0.0%
1077	Richwood	< 100	651,241	48,102	1,356,288	55,970	131.2%	90%	95%	2.6%	0.0%
1072	Riesel	< 11	246,605	15,419	389,692	28,865	158.4%	85%	85%	15.9%	0.0%
1075	Rio Grande City	> 100	3,738,951	382,079	4,575,926	419,367	101.7%	115%	110%	3.5%	0.0%
1079	Rio Vista	< 11	266,043	17,516	733,195	93,405	399.2%	85%	85%	-5.2%	-1.0%
1080	Rising Star	< 11	227,075	7,818	552,494	80,121	682.0%	85%	85%	1.4%	0.0%
1082	River Oaks	< 100	1,371,430	176,819	1,447,481	418,647	172.2%	115%	115%	-0.5%	-0.2%
1084	Roanoke	> 100	3,372,087	1,159,156	2,121,344	1,232,914	82.0%	95%	90%	1.7%	0.0%
1088	Robert Lee	< 11	127,539	5,900	312,662	0	72.9%	75%	75%	-1.3%	-0.6%
1089	Robinson	< 100	1,719,257	336,173	2,353,936	457,043	121.6%	115%	115%	1.6%	0.0%
21090	Robstown	> 100	3,822,329	328,136	3,910,600	536,531	127.7%	120%	125%	2.1%	0.0%

Texas Municipal Retirement System

City Number	City Name	Active Count	Expected Termination Weighted by Salary Select ($)	Expected Termination Weighted by Salary Ultimate ($)	Actual Termination Weighted by Salary Select ($)	Actual Termination Weighted by Salary Ultimate ($)	Weighted A/E Ratio	Current City Load	Proposed City Load	Population Actual Annual Rate of Change	Population Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
11090	Robstown Utility Systems	< 100	975,110	201,130	1,484,351	144,240	87.9%	105%	100%	-0.9%	-0.4%
1092	Roby	< 6	78,827	17,240	120,442	21,483	119.6%	75%	75%	-7.1%	-1.0%
1096	Rockdale	< 100	1,165,385	139,248	2,002,625	249,752	157.8%	115%	115%	-0.1%	0.0%
1098	Rockport	> 100	2,979,559	409,153	3,619,487	609,165	124.7%	103%	108%	1.2%	0.0%
1100	Rocksprings	< 11	191,349	5,006	391,286	0	60.8%	75%	75%	-0.9%	-0.4%
1102	Rockwall	> 100	5,979,044	2,237,036	4,755,295	2,712,043	95.8%	75%	75%	1.3%	0.0%
1104	Rogers	< 11	260,687	16,625	382,546	73,866	308.0%	90%	85%	-2.3%	-1.0%
1105	Rollingwood	< 100	449,207	73,419	768,488	0	50.9%	100%	95%	2.1%	0.0%
1106	Roma	> 100	2,084,464	277,678	2,368,673	238,041	84.8%	105%	100%	1.5%	0.0%
1109	Roscoe	< 11	139,363	36,138	147,123	0	31.4%	75%	75%	0.5%	0.0%
1112	Rosebud	< 16	378,074	7,203	860,858	0	67.7%	100%	95%	-0.1%	0.0%
1114	Rosenberg	> 100	7,140,495	1,225,131	7,129,556	2,594,821	155.7%	115%	120%	1.3%	0.0%
1116	Rotan	< 11	100,870	34,746	208,565	0	61.5%	75%	75%	-0.8%	-0.3%
1118	Round Rock	> 100	22,972,713	5,810,886	18,890,044	5,708,336	82.9%	85%	83%	1.8%	0.0%
1119	Rowlett	> 100	9,734,025	1,831,724	10,527,740	3,918,489	159.4%	115%	120%	1.0%	0.0%
1120	Royse City	< 100	1,687,431	268,125	1,849,588	722,445	192.9%	100%	105%	2.0%	0.0%
1122	Rule	< 6	57,639	6,822	74,840	77,796	717.0%	75%	75%	-2.1%	-1.0%
1123	Runaway Bay	< 100	473,334	19,659	1,263,333	140,695	505.1%	100%	105%	0.6%	0.0%
1124	Runge	< 6	84,214	0	176,017	0	106.8%	80%	75%	0.4%	0.0%
1126	Rusk	< 100	905,742	127,388	885,626	228,632	135.9%	107%	112%	0.7%	0.0%
1128	Sabinal	< 16	423,773	8,356	896,284	35,908	318.6%	100%	100%	-1.5%	-0.7%
1129	Sachse	> 100	3,683,389	783,943	4,307,850	1,678,407	162.2%	125%	125%	2.6%	0.0%
1131	Saginaw	> 100	2,919,424	686,326	3,280,011	871,565	109.0%	80%	85%	0.7%	0.0%
1130	Saint Jo	< 11	311,767	2,631	837,575	36,075	895.6%	85%	85%	-3.3%	-1.0%
1133	Salado	< 11	237,551	21,306	554,472	179,275	570.0%	85%	85%	3.2%	0.0%
1132	San Angelo	> 100	17,651,880	2,639,741	20,842,060	4,331,597	132.7%	116%	121%	-0.2%	-0.1%
21136	San Antonio	> 100	171,150,913	35,993,225	138,023,344	33,294,709	79.0%	86%	81%	1.0%	0.0%
11136	San Antonio Water System	> 100	37,631,194	9,582,503	27,166,380	8,687,056	75.4%	85%	80%	0.8%	0.0%
1138	San Augustine	< 100	848,910	112,412	1,177,803	309,723	205.2%	115%	115%	-1.0%	-0.5%
1140	San Benito	> 100	3,511,629	517,320	4,353,844	1,002,797	152.2%	106%	111%	-0.4%	-0.1%
1144	San Felipe	< 6	90,491	32,198	256,743	29,633	139.1%	75%	75%	-1.3%	-0.6%
1148	San Juan	> 100	5,480,791	837,927	7,667,643	1,672,299	160.3%	115%	120%	2.0%	0.0%
1150	San Marcos	> 100	16,908,882	2,924,558	12,750,132	3,356,053	90.7%	100%	95%	3.1%	0.0%
1152	San Saba	< 100	1,237,546	127,203	1,268,087	136,962	94.5%	100%	95%	0.2%	0.0%
1146	Sanger	< 100	1,458,859	432,893	1,605,251	611,642	116.8%	115%	115%	1.0%	0.0%

Texas Municipal Retirement System

City Number	City Name	Active Count	Expected Termination Weighted by Salary Select ($)	Ultimate ($)	Actual Termination Weighted by Salary Select ($)	Ultimate ($)	Weighted A/E Ratio	Current City Load	Proposed City Load	Population Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
1153	Sansom Park	< 100	1,465,814	31,259	3,359,679	323,274	683.4%	115%	115%	1.2%	0.0%
1155	Santa Fe	< 100	1,852,240	223,899	2,967,145	481,944	175.7%	115%	115%	0.0%	0.0%
1158	Savoy	< 6	144,698	5,279	398,877	70,141	872.4%	75%	75%	-6.3%	-1.0%
1159	Schertz	> 100	9,194,989	1,406,378	8,971,974	1,398,671	88.2%	95%	90%	2.3%	0.0%
1160	Schulenburg	< 100	790,773	118,126	751,087	152,373	105.0%	100%	105%	0.0%	0.0%
1161	Seabrook	< 100	2,071,041	677,545	1,855,588	555,773	75.4%	85%	80%	0.2%	0.0%
1162	Seadrift	< 16	187,699	53,950	200,197	0	31.7%	80%	75%	4.8%	0.0%
1164	Seagoville	< 100	2,189,340	367,699	3,003,709	538,296	127.9%	115%	115%	-0.1%	0.0%
1166	Seagraves	< 100	597,404	10,357	1,194,700	0	59.5%	95%	90%	4.2%	0.0%
1167	Sealy	< 100	1,642,263	302,622	1,865,009	614,079	154.5%	112%	115%	1.3%	0.0%
1168	Seguin	> 100	8,933,768	1,328,524	10,012,640	2,115,188	128.1%	114%	119%	3.0%	0.0%
1169	Selma	< 100	2,379,992	403,452	2,272,593	537,355	107.6%	100%	105%	1.8%	0.0%
1170	Seminole	< 100	2,086,569	204,698	2,883,390	622,485	222.0%	115%	115%	0.7%	0.0%
1171	Seven Points	< 100	753,540	2,947	2,106,665	0	83.2%	115%	110%	1.4%	0.0%
1172	Seymour	< 100	631,918	110,528	793,376	239,379	166.2%	115%	115%	0.5%	0.0%
1165	Shady Shores	< 6	46,398	11,177	42,000	0	26.9%	75%	75%	-	-
1177	Shallowater	< 16	371,901	57,636	338,877	129,026	160.3%	100%	100%	2.7%	0.0%
1174	Shamrock	< 100	504,805	31,886	711,695	97,799	224.4%	115%	115%	-0.4%	-0.1%
1173	Shavano Park	< 100	1,508,839	119,502	2,120,876	342,684	212.4%	115%	115%	1.5%	0.0%
1175	Shenandoah	< 100	2,099,462	370,909	2,302,040	1,455,239	266.0%	93%	98%	-3.5%	-1.0%
1181	Shepherd	< 16	243,222	11,359	307,153	0	37.6%	80%	75%	2.3%	0.0%
1176	Sherman	> 100	10,449,360	1,876,967	8,606,690	1,701,977	78.4%	100%	95%	0.7%	0.0%
1178	Shiner	< 100	468,950	84,961	685,762	78,993	98.8%	101%	99%	2.1%	0.0%
1179	Shoreacres	< 16	510,818	30,254	1,031,199	112,277	280.8%	100%	100%	-0.8%	-0.3%
1180	Silsbee	< 100	1,783,755	245,900	2,240,019	237,752	94.9%	105%	100%	0.1%	0.0%
1182	Silverton	< 6	76,057	3,460	74,665	0	29.2%	75%	75%	2.9%	0.0%
1183	Simonton	< 6	N/A	N/A	N/A	N/A	N/A	75%	75%	-	-
1184	Sinton	< 100	1,743,151	150,954	2,536,482	210,479	126.2%	115%	115%	2.0%	0.0%
1185	Skellytown	< 11	211,376	1,523	707,558	27,540	1175.6%	75%	80%	1.9%	0.0%
1186	Slaton	< 100	1,381,890	159,783	1,912,545	214,560	121.1%	115%	115%	-1.4%	-0.6%
1188	Smithville	< 100	1,634,019	141,856	2,377,023	400,063	211.0%	115%	115%	1.1%	0.0%
1189	Smyer	< 6	7,224	23,514	18,456	37,446	170.7%	75%	75%	2.9%	0.0%
1190	Snyder	< 100	2,594,612	414,846	3,440,638	718,173	142.4%	110%	115%	0.8%	0.0%
1191	Somerset	< 16	420,354	0	975,929	0	113.7%	85%	90%	2.2%	0.0%
1192	Somerville	< 16	342,810	59,010	710,566	95,158	157.6%	100%	100%	-0.2%	0.0%

City Number (1)	City Name (2)	Active Count (3)	Expected Termination Weighted by Salary Select ($) (4)	Ultimate ($) (5)	Actual Termination Weighted by Salary Select ($) (6)	Ultimate ($) (7)	Weighted A/E Ratio (7)	Current City Load (8)	Proposed City Load (9)	Population Actual Annual Rate of Change (10)	Proposed Annual Rate of Change (11)
1194	Sonora	< 100	1,043,490	78,245	1,585,199	102,936	123.4%	115%	115%	0.9%	0.0%
1196	Sour Lake	< 16	381,356	40,687	926,262	59,131	158.7%	85%	90%	0.6%	0.0%
1198	South Houston	> 100	2,377,983	394,121	2,712,432	439,602	100.3%	115%	110%	0.4%	0.0%
1199	South Padre Island	> 100	4,371,012	706,545	5,580,618	1,009,711	123.0%	95%	100%	2.4%	0.0%
1197	Southlake	> 100	8,600,980	2,179,520	8,570,243	2,971,896	110.8%	102%	107%	2.3%	0.0%
1200	Southmayd	< 11	60,717	2,399	16,019	37,347	934.1%	75%	80%	-	-
1202	Southside Place	< 100	544,018	154,652	400,892	324,129	146.6%	99%	104%	1.9%	0.0%
1204	Spearman	< 100	979,143	21,128	1,682,659	116,997	380.5%	115%	115%	1.0%	0.0%
1201	Splendora	< 100	127,607	4,327	171,917	0	40.1%	75%	75%	-	-
1205	Spring Valley Village	< 100	931,826	281,931	1,419,554	384,040	126.3%	99%	104%	0.6%	0.0%
1203	Springtown	< 100	1,401,646	79,005	2,614,501	320,811	297.1%	100%	105%	1.3%	0.0%
1206	Spur	< 16	147,633	45,880	298,961	71,725	153.2%	85%	90%	0.1%	0.0%
1207	Stafford	> 100	4,044,972	715,489	3,102,121	1,011,275	106.9%	80%	85%	4.3%	0.0%
1208	Stamford	< 100	602,347	28,012	807,408	49,758	145.5%	115%	115%	-3.0%	-1.0%
1210	Stanton	< 100	487,446	119,170	672,103	124,836	103.3%	115%	110%	1.2%	0.0%
1211	Star Harbor	< 6	92,256	11,899	150,263	0	48.4%	75%	75%	-1.8%	-0.8%
1212	Stephenville	> 100	3,279,857	690,468	3,289,316	515,119	74.2%	85%	80%	2.0%	0.0%
1213	Sterling City	< 11	93,004	34,710	54,791	0	17.5%	80%	75%	0.0%	0.0%
1214	Stinnett	< 100	493,319	42,852	781,828	169,026	281.8%	85%	90%	3.0%	0.0%
1216	Stockdale	< 11	63,231	8,840	25,183	0	11.8%	75%	75%	-	-
1218	Stratford	< 16	484,216	36,833	774,847	89,716	192.5%	95%	100%	1.1%	0.0%
1224	Sudan	< 11	117,921	44,062	115,550	32,493	73.0%	80%	75%	1.2%	0.0%
1225	Sugar Land	> 100	19,553,231	4,163,989	15,240,132	4,658,608	89.7%	83%	88%	2.7%	0.0%
1226	Sulphur Springs	> 100	3,158,630	530,399	3,031,602	541,525	89.3%	85%	89%	0.9%	0.0%
1228	Sundown	< 16	404,935	65,832	534,236	32,953	69.0%	115%	100%	-0.4%	-0.1%
1229	Sunnyvale	< 100	1,219,006	171,815	2,213,964	446,844	208.7%	100%	105%	5.2%	0.0%
1230	Sunray	< 16	370,039	48,226	898,384	166,278	277.3%	100%	100%	0.1%	0.0%
1227	Sunrise Beach Village	< 11	402,743	18,628	715,801	55,814	231.1%	85%	85%	10.1%	0.0%
1231	Sunset Valley	< 100	1,042,269	244,984	1,369,378	287,721	108.9%	100%	105%	0.2%	0.0%
1233	Surfside Beach	< 100	675,069	29,375	1,541,947	137,610	346.6%	100%	105%	1.3%	0.0%
1232	Sweeny	< 100	585,023	125,746	904,891	198,831	140.1%	100%	105%	1.5%	0.0%
1234	Sweetwater	> 100	2,515,002	663,007	3,070,294	771,987	105.6%	105%	106%	0.7%	0.0%
1264	TMRS	> 100	4,118,359	1,022,993	1,915,618	566,620	46.8%	75%	75%	4.6%	0.0%
1236	Taft	< 100	1,111,385	59,603	3,053,650	168,338	249.7%	115%	115%	-0.5%	-0.2%
1238	Tahoka	< 100	411,356	39,299	552,900	0	40.0%	100%	95%	3.0%	0.0%

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
1240	Talty	< 6	6,287	0	26,530	0	170.1%	75%	75%	-	-
1241	Tatum	< 11	250,832	27,657	346,087	110,720	279.2%	85%	85%	5.0%	0.0%
1246	Taylor	> 100	3,467,599	609,741	4,428,744	1,260,845	161.0%	110%	115%	0.7%	0.0%
1248	Teague	< 100	893,281	20,366	1,622,606	86,167	305.7%	115%	115%	-2.4%	-1.0%
1252	Temple	> 100	14,658,324	2,935,180	14,454,218	2,865,554	87.4%	95%	90%	1.0%	0.0%
1254	Tenaha	< 11	327,873	6,645	784,738	78,692	775.7%	85%	85%	0.1%	0.0%
1256	Terrell	> 100	3,754,969	975,239	3,011,448	640,102	62.9%	85%	80%	0.9%	0.0%
1258	Terrell Hills	< 100	1,521,265	129,817	2,060,643	365,082	207.6%	115%	115%	0.6%	0.0%
31263	Tex Municipal League IEBP	> 100	5,198,608	1,681,085	5,081,645	968,755	63.4%	105%	100%	1.9%	0.0%
21263	Tex Municipal League IRP	> 100	6,525,068	4,558,396	3,015,655	1,482,627	33.1%	75%	75%	0.3%	0.0%
21260	Texarkana	> 100	5,575,931	760,504	5,676,306	1,139,295	119.4%	108%	113%	-1.0%	-0.5%
11260	Texarkana Police Dept	< 100	2,608,659	457,157	1,358,806	824,190	122.7%	80%	85%	-0.1%	0.0%
31260	Texarkana Water Utilities	> 100	3,947,999	634,791	3,649,742	659,485	89.3%	100%	95%	-0.2%	-0.1%
1262	Texas City	> 100	11,483,479	1,909,224	10,916,514	1,880,473	86.9%	105%	100%	-0.1%	0.0%
11263	Texas Municipal League	< 100	1,105,530	342,510	360,618	452,534	88.3%	100%	95%	0.3%	0.0%
1267	The Colony	> 100	7,963,053	1,906,292	6,633,563	2,247,442	94.9%	99%	95%	1.9%	0.0%
1269	Thompsons	< 6	25,915	17,054	0	0	0.0%	75%	75%	0.0%	0.0%
1268	Thorndale	< 11	156,989	24,939	192,788	31,318	111.2%	80%	85%	-2.5%	-1.0%
1272	Thrall	< 6	34,125	7,184	71,097	38,533	381.1%	75%	75%	-	-
1274	Three Rivers	< 100	965,492	199,456	1,210,309	116,778	72.1%	90%	85%	2.0%	0.0%
1276	Throckmorton	< 6	136,243	2,584	171,591	37,477	900.2%	75%	75%	-0.5%	-0.2%
1277	Tiki Island	< 11	212,053	37,735	227,179	96,363	183.8%	85%	85%	1.2%	0.0%
1278	Timpson	< 11	357,287	21,656	530,615	0	44.2%	80%	75%	2.2%	0.0%
1280	Tioga	< 11	176,919	23,582	276,124	0	46.4%	80%	75%	5.1%	0.0%
1283	Tolar	< 6	133,042	20,761	315,989	42,552	192.6%	75%	75%	2.2%	0.0%
1286	Tom Bean	< 11	226,966	19,643	457,929	0	60.0%	85%	80%	-0.3%	-0.1%
1284	Tomball	> 100	4,946,319	859,657	4,328,839	1,357,774	120.0%	110%	115%	2.0%	0.0%
1290	Trent	< 6	23,841	5,994	0	0	0.0%	75%	75%	0.0%	0.0%
1292	Trenton	< 6	160,611	0	401,830	0	119.0%	75%	75%	-3.0%	-1.0%
1293	Trinidad	< 6	192,357	5,241	496,777	29,575	412.5%	80%	75%	-3.1%	-1.0%
1294	Trinity	< 100	895,422	30,242	1,813,068	27,657	114.6%	115%	115%	0.3%	0.0%
1295	Trophy Club	< 100	2,419,560	545,145	3,679,472	2,021,119	265.8%	110%	115%	-0.2%	0.0%
1296	Troup	< 100	650,368	49,440	899,702	102,281	164.2%	115%	115%	1.6%	0.0%
1297	Troy	< 16	283,283	6,640	283,685	0	29.8%	85%	80%	8.7%	0.0%
1298	Tulia	< 100	919,581	82,355	1,532,864	177,604	177.9%	100%	105%	1.4%	0.0%

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
1299	Turkey	< 6	65,659	0	59,952	0	71.8%	75%	75%	2.5%	0.0%
1301	Tye	< 16	194,528	53,012	288,968	65,774	118.0%	90%	95%	2.6%	0.0%
1304	Tyler	> 100	16,746,681	2,970,530	16,527,044	2,650,142	82.4%	110%	105%	0.6%	0.0%
1305	Universal City	> 100	3,616,843	471,562	4,069,264	653,944	116.0%	125%	120%	0.7%	0.0%
1306	University Park	> 100	3,949,618	1,397,946	1,437,134	1,032,390	54.8%	85%	80%	0.1%	0.0%
1308	Uvalde	> 100	4,742,564	462,510	5,356,718	1,313,900	202.6%	115%	120%	1.0%	0.0%
1312	Valley Mills	< 11	100,029	4,953	294,340	0	87.5%	75%	80%	-	-
1313	Valley View	< 11	94,969	0	217,986	0	112.9%	75%	80%	-	-
1314	Van	< 100	470,408	69,595	933,074	227,602	253.6%	100%	105%	1.0%	0.0%
1316	Van Alstyne	< 100	1,130,703	115,865	2,118,832	546,071	336.1%	115%	115%	0.6%	0.0%
1318	Van Horn	< 100	508,822	116,714	472,238	115,865	86.7%	103%	98%	-2.0%	-1.0%
1320	Vega	< 11	119,069	6,369	259,399	0	64.8%	80%	75%	-0.3%	-0.1%
1324	Venus	< 100	525,477	28,439	714,377	136,548	326.1%	100%	105%	5.3%	0.0%
1326	Vernon	< 100	2,652,116	371,136	3,740,444	640,463	144.6%	120%	115%	-1.0%	-0.4%
1328	Victoria	> 100	16,083,002	2,318,632	20,099,524	3,492,115	126.8%	125%	125%	0.5%	0.0%
1329	Vidor	< 100	1,730,939	286,983	1,678,515	609,645	155.2%	100%	105%	0.2%	0.0%
1500	Village Fire Department	< 100	1,124,959	217,143	1,336,489	585,114	195.6%	100%	105%	-0.5%	-0.2%
1327	Village of the Hills	< 6	0	2,171	0	0	22.3%	75%	75%	-	-
1330	Waco	> 100	32,550,453	6,909,069	30,160,052	5,976,273	79.0%	110%	105%	-0.2%	-0.1%
1332	Waelder	< 100	462,506	42,292	841,292	0	54.1%	90%	85%	1.8%	0.0%
1334	Wake Village	< 100	626,247	51,139	984,750	179,404	255.5%	115%	115%	2.4%	0.0%
1336	Waller	< 100	957,156	53,136	1,883,310	127,063	200.8%	99%	104%	4.6%	0.0%
1337	Wallis	< 100	322,938	24,830	535,209	152,966	415.8%	85%	90%	3.4%	0.0%
1338	Walnut Springs	< 6	20,626	21,002	24,960	0	36.0%	75%	75%	0.0%	0.0%
1340	Waskom	< 100	475,332	62,744	706,850	109,186	147.8%	100%	105%	-0.9%	-0.4%
1341	Watauga	> 100	4,840,506	833,702	6,169,564	1,130,328	118.6%	120%	119%	-1.4%	-0.7%
1342	Waxahachie	> 100	5,852,757	1,240,020	4,138,232	1,501,378	93.1%	110%	105%	1.9%	0.0%
1344	Weatherford	> 100	9,831,465	1,810,133	9,548,032	1,678,461	84.0%	100%	95%	0.7%	0.0%
1345	Webster	> 100	3,787,470	1,002,002	2,759,199	963,508	78.9%	82%	79%	0.5%	0.0%
1346	Weimar	< 100	428,932	176,144	437,118	182,569	92.0%	98%	93%	0.2%	0.0%
1350	Wellington	< 16	155,381	43,989	276,887	0	53.0%	89%	84%	-0.1%	0.0%
1352	Wells	< 11	89,536	2,034	137,384	0	45.6%	75%	75%	1.7%	0.0%
1354	Weslaco	> 100	5,608,699	973,180	7,848,636	2,394,394	188.0%	104%	109%	-1.9%	-0.9%
1356	West	< 100	502,005	78,710	848,075	109,158	132.8%	115%	115%	0.2%	0.0%
1358	West Columbia	< 100	1,095,119	117,236	2,001,671	276,666	194.8%	115%	115%	0.4%	0.0%

Texas Municipal Retirement System

City Number	City Name	Active Count	Expected Termination Weighted by Salary Select ($)	Expected Termination Weighted by Salary Ultimate ($)	Actual Termination Weighted by Salary Select ($)	Actual Termination Weighted by Salary Ultimate ($)	Weighted A/E Ratio	Current City Load	Proposed City Load	Population Actual Annual Rate of Change	Population Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
1359	West Lake Hills	< 100	960,304	218,812	1,455,185	449,906	167.4%	91%	96%	-1.6%	-0.8%
1361	West Orange	< 100	483,308	113,444	393,138	138,794	97.0%	91%	96%	-1.2%	-0.6%
1365	West Tawakoni	< 100	326,175	48,656	587,593	129,892	212.4%	100%	105%	-1.2%	-0.5%
1364	West Univ. Place	> 100	3,631,991	882,087	3,765,798	981,893	97.1%	115%	110%	1.1%	0.0%
1363	Westlake	< 100	966,790	273,222	837,512	689,270	175.8%	100%	105%	5.6%	0.0%
1362	Westover Hills	< 100	702,703	45,388	750,530	277,897	396.0%	100%	105%	1.6%	0.0%
1366	Westworth Village	< 100	1,587,259	149,949	2,620,556	440,223	223.8%	115%	115%	3.7%	0.0%
1368	Wharton	> 100	2,864,294	344,037	3,259,549	951,297	198.3%	110%	115%	2.1%	0.0%
1370	Wheeler	< 11	224,796	10,713	235,515	16,796	124.4%	75%	75%	2.6%	0.0%
1372	White Deer	< 6	259,185	2,593	472,737	45,247	1092.1%	85%	75%	-4.7%	-1.0%
1377	White Oak	< 100	1,154,009	206,419	1,175,591	233,861	97.7%	115%	110%	-0.2%	-0.1%
1378	White Settlement	> 100	3,267,731	593,209	4,932,883	862,148	131.4%	125%	125%	0.0%	0.0%
1374	Whiteface	< 6	52,581	27,595	30,983	45,994	116.7%	75%	75%	-0.9%	-0.4%
1375	Whitehouse	< 100	1,161,614	166,925	1,737,168	629,502	268.8%	115%	115%	-0.3%	-0.1%
1376	Whitesboro	< 100	996,119	189,482	1,177,577	197,929	97.3%	105%	100%	0.3%	0.0%
1380	Whitewright	< 100	664,617	46,440	913,082	209,715	309.5%	105%	110%	1.5%	0.0%
1382	Whitney	< 100	523,982	30,319	1,111,919	23,733	109.7%	115%	110%	-0.5%	-0.2%
1384	Wichita Falls	> 100	22,055,178	6,017,993	25,534,069	5,736,218	91.1%	110%	105%	-0.1%	0.0%
1386	Willis	< 100	1,039,044	146,357	1,367,531	212,965	125.7%	115%	115%	2.3%	0.0%
1387	Willow Park	< 100	1,407,654	120,565	2,381,867	453,782	274.2%	90%	95%	12.7%	0.0%
1388	Wills Point	< 100	948,119	105,680	1,862,223	312,183	234.2%	100%	105%	-1.7%	-0.8%
1390	Wilmer	< 100	1,058,256	128,993	2,181,104	326,781	212.0%	115%	115%	2.6%	0.0%
1392	Wimberley	< 11	228,004	28,637	524,451	101,764	279.8%	80%	85%	5.8%	0.0%
1393	Windcrest	< 100	1,886,652	176,574	2,728,661	679,356	271.9%	115%	115%	1.8%	0.0%
1395	Winfield	< 6	156,184	0	439,796	0	128.4%	75%	75%	-	-
1396	Wink	< 11	183,683	28,284	215,296	59,924	160.9%	75%	80%	4.6%	0.0%
1398	Winnsboro	< 100	1,090,196	119,601	1,924,592	217,610	160.8%	115%	115%	0.3%	0.0%
1399	Winona	< 6	270,410	26,411	694,113	116,094	337.9%	85%	75%	-3.1%	-1.0%
1400	Winters	< 16	404,237	18,913	669,402	49,186	204.0%	100%	100%	-0.8%	-0.4%
1403	Wolfforth	< 100	764,438	84,163	1,036,414	94,346	107.0%	98%	103%	0.5%	0.0%
1409	Woodcreek	< 6	66,737	4,144	164,514	53,034	834.6%	75%	75%	14.9%	0.0%
1404	Woodsboro	< 16	336,517	40,454	622,545	144,438	267.4%	85%	90%	0.7%	0.0%
1406	Woodville	< 100	617,769	239,514	680,713	26,252	39.3%	101%	96%	-0.5%	-0.2%
1407	Woodway	< 100	2,312,662	441,340	1,840,188	597,988	104.3%	110%	105%	1.8%	0.0%
1408	Wortham	< 11	283,029	26,645	333,652	0	35.1%	85%	80%	-0.7%	-0.3%

Texas Municipal Retirement System

City Number	City Name	Active Count	Expected Termination Weighted by Salary		Actual Termination Weighted by Salary		Weighted A/E Ratio	Current City Load	Proposed City Load	Population	
			Select ($)	Ultimate ($)	Select ($)	Ultimate ($)				Actual Annual Rate of Change	Proposed Annual Rate of Change
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
1410	Wylie	> 100	8,042,598	1,876,274	7,660,119	1,637,508	80.2%	100%	95%	4.8%	0.0%
1412	Yoakum	< 100	1,496,687	405,355	2,234,827	578,869	129.4%	100%	105%	0.0%	0.0%
1414	Yorktown	< 16	328,755	39,147	830,284	108,347	239.8%	100%	100%	-3.6%	-1.0%
1415	Zavalla	< 11	185,485	23,068	505,483	75,420	275.6%	75%	80%	-2.2%	-1.0%

APPENDIX B

ACTUARIAL IMPACT BY CITY

Texas Municipal Retirement System

City Number	City Name	2020 Full Rate	Experience Study	Impact of Changes	City Number	City Name	2020 Full Rate	Experience Study	Impact of Changes
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
4	Abernathy	3.85%	3.93%	0.08%	79	Balcones Heights	7.92%	8.28%	0.36%
6	Abilene	11.05%	11.39%	0.34%	80	Ballinger	3.56%	3.52%	-0.04%
7	Addison	11.06%	11.23%	0.17%	82	Balmorhea	0.00%	0.00%	0.00%
8	Agua Dulce	7.77%	7.51%	-0.26%	83	Bandera	10.82%	10.92%	0.10%
10	Alamo	6.30%	6.36%	0.06%	84	Bangs	12.33%	12.25%	-0.08%
12	Alamo Heights	16.91%	17.02%	0.11%	90	Bartlett	8.22%	8.73%	0.51%
14	Alba	1.96%	1.65%	-0.31%	91	Bartonville	15.55%	15.40%	-0.15%
16	Albany	5.48%	5.48%	0.00%	92	Bastrop	11.29%	11.36%	0.07%
17	Aledo	7.50%	7.46%	-0.04%	94	Bay City	9.62%	10.04%	0.42%
18	Alice	4.80%	4.85%	0.05%	93	Bayou Vista	2.66%	2.82%	0.16%
19	Allen	14.00%	14.40%	0.40%	96	Baytown	17.33%	17.83%	0.50%
20	Alpine	0.88%	1.78%	0.90%	98	Beaumont	19.41%	19.99%	0.58%
22	Alto	10.75%	11.06%	0.31%	100	Bedford	8.92%	8.88%	-0.04%
23	Alton	13.34%	13.28%	-0.06%	101	Bee Cave	8.97%	8.97%	0.00%
24	Alvarado	5.36%	5.21%	-0.15%	102	Beeville	0.43%	1.39%	0.96%
26	Alvin	17.00%	17.15%	0.15%	106	Bellaire	20.20%	20.41%	0.21%
28	Alvord	5.78%	5.45%	-0.33%	109	Bellmead	8.63%	8.72%	0.09%
30	Amarillo	12.21%	12.66%	0.45%	110	Bells	0.00%	0.54%	0.54%
32	Amherst	0.00%	0.00%	0.00%	112	Bellville	15.78%	16.28%	0.50%
34	Anahuac	8.66%	8.39%	-0.27%	114	Belton	8.11%	8.10%	-0.01%
36	Andrews	15.98%	16.54%	0.56%	118	Benbrook	16.44%	16.67%	0.23%
38	Angleton	12.21%	12.26%	0.05%	121	Berryville	3.39%	3.32%	-0.07%
40	Anna	14.09%	14.25%	0.16%	123	Bertram	1.70%	1.53%	-0.17%
41	Annetta	8.82%	8.56%	-0.26%	124	Big Lake	17.51%	18.26%	0.75%
44	Anson	0.57%	0.67%	0.10%	126	Big Sandy	2.49%	2.56%	0.07%
45	Anthony	3.19%	3.14%	-0.05%	128	Big Spring	17.44%	18.12%	0.68%
48	Aransas Pass	9.79%	10.05%	0.26%	132	Bishop	3.52%	3.59%	0.07%
50	Archer City	4.25%	4.02%	-0.23%	134	Blanco	6.55%	6.28%	-0.27%
49	Arcola	4.05%	3.99%	-0.06%	140	Blooming Grove	10.78%	10.77%	-0.01%
51	Argyle	13.42%	13.51%	0.09%	142	Blossom	4.11%	4.22%	0.11%
52	Arlington	16.13%	16.76%	0.63%	143	Blue Mound	4.68%	4.71%	0.03%
54	Arp	1.14%	1.60%	0.46%	144	Blue Ridge	1.79%	2.03%	0.24%
60	Aspermont	0.00%	0.00%	0.00%	148	Boerne	18.35%	18.91%	0.56%
62	Athens	15.46%	15.69%	0.23%	150	Bogata	0.14%	0.53%	0.39%
64	Atlanta	3.39%	3.44%	0.05%	152	Bonham	5.15%	5.23%	0.08%
66	Aubrey	5.91%	5.65%	-0.26%	154	Booker	5.64%	5.45%	-0.19%
74	Avinger	2.02%	2.01%	-0.01%	156	Borger	13.87%	13.89%	0.02%
75	Azle	12.50%	12.70%	0.20%	158	Bovina	0.23%	0.50%	0.27%
77	Baird	1.08%	1.22%	0.14%	160	Bowie	9.57%	10.02%	0.45%
78	Balch Springs	13.60%	13.62%	0.02%	162	Boyd	4.10%	4.04%	-0.06%

City Number	City Name	2020 Full Rate	Experience Study	Impact of Changes	City Number	City Name	2020 Full Rate	Experience Study	Impact of Changes
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
166	Brady	9.83%	9.86%	0.03%	230	Carrollton	12.12%	12.25%	0.13%
170	Brazoria	5.64%	5.94%	0.30%	232	Carthage	17.97%	18.62%	0.65%
172	Breckenridge	6.93%	7.21%	0.28%	231	Castle Hills	12.38%	12.64%	0.26%
174	Bremond	15.97%	15.02%	-0.95%	234	Castroville	8.75%	8.85%	0.10%
176	Brenham	9.67%	9.80%	0.13%	238	Cedar Hill	13.79%	14.25%	0.46%
177	Bridge City	15.13%	15.35%	0.22%	239	Cedar Park	14.36%	14.57%	0.21%
178	Bridgeport	13.67%	14.33%	0.66%	240	Celeste	8.93%	8.77%	-0.16%
180	Bronte	13.09%	12.84%	-0.25%	242	Celina	6.47%	6.26%	-0.21%
182	Brookshire	8.68%	8.97%	0.29%	244	Center	12.40%	12.43%	0.03%
184	Brownfield	3.92%	4.59%	0.67%	246	Centerville	22.13%	20.58%	-1.55%
186	Brownsboro	10.41%	10.30%	-0.11%	247	Chandler	4.46%	4.46%	0.00%
10188	Brownsville	16.86%	17.10%	0.24%	248	Charlotte	3.79%	3.95%	0.16%
20188	Brownsville PUB	17.21%	17.47%	0.26%	249	Chester	0.62%	0.86%	0.24%
10190	Brownwood	13.37%	13.47%	0.10%	245	Chico	4.26%	3.82%	-0.44%
30190	Brownwood Health Dept.	10.64%	11.13%	0.49%	250	Childress	15.51%	15.88%	0.37%
20190	Brownwood Public Library	4.44%	4.57%	0.13%	251	Chillicothe	7.33%	7.13%	-0.20%
195	Bruceville-Eddy	5.72%	5.76%	0.04%	253	Chireno	21.08%	21.36%	0.28%
192	Bryan	15.19%	15.60%	0.41%	254	Christine	0.00%	0.00%	0.00%
193	Bryson	0.00%	0.00%	0.00%	255	Cibolo	12.49%	12.60%	0.11%
194	Buda	13.76%	13.82%	0.06%	256	Cisco	6.39%	6.31%	-0.08%
196	Buffalo	4.82%	4.53%	-0.29%	258	Clarendon	1.39%	1.56%	0.17%
198	Bullard	7.48%	7.53%	0.05%	259	Clarksville	1.56%	3.46%	1.90%
203	Bulverde	10.00%	10.15%	0.15%	260	Clarksville City	4.40%	3.54%	-0.86%
199	Bunker Hill Village	10.18%	10.29%	0.11%	263	Clear Lake Shores	10.65%	10.73%	0.08%
200	Burkburnett	10.28%	10.69%	0.41%	264	Cleburne	16.06%	16.22%	0.16%
202	Burleson	15.47%	15.83%	0.36%	266	Cleveland	10.53%	10.71%	0.18%
204	Burnet	13.00%	13.20%	0.20%	268	Clifton	1.93%	2.00%	0.07%
206	Burton	10.36%	9.51%	-0.85%	271	Clute	10.29%	10.64%	0.35%
207	Cactus	5.18%	4.96%	-0.22%	272	Clyde	12.98%	13.19%	0.21%
208	Caddo Mills	5.79%	5.65%	-0.14%	274	Coahoma	6.27%	6.16%	-0.11%
210	Caldwell	8.13%	8.07%	-0.06%	276	Cockrell Hill	8.08%	8.67%	0.59%
212	Calvert	1.16%	1.29%	0.13%	278	Coleman	16.89%	16.74%	-0.15%
214	Cameron	10.29%	10.35%	0.06%	280	College Station	13.19%	13.27%	0.08%
216	Campbell	41.75%	40.79%	-0.96%	281	Colleyville	8.94%	9.05%	0.11%
220	Canadian	17.10%	17.75%	0.65%	282	Collinsville	5.43%	5.08%	-0.35%
221	Caney City	1.43%	1.43%	0.00%	283	Colmesneil	9.05%	8.49%	-0.56%
222	Canton	11.61%	11.80%	0.19%	284	Colorado City	8.04%	7.97%	-0.07%
224	Canyon	14.12%	14.00%	-0.12%	286	Columbus	12.46%	12.27%	-0.19%
227	Carmine	1.95%	2.22%	0.27%	288	Comanche	4.97%	4.88%	-0.09%
228	Carrizo Springs	5.33%	5.29%	-0.04%	289	Combes	6.92%	6.97%	0.05%

Texas Municipal Retirement System

City Number	City Name	2020 Full Rate	Experience Study	Impact of Changes	City Number	City Name	2020 Full Rate	Experience Study	Impact of Changes
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
290	Commerce	8.50%	8.67%	0.17%	360	Denver City	11.17%	11.69%	0.52%
294	Conroe	16.24%	16.78%	0.54%	362	Deport	1.88%	1.83%	-0.05%
295	Converse	13.72%	13.98%	0.26%	370	Devine	16.62%	17.23%	0.61%
298	Cooper	5.02%	5.29%	0.27%	371	Diboll	14.67%	15.26%	0.59%
299	Coppell	15.57%	15.99%	0.42%	372	Dickens	1.97%	2.14%	0.17%
297	Copper Canyon	13.29%	12.83%	-0.46%	373	Dickinson	9.49%	9.56%	0.07%
300	Copperas Cove	12.06%	12.42%	0.36%	374	Dilley	10.14%	10.32%	0.18%
301	Corinth	15.34%	15.56%	0.22%	376	Dimmitt	4.02%	5.39%	1.37%
302	Corpus Christi	24.61%	24.88%	0.27%	382	Donna	11.06%	11.11%	0.05%
304	Corrigan	3.97%	3.86%	-0.11%	379	Double Oak	7.05%	6.64%	-0.41%
306	Corsicana	15.37%	15.15%	-0.22%	383	Dripping Springs	5.97%	5.79%	-0.18%
308	Cotulla	6.61%	6.53%	-0.08%	385	Driscoll	1.95%	1.70%	-0.25%
310	Crandall	10.68%	11.01%	0.33%	384	Dublin	12.43%	12.67%	0.24%
312	Crane	8.01%	8.68%	0.67%	386	Dumas	5.56%	5.49%	-0.07%
314	Crawford	0.79%	0.86%	0.07%	388	Duncanville	7.67%	7.32%	-0.35%
316	Crockett	8.09%	8.35%	0.26%	394	Eagle Lake	8.90%	9.06%	0.16%
318	Crosbyton	5.02%	5.17%	0.15%	396	Eagle Pass	8.54%	8.51%	-0.03%
320	Cross Plains	8.16%	8.03%	-0.13%	397	Early	3.22%	3.53%	0.31%
321	Cross Roads	7.55%	7.23%	-0.32%	399	Earth	5.09%	5.13%	0.04%
322	Crowell	5.53%	5.42%	-0.11%	393	East Bernard	5.02%	4.88%	-0.14%
323	Crowley	10.95%	11.17%	0.22%	401	East Mountain	13.08%	13.55%	0.47%
324	Crystal City	0.61%	1.74%	1.13%	395	East Tawakoni	5.27%	5.36%	0.09%
326	Cuero	10.48%	10.72%	0.24%	398	Eastland	8.98%	9.14%	0.16%
328	Cumby	1.91%	1.87%	-0.04%	402	Ector	1.94%	1.63%	-0.31%
332	Daingerfield	5.60%	5.78%	0.18%	406	Eden	2.94%	3.50%	0.56%
334	Daisetta	0.92%	1.32%	0.40%	408	Edgewood	2.69%	2.40%	-0.29%
336	Dalhart	4.78%	4.95%	0.17%	410	Edinburg	14.32%	14.48%	0.16%
339	Dalworthington Gardens	20.99%	21.94%	0.95%	412	Edna	10.67%	10.88%	0.21%
340	Danbury	5.74%	5.46%	-0.28%	414	El Campo	10.54%	10.53%	-0.01%
341	Darrouzett	4.13%	3.91%	-0.22%	416	Eldorado	7.21%	7.56%	0.35%
344	Dayton	6.99%	6.95%	-0.04%	418	Electra	2.35%	2.30%	-0.05%
352	De Leon	1.76%	1.77%	0.01%	420	Elgin	13.76%	13.83%	0.07%
10366	DeSoto	10.94%	10.99%	0.05%	422	Elkhart	5.23%	5.12%	-0.11%
346	Decatur	14.30%	14.08%	-0.22%	427	Elmendorf	1.58%	1.51%	-0.07%
348	Deer Park	13.78%	14.15%	0.37%	432	Emory	6.74%	6.50%	-0.24%
350	Dekalb	2.43%	3.01%	0.58%	436	Ennis	16.71%	17.08%	0.37%
354	Del Rio	7.45%	7.25%	-0.20%	439	Euless	17.70%	18.13%	0.43%
353	Dell City	9.17%	8.99%	-0.18%	440	Eustace	10.63%	11.15%	0.52%
356	Denison	12.16%	12.18%	0.02%	441	Everman	9.39%	9.49%	0.10%
358	Denton	17.29%	17.79%	0.50%	443	Fair Oaks Ranch	11.71%	11.78%	0.07%

Texas Municipal Retirement System

City Number	City Name	2020 Full Rate	Experience Study	Impact of Changes	City Number	City Name	2020 Full Rate	Experience Study	Impact of Changes
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
442	Fairfield	7.17%	7.32%	0.15%	510	Giddings	18.19%	18.23%	0.04%
445	Fairview	10.77%	10.86%	0.09%	512	Gilmer	13.34%	13.66%	0.32%
20444	Falfurrias	3.33%	3.24%	-0.09%	514	Gladewater	8.62%	8.66%	0.04%
446	Falls City	7.85%	7.63%	-0.22%	516	Glen Rose	14.60%	14.80%	0.20%
448	Farmers Branch	19.00%	18.98%	-0.02%	517	Glenn Heights	2.87%	3.45%	0.58%
450	Farmersville	8.74%	8.86%	0.12%	518	Godley	2.63%	2.49%	-0.14%
451	Farwell	15.24%	15.45%	0.21%	519	Goldsmith	3.20%	2.39%	-0.81%
452	Fate	10.74%	10.91%	0.17%	520	Goldthwaite	23.50%	24.36%	0.86%
454	Fayetteville	3.22%	2.74%	-0.48%	522	Goliad	4.99%	5.24%	0.25%
456	Ferris	5.45%	5.56%	0.11%	524	Gonzales	10.45%	10.50%	0.05%
458	Flatonia	15.94%	16.15%	0.21%	527	Gordon	2.73%	2.61%	-0.12%
460	Florence	4.34%	4.18%	-0.16%	530	Gorman	9.17%	9.05%	-0.12%
20462	Floresville	10.26%	10.33%	0.07%	532	Graford	2.87%	2.73%	-0.14%
463	Flower Mound	10.77%	11.16%	0.39%	10534	Graham	10.35%	10.26%	-0.09%
464	Floydada	10.00%	10.06%	0.06%	536	Granbury	15.67%	15.73%	0.06%
468	Forest Hill	12.82%	12.91%	0.09%	540	Grand Prairie	16.83%	17.32%	0.49%
470	Forney	13.80%	14.03%	0.23%	542	Grand Saline	7.33%	7.49%	0.16%
472	Fort Stockton	9.64%	9.65%	0.01%	544	Grandview	6.50%	6.93%	0.43%
476	Franklin	3.11%	3.20%	0.09%	546	Granger	0.82%	1.29%	0.47%
478	Frankston	1.45%	1.51%	0.06%	547	Granite Shoals	4.80%	4.57%	-0.23%
480	Fredericksburg	12.06%	12.32%	0.26%	548	Grapeland	4.10%	4.52%	0.42%
482	Freeport	14.30%	14.62%	0.32%	550	Grapevine	18.53%	18.93%	0.40%
481	Freer	7.00%	7.22%	0.22%	552	Greenville	11.00%	11.25%	0.25%
483	Friendswood	15.84%	16.12%	0.28%	551	Gregory	3.96%	4.57%	0.61%
484	Friona	9.06%	9.45%	0.39%	553	Grey Forest	15.76%	16.36%	0.60%
486	Frisco	14.07%	14.46%	0.39%	556	Groesbeck	2.50%	2.53%	0.03%
487	Fritch	1.78%	3.81%	2.03%	558	Groom	2.71%	2.78%	0.07%
488	Frost	6.98%	6.98%	0.00%	559	Groves	9.13%	9.15%	0.02%
491	Fulshear	7.69%	7.54%	-0.15%	560	Groveton	2.03%	2.00%	-0.03%
493	Fulton	22.59%	22.24%	-0.35%	562	Gruver	14.49%	13.46%	-1.03%
492	Gainesville	12.17%	12.16%	-0.01%	563	Gun Barrel City	4.70%	4.99%	0.29%
494	Galena Park	12.14%	12.09%	-0.05%	564	Gunter	4.14%	4.42%	0.28%
498	Ganado	13.16%	12.15%	-1.01%	568	Hale Center	1.98%	1.80%	-0.18%
499	Garden Ridge	7.39%	7.44%	0.05%	570	Hallettsville	11.84%	12.14%	0.30%
500	Garland	11.03%	11.24%	0.21%	572	Hallsville	2.93%	2.84%	-0.09%
502	Garrison	16.50%	15.36%	-1.14%	574	Haltom City	19.05%	19.58%	0.53%
503	Gary	7.22%	6.85%	-0.37%	576	Hamilton	15.10%	15.12%	0.02%
504	Gatesville	14.88%	15.36%	0.48%	578	Hamlin	11.69%	11.77%	0.08%
505	George West	5.79%	5.64%	-0.15%	580	Happy	8.15%	7.75%	-0.40%
506	Georgetown	12.13%	12.61%	0.48%	581	Harker Heights	14.77%	14.96%	0.19%

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
10582	Harlingen	11.66%	11.23%	-0.43%	632	Humble	13.61%	13.59%	-0.02%
20582	Harlingen Waterworks Sys	1.92%	1.85%	-0.07%	633	Hunters Creek Village	17.15%	17.33%	0.18%
583	Hart	3.97%	3.62%	-0.35%	634	Huntington	14.27%	14.62%	0.35%
586	Haskell	0.00%	0.00%	0.00%	636	Huntsville	18.58%	18.62%	0.04%
587	Haslet	8.63%	8.53%	-0.10%	637	Hurst	11.11%	11.52%	0.41%
588	Hawkins	6.06%	7.08%	1.02%	638	Hutchins	9.07%	9.29%	0.22%
585	Hays	8.43%	8.70%	0.27%	640	Hutto	12.04%	12.18%	0.14%
590	Hearne	14.98%	15.47%	0.49%	641	Huxley	0.90%	1.28%	0.38%
591	Heath	11.55%	11.69%	0.14%	642	Idalou	4.05%	3.99%	-0.06%
592	Hedley	2.45%	3.02%	0.57%	643	Ingleside	8.87%	9.08%	0.21%
595	Hedwig Village	7.33%	7.07%	-0.26%	646	Ingram	5.73%	5.86%	0.13%
593	Helotes	6.57%	6.37%	-0.20%	647	Iowa Colony	14.15%	12.79%	-1.36%
594	Hemphill	7.33%	7.22%	-0.11%	644	Iowa Park	14.76%	15.22%	0.46%
596	Hempstead	7.78%	7.85%	0.07%	645	Iraan	17.58%	17.23%	-0.35%
598	Henderson	16.11%	16.70%	0.59%	648	Irving	14.46%	14.73%	0.27%
600	Henrietta	14.74%	15.17%	0.43%	650	Italy	2.99%	2.99%	0.00%
602	Hereford	10.34%	10.61%	0.27%	652	Itasca	10.70%	10.99%	0.29%
605	Hewitt	15.48%	16.05%	0.57%	654	Jacinto City	7.97%	8.09%	0.12%
609	Hickory Creek	11.95%	12.28%	0.33%	656	Jacksboro	14.92%	15.26%	0.34%
606	Hico	8.30%	8.43%	0.13%	658	Jacksonville	10.61%	10.73%	0.12%
607	Hidalgo	12.66%	12.62%	-0.04%	660	Jasper	9.09%	8.86%	-0.23%
608	Higgins	4.07%	3.99%	-0.08%	664	Jefferson	0.89%	1.50%	0.61%
610	Highland Park	5.64%	5.61%	-0.03%	665	Jersey Village	14.05%	14.08%	0.03%
611	Highland Village	13.31%	13.29%	-0.02%	666	Jewett	10.60%	11.84%	1.24%
613	Hill Country Village	3.79%	3.80%	0.01%	668	Joaquin	4.56%	4.42%	-0.14%
612	Hillsboro	11.28%	11.48%	0.20%	670	Johnson City	9.78%	9.77%	-0.01%
619	Hilshire Village	10.98%	10.87%	-0.11%	673	Jones Creek	6.02%	5.98%	-0.04%
614	Hitchcock	4.18%	3.71%	-0.47%	675	Jonestown	7.32%	7.15%	-0.17%
615	Holland	7.08%	6.63%	-0.45%	677	Josephine	5.95%	5.95%	0.00%
616	Holliday	2.64%	2.46%	-0.18%	671	Joshua	5.70%	5.68%	-0.02%
617	Hollywood Park	8.81%	8.84%	0.03%	672	Jourdanton	6.08%	6.26%	0.18%
618	Hondo	8.22%	8.27%	0.05%	674	Junction	14.53%	14.59%	0.06%
620	Honey Grove	7.29%	7.14%	-0.15%	676	Justin	7.43%	7.42%	-0.01%
622	Hooks	13.46%	13.44%	-0.02%	678	Karnes City	8.74%	9.04%	0.30%
623	Horizon City	5.89%	5.91%	0.02%	680	Katy	13.62%	13.78%	0.16%
626	Howe	5.25%	4.96%	-0.29%	682	Kaufman	14.78%	15.13%	0.35%
627	Hubbard	0.77%	0.93%	0.16%	683	Keene	12.17%	12.33%	0.16%
628	Hudson	4.17%	4.14%	-0.03%	681	Keller	15.83%	16.28%	0.45%
629	Hudson Oaks	12.20%	12.38%	0.18%	685	Kemah	6.93%	6.63%	-0.30%
630	Hughes Springs	8.63%	8.98%	0.35%	684	Kemp	5.79%	5.74%	-0.05%

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
686	Kenedy	3.93%	3.87%	-0.06%	730	Laredo	20.77%	21.30%	0.53%
688	Kennedale	13.57%	13.52%	-0.05%	733	Lavon	6.51%	6.27%	-0.24%
690	Kerens	8.15%	8.12%	-0.03%	736	League City	14.72%	14.99%	0.27%
692	Kermit	15.71%	15.67%	-0.04%	737	Leander	12.04%	12.17%	0.13%
10694	Kerrville	10.13%	10.51%	0.38%	735	Lefors	4.05%	3.89%	-0.16%
20694	Kerrville PUB	12.06%	12.40%	0.34%	739	Leon Valley	17.12%	17.22%	0.10%
10696	Kilgore	13.78%	13.98%	0.20%	738	Leonard	1.15%	1.30%	0.15%
698	Killeen	11.27%	11.07%	-0.20%	740	Levelland	11.44%	11.68%	0.24%
700	Kingsville	8.80%	8.86%	0.06%	742	Lewisville	16.57%	16.90%	0.33%
701	Kirby	14.77%	15.13%	0.36%	744	Lexington	8.82%	8.99%	0.17%
702	Kirbyville	5.82%	5.71%	-0.11%	746	Liberty	17.48%	17.39%	-0.09%
704	Knox City	2.37%	2.62%	0.25%	745	Liberty Hill	7.08%	7.03%	-0.05%
706	Kosse	5.36%	5.17%	-0.19%	748	Lindale	14.79%	14.82%	0.03%
708	Kountze	1.38%	1.42%	0.04%	750	Linden	1.28%	1.35%	0.07%
709	Kress	0.00%	0.00%	0.00%	755	Lipan	2.46%	2.11%	-0.35%
699	Krugerville	8.17%	7.79%	-0.38%	751	Little Elm	13.47%	13.59%	0.12%
707	Krum	6.57%	6.32%	-0.25%	752	Littlefield	8.93%	8.88%	-0.05%
710	Kyle	12.52%	13.05%	0.53%	753	Live Oak	18.26%	18.45%	0.19%
725	La Coste	1.30%	1.33%	0.03%	757	Liverpool	1.94%	1.72%	-0.22%
714	La Feria	11.23%	11.43%	0.20%	754	Livingston	15.56%	16.11%	0.55%
716	La Grange	14.06%	14.28%	0.22%	756	Llano	14.59%	14.45%	-0.14%
723	La Grulla	5.13%	5.83%	0.70%	758	Lockhart	12.81%	12.70%	-0.11%
732	La Joya	6.83%	6.87%	0.04%	760	Lockney	0.00%	0.00%	0.00%
721	La Marque	13.92%	14.21%	0.29%	765	Lone Star	2.54%	2.76%	0.22%
728	La Porte	15.38%	15.39%	0.01%	766	Longview	10.86%	11.32%	0.46%
731	La Vernia	3.12%	3.08%	-0.04%	768	Loraine	3.39%	3.38%	-0.01%
711	Lacy-Lakeview	14.40%	14.95%	0.55%	769	Lorena	10.78%	10.75%	-0.03%
712	Ladonia	3.26%	4.39%	1.13%	770	Lorenzo	2.25%	3.19%	0.94%
713	Lago Vista	8.12%	8.03%	-0.09%	771	Los Fresnos	7.34%	7.25%	-0.09%
705	Laguna Vista	4.32%	4.32%	0.00%	773	Lott	1.24%	1.22%	-0.02%
717	Lake Dallas	13.06%	13.36%	0.30%	774	Lovelady	7.65%	7.39%	-0.26%
718	Lake Jackson	12.04%	12.00%	-0.04%	778	Lubbock	17.57%	17.83%	0.26%
719	Lake Worth	16.05%	16.38%	0.33%	779	Lucas	12.50%	12.63%	0.13%
727	Lakeport	0.00%	0.22%	0.22%	782	Lufkin	16.17%	16.58%	0.41%
715	Lakeside	8.55%	7.99%	-0.56%	784	Luling	8.60%	8.58%	-0.02%
729	Lakeside City	2.08%	1.83%	-0.25%	785	Lumberton	15.98%	15.88%	-0.10%
720	Lakeway	13.90%	14.02%	0.12%	786	Lyford	4.07%	3.98%	-0.09%
722	Lamesa	4.76%	4.81%	0.05%	787	Lytle	10.23%	10.71%	0.48%
724	Lampasas	15.55%	16.03%	0.48%	790	Madisonville	9.49%	9.55%	0.06%
726	Lancaster	13.45%	13.83%	0.38%	791	Magnolia	1.62%	1.62%	0.00%

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
792	Malakoff	7.64%	7.46%	-0.18%	864	Miles	0.00%	0.00%	0.00%
796	Manor	9.11%	9.08%	-0.03%	865	Milford	8.43%	8.84%	0.41%
798	Mansfield	15.39%	15.87%	0.48%	868	Mineola	4.54%	4.91%	0.37%
799	Manvel	10.70%	10.61%	-0.09%	870	Mineral Wells	8.82%	8.77%	-0.05%
800	Marble Falls	9.76%	10.06%	0.30%	874	Mission	8.52%	8.81%	0.29%
802	Marfa	3.21%	3.48%	0.27%	875	Missouri City	8.86%	8.64%	-0.22%
804	Marion	3.42%	4.03%	0.61%	876	Monahans	7.36%	7.27%	-0.09%
806	Marlin	8.71%	8.67%	-0.04%	887	Mont Belvieu	14.36%	14.96%	0.60%
808	Marquez	18.81%	18.63%	-0.18%	877	Montgomery	6.05%	6.07%	0.02%
810	Marshall	16.12%	16.45%	0.33%	878	Moody	2.29%	2.24%	-0.05%
812	Mart	2.03%	3.10%	1.07%	883	Morgan's Point	10.02%	10.47%	0.45%
813	Martindale	12.02%	11.64%	-0.38%	882	Morgan's Point Resort	11.82%	11.93%	0.11%
814	Mason	6.57%	6.27%	-0.30%	884	Morton	4.03%	4.67%	0.64%
816	Matador	7.96%	7.90%	-0.06%	886	Moulton	4.73%	4.62%	-0.11%
818	Mathis	3.64%	4.19%	0.55%	890	Mount Enterprise	2.46%	2.41%	-0.05%
820	Maud	3.47%	3.41%	-0.06%	892	Mt. Pleasant	14.98%	14.93%	-0.05%
822	Maypearl	2.69%	2.40%	-0.29%	894	Mt. Vernon	11.40%	11.49%	0.09%
824	McAllen	7.81%	7.48%	-0.33%	896	Muenster	1.64%	2.72%	1.08%
826	McCamey	1.67%	2.20%	0.53%	898	Muleshoe	19.10%	19.87%	0.77%
828	McGregor	9.65%	9.55%	-0.10%	901	Munday	3.38%	3.27%	-0.11%
830	McKinney	14.90%	15.10%	0.20%	903	Murphy	13.98%	14.07%	0.09%
832	McLean	2.58%	2.32%	-0.26%	10904	Nacogdoches	14.15%	14.56%	0.41%
833	McLendon-Chisholm	1.52%	1.49%	-0.03%	906	Naples	2.17%	2.57%	0.40%
834	Meadow	4.24%	4.12%	-0.12%	907	Nash	17.54%	17.88%	0.34%
831	Meadowlakes	2.38%	2.29%	-0.09%	905	Nassau Bay	15.74%	15.86%	0.12%
835	Meadows Place	9.54%	9.44%	-0.10%	909	Natalia	3.17%	3.07%	-0.10%
837	Melissa	12.84%	13.06%	0.22%	908	Navasota	7.60%	7.95%	0.35%
1501	Memorial Villages PD	11.61%	11.53%	-0.08%	910	Nederland	6.47%	7.15%	0.68%
840	Memphis	3.59%	4.24%	0.65%	912	Needville	4.21%	4.15%	-0.06%
842	Menard	0.00%	0.00%	0.00%	914	New Boston	2.07%	2.46%	0.39%
844	Mercedes	18.09%	18.22%	0.13%	10916	New Braunfels	16.85%	17.02%	0.17%
846	Meridian	2.96%	3.12%	0.16%	20916	New Braunfels Utilities	17.22%	17.80%	0.58%
848	Merkel	11.50%	11.92%	0.42%	915	New Deal	0.72%	1.19%	0.47%
852	Mertzon	11.81%	11.74%	-0.07%	923	New Fairview	10.69%	10.59%	-0.10%
854	Mesquite	16.62%	17.09%	0.47%	918	New London	3.39%	3.57%	0.18%
856	Mexia	12.11%	12.49%	0.38%	919	New Summerfield	7.70%	7.68%	-0.02%
858	Miami	11.46%	11.38%	-0.08%	917	New Waverly	7.63%	7.39%	-0.24%
860	Midland	14.41%	14.53%	0.12%	913	Newark	2.95%	2.81%	-0.14%
862	Midlothian	14.76%	14.94%	0.18%	920	Newton	21.14%	21.65%	0.51%
863	Milano	11.49%	11.23%	-0.26%	922	Nixon	0.64%	0.80%	0.16%

Texas Municipal Retirement System

City Number	City Name	2020 Full Rate	Experience Study	Impact of Changes	City Number	City Name	2020 Full Rate	Experience Study	Impact of Changes
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
924	Nocona	10.11%	10.61%	0.50%	994	Perryton	14.96%	15.02%	0.06%
925	Nolanville	2.12%	2.05%	-0.07%	1000	Pflugerville	13.46%	13.62%	0.16%
928	Normangee	0.87%	2.27%	1.40%	1002	Pharr	7.86%	7.62%	-0.24%
931	North Richland Hills	16.34%	16.82%	0.48%	1004	Pilot Point	11.50%	11.63%	0.13%
930	Northlake	9.97%	10.23%	0.26%	1005	Pinehurst	19.82%	19.63%	-0.19%
935	O'Donnell	7.47%	7.25%	-0.22%	1003	Pineland	6.24%	6.19%	-0.05%
936	Oak Point	7.49%	7.26%	-0.23%	1001	Piney Point Village	6.92%	6.72%	-0.20%
937	Oak Ridge North	11.40%	11.64%	0.24%	1006	Pittsburg	13.36%	13.54%	0.18%
942	Odem	9.70%	9.41%	-0.29%	1007	Plains	4.22%	4.29%	0.07%
944	Odessa	13.44%	13.99%	0.55%	1008	Plainview	12.27%	12.51%	0.24%
945	Oglesby	1.07%	0.98%	-0.09%	1010	Plano	16.71%	17.03%	0.32%
949	Old River-Winfree	0.00%	0.00%	0.00%	1012	Pleasanton	15.22%	15.29%	0.07%
950	Olmos Park	2.65%	2.93%	0.28%	1013	Point	13.12%	13.01%	-0.11%
951	Olney	6.90%	6.65%	-0.25%	1017	Ponder	6.22%	5.76%	-0.46%
953	Omaha	5.14%	4.92%	-0.22%	1014	Port Aransas	11.67%	11.82%	0.15%
954	Onalaska	2.09%	2.32%	0.23%	11016	Port Arthur	13.74%	14.09%	0.35%
958	Orange	15.16%	15.22%	0.06%	1018	Port Isabel	3.68%	3.87%	0.19%
960	Orange Grove	7.20%	8.04%	0.84%	1020	Port Lavaca	5.89%	5.92%	0.03%
959	Ore City	1.02%	1.00%	-0.02%	1022	Port Neches	13.19%	13.41%	0.22%
962	Overton	3.16%	3.73%	0.57%	1019	Portland	13.18%	13.21%	0.03%
961	Ovilla	9.83%	9.93%	0.10%	1024	Post	14.26%	14.01%	-0.25%
963	Oyster Creek	10.76%	11.10%	0.34%	1026	Poteet	2.14%	2.80%	0.66%
964	Paducah	0.00%	0.00%	0.00%	1028	Poth	4.27%	4.14%	-0.13%
966	Palacios	17.27%	17.20%	-0.07%	1030	Pottsboro	6.75%	6.62%	-0.13%
968	Palestine	13.58%	13.80%	0.22%	1031	Prairie View	4.28%	4.25%	-0.03%
970	Palmer	11.04%	11.03%	-0.01%	1032	Premont	0.00%	0.00%	0.00%
969	Palmhurst	5.73%	5.54%	-0.19%	1029	Presidio	0.75%	0.90%	0.15%
971	Palmview	1.99%	1.91%	-0.08%	1033	Primera	0.00%	0.41%	0.41%
972	Pampa	21.48%	22.01%	0.53%	1034	Princeton	10.75%	10.98%	0.23%
974	Panhandle	11.25%	11.29%	0.04%	1036	Prosper	13.54%	13.75%	0.21%
973	Panorama Village	6.28%	5.92%	-0.36%	1037	Providence Village	7.59%	7.35%	-0.24%
975	Pantego	17.17%	17.14%	-0.03%	1042	Quanah	9.08%	10.28%	1.20%
976	Paris	7.18%	7.08%	-0.10%	1045	Queen City	1.71%	1.93%	0.22%
977	Parker	12.42%	12.78%	0.36%	1044	Quinlan	9.96%	10.40%	0.44%
978	Pasadena	13.46%	13.73%	0.27%	1047	Quintana	2.87%	2.62%	-0.25%
983	Pearland	13.14%	13.22%	0.08%	1046	Quitaque	4.60%	4.51%	-0.09%
984	Pearsall	4.69%	4.72%	0.03%	1048	Quitman	5.57%	5.88%	0.31%
988	Pecos City	6.14%	6.40%	0.26%	1050	Ralls	7.75%	7.39%	-0.36%
989	Pelican Bay	4.35%	4.27%	-0.08%	1051	Rancho Viejo	6.71%	7.03%	0.32%
991	Penitas	4.11%	4.00%	-0.11%	1052	Ranger	7.89%	8.22%	0.33%

Texas Municipal Retirement System

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1054	Rankin	0.71%	0.96%	0.25%	1120	Royse City	15.35%	15.49%	0.14%
1055	Ransom Canyon	15.74%	15.82%	0.08%	1122	Rule	2.17%	3.08%	0.91%
1058	Raymondville	0.98%	2.19%	1.21%	1123	Runaway Bay	1.73%	2.28%	0.55%
1061	Red Oak	7.10%	6.92%	-0.18%	1124	Runge	18.66%	18.60%	-0.06%
1062	Redwater	3.19%	2.95%	-0.24%	1126	Rusk	6.01%	6.14%	0.13%
1064	Refugio	0.00%	0.00%	0.00%	1128	Sabinal	3.24%	3.35%	0.11%
1065	Reklaw	16.76%	15.99%	-0.77%	1129	Sachse	14.64%	14.95%	0.31%
1066	Reno (Lamar County)	4.40%	4.87%	0.47%	1131	Saginaw	21.67%	21.91%	0.24%
1069	Reno (Parker County)	4.11%	4.03%	-0.08%	1130	Saint Jo	2.54%	4.01%	1.47%
1067	Rhome	7.12%	6.82%	-0.30%	1133	Salado	5.70%	6.03%	0.33%
1068	Rice	1.20%	1.29%	0.09%	1132	San Angelo	17.43%	17.48%	0.05%
1070	Richardson	14.72%	14.88%	0.16%	21136	San Antonio	11.67%	12.17%	0.50%
1073	Richland Hills	15.63%	16.01%	0.38%	11136	San Antonio Water System	3.64%	3.76%	0.12%
1074	Richland Springs	0.00%	0.00%	0.00%	1138	San Augustine	8.19%	8.28%	0.09%
1076	Richmond	14.63%	15.06%	0.43%	1140	San Benito	5.27%	5.09%	-0.18%
1077	Richwood	11.09%	11.31%	0.22%	1144	San Felipe	4.62%	4.53%	-0.09%
1072	Riesel	5.83%	5.64%	-0.19%	1148	San Juan	2.49%	2.39%	-0.10%
1075	Rio Grande City	6.83%	7.11%	0.28%	1150	San Marcos	17.29%	17.75%	0.46%
1079	Rio Vista	4.33%	4.44%	0.11%	1152	San Saba	8.46%	8.67%	0.21%
1080	Rising Star	0.06%	0.53%	0.47%	1146	Sanger	8.16%	8.41%	0.25%
1082	River Oaks	14.39%	14.64%	0.25%	1153	Sansom Park	6.03%	6.59%	0.56%
1084	Roanoke	17.34%	17.80%	0.46%	1155	Santa Fe	11.83%	12.06%	0.23%
1088	Robert Lee	5.53%	5.48%	-0.05%	1158	Savoy	0.00%	1.08%	1.08%
1089	Robinson	13.59%	13.81%	0.22%	1159	Schertz	15.80%	16.41%	0.61%
21090	Robstown	5.79%	5.81%	0.02%	1160	Schulenburg	21.50%	21.40%	-0.10%
11090	Robstown Utility Systems	12.72%	13.13%	0.41%	1161	Seabrook	15.88%	16.46%	0.58%
1092	Roby	3.26%	4.10%	0.84%	1162	Seadrift	3.64%	3.37%	-0.27%
1096	Rockdale	8.99%	9.00%	0.01%	1164	Seagoville	10.94%	11.09%	0.15%
1098	Rockport	17.87%	17.83%	-0.04%	1166	Seagraves	10.22%	10.31%	0.09%
1100	Rocksprings	1.31%	1.66%	0.35%	1167	Sealy	14.86%	14.88%	0.02%
1102	Rockwall	15.45%	15.70%	0.25%	1168	Seguin	22.22%	22.37%	0.15%
1104	Rogers	8.68%	9.14%	0.46%	1169	Selma	14.64%	14.87%	0.23%
1105	Rollingwood	11.88%	12.15%	0.27%	1170	Seminole	12.03%	12.01%	-0.02%
1106	Roma	10.19%	10.27%	0.08%	1171	Seven Points	1.11%	4.39%	3.28%
1109	Roscoe	2.30%	1.93%	-0.37%	1172	Seymour	7.20%	7.17%	-0.03%
1112	Rosebud	1.95%	1.89%	-0.06%	1165	Shady Shores	9.51%	9.40%	-0.11%
1114	Rosenberg	16.19%	16.39%	0.20%	1177	Shallowater	4.56%	4.76%	0.20%
1116	Rotan	0.00%	0.00%	0.00%	1174	Shamrock	8.75%	9.15%	0.40%
1118	Round Rock	15.35%	15.70%	0.35%	1173	Shavano Park	13.35%	13.58%	0.23%
1119	Rowlett	13.05%	13.04%	-0.01%	1175	Shenandoah	18.24%	19.14%	0.90%

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1181	Shepherd	2.59%	3.28%	0.69%	1229	Sunnyvale	11.56%	11.59%	0.03%
1176	Sherman	14.34%	14.71%	0.37%	1230	Sunray	14.44%	15.08%	0.64%
1178	Shiner	8.00%	7.90%	-0.10%	1227	Sunrise Beach Village	1.34%	1.32%	-0.02%
1179	Shoreacres	4.49%	5.11%	0.62%	1231	Sunset Valley	13.18%	13.54%	0.36%
1180	Silsbee	18.97%	19.58%	0.61%	1233	Surfside Beach	1.34%	1.53%	0.19%
1182	Silverton	5.39%	5.35%	-0.04%	1232	Sweeny	17.11%	17.27%	0.16%
1183	Simonton	2.40%	2.37%	-0.03%	1234	Sweetwater	17.73%	18.04%	0.31%
1184	Sinton	12.33%	12.56%	0.23%	1264	TMRS	15.74%	16.14%	0.40%
1185	Skellytown	1.91%	2.57%	0.66%	1236	Taft	17.88%	18.38%	0.50%
1186	Slaton	6.79%	6.91%	0.12%	1238	Tahoka	0.00%	0.78%	0.78%
1188	Smithville	6.94%	6.99%	0.05%	1240	Talty	10.89%	10.85%	-0.04%
1189	Smyer	9.68%	8.63%	-1.05%	1241	Tatum	1.81%	1.71%	-0.10%
1190	Snyder	13.63%	13.60%	-0.03%	1246	Taylor	11.56%	11.74%	0.18%
1191	Somerset	2.68%	2.56%	-0.12%	1248	Teague	9.04%	9.19%	0.15%
1192	Somerville	4.25%	4.59%	0.34%	1252	Temple	16.91%	17.50%	0.59%
1194	Sonora	8.45%	8.98%	0.53%	1254	Tenaha	0.30%	0.75%	0.45%
1196	Sour Lake	5.23%	5.18%	-0.05%	1256	Terrell	15.89%	16.35%	0.46%
1198	South Houston	9.83%	9.89%	0.06%	1258	Terrell Hills	15.38%	15.49%	0.11%
1199	South Padre Island	12.93%	13.04%	0.11%	31263	Tex Municipal League IEBP	5.92%	6.04%	0.12%
1197	Southlake	12.45%	12.53%	0.08%	21263	Tex Municipal League IRP	10.51%	10.72%	0.21%
1200	Southmayd	5.17%	5.04%	-0.13%	21260	Texarkana	15.56%	15.82%	0.26%
1202	Southside Place	11.61%	11.70%	0.09%	11260	Texarkana Police Dept	14.42%	14.55%	0.13%
1204	Spearman	11.38%	11.63%	0.25%	31260	Texarkana Water Utilities	16.12%	16.56%	0.44%
1201	Splendora	5.59%	5.69%	0.10%	1262	Texas City	16.24%	16.70%	0.46%
1205	Spring Valley Village	6.91%	6.83%	-0.08%	11263	Texas Municipal League	14.85%	14.86%	0.01%
1203	Springtown	9.31%	9.91%	0.60%	1267	The Colony	12.92%	13.26%	0.34%
1206	Spur	5.17%	5.19%	0.02%	1269	Thompsons	4.31%	4.01%	-0.30%
1207	Stafford	14.13%	14.40%	0.27%	1268	Thorndale	8.09%	8.04%	-0.05%
1208	Stamford	4.96%	4.93%	-0.03%	1272	Thrall	7.41%	7.02%	-0.39%
1210	Stanton	7.66%	7.79%	0.13%	1274	Three Rivers	22.64%	23.03%	0.39%
1211	Star Harbor	10.70%	10.31%	-0.39%	1276	Throckmorton	4.91%	5.14%	0.23%
1212	Stephenville	6.67%	7.22%	0.55%	1277	Tiki Island	3.76%	3.48%	-0.28%
1213	Sterling City	1.11%	0.95%	-0.16%	1278	Timpson	2.01%	2.21%	0.20%
1214	Stinnett	0.00%	0.03%	0.03%	1280	Tioga	1.46%	1.42%	-0.04%
1216	Stockdale	5.53%	5.23%	-0.30%	1283	Tolar	7.74%	7.43%	-0.31%
1218	Stratford	5.17%	5.16%	-0.01%	1286	Tom Bean	2.68%	2.99%	0.31%
1224	Sudan	1.51%	0.66%	-0.85%	1284	Tomball	13.49%	13.56%	0.07%
1225	Sugar Land	14.60%	14.67%	0.07%	1290	Trent	7.88%	6.47%	-1.41%
1226	Sulphur Springs	7.77%	7.40%	-0.37%	1292	Trenton	3.42%	3.75%	0.33%
1228	Sundown	11.75%	12.58%	0.83%	1293	Trinidad	3.07%	2.96%	-0.11%

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1294	Trinity	6.86%	7.22%	0.36%	1359	West Lake Hills	16.40%	17.03%	0.63%
1295	Trophy Club	13.09%	13.14%	0.05%	1361	West Orange	20.02%	20.58%	0.56%
1296	Troup	5.36%	5.42%	0.06%	1365	West Tawakoni	9.06%	8.99%	-0.07%
1297	Troy	11.11%	10.77%	-0.34%	1364	West Univ. Place	12.89%	13.33%	0.44%
1298	Tulia	10.69%	10.60%	-0.09%	1363	Westlake	11.77%	11.86%	0.09%
1299	Turkey	5.18%	5.10%	-0.08%	1362	Westover Hills	2.35%	2.23%	-0.12%
1301	Tye	6.90%	6.57%	-0.33%	1366	Westworth Village	11.74%	11.91%	0.17%
1304	Tyler	20.99%	21.50%	0.51%	1368	Wharton	5.70%	5.55%	-0.15%
1305	Universal City	18.57%	18.91%	0.34%	1370	Wheeler	7.96%	8.19%	0.23%
1306	University Park	9.45%	9.12%	-0.33%	1372	White Deer	9.56%	10.10%	0.54%
1308	Uvalde	5.96%	5.94%	-0.02%	1377	White Oak	14.40%	14.51%	0.11%
1312	Valley Mills	2.32%	2.18%	-0.14%	1378	White Settlement	17.07%	17.55%	0.48%
1313	Valley View	1.83%	1.67%	-0.16%	1374	Whiteface	1.63%	2.66%	1.03%
1314	Van	7.18%	7.17%	-0.01%	1375	Whitehouse	8.66%	8.72%	0.06%
1316	Van Alstyne	9.75%	9.84%	0.09%	1376	Whitesboro	6.38%	6.52%	0.14%
1318	Van Horn	8.20%	8.71%	0.51%	1380	Whitewright	3.13%	3.40%	0.27%
1320	Vega	23.29%	24.11%	0.82%	1382	Whitney	4.07%	4.16%	0.09%
1324	Venus	10.54%	10.51%	-0.03%	1384	Wichita Falls	13.28%	13.48%	0.20%
1326	Vernon	12.29%	12.53%	0.24%	1386	Willis	9.46%	9.66%	0.20%
1328	Victoria	16.30%	16.58%	0.28%	1387	Willow Park	7.41%	7.22%	-0.19%
1329	Vidor	14.22%	14.11%	-0.11%	1388	Wills Point	12.01%	11.99%	-0.02%
1500	Village Fire Department	6.29%	5.92%	-0.37%	1390	Wilmer	4.48%	4.42%	-0.06%
1327	Village of the Hills	6.16%	6.03%	-0.13%	1392	Wimberley	6.56%	6.36%	-0.20%
1330	Waco	14.33%	14.79%	0.46%	1393	Windcrest	7.27%	7.37%	0.10%
1332	Waelder	2.75%	2.82%	0.07%	1395	Winfield	3.81%	3.46%	-0.35%
1334	Wake Village	12.84%	13.03%	0.19%	1396	Wink	7.85%	7.33%	-0.52%
1336	Waller	3.96%	3.96%	0.00%	1398	Winnsboro	9.10%	9.30%	0.20%
1337	Wallis	2.40%	2.46%	0.06%	1399	Winona	1.94%	5.21%	3.27%
1338	Walnut Springs	3.93%	3.52%	-0.41%	1400	Winters	10.41%	10.65%	0.24%
1340	Waskom	6.83%	6.91%	0.08%	1403	Wolfforth	11.49%	11.79%	0.30%
1341	Watauga	14.20%	14.75%	0.55%	1409	Woodcreek	8.03%	7.42%	-0.61%
1342	Waxahachie	15.36%	15.78%	0.42%	1404	Woodsboro	0.74%	1.69%	0.95%
1344	Weatherford	13.37%	13.81%	0.44%	1406	Woodville	17.39%	17.75%	0.36%
1345	Webster	17.70%	17.90%	0.20%	1407	Woodway	16.77%	16.91%	0.14%
1346	Weimar	16.89%	16.91%	0.02%	1408	Wortham	5.36%	6.01%	0.65%
1350	Wellington	4.27%	4.38%	0.11%	1410	Wylie	14.75%	15.35%	0.60%
1352	Wells	2.96%	3.24%	0.28%	1412	Yoakum	16.14%	16.00%	-0.14%
1354	Weslaco	8.27%	8.01%	-0.26%	1414	Yorktown	0.85%	0.99%	0.14%
1356	West	1.40%	2.33%	0.93%	1415	Zavalla	0.09%	1.52%	1.43%
1358	West Columbia	3.19%	4.02%	0.83%					