

# LCRA Retirement Plan

Report of an Actuarial Audit

Final Actuarial Audit Report in Accordance with  
Section 802.1012(f) of the Texas Government Code

August 24, 2023





August 24, 2023

Board of Trustees  
Lower Colorado River Authority  
3700 Lake Austin Blvd  
Austin, TX 78703

**Re: Final Report on the Actuarial Audit of the Lower Colorado River Authority Retirement Plan**

Dear Trustees:

Gabriel, Roeder, Smith & Company (GRS) is pleased to present this report of an actuarial audit of the January 1, 2023 Actuarial Valuation of the Lower Colorado River Authority Retirement Plan (the Plan). The following documents are intended to demonstrate that the plan sponsor has complied with Section 802.1012 of the Texas Government Code which requires an actuarial audit of public retirement systems with total assets of at least \$100 million every five years.

The following three documents will constitute the final actuarial audit report, as required by Section 802.1012(h) of the Texas Government Code:

1. This cover letter,
2. Actuarial audit report, dated August 3, 2023, and
3. The plan sponsor's response to the actuarial audit report, provided to GRS on August 15, 2023.

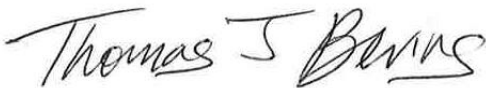
Following the delivery of the actuarial audit report on August 3, 2023, GRS requested a response to the report, as required by Section 802.1012(g) of the Texas Government Code. The plan sponsor provided a response to the draft report on August 15, 2023.

GRS is pleased to report that, in our professional opinion, we believe the January 1, 2023 Actuarial Valuation of the Lower Colorado River Authority Retirement Plan was reasonable, used appropriate assumptions and adhered to Actuarial Standards of Practice and Texas PRB Pension Funding Guidelines.

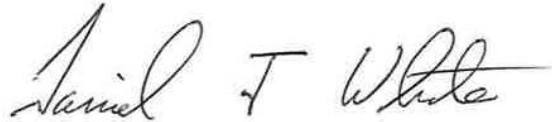
The signing actuaries are independent of the plan sponsor. Mr. Bevins is an Associate of the Society of Actuaries and Mr. White is an Enrolled Actuary, and a Fellow of the Society of Actuaries. Both Mr. Bevins and Mr. White are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,

**Gabriel, Roeder, Smith & Company**



Thomas J. Bevins, ASA, MAAA  
Consultant



Daniel J. White, FSA, MAAA, EA  
Regional Director

# LCRA Retirement Plan

Report of an Actuarial Audit

Final Actuarial Audit Report in Accordance with  
Section 802.1012(f) of the Texas Government Code

August 3, 2023





August 3, 2023

Board of Trustees  
Lower Colorado River Authority  
3700 Lake Austin Blvd  
Austin, TX 78703

Dear Trustees:

Gabriel, Roeder, Smith & Company (GRS) is pleased to present this report of an actuarial audit of the January 1, 2023 Actuarial Valuation of the Lower Colorado Retirement Plan Retirement Plan (the Plan). We are grateful to the Lower Colorado River Authority (LCRA) staff and Rudd and Wisdom, Inc., the retained actuary, for their cooperation throughout the actuarial audit process.

This actuarial audit involves an independent verification and analysis of the assumptions, procedures, methods, and conclusions used by the retained actuary for LCRA, in the valuation of the Plan as of January 1, 2023, to ensure that the conclusions are technically sound and conform to the appropriate Standards of Practice as promulgated by the Actuarial Standards Board.

GRS is pleased to report to LCRA that, in our professional opinion, the January 1, 2023 Actuarial Valuation prepared by the retained actuary provides a fair and reasonable assessment of the financial position of the Plan.

Throughout this report we make suggestions for ways to improve the work product. We hope that the retained actuary and LCRA find these items helpful. Thank you for the opportunity to work on this assignment.

Mr. Bevins and Mr. White are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,  
**Gabriel, Roeder, Smith & Company**

A handwritten signature in black ink that reads "Thomas J. Bevins". The signature is written in a cursive style with a prominent "T" and "B".

Thomas J. Bevins, ASA, MAAA  
Consultant

A handwritten signature in black ink that reads "Daniel J. White". The signature is written in a cursive style with a prominent "D" and "W".

Daniel J. White, FSA, MAAA, EA  
Regional Director

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## SECTION A

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### EXECUTIVE SUMMARY

## Executive Summary

LCRA issued a Request for Proposal (RFP) for an Actuarial Audit of the LCRA Retirement Plan (the Plan) and a peer review, including test lives (separated by defined benefit and cash balance plan), of the January 1, 2023 actuarial valuation performed by the retained actuary. LCRA selected Gabriel, Roeder, Smith & Company (GRS) to perform the actuarial audit. The project commenced in June of 2023.

This Actuarial Audit includes the following:

- Comparison and reconciliation of census data provided by LCRA and that used by the consulting actuary for preparing the actuarial valuation.
- Review and analysis of the calculation results as well as a review of the mathematical calculations for completeness and accuracy, based on a detailed review of a representative sample of the current plan participants.
- Verification that all appropriate benefits have been valued and valued accurately.
- Evaluation of the actuarial cost method and the actuarial asset valuation method in use and whether other methods may be more appropriate for LCRA.
- Verification of the reasonableness of the calculation of the unfunded actuarial accrued liability and the amortization period used under the actuarial cost method.
- Review of the demographic and economic actuarial assumptions for consistency, reasonableness and compatibility. Such assumptions shall include, but are not limited to: mortality, retirement and separation rates, levels of pay adjustments, rates of investment return, and disability factors.
- Assessment of the adherence to relevant Actuarial Standards of Practice (ASOPs) published by the American Academy of Actuaries.
- Assessment of the adherence to the Texas Pension Review Board (PRB) Pension Funding Guidelines.

This actuarial audit will satisfy the requirements of Section 802.1012 of the Texas Government Code which requires an actuarial audit of public retirement systems in Texas with total assets of at least \$100 million every five years.

### Summary of Findings

Based on our review, the actuarial valuation, studies, and reports of the Plan are reasonable, used appropriate assumptions and adhered to Actuarial Standards of Practice and Texas PRB Pension Funding Guidelines. We offer the following recommendations based on the valuation methods and assumptions used by the retained actuary in the January 1, 2023 actuarial valuation.

### Actuarial Assumptions

- In the next experience study, we recommend the retained actuary consider retirement rates for cash balance participants that are dependent on entry age, as was the case with the assumption prior to the most recent experience study. Alternatively, we recommend the retained actuary consider analyzing the retirement patterns on a liability-weighted basis rather than a count basis.





- In the next experience study, we recommend the retained actuary utilize a longer duration of data (eight to ten years) for the purpose of determining individual salary increases, including the underlying general increase assumption (currently 4.25%), specifically the economic productivity component.
- In the next experience study, we recommend that the retained actuary study the accrual and usage patterns for unused sick leave to determine if it is reasonable to include an assumption to project increases in unused sick leave until assumed retirement decrements, rather than only consider accrued sick leave as of the valuation date to stay constant until retirement.
- The current assumption for disability incidence is based upon an assumption formerly used by the Texas County and District Retirement System (TCDRS). We recommend that the retained actuary consider updating the current assumption for disability incidence to be congruent to the most recent assumption used by TCDRS.

#### **Actuarial Methods and Funding Policy**

- No recommendations

#### **Actuarial Valuation Results**

- No recommendations

#### **Content of Valuation Report**

- No recommendations

## **SECTION B**

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### **GENERAL ACTUARIAL AUDIT PROCEDURE**

# General Actuarial Audit Procedure

At the commencement of this engagement, GRS requested the information necessary to thoroughly review the work product of the retained actuary. Specifically, GRS received and reviewed the following items:

- Actuarial valuation report as of January 1, 2023,
- The most recent experience study dated October 11, 2021,
- The Plan's Investment Policy Statement, amended January 1, 2021; and the Amendment to Investment Management Agreement effective October 31, 2022,
- The Lower Colorado River Authority Retirement Plan and Trust Agreement, amended and restated effective January 1, 2014; and Amendment No. Three (effective November 19, 2019) and Amendment No. Four (effective January 1, 2021),
- January 1, 2023 Outline of Major Plan Provisions for Pension Participants and January 1, 2023 Outline of Major Plan Provisions for Cash Balance Participants, and
- Detailed calculations from the retained actuary for a sampling of 30 plan participants as of January 1, 2023.

In performing our review, we:

- Reviewed the plan document to understand the benefits provided by the Plan,
- Reviewed the appropriateness of the actuarial assumptions,
- Reviewed the census data for basic demographic statistics (statuses, pay, benefits, payment forms, etc.),
- Reviewed the actuarial reports/studies, and
- Reviewed the detailed liability calculation of the 30 sample test lives to ensure that the calculations were consistent with the stated plan provisions, actuarial methods and assumptions.

The entire review, which follows, is based on our review of this information and subsequent correspondence with LCRA and the retained actuary for clarification and further documentation.

## Key Actuarial Concepts

An actuarial valuation is a detailed statistical simulation of the future operation of a retirement plan using the set of actuarial assumptions adopted by the plan sponsor. It is designed to simulate all of the dynamics of such a retirement plan for each current participant of the plan, including:

- Accrual of future service,
- Changes in compensation,
- Leaving the plan through retirement, disability, withdrawal, or death, and
- Determination of and payment of benefits from the plan.

This simulated dynamic is applied to each active participant of the plan. This simulation results in a set of expected future benefit payments to that participant. Discounting those future payments for the likelihood of survival and at the assumed rate of investment return, produces the Total Present Value of Plan Benefits (TPV) for that participant. The actuarial cost method will allocate this TPV between the participant's past service (actuarial accrued liability) and future service (future normal costs).

## **PRB Pension Funding Guidelines**

During our actuarial audit of the Plan, we reviewed the actuarial valuation of the Plan from the perspective of the Texas Pension Review Board's Pension Funding Guidelines, as adopted January 26, 2017, effective June 30, 2017. The Guidelines are:

1. The funding of a pension plan should reflect all plan obligations and assets.
2. The allocation of the normal cost portion of the contributions should be level or declining as a percent of payroll over all generations of taxpayers, and should be calculated under applicable actuarial standards.
3. Funding of the unfunded actuarial accrued liability should be level or declining as a percentage of payroll over the amortization period.
4. Actual contributions made to the plan should be sufficient to cover the normal cost and to amortize the unfunded actuarial accrued liability over as brief a period as possible, but not to exceed 30 years, with 10 - 25 years being the more preferable target range.\* For plans that use multiple amortization layers, the weighted average of all amortization periods should not exceed 30 years. Benefit increases should not be adopted if all plan changes being considered cause a material increase in the amortization period and if the resulting amortization period exceeds 25 years.
5. The choice of assumptions should be reasonable, and should comply with applicable actuarial standards.
6. Retirement systems should monitor, review and report the impact of actual plan experience on actuarial assumptions at least once every five years.

*\* Plans with amortization periods that exceed 30 years as of 06/30/2017 should seek to reduce their amortization period to 30 years or less as soon as practicable, but not later than 06/30/2025.*

These key actuarial concepts will be discussed in more detail throughout this report.

## **SECTION C**

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### **ACTUARIAL ASSUMPTIONS**

# Actuarial Assumptions

## Overview

The actuarial valuation report contains a description of the actuarial assumptions which were used in the actuarial valuation as of January 1, 2023. Additionally, the retained actuary published an actuarial experience report, dated October 11, 2021. We have reviewed this report in detail in order to assess the reasonableness of the assumptions used in the actuarial valuation.

The set of actuarial assumptions is one of the foundations upon which an actuarial valuation is based. An actuarial valuation is, essentially, a statistical projection of the amount and timing of future benefits to be paid under the retirement plan. In any statistical projection, assumptions as to future events will drive the process. Actuarial valuations are no exception.

It is important to understand the nature of the retirement plan and the plan sponsor when assessing the reasonableness of the actuarial assumptions. No projection of future events can be labeled as “correct” or “incorrect”. However, there is a “range of reasonableness” for each assumption. We evaluate individual elements as follows:

- Whether or not they fall within the range of reasonableness, and
- If they fall within that range, whether they are reasonable for the actuarial valuation of the Plan.

Actuarial assumptions for the valuation of retirement plans are of two types: (i) demographic assumptions, and (ii) economic assumptions. We have assessed the reasonableness of both types as part of this actuarial audit.

## Demographic Assumptions

### General

These assumptions simulate the movement of participants into and out of plan coverage and between status types. Key demographic assumptions are:

- turnover among active participants,
- retirement patterns among active participants, and
- healthy retiree mortality.

In addition, there are a number of other demographic assumptions with less substantial impact on the results of the process, such as:

- disability incidence and mortality among disabled benefit recipients,
- mortality among active participants,
- distribution of form of payment selection, and
- percent of active participants who are married and the relationship of the ages of participants and spouses.

Demographic assumptions for a retirement plan such as LCRA are normally established by statistical studies of recent actual experience, called experience studies. Such studies underlie the assumptions used in the valuations.

Once it is determined whether or not an assumption needs adjustment, setting the new assumption depends upon the extent to which the current experience is an indicator of the long-term future.

- Full credibility may be given to the current experience. Under this approach, the new assumptions are set very close to recent experience.
- Alternatively, the recent experience might be given only partial credibility. Thus, the new assumptions may be set by blending the recent experience with the prior assumption.
- If recent experience is believed to be atypical of the future, such knowledge is taken into account.
- Finally, it may be determined that the size of the plan does not provide a large enough sample to make the data credible. In such cases, the experience of the plan may be disregarded and the assumption is set based upon industry standards for similar groups.

The measurement of experience is normally affected by simply counting occurrences of an event. Thus, for example, in reviewing retirement patterns, an actuary might count the number of actual retirees among males aged 55 with 30 years of service. These retirements would be compared against the number of total people in that group to generate a raw rate of retirement for that group.

### Experience Study Report

The experience study report, dated October 11, 2021, provides a thorough description of each assumption studied, the basis of the proposed assumption, a summary of the current and proposed assumptions, and the impact of the changes on the actuarial valuation.

We believe that the experience study report did a very good job describing the assumptions, providing context for the basis of the assumptions, and outlining the reasoning for the proposed assumptions (and applicable changes, if any) going forward. It is best practice to review the definition of actuarial equivalence whenever assumption changes are being considered and presenting this information in the experience study report allows the decision makers to consider all of the proposed changes at the same time.

### Observations on Assumptions

Overall, it appears that the current demographic assumptions are reasonable. Below, we offer general observations and considerations for the retained actuary based on our experiences with similar plans.

Retirement – It was very helpful that the actuary pointed out that the Optional Credited Service (OCS) provisions affected the analysis of retirement activity over the period that was studied. We understand that this program made updating the retirement rates difficult and concur with the actuary in making several adjustments to the anticipated retirement rates. In addition, the rates at which participants are assumed to retire are based on the participant's age at hire and their current age and the Plan allows participants to retire with a Rule of 80 (age plus service equals at least 80). It is likely that rates of

retirement have some correlation to both the participant's current age and current service. The current assumption allows both of these factors to be considered when establishing the retirement assumption.

We believe that the overall retirement rate assumption is appropriate for the Plan. However, we would like to include a general observation in regard to the comparison of retirement rates between the traditional pension plan (Option A) and the cash balance plan (Option B). Although there is very little actual experience of retirements in the cash balance plan, we noticed some significant changes for retirement rates for ages 61 and under as a result of the most recent experience study. Additionally, the rates at each age are no longer dependent on entry-age, meaning a correlation to service at retirement was eliminated. The actuary did note, however, that there were simply not enough exposures in each age vs. entry-age grouping to be statistically credible, which is a valid statement.

When a new tier of benefit provisions or a new plan design is introduced, actuaries still must develop reasonable assumptions of future behavior even if there has yet to be any actual experience. Due to the accrual nature of the cash balance plan, we believe that the retirement patterns could be correlated to years of service or the accumulated cash balance, and thus entry-age at age of retirement seems relevant. This also could be solved by weighting the analysis by the amount of potential liability instead of by counts. However, we also acknowledge that this has less relevance with a cash balance plan than with a traditional defined benefit plan as it relates to the liability and normal cost. Generally speaking, the Option A participants have higher retirement rates than Option B participants at most ages, but curiously lower rates for ages 60 to 62. Although this may end up being entirely valid, we recommend the retained actuary continue to monitor this as more Option B experience develops.

Turnover – The rates at which participants are assumed to withdraw (or turnover) are based on the participant's age at hire and their current service. In the experience study, the experience of cash balance participants was combined with the pension plan participants, which we believe is reasonable. The current assumption was also developed to be consistent with the actual experience over the most recent experience study period and we believe that the withdrawal rate assumption is appropriate for the Plan.

Disability Incidence – In general, very little retirement plan experience exists in order to set a reasonable assumption based on actual retirement plan experience, and the actuary explains this in the report. It is our understanding that the current assumption was recommended as a result of the June 7, 2016 experience study and match those used by the Texas County and District Retirement System (TCDRS) at that point in time. The current assumption for disability incidence that is based on the TCDRS pension plan assumptions seems reasonable. However, TCDRS has completed a new experience study since then and disability rates were updated for that plan. The actuary may want to consider using the updated rates in the upcoming actuarial valuations.

Mortality – The main demographic assumption in an actuarial valuation is mortality because this assumption is a predictor of how long pension payments will be made by the trust (excluding lumps sums paid by the cash balance plan). The current mortality assumption for active participants, healthy annuitants, and disabled annuitants is based on the gender distinct Above Median Salary subset of the Pub-2010 General Employees Mortality Tables with generational mortality improvements using Scale MP-2020. For actuarial equivalence, including lump sum conversion purposes, the same tables are used but with a unisex blend of 80% male/ 20% female and projected to the year 2026. This is an established





mortality assumption and is appropriate for this purpose. The use of the Pub-2010 tables has become the industry standard for public retirement systems, specifically for those like LCRA that are not large enough to establish full statistical credibility based on its own experience. Furthermore, the Pub-2010 tables were developed on a benefit or salary-weighted basis and thus, given the salary statistics of LCRA plan participants, we believe the use of the Above Median subset is appropriate. Additionally, the 80% male/20% female blend used for the unisex actuarial equivalence assumption continues to be an appropriate fit based on the gender distribution in the January 1, 2023 valuation.

*Unused Sick Leave Accrual* – Since the prior actuarial audit that was performed in 2018, the retained actuary began including unused sick leave in the projected benefit calculations. The current assumption is that participants will have the same amount of unused sick leave at retirement as what is provided as of the valuation date. For instance, a new hire that has not accrued any unused sick leave will be assumed to retire with no unused sick leave, but someone with many years of service and a notable amount of unused sick leave will be projected to retire with that accumulated amount of unused sick leave. If the unused sick leave of participants generally increases over their career, this will lead to actuarial losses and thus should be included in the normal cost.

It is unclear if the accrual of unused sick leave throughout a participant's career at LCRA was analyzed in the most recent experience study, or if there was even enough historical data to do so. The assumption prior to the most recent experience study was to add a 2% load to projected benefits. In the next experience study, we recommend that the retained actuary study the accrual and usage patterns for unused sick leave to determine if it is reasonable to include an assumption to project increases in unused sick leave until assumed retirement decrements, rather than only consider accrued unused sick leave as of the valuation date to stay constant until retirement.

## **Economic Assumptions**

### **General**

These assumptions simulate the impact of economic forces on the amounts and values of future benefits. Key economic assumptions are the assumed rate of investment return and assumed rates of future salary increase. All economic assumptions are built upon an underlying inflation assumption.

### **Inflation**

Inflation refers to mean price inflation as measured by annual increases in the Consumer Price Index (CPI). This inflation assumption underlies most of the other economic assumptions. It primarily impacts investment return and salary increases.

The current explicit inflation assumption is 2.50%. The inflation assumption was lowered from 2.75%, initially set in the January 1, 2017 actuarial valuation, to 2.50% beginning with the January 1, 2021 actuarial valuation and has remained at 2.50% through the January 1, 2023 actuarial valuation, as a result of the October 11, 2021 Experience Study.

In our review of the 2023 capital market assumption sets for the eleven investment consulting firms listed on the next page, the average assumption for inflation was approximately 2.52%, with a range of 2.26% to 2.90%. It should be noted that all of these investment consulting firms set their assumptions based on approximately a ten-year outlook, while actuaries generally must make longer projections.

In the Social Security Administration’s 2023 Trustees Report, the Office of the Chief Actuary projected a long-term average annual inflation rate of 2.4% under the intermediate cost assumption. (The low-cost assumption was 3.0% and the high cost assumption was 1.8%). These inflation assumptions forecasts have not materially changed for several years, as they were the same rates as in the corresponding 2020, 2021 and 2022 reports.

The Philadelphia Federal Reserve conducts a quarterly survey of the Society of Professional Forecasters. In their forecast immediately preceding the January 1, 2023 actuarial valuation, fourth quarter of 2022, was for inflation over the next ten years to average 2.95%. Over the shorter term, the society of Professional Forecasters are predicting inflation to average 3.4%% and 2.5% for the calendar years 2023 and 2024, respectively, so they are expecting inflation to fluctuate more so than in projections from a few years ago when actual inflation was at historical lows.

We consider the 2.50% assumption to be within the reasonable range. However, given recent developments of high inflation over roughly the past two years, we also recommend that the retained actuary continue to monitor this assumption (which they appear to be doing annually) to ensure that it remains within a reasonable range.

## Investment Return

The investment return assumption is one of the principal assumptions 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 retirement plan. Even a small change to this assumption can produce significant changes to the liabilities and contribution rates. The current assumption incorporates inflation of 2.50% per annum plus an annual real rate of return of 4.50%, net of investment-related expenses paid from the trust, for an assumed nominal rate of return of 7.00%. Note these assumptions are the same as those recommended by the October 11, 2021 Experience Study.

We believe an appropriate approach to reviewing an investment return assumption is to determine the median expected portfolio return given the retirement plan’s target allocation and a given set of capital market assumptions. Per the Plan’s Investment Policy Statement, amended January 1, 2021, the Plan’s current target asset allocation is:

Asset Class	Minimum %	Maximum
Return Enhancement Strategies	60%	80%
Risk Management Strategies	10%	30%
Alternatives	0%	20%
Cash Equivalent Reserves	0%	10%

However, Exhibit 2 of the “Amendment to Investment Management Agreement,” effective on or about October 31, 2022 provides more detail of the targeted asset classes, shown in the table below:

Asset Class	Target
SIIT S&P 500 Index Fund	30.00%
SIIT Small/Mid Cap Fund	7.00%
SIIT World Equity Ex-US Fund	22.00%
SIIT Emerging Markets Equity Fund	3.00%
SIIT Core Fixed Income Fund	14.00%
SIIT Limited Duration Bond Fund	6.00%
SIIT High Yield Fund	4.00%
SIIT Emerging Markets Debt Fund	4.00%
SEI Core Property Collective Investment Trust	5.00%
SEI Special Situations Collective Investment Trust	5.00%
<b>Total</b>	<b>100.00%</b>

Because GRS is a benefit consulting firm and does not develop or maintain our own capital market assumptions, we reviewed assumptions developed and published by the following investment consulting firms:

- Aon
- Black Rock
- BNY Mellon
- Callan
- Cambridge
- JP Morgan
- Meketa
- Mercer
- NEPC
- Verus
- Wilshire

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 estimates for core investments (i.e. fixed income, equities, and real estate) are generally based on anticipated returns produced by passive index funds.

In addition to examining the expected geometric return, it is important to review anticipated volatility of the investment portfolio and understand the range of long-term net return that could be expected to be produced by the investment portfolio. Therefore, the following table provides the 40<sup>th</sup>, 50<sup>th</sup>, and 60<sup>th</sup> percentiles of the 10-year geometric average of the expected nominal return, net of investment-related expenses paid from the trust, as well as the probability of exceeding the current 7.00% assumption.

Capital Market Assumption Set (CMA)	Distribution of 10-Year Average Geometric Net Nominal Return			Probability of exceeding 7.00%
	40th	50th	60th	
(1)	(2)	(3)	(4)	(5)
1	4.88%	5.85%	6.83%	38.3%
2	4.93%	5.89%	6.86%	38.6%
3	5.62%	6.60%	7.59%	45.9%
4	5.73%	6.74%	7.76%	47.4%
5	5.88%	6.83%	7.79%	48.2%
6	5.89%	6.84%	7.81%	48.4%
7	5.97%	6.93%	7.90%	49.2%
8	6.22%	7.17%	8.12%	51.8%
9	6.22%	7.18%	8.16%	51.9%
10	6.69%	7.62%	8.56%	56.7%
11	6.82%	7.83%	8.84%	58.3%
<b>Average</b>	<b>5.90%</b>	<b>6.86%</b>	<b>7.84%</b>	<b>48.6%</b>

The table above shows that the resulting 10-year geometric average of the expected nominal return is 6.86%. Additionally, the table above documents that the average probability of exceeding the current 7.00% investment return assumption over a 10-year period is 48.6%.

The current investment return assumption falls within our best-estimate range and we believe that the assumption is reasonable for this purpose.

### Earnings Progression

In general, assumed rates of pay increase are often constructed as the total of three main components:

- Price inflation – currently 2.50%
- Economic Productivity Increases – currently 1.75%
- Merit, Promotion, and Longevity – This portion of the salary increase assumption reflects components such as promotional increases as well as increases for merit and longevity. This portion of the assumption is not related to inflation. The current assumptions vary this component based on the participant’s age at hire and their current service.

In the context of a typical employer pay scale, pay levels are set for various employment grades. In general, this pay scale is adjusted as follows:

- The inflation and economic productivity assumptions, collectively referred to as wage inflation, reflect the overall increases of the entire pay scale, and
- The Merit, Promotion, and Longevity increase assumption reflects movement of participants through the pay scale.

Based on the building block approach outlined above, the earnings progression assumption is based on the sum of the expected pay increases related to wage inflation plus a component for merit, promotion and longevity. The current assumption was developed to be consistent with the actual experience over the most recent experience study period.

In the October 11, 2021 Experience Study the retained actuary recommended the 1.75% assumption for economic productivity increases, which was an increase of 1.00% from the prior 0.75% assumption. Additionally, there were no changes to the underlying price inflation of 2.50% or the rates for merit, promotion, and longevity, which is a two-dimensional table based on years of service and entry age. Table 7 in the experience study report shows the combined average salary increases, divided into two service-based groups: 1 to 19 years of service, and 20+ years of service. For easier reference in this discussion, Table 7 has been replicated below:

Replication of Table 7

Number of Increases	Years of Service	Combined Average Increases		
		Assumed	Actual	Difference
3,199	1 - 19	3.70%	4.70%	1.00%
847	20+	3.25%	3.86%	0.61%
<u>4,046</u>	Total	3.60%	4.51%	0.91%

The prior assumption for general wage inflation was 3.25% (2.50% price inflation plus 0.75% economic productivity). We typically find that general wage inflation shows itself among long-service employees, when employees, on average, have exhausted most of their opportunities for merit and promotion increases. Thus, we believe the difference of 0.61% on the row for employees with 20+ years of service may be a better indicator of changes in the economic productivity component, with that being the ceiling given that some of those employees may still be receiving merit, promotion, and longevity increases. Subtracting the 2.50% price inflation assumption from the actual experience of 3.86% for employees with 20+ years of service results in a 1.36% economic productivity component. As it follows based on this building block approach, this may indicate that it may have been appropriate to adjust the table for merit, promotion, and longevity increases, specifically for employees with 1 to 19 years of service.

Furthermore, we find that when it comes to salary increases, typically a longer duration than the four years of experience utilized in the experience study illustrates the economic cycle for compensation (e.g. eight to ten years). This study may be heavily weighted by one or more “catch-up” years of increases that may not be expected as frequently as every four years. For example, the prior economic productivity assumption was 0.75% and the current assumption is 1.75%, which was a relatively drastic increase. Both may be appropriate within the years studied, but if combined, an assumption somewhere in between may be a more appropriate reflection of long-term expectations.

In the next experience study, we recommend that the retained actuary consider utilizing a longer duration of data to analyze compensation increases, as well as put a greater weight on long-service employees for determining the economic productivity component. We further recommend that the retained actuary revisit the table for merit, promotion, and longevity increases, if when added to the general wage inflation (price inflation plus economic productivity), is no longer an appropriate fit.

## Summary

The set of actuarial assumptions and methods, taken in combination, are within the range of reasonableness and established in accordance with ASOP No. 27, Selection of Economic Assumptions for Measuring Pension Obligations, ASOP No. 35, Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations, and the Texas PRB Guidelines for Actuarial Soundness.

We have the following recommendations regarding the actuarial assumptions:

- (1) In the next experience study, we recommend the retained actuary consider retirement rates for cash balance participants that are dependent on entry-age, as was the case with the assumption prior to the most recent experience study. Alternatively, we recommend the retained actuary consider analyzing the retirement patterns on a liability-weighted basis rather than a count basis.
- (2) In the next experience study, we recommend the retained actuary utilize a longer duration of data (eight to ten years) for the purpose of determining individual salary increases, including the underlying general increase assumption (currently 4.25%), specifically the economic productivity component.
- (3) In the next experience study, we recommend that the retained actuary study the accrual and usage patterns for unused sick leave to determine if it is reasonable to include an assumption to project increases in unused sick leave until assumed retirement decrements, rather than only consider accrued sick leave as of the valuation date to stay constant until retirement.
- (4) The current assumption for disability incidence is based upon an assumption formerly used by the Texas County and District Retirement System (TCDRS). We recommend that the retained actuary consider updating the current assumption for disability incidence to be congruent to the most recent assumption used by TCDRS.

## SECTION D

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### **ACTUARIAL METHODS AND FUNDING POLICY**

# Actuarial Methods and Funding Policy

## Actuarial Cost Methods

### General

The ultimate cost of the Plan is equal to the benefits paid plus the expenses related to operating the Plan. This cost is funded through contributions to the Plan plus the investment return on accumulated contributions which are not immediately needed to pay benefits or expenses. The level and timing of the contributions needed to fund the ultimate cost are determined by the actuarial assumptions, plan provisions, participant characteristics, investment experience, and the actuarial cost method.

An actuarial cost method is a mathematical process for allocating the dollar amount of the Total Present Value of Plan Benefits (TPV) between future normal costs and the Actuarial Accrued Liability (AAL). The retained actuary uses the Entry Age Normal actuarial cost method, characterized by:

- (1) Normal Cost (NC) – the level percent of payroll contribution, paid from each participant’s date of hire to date of retirement, which will accumulate enough assets at retirement to fund the participant’s projected benefits from retirement to death.
- (2) Actuarial Accrued Liability – the excess of the TPV over the present value of all future remaining normal costs.

The Entry Age Normal actuarial cost method is the most prevalent funding method in the public sector. It is appropriate for the public sector because it produces costs that remain relatively stable as a percentage of payroll over time, resulting in intergenerational equity for taxpayers. Historically, most public plans have used the Entry Age Normal actuarial cost method. Therefore, the retained actuary’s stated methods for allocating the liabilities of the Plan are certainly in line with national trends.

### Comments on the Cost Method

We believe that the use of the Entry Age Normal actuarial cost method is reasonable in this situation.

## Asset Valuation Method

Sharp short-term swings in market value can result in large fluctuations in the contributions required to fund the Plan. Thus, many actuaries use an asset valuation method which smooths out these fluctuations in support of achieving level contributions. A good asset valuation method places values on a retirement plan’s assets which are related to current market value but which will also produce a smoother pattern of costs.

ASOP No. 44, Selection and Use of Asset Valuation Methods for Pension Valuations, provides a framework for the determination of the actuarial value of assets (AVA) emphasizing that the method should bear a reasonable relationship to the market value of assets (MVA), recognize investment gains and losses over



an appropriate time period, and avoid systematic bias that would overstate or understate the AVA in comparison to MVA.

The actuarial valuation of the Plan currently utilizes a smoothed asset valuation method that immediately recognizes income equal to the expected return on valuation assets, based on the assumed valuation interest rate (7.00%). Differences between the assumed investment return on valuation assets and the actual market investment return is recognized over a five-year period. Further, the AVA is constrained to be within 80% and 120% of the MVA. This “corridor” assures that the AVA will always be within a reasonable range around the MVA.

The smoothing method used for the actuarial valuation of the Plan is very common among public employee retirement systems. We feel that this method complies with ASOP No. 44, Selection and Use of Asset Valuation Methods for Pension Valuations. Additionally, this method is reasonable and appropriately applied for the valuation.

## **Funding Policy**

The LCRA Retirement Plan was closed to new entrants as of May 1, 2012. As a result, the retained actuary proposed a new funding policy for the April 1, 2012 actuarial valuation where LCRA would contribute the Plan’s normal cost and an amount sufficient to amortize the Plan’s unfunded AAL over a 25-year period. Since the group of active Plan participants is now closed, the retained actuary further recommended that the contribution toward the unfunded AAL be calculated based on a level dollar basis and over a closed 25-year period.

Sections 6.02 and 6.03 of the Lower Colorado River Authority Retirement Plan and Trust Agreement, as amended and restated effective January 1, 2014, direct the actuary to recommend a funding policy that determines the contributions “necessary to fund the benefits of the Plan on a sound actuarial basis”.

This is a reasonable funding policy and complies with the provisions of the Plan and the Texas PRB Pension Funding Guidelines.

## **SECTION E**

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### **ACTUARIAL VALUATION RESULTS**

# Actuarial Valuation Results

## Benefits

Every employer is different and every employer's retirement plan is different. Each employer has a set of business needs that dictate the type of retirement benefit that is most appropriate for their employees. Additionally, the amount of resources available to allocate to the retirement plan will dictate the level of benefits provided by the retirement plan. Regardless of the reasons for the benefit design, the employer must understand the liability and contribution requirements associated with the benefits promised. As a result, the actuarial valuation and the resulting funding policy contribution must properly reflect the benefit structure of the retirement plan.

In general, the benefits promised by the Plan were reasonably incorporated in the actuarial valuation of the Plan.

## Actuarial Valuation Results

As part of our review, GRS requested sample participant test life calculations from the retained actuary to ensure that the retained actuary valued the correct benefit levels, used the correct assumptions, and calculated the liabilities correctly on an individual basis.

Generally accepted actuarial standards and practices provide actuaries with the basic mathematics and framework for calculating the actuarial results. When it comes to applying those actuarial standards to complex calculations, differences may exist due to individual opinion on the best way to make those complex calculations. This may lead to differences in the calculated results, but these differences should not be material.

**Active Participants.** At the onset of the review, we requested that the retained actuary provide sample test life calculations for 12 active participants. The retained actuary provided the information we requested regarding the active participants with sufficient detail to allow for a thorough review of the calculations.

Based on our review of the aspects of the actuarial valuation, the liability determination of active participants was reasonable and appropriately determined.

**Participants with deferred benefits.** At the onset of the review, we requested that the retained actuary provide sample test life calculations for six deferred vested participants waiting to commence their retirement benefits, including two disabled deferred. The retained actuary provided the information we requested regarding these participants with deferred benefits with sufficient detail to allow for a thorough review of the calculations.

Based on our review, the liability determination of these participants was reasonable and consistent with the stated assumptions and methods.

**Annuitants.** At the onset of the review, we requested that the retained actuary provide sample test life calculations for 12 annuitants. The retained actuary provided the information we requested regarding the annuitants with sufficient detail to allow for a thorough review of the calculations.

Based on our review, the liability determination of annuitants was reasonable and consistent with the stated assumptions and methods.

## Summary

Besides the comments made in Section C of this report, we believe that the valuation results are developed in a reasonable manner.

## **SECTION F**

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### **CONTENT OF THE VALUATION REPORT**

## Content of the Valuation Report

ASOP No. 4, Measuring Pension Obligations and Determining Pension Plan Costs or Contributions, and ASOP No. 41, Actuarial Communications, provide guidance for measuring pension obligations and communicating the results. The Standards list specific elements to be included, either directly or by references to prior communication, in pension actuarial communications. The pertinent items that should be included in actuarial valuation report on a pension plan should include:

- The name of the person and/or firm retaining the actuary and the purposes that the communication is intended to serve.
- A statement as to the effective date of the calculations, the date as of which the participant and financial information were compiled, and the sources and adequacy of such information.
- An outline of the benefits being discussed or valued and of any significant benefits not included in the actuarial determinations.
- A summary of the participant information, separated into significant categories such as active, retired, and terminated with future benefits payable. Actuaries are encouraged to include a detailed display of the characteristics of each category and reconciliation with prior reported data.
- A description of the actuarial assumptions, cost method and the asset valuation method used. Changes in assumptions and methods from those used in previous communications should be stated and their effects noted. If the actuary expects that the long-term trend of costs resulting from the continued use of present assumptions and methods would result in a significantly increased or decreased cost basis, this should also be communicated.
- A summary of asset information and derivation of the actuarial value of assets. Actuaries are encouraged to include an asset summary by category of investment and reconciliation with prior reported assets showing total contributions, benefits, investment return, and any other reconciliation items.
- A statement of the findings, conclusions, or recommendations necessary to satisfy the purpose of the communication and a summary of the actuarial determinations upon which these are based. The communication should include applicable actuarial information regarding financial reporting. Actuaries are encouraged to include derivation of the items underlying these actuarial determinations.
- A disclosure of any facts which, if not disclosed, might reasonably be expected to lead to an incomplete understanding of the communication.

### Summary

In general, the actuarial valuation report complied with the applicable Actuarial Standards of Practice. The presentation of actuarial methods and assumptions is generally complete and understandable. The methods described in this section are reasonable and appropriate for public retirement plans. We have no further suggestions regarding the overall communication of the valuation report.

## **SECTION G**

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### **FINAL REMARKS**

## Final Remarks

The auditing actuarial firm, Gabriel, Roeder, Smith & Company (GRS), is independent of LCRA, the plan sponsor and retained actuarial firm. The auditing actuaries are not aware of any conflict of interest that would impair the objectivity of this work.

We have presented a few suggestions for areas where we believe the product can be improved and we hope that LCRA, the plan sponsor and the retained actuary find these suggestions useful. The retained actuary has access to information and a long history of experience with LCRA. We understand that the retained actuary may agree with some of our recommendations, while rejecting others. We ask that the retained actuary and LCRA consider our recommendations carefully.





Mr. Daniel White, Regional Director  
Mr. Thomas Bevins, Consultant  
Gabriel Roeder Smith & Company  
5605 N. MacArthur Blvd., Suite 870  
Irving, Texas 75038-2631

Re: Comments on the Actuarial Audit of the  
January 1, 2023 Actuarial Valuation

Dear Mr. White and Mr. Bevins:

The state law requiring actuarial audits of public employee pension plans gives the LCRA Retirement Plan Board of Trustees the opportunity to make written comments on your actuarial review of the actuarial valuation of the LCRA Retirement Plan prepared by Rudd and Wisdom, Inc. The Board has asked them for assistance in preparing these comments. We have reproduced the summary of your recommendations from pages 2 and 3 of your preliminary report and inserted our comments in bold print for inclusion in your final report.

#### Actuarial Assumptions

- (1) In the next experience study, we recommend the retained actuary consider retirement rates for cash balance participants that are dependent on entry age, as was the case with the assumption prior to the most recent experience study. Alternatively, we recommend the retained actuary consider analyzing the retirement patterns on a liability-weighted basis rather than a count basis.

**Rudd and Wisdom will consider retirement rates for cash balance participants that are dependent on entry age in the next experience study if there is adequate experience. Alternatively, Rudd and Wisdom will consider analyzing the retirement patterns on a liability-weighted basis rather than a count basis.**

- (2) In the next experience study, we recommend the retained actuary utilize a longer duration of data (eight to ten years) for the purpose of determining individual salary increases, including the underlying general increase assumption (currently 4.25%), specifically the economic productivity component.

**Rudd and Wisdom will consider using at least eight years of data for reviewing the individual salary increases experience in the next experience study.**

#### Actuarial Methods and Funding Policy

- (3) In the next experience study, we recommend that the retained actuary study the accrual and usage patterns for unused sick leave to determine if it is reasonable to include an assumption to project increases in unused sick leave until assumed retirement decrements, rather than only consider accrued sick leave as of the valuation date to stay constant until retirement.

**Rudd and Wisdom will consider as a part of the next experience study if it is reasonable to study the accrual and usage patterns for unused sick leave to project unused sick leave once eligible for retirement rather than assuming that accrued sick leave at retirement would be the same as of the date of each actuarial valuation.**

- (4) The current assumption for disability incidence is based upon an assumption formerly used by the Texas County and District Retirement System (TCDRS). We recommend that the retained actuary consider updating the current assumption for disability incidence to be congruent to the most recent assumption used by TCDRS.

**Rudd and Wisdom will consider basing the disability incidence assumption on the most recent assumption used by TCDRS in the next experience study.**

Rudd and Wisdom expressed to us their appreciation for the quality of your actuarial audit and the professional way in which you interacted with them and prepared your report.

Sincerely,



Jim Travis  
Chair LCRA Retirement Board of Trustees