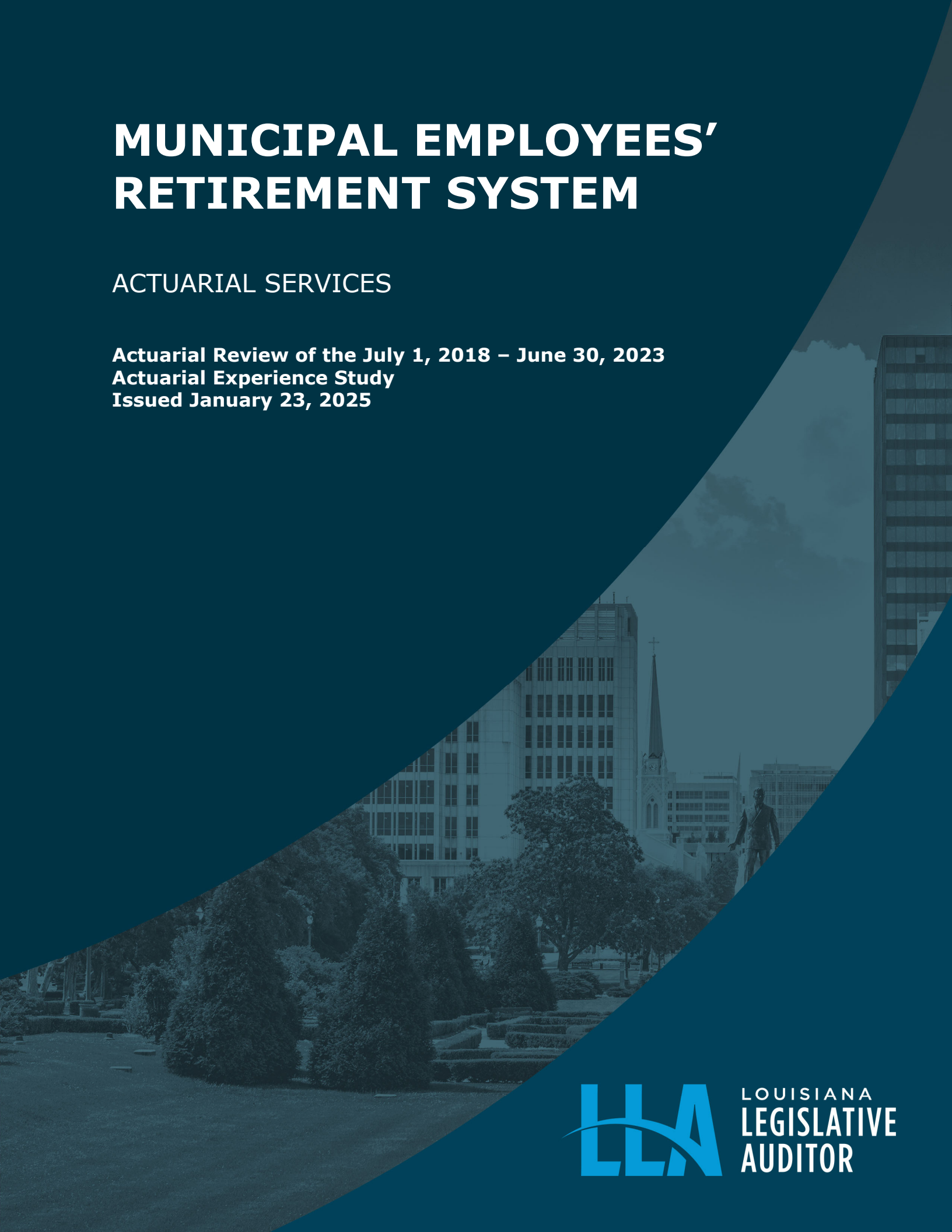
MUNICIPAL EMPLOYEES' RETIREMENT SYSTEM

ACTUARIAL SERVICES

Actuarial Review of the July 1, 2018 – June 30, 2023
Actuarial Experience Study
Issued January 23, 2025



LOUISIANA LEGISLATIVE AUDITOR

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January 23, 2025

The Honorable Tony Bacala
Chairman, Public Retirement Systems' Actuarial Committee
Louisiana House of Representatives
Post Office Box 94062
Baton Rouge, Louisiana 70804

Re: Actuarial Review of MERS' 2024 Experience Study

Dear Chairman Bacala and PRSAC Members:

In accordance with La. R.S. 11:127(C) and 24:513(C)(1), the Louisiana Legislative Auditor has conducted an Actuarial Review for the Municipal Employees' Retirement System.

The following presents the results of our Actuarial Review of MERS' July 1, 2018 – June 30, 2023 Experience Study Report (2024 Experience Study) prepared by Curran Actuarial Consulting, Ltd. and dated June 14, 2024. In doing so, we have reviewed certain actuarial assumptions and methods recommended by MERS' actuary.

I would like to thank MERS' director, staff, and actuary for the cooperation and assistance provided for this review.

Respectfully submitted,

Michael J. "Mike" Waguespack, CPA
Legislative Auditor

MJW:kjh

cc: Ms. Maris LeBlanc, Executive Director
Municipal Employees' Retirement System

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Executive Summary

We performed a review of the methods used by MERS' actuary as presented in the 2024 Experience Study. We have also reviewed the economic, demographic, and other valuation actuarial assumptions studied in the 2024 Experience Study.

Summary of Findings

In general, we did not identify any significant deficiencies in the reporting, nor did we identify any significant issues with the basis for which the assumptions were studied. However, we have brought up a number of possible considerations or recommendations, which the MERS Board and actuary may find beneficial if incorporated in the upcoming valuations or future experience studies.

We summarize our recommendations below with additional comments presented in the remainder of the report.

Economic Assumption Recommendations

The following economic assumptions were reviewed in the Experience Study Report:

- Inflation
- Investment Rate of Return and Discount Rate
- Salary Increase Rates

We find the economic assumptions recommended by the MERS actuary to be generally reasonable and adequately documented. However, we offer the following recommendations for improving the development, assessment, and/or disclosure of the economic assumptions.

Investment Return

(1) Time Horizon – Develop an investment return assumption that reflects both the mid-term (10 years) and the long-term (20-30 years) time horizons, blending them based on the plan's expected benefit stream and cash flows.
(2) Volatility of CMAs[1] and Smoothing – Consider smoothing the volatility of market-driven CMAs used when developing a recommendation and/or assessing the reasonableness of the selected assumption. This can be done

[1] Market-driven Capital Market Assumptions (CMAs) are developed by professional investment forecasters and are comprised of (a) expected returns for each asset class, (b) expected rate of inflation, (c) expected standard deviations for each asset class and (d) expected correlation coefficients among the various asset classes. These are considered "market-driven" because the expectations are influenced by current market conditions and, thus, are subject to market volatility. These are combined with a plan's asset allocation percentages using complex mathematical finance formulas to develop a probability distribution of future expected returns for the portfolio as a whole.

by incorporating prior years' market-driven CMAs (as applied to the current asset allocations and expected benefit cash flow demands) and employ a smoothing mechanism with a corridor or range of reasonableness around the mid-point.

(3) Expert Opinions – Apply the CMAs from each independent investment firm separately to MERS' asset allocations, to obtain separate expected returns for MERS' portfolio rather than amalgamate the CMAs.

Salary Increase Rates

(1) Include a separate analysis of real rates of salary growth (net of inflation).
(2) Consider performing an analysis examining salary increases based on service and/or age.
(3) For Plan A, consider using a longer select period with gradually decreasing rates.

Demographic Assumption Recommendations

The following demographic assumptions were reviewed in the Experience Study Report:

- Mortality rates
- Disability rates
- Retirement Rates
- Withdrawal/Termination Rates
- Other assumptions

We find the demographic assumptions recommended by the MERS actuary to be generally reasonable and adequately documented. However, we offer the following recommendations for improving the development, assessment, and/or disclosure of the economic assumptions.

Mortality

Display the number of deaths expected from the current and proposed rates next to the actual deaths experienced.

Retirement Rates

(1) Include an explicit approach to address the effects of the pandemic. Or, at a minimum, include a qualitative discussion of the potential impacts of the pandemic on the observed experience and any related adjustments, or lack thereof.
(2) Consider performing an explicit analysis examining retirement rates by years since first eligible for retirement.

Scope of Review

The experience study of the actuarial assumptions of the Municipal Employees' Retirement System (MERS or the System) for the period July 1, 2018 through June 30, 2023 (2024 Experience Study) was prepared by Curran Actuarial Consulting, Ltd. and dated June 14, 2024.

This Review of that report presents assessments for appropriateness and reasonableness of certain methods and key actuarial assumptions recommended by MERS' actuary. However, a full replication of the experience study was not performed. This Review supplements the assessment with recommendations for improvements. This Review is separate from any review evaluating results of MERS' actuarial valuations.

Inflation

The assumed annual rate of future inflation is a component of the assumed return assumption, the salary increase assumption, and the frequency and magnitude of future Permanent Benefit Increases (PBIs). The 2024 Experience Study report indicates that the System's long-term inflation assumption is 2.50% and that the System's actuary believes that the 2.50% inflation assumption remains reasonable.

The system actuary provides the following references in support of this inflation assumption:

2024 Experience Study Reported Inflation Forecasts	
Federal Reserve Bank of Cleveland	
30-Year Expectation (February 2024)	2.3%
Federal Reserve Bank of St. Louis; FRED	
30-Year Expectation (February 2024)	2.32%
2023 Social Security Trustees Report	
CPI-W Ultimate (Long-term) Intermediate Assumption	2.4%
2023 Horizon Actuarial Survey of Capital Market Assumptions	
(20-Year Horizon Inflation Expectation)	
Minimum	2.2%
Maximum	2.9%
Curran Actuarial Consulting Consultant Average	
(long-term average for 2024)	
Low Value	2.2%
High Value	2.8%
Average	2.46%

Conclusion – The Actuary for the LLA considers an annual rate of future inflation of 2.50% to be acceptable, based on a survey of professional inflation forecasters.

However, the Actuary for the LLA recommends more source data points for input, particularly from professional economists experienced in inflation forecasting. A sample of publicly available resources for economists' inflation expectations is in Appendix A.

Investment Return and Discount Rate

The discount rate assumption is typically the single actuarial assumption with the largest impact on the development of liabilities. In most public sector pension valuations, the investment return assumption is also used as the discount rate.

The 2024 Experience Study recommends making no change in the 6.85% investment return assumption.

To assess the reasonableness of MERS' return assumption, the 2024 Experience Study relied on the long-term capital market assumptions (CMAs[2]) prepared by:

- A survey of investment firms, amalgamated to create a single CMA set, which is then applied to MERS' asset allocations.

Conclusion – The Actuary for the LLA agrees that the investment return assumption (6.85%) falls within an acceptable range.

However, this Review offers the following recommendations for improving the development, assessment, and/or disclosure of an investment return assumption.

(1) Time Horizon – Develop an investment return assumption that reflects both the mid-term (10 years) and the long-term (20-30 years) time horizons based on the plan's expected benefit stream and cash flows.
(2) Volatility of CMAs and Smoothing – Consider smoothing the volatility of market-driven CMAs used when developing a recommendation and/or assessing the reasonableness of the selected assumption. This can be done by incorporating prior estimates that reflect recent years of market-driven CMAs from forecasters and current asset allocations.
(3) Expert Opinions – Apply the CMAs from each independent investment firm separately to MERS' asset allocations, to obtain separate expected returns for MERS' portfolio rather than amalgamate the CMAs.

These recommendations are discussed in more detail in the following sections.

[2] Market-driven Capital Market Assumptions (CMAs) are developed by professional investment forecasters and are comprised of (a) expected returns for each asset class, (b) expected rate of inflation, (c) expected standard deviations for each asset class and (d) expected correlation coefficients among the various asset classes. These are considered "market-driven" because the forecasters' expectations are influenced by current market conditions and, thus, are subject to market volatility. These are applie to a plan's asset allocation percentages using complex mathematical finance formulas to develop a probability distribution of future expected returns for the portfolio as a whole.

Time Horizon

Recommendation: Develop an investment return assumption that reflects both the mid-term (10 years) and the long-term (20-30 years) time horizons, blending them based on the plan's expected benefit stream and cash flows.

The 2024 Experience Study report relied solely on long-term CMAs for its recommendations of investment returns.

Historically, the use of long-term (generally defined as 20- to 30-years) investment return expectations was common across all areas of pension actuarial practice. Over the past few decades, what was once common actuarial practice, such as the use of rolling amortization periods spanning 30, or even 40, years, has come under scrutiny. The pension actuarial community, including the public plan community have reexamined whether the long-held belief that these "perpetual" time periods are still appropriate, or even reasonable. In addition, significant changes have been made in how the financial community values, and forecasts, asset returns.

This Review is not questioning whether the use of the investment return assumption is appropriate for this particular measurement. The core question is in methodology: *Which is more appropriate for selecting an expected investment return assumption, a mid-term time horizon, long-term, or somewhere in between?*

The 2024 Experience Study report disclosed its rationale for using only long-term time horizon forecasts as follows:

> We continue to believe that retirement systems like the Municipal Employees' Retirement System that are open to new membership and well-funded are best served by consistently setting their return expectations based on long-term capital market assumptions. In our opinion, the use of such a consistent methodology limits the influence of recency bias since recent investment measurements exert less impact on long-term future expectations than they do on short-term future expectations.

It is true mid-term forecasts are more sensitive to current market conditions than long-term forecasts. However, the general belief, and implied argument in the reasoning above, is that long-term forecasts are less volatile than mid-term forecasts. Recent events illustrate that long-term forecasts are not immune to experiencing volatility. Therefore, alternative ways to directly address volatility concerns, such as the example discussed in the section titled "Smoothing of Return Expectations," should be considered given the other issues with relying solely on long-term horizon forecasts.

Consider the following arguments against relying solely on the long-term expectation, but recognizing a blend of mid-term and long-term time horizons for expected returns.

In the Meantime

Perhaps the most important question worth asking is what happens while waiting "for the long-term to occur"?

Most professional investment forecasters only produce and publish market-driven CMAs for a 10-year period (mid-term), while others will produce both a 10-year period expectation and a long-term (20- or 30-year period) expectation. Combining the latter expectations from the same forecasters allows one to create a pattern of future expected returns that resembles a yield curve for bonds – given the nature of the time value of money and investment risk, this pattern is usually lower in years 1-10, and higher in years 11-30.

Note, while the curve flattened in 2023 for both bond yields and for balanced portfolio expected returns, in future years, the shape of the two curves (yield curve and expected return pattern) is expected to return to "more normal" shapes.

An actuarial valuation using a long-term expected return ignores the expectation that actuarial losses are more likely to occur "in the meantime." Ignoring the sequence of return risk inherent in this approach makes decreases in funded status and increases in required contributions more likely over the near term until asset gains in the out-years "make-up" for these losses. *Is that a sustainable approach that should be considered reasonable?*

Sequence of Return Risk

On a percent basis, early investment losses require larger investment gains in later years to make up the difference, e.g., a 50% loss in year 1 requires a 100% gain in year 2 to break-even.

In addition, the traditional approach of developing the long-term assumed return on assets implicitly assumes that all current assets will be invested for the entire projection period, including assuming that short duration assets like notes and short-term bonds will perpetually be reinvested at the expected long-term rate. For a plan in a negative cash flow position, like MERS, where expected benefit payments exceed expected contributions (including ad valorem Tax and revenue sharing collections) by nearly $25 million on a system-wide basis (approximately 2%-3% of total assets), it is clearly not reasonable to assume that all current assets will be invested for the long-term. Undoubtedly, absent unanticipated contributions, a portion of these assets will need to be liquidated to cover benefit payments, further emphasizing why the asset gains relied upon in the out-years are not going to make up the shortfall that occurs "in the meantime."

Reliability

A general principle of forecasting science is that as the time horizon gets longer, forecasts are less reliable. In hurricane forecasting, this is known as the cone of uncertainty, and is frequently illustrated when describing the expected path of a tropical storm or hurricane. The same principal holds true for all forms of forecasting, including election forecasting and investment return forecasting. Furthermore, long-

term CMA forecasts rely heavily on reversion to the mean, which generally requires the same conditions to apply in the future as those that applied in the past baseline period. Unknown changes are certain to impact capital markets and expected returns, further adding to the cone of uncertainty associated with the long-term forecasts.

Evolution in Financial and Actuarial Modeling

The "duration" of a payment stream is the present value-weighted average length of time until benefit payments occur. It represents a "center of mass" of the discounted benefit stream, i.e., a weighted-average time horizon. Pension plan benefit payment durations for current participants are seldom ever 20-30 years (long-term). They are more like 8 to 15 years (i.e., mid-term, or between mid-term and long-term). Financial modeling, and actuarial practice, have evolved over time to recognize the duration of payment streams.

In the private sector, actuaries would never discount all future benefits using solely the long-term yield (nor is it permitted by Congress, the IRS, or FASB). That is why in the private sector, when the goal is to capture the full yield curve or all three segments into a single rate, plans are required to calculate a "single equivalent rate" or an "effective rate" that provides a representation that includes all points along the yield curve consistent with the plan specific benefit payment stream.

These changes are also recognized in the recent revisions to ASOP No 4. The description of the Low Default Risk Obligation Measure (LDROM) in §3.11 states [underline added for emphasis], "*When calculating this measure, the actuary should select a discount rate or discount rates derived from low-default-risk fixed income securities whose cash flows are reasonably consistent with the pattern of benefits expected to be paid in the future."* While this language is not directly applicable to funding valuations, it is instructive to see the Actuarial Standards Board's thinking on how to capture the effect of cash flow timing on a present value.

Volatility and Smoothing of Return Expectations

Recommendation: Consider smoothing the volatility of market-driven CMAs used when developing a recommendation and/or assessing the reasonableness of the selected assumption. This can be done by incorporating prior years' market-driven CMAs (as applied to the current asset allocations and expected benefit cash flow demands) and employ a smoothing mechanism with a corridor or range of reasonableness around the mid-point.

Smoothing of volatile market-driven expected returns is no different in rationale and motivation than smoothing of the market value of assets into an actuarial value of assets. Smoothing volatile asset-related values has a long actuarial history, and is designed to dampen volatility in factors that are expected to reverse in future years.

Prior to 2023, there was not a compelling reason to consider smoothing the market-driven return expectations because (a) the changes from year to year were not dramatic, (b) the changes were in the same direction rather than up and down, and

(c) a smoothing algorithm would have resulted only in marginally different rates than the market-driven expectations themselves. Generally speaking, these market forces moved portfolio expectations in increments of only 10-50 basis points (mostly downward), depending on the asset allocation. These were not examples of volatility, but trend. And trend needs to be recognized, not obscured.

Expected future returns from professional investment forecasters (especially mid-term expectations) are substantially influenced by the then-current market forces and conditions (e.g., interest rates, CAPE and other P/E ratios, inflation, etc.). Given the market forces and conditions in 2022, forecasts issued for 2023 exhibited significant spikes in expected returns in most asset classes. This has been considered an example of volatility, not trend. This spike has prompted a reconsideration within the actuarial profession regarding how market-driven CMAs are used for this purpose.

Utilizing a smoothing method, coupled with the use of both mid- and long-term CMAs, directly addresses concerns regarding the volatility in forecasters expectations seen in recent years as well as mitigating the potential recency bias short- or mid-term CMAs may experience.

Expert Opinions

Recommendation: Apply the CMAs from each investment firm independently and directly to MERS' asset allocations, to obtain separate expected returns for MERS' portfolio rather than amalgamate the CMAs.

Generally speaking, actuaries are not trained or experienced in developing mid-term and long-term (a) CMAs by asset class to be used in forecasting future investment returns, or (b) future inflation rates. We must turn to experts in those respective forecasting fields to provide input for recommending or assessing investment return assumptions for use in pension valuations.

In forecasting science, generally, considering multiple expert inputs is better than relying on only one. Having too few sources of market-driven CMA inputs is not optimal; neither is having too many.

The 2024 Experience Study employs an aggregation approach to distill various CMA sets into a single CMA set by first gathering information from a total of nine investment firms.

Aggregation Approach

The aggregation approach is an amalgamation of the available data from various investment firms and creates a composite CMA set (comprised of returns, standard deviations, and correlation coefficients). This is not an unreasonable process for developing or assessing a plan's investment return assumption for valuation purposes.

However, as compared to applying each firm's CMA set independently and directly to MERS' asset allocation, the aggregation method (a) introduces additional slippage and sources of statistical error and (b) loses useful information otherwise learned from a direct approach.

In the aggregation approach, a *standardized* list of asset classes is created. Each investment firm has its own (different) list of asset classes; and each asset class from each firm has its own capital market assumptions. Each firms' asset classes and assumptions are mapped (approximately) to the standardized list, in order to collect and amalgamate the assumptions into the single *standardize*d list of asset classes. This mapping results in an amalgamated set of expected returns, standard deviation, and correlation coefficients for each asset class in the *standardized* list. This approximate mapping and amalgamation introduce a certain amount of statistical error[3] into the final *standardized* CMA set. Having too many asset classes in the *standardized* list compounds the potential for statistical error.

Next, the asset classes in the System's own asset allocations are mapped to those in the *standardized* list.

Direct Approach

In the direct approach, the asset classes in the System's own asset allocations are mapped to each of the investment firm's own asset classes. This preserves each firm's own integrity and relationships among the three elements of their CMA (expected returns, standard deviations, and correlation coefficients).

This approach produces MERS' own expected returns and standard deviations for its portfolio, as forecasted by each separate investment firm independently. The firms can be ranked from most conservative to most aggressive, giving a sense of the opinion-spread by expert.

[3] Even though there are nine investment firms included in the survey, less than nine are represented in the composite average for many of the standardized asset classes because of inexact mapping. Some of these correlation coefficients have even less than that, because they require pairs of asset classes to be represented. Sometimes, the firms do not adequately complete the request and sometimes the forecasts from prior years are included. Some of these sources of statistical error can be mitigated and may not have a significant effect on final results.

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.

Actuaries commonly separate salary increases for each year in the experience period into two components:

(1) The actual inflation rate for that given year, and
(2) The excess of the actual total rate over the actual inflation rate; this represents the "real salary increase rate", or the portion of the increase representing merit and productivity increase, under the theory that workers' salary increases occur to keep up with inflation, promotions and improvements in personal skills, and general productivity in the workforce.

The actuary can further separate the actual real salary increase rates:

(1) By age during the experience period so that each age has its own actual raw salary increase rate and assumed rate, or
(2) By years of service, without regard for age; a non-actuarial advantage of this separation prevents the salary increases from showing a decline as members age, or
(3) By select and ultimate; this is built using separate rates by service for the first X years of service, then aggregated by age thereafter, or built using separate rates by age for the first X years of age, then aggregated by service thereafter, or
(4) A single rate, regardless of ages or years of service.

An actuarial analysis for deciding which of these approaches is preferable would be to examine the least squares or other measure of statistical best-predictors, i.e., which method does the best job of predicting (back-testing) the actual raw rates with the least statistical error. There may be other not-so-actuarial considerations (such as known bargaining expectations).

The first three methods require a minimum threshold number of members in each category for actuarial credibility. MERS has a sufficiently large number of members to consider partitioning the data in these ways.

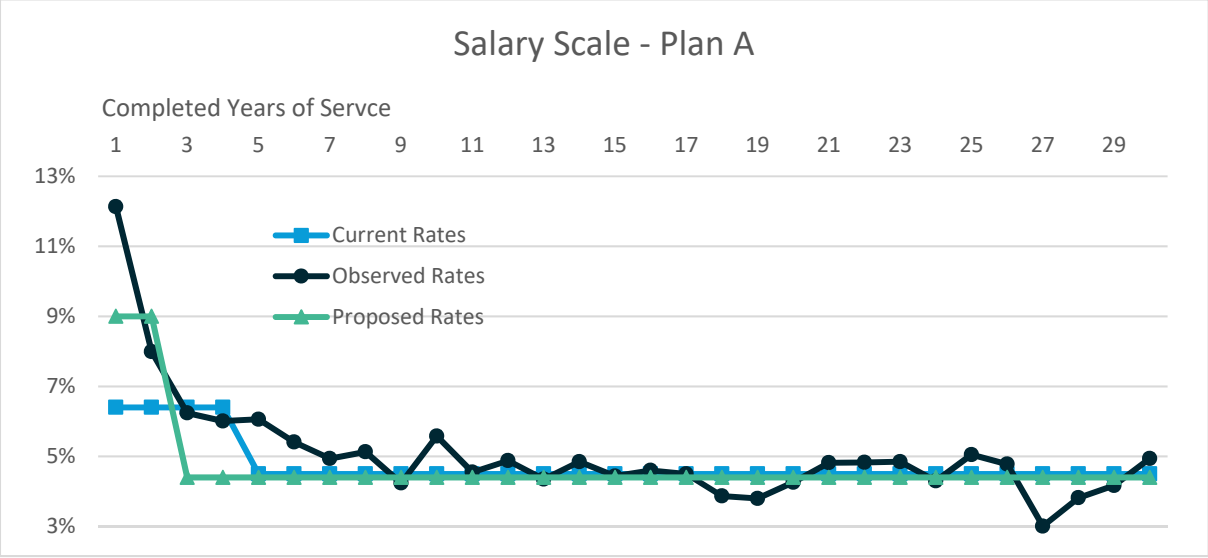
By separating the total increases experienced between inflation and merit and productivity (real) increases, the actuary can (a) decide on the most appropriate salary scale for merit and productivity (b) then decide separately on a future inflation component over a mid-term horizon of future working lifetimes that is consistent with the inflation component of the investment return assumption and any other inflation-related assumptions.

The 2024 Experience Study report analyzed the gross actual raw rates by service for Plan A and Plan B separately. MERS' actuary adopted an approach of not separating rates of salary increases between the inflation component and the merit and productivity component for this analysis. MERS' actuary does estimate implied real rates on an aggregate basis for the period by estimating total inflation over the study period, with a 1-year lag. However, there is not an indication of how this informs the development of the salary scale.

Actual rates of salary increases are based on observations over the last 10 years, a period twice as long as periods used in analyzing other assumptions. This choice is reasonable given the cyclical nature of economic conditions driving salary increases, and has the added benefit of not over-emphasizing highly unlikely events that have a significant economic impact.

Plan A

The following graph illustrates the current, observed, and proposed rates for Plan A.



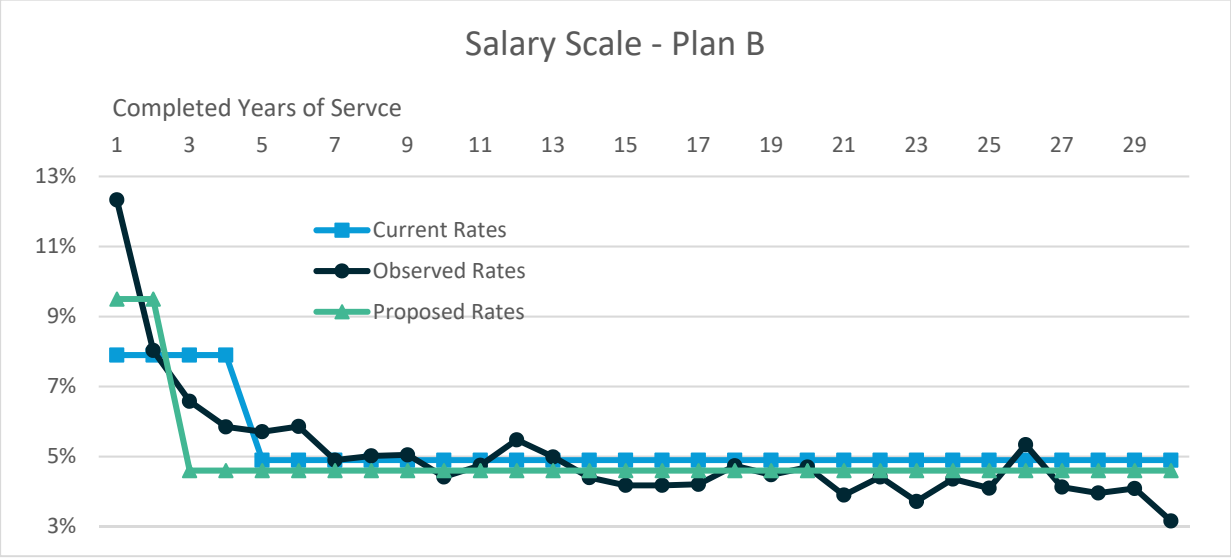
Current rates use a single rate of 6.40% for completed years of service up to 4 and 4.50% thereafter. The proposed rates use a single rate of 9.00% for completed years

of service up to 2 and 4.40% thereafter. Observed rates are generally higher than current and proposed rates for all periods. This is particularly true for early durations through approximately 9 years of completed service. MERS' actuary reflects some of the observed effect by increasing the short duration rates by a significant margin, but shortens the select period from 4 to 2 years.

An assumed salary scale that is below expectation, particularly in the early years of a career, can significantly undervalue the final expected cost of an individual's benefit. For example, observed rates equate to an approximate average annual increase of 5.07% over a 30-year career, while current and proposed rates only equate to 4.75% and 4.70%, respectively. Assuming observed rates hold, a new employee's final salary would be understated by approximately 10% under the proposed rates, with a commensurate impact on that individual's liabilities. However, on an aggregate basis, this effect is less pronounced given the relative size of early career liabilities particularly given Plan A is a relatively mature plan.

Plan B

The following graph illustrates the current, observed, and proposed rates for Plan B.



Observed rates for Plan B are lower than current rates for a number of data points, particularly during the select period and therefore does not raise similar concerns as Plan A. Further, on a 30-year career basis, both current and proposed rates equate to slightly more conservative average annual increases of 5.02% versus 4.92% for the observed rates.

Conclusion – The Actuary for the LLA considers the aggregate results for the salary scales for Plan A and Plan B to be acceptable.

However, the following are recommendations for improving the process (or its description):

(1) A separate analysis of real rates of salary growth, by service duration, could improve the outcome.
(2) Assumptions based on service or age (or both) may be more appropriate for a system of MERS' size.
(3) For Plan A specifically, MERS' actuary may wish to consider using a longer select period before achieving the ultimate expected rate, such as a 10-year period with rates that gradually decrease for years 1 through 10.

Mortality Rates

The methodology employed for developing the mortality assumption recommended by MERS' actuary included two components:

- base mortality tables, and
- mortality improvement scales.

This the most common approach currently used by pension actuaries.

Credibility

Actuarial credibility pertains to the statistical confidence in the results of an experience study for projecting future mortality rates.

For the purpose of the experience study, the credibility was assessed separately for males and females, for actives and retirees, and also for healthy and disabled retirees. In order to be fully credible, the experience study for each group for which rates are developed is required to observe more than 1,000 deaths during the exposure period, with the exact threshold depending on the choice of table type.

Broadly speaking, mortality tables may be developed by analyzing numbers of members dying during the study period (headcount-weighted tables), or analyzing discontinuation of payments (amount-weighted tables). The decision for which type is used, should lead to obtaining the most appropriate result for the particular application at hand. For the measurement of most pension obligations, tables weighted by amount (salary for active employees and benefit amount for those in payment status) generally produce the most appropriate results.

MERS' mortality experience is not sufficient to develop system-specific mortality rates for each age. Information presented in the experience study report (summarized in the table below) indicates that the number of deaths amongst retirees supports a partial credibility of the system experience for determination of scaling factors.

Summary of Credibility Analysis			
		Deaths	Credibility Factor
Non-Disabled Retired	Male	482	53%
	Female	345	44%
Active	No separate analysis		
Disabled Retired	No separate analysis		
Survivor	No separate analysis		

Consequently, the MERS actuary adopted a common approach of selecting reference tables based on a larger population, and scaling mortality rates from these tables using aggregate experience of the relevant MERS' member groups. The MERS actuary also adopted amount-weighted tables. System data for other membership subpopulation was deemed not sufficient to facilitate development of separate scaling factors.

Base Mortality Tables

The Retirement Plans Experience Committee (RPEC) of the Society of Actuaries published PUB-2010 tables in January 2019. Although not the newest broad-based tables, PUB-2010 were developed exclusively from experience of public-sector retirement systems, and as such constitute the most appropriate standard reference tables available for purposes of national estimates of mortality for public pension plans.

In preparing the experience study, MERS' actuary compared the actual plan experience for retirees to the PUB-2010 Safety Healthy Retiree, Below-Median Income, projected to 2018 (the middle point of the study period).

MERS-derived Adjustment Factors

MERS-derived adjustment factors to be applied to the PUB-2010 mortality tables were calculated only for retirees. Designed to coincide with the central year of the experience study, these factors were developed by comparing the total observed number of deaths for the group from the experience study to the total number of deaths expected from application of the base reference mortality table. Because data for active employees, disabled retirees, and survivors wasn't sufficient to facilitate separate analysis, factors derived for retirees are proposed to be used for other subgroups in combination with appropriate reference tables.

MERS-derived Adjustment Factors			
	Adjustment Factor		
	Males	Females	Reference Table
Active	115%	120%	General Employee, Below-Median Income
Non-Disabled Retired	115%	120%	General Healthy Retiree, Below-Median Income
Disabled Retired	115%	120%	Non-Safety Disabled Retiree
Survivor	N/A	N/A	General Healthy Retiree, Below-Median Income

Exhibits in the 2024 Experience Study report support our conclusion that these adjustment factors appear reasonable for use in actuarial valuations for MERS.

It is worth noting that MERS' actuary excluded deaths occurring during the COVID-19 pandemics from the above analysis. In order to maintain sufficient volume of data

while excluding period most affected by the pandemic, observations are based on a five-year period ending June 30, 2020 (beginning and ending three years earlier than the experience study period).

Mortality Improvement Scale

The 2024 Experience Study report used the Society of Actuaries recommended approach – application of the generational mortality improvement scale MP-2021. This is the most recent experience-based improvement scale published by the Society of Actuaries. Because the adjustment factors were determined for reference tables projected to the central year of the study period, future mortality improvements will be projected from 2010, the central year of the period used in development of reference tables.

Conclusion -- The Actuary for the LLA considers the process and resulting mortality assumptions to be acceptable.

However, the process (or its description) could be improved by displaying the number of expected deaths from the current and proposed rates next to the actual deaths experienced.

Disability Rates

The disability incidence assumption is the probability that a member will become disabled while actively participating in the plan. Disability rates are commonly assumed to vary by age.

MERS' actuary uses scaled disability rates developed for the Railroad Retirement System, with a scaling factor determined from the overall disability MERS experience. Because the MERS' own data is insufficient to develop the system specific disability table, the current rates were calculated by scaling the disability rates used for the 21st valuation of the Railroad Retirement System for individuals with 10-19 years of service with a 25% scaling factor for Plan A and a 50% scaling factor for Plan B. Similarly, the proposed rates are the same as rates used for the 28th valuation of the Railroad Retirement System for individuals with 10-19 years of service with a 55% scaling factor for Plan A and no scaling factor for Plan B. The following table compares current assumptions to the observed and proposed aggregate disability rates:

Disability Incidence Assumptions
Summary of Aggregate Rates

	Current Assumed	Observed	Proposed Assumed
Plan A Composite Disability Rates	0.37%	0.42%	0.44%
Plan B Composite Disability Rates	0.67%	0.38%	0.67%

The actual disability rates during the experience period exhibited a high degree of volatility but, on average, were slightly higher for Plan A and significantly lower for Plan B than the rates currently assumed. MERS' actuary increased the scaling factor for both plans.

Conclusion -- The actuary for the LLA considers the approach and results for the disability rates to be acceptable.

Retirement Rates

As with most other decrements, retirement rates from active employment can be undertaken using a few approaches. An entry to a Deferred Retirement Optional Plan (DROP) can be analyzed similar to retirement because the eligibility for entering the DROP is often conditioned on meeting eligibility for retirement and, like retirement, it results in cessation of benefit accruals. Many retirement systems evaluate DROP entry and retirement together because they have similar effects on benefit accruals and liability buildup. Other systems, including MERS in the 2024 Experience Study, analyze DROP rates separately from retirement. In addition, MERS' actuary analyzed retirement experience of post-DROP members separately from regular retirements.

As is the case with other decrements, studies of retirement rates and DROP can be undertaken using a few approaches. A robust and explicit approach would start by determining which rate is most likely to be the best predictor of future experience, and by analyzing the rates:

(1) By age, during the experience period, so that each age has its own actual raw retirement rate and assumed rate;
(2) By years of eligibility, without regard for age;
(3) By a combination of age and years of service;
(4) By select and ultimate; this is built using separate rates by year of eligibility for the first X years, then aggregated by age thereafter, or built using separate rates by age for the first X years of age, then aggregated by year of eligibility thereafter; or
(5) A single retirement age, sometimes expressed in terms of eligibility for retirement (this approach is less and less common with advancements in valuation systems).

MERS' actuary focused attention on analyzing the plan retirement and DROP experience by age. Rates are developed separately for each of the Plans and their respective tiers. Given experience for Tier 2 members, first hired on or after January 1, 2013, is limited, MERS' actuary used adjusted experience from Tier 1 (to reflect the differences in eligibility provisions) in addition to experience from Tier 2 to develop retirement and DROP entry rates for Tier 2. Neither Plan A or Plan B has had a member from Tier 2 complete DROP and retire, so Tier 2 Post-DROP Retirement rates for both Plans are the same as Tier 1. The following table compares current assumptions to the observed and proposed aggregate retirement rates:

Retirement/DROP Assumptions Summary of Aggregate Rates				
		Retirement	DROP	Post-DROP Retirement
Plan A, Tier 1	Current Assumed	10.4%	16.4%	17.7%
	Observed	12.3%	13.5%	21.7%
	Proposed Assumed	12.4%	14.9%	19.8%
Plan A, Tier 2	Current Assumed	11.7%	16.3%	17.7%
	Observed	13.8%	12.9%	N/A[4]
	Proposed Assumed	12.1%	15.8%	19.8%
Plan B, Tier 1	Current Assumed	12.9%	16.8%	17.7%
	Observed	13.5%	15.1%	23.4%
	Proposed Assumed	13.6%	15.8%	20.8%
Plan B, Tier 2	Current Assumed	13.9%	15.3%	17.7%
	Observed	14.3%	13.2%	N/A[4]
	Proposed Assumed	14.4%	14.3%	20.8%

The current assumptions vary based on age, separately for regular retirement, DROP entry, and post-DROP retirement. The actual retirement rates during the experience period were generally higher than currently assumed and the DROP rates were lower than currently assumed.

The proposed retirement rates/DROP were adjusted to better reflect the experience. They are generally based on smoothed actual rates with some allowance made for the current assumption. Generally, retirement rates are lower and DROP rates are higher than the actual rates, while retirement rates are higher and DROP rates are lower than the current rates.

It is not clear how much these changes were affected by the events associated with the COVID-19 pandemic.

Conclusion Given the unusual nature of events surrounding the COVID-19 pandemic, the Actuary for the LLA believes that an explicit approach to address the effects of the pandemic on the observed experience would be valuable. At a minimum, the experience study should include a qualitative discussion of the potential impacts of the pandemic on the observed experience and any related adjustments, or lack thereof.

[4] Tier 2 post-DROP retirement rates are based exclusively on tier 1 experience because there are no tier2 members who have completed DROP and retirement.

However, irregular pre-pandemic experience makes it difficult to draw meaningful conclusions with respect to the effect the pandemic may have had on the observed experience. Therefore, the Actuary for the LLA considers the retirement assumptions to be acceptable.

Finally, we did not find any explicit documentation or analysis of retirement pattern by year of eligibility. Additional analysis examining retirement rates by years since first eligible for retirement could provide valuable insight into retirement patterns.

Withdrawal Rates

Withdrawal rate experience studies can be undertaken using a few approaches. In a robust and explicit approach, the actuary can separate the actual raw withdrawal rate:

(1) By age during the experience period so that each age has its own actual raw withdrawal rate and assumed rate;
(2) By years of service, without regard for age;
(3) By a combination of age and years of service;
(4) By select and ultimate; this is built using separate rates by service for the first X years of service, then aggregated by age thereafter, or built using separate rates by age for the first X years of age, then aggregated by service thereafter; or
(5) A single rate, regardless of ages or years of service (this is rarely used for withdrawal rate assumptions).

An actuarial analysis for deciding which of these approaches is preferable would be to examine the least squares or other measure of statistical best-predictors, i.e., which method does the best job of predicting (back-testing) the actual raw rates with the least statistical error. There may be other not-so-actuarial considerations.

The first four approaches require a minimum threshold number of members in each category for actuarial credibility. MERS may have a sufficiently large number of members to partition the data in these ways. The following table compares current assumptions to the observed and proposed aggregate withdrawal rates from active service:

Withdrawal (Including Early Retirement) Assumptions
Summary of Aggregate Rates

	Current Assumed	Observed	Proposed Assumed
Plan A Composite Termination/Early Retirement Rates	13.0%	14.6%	14.0%
Plan B Composite Termination/Early Retirement Rates	14.7%	15.7%	15.4%

The current assumptions vary based on service.

The actual withdrawal rates during the experience period varied by service:

(1) For Plan A, generally, actual rates were higher than the rates currently assumed, with a few exceptions at various service durations.

(2) For Plan B, actual rates were volatile but overall were higher than rates currently assumed.

Finally, while the overall relation between assumed and observed termination experience during the covered period varied between age groups, it is not clear how much the actual termination patterns were affected by the events associated with the COVID-19 pandemic. MERS' actuary included brief commentary identifying the COVID-19 pandemic as one possible cause for the increase.

The proposed rates were based on smoothed actual rates with some allowance for the current assumptions and were set to strike a balance between the current rates and the actual experience, including the use of a multiplier of 97.5% which appears to be an attempt to account for the possible impact of the COVID-19 pandemic.

Conclusion – Given the unusual nature of events surrounding the COVID-19 pandemic, the Actuary for the LLA considers the withdrawal assumptions to be acceptable.

Other Assumptions

The 2024 Experience Study report also includes the following assumptions:

- Dependent/minor children statistics
- Spouse's age
- Marital status
- Elected official accrual rates
- Percentage of terminated vested participants electing a contribution refund.
- DROP and Post-DROP participation rates
- Actuarial equivalence factors and service transactions
- Inputs for development of option factors
- Accumulated leave conversion

We reviewed the sections of the 2024 Experience Study report relating to the assumptions mentioned above and found them to be described with reasonable detail and careful recognition of relevant experience. Therefore, we find these assumptions mentioned acceptable.

APPENDIX A – Inflation Forecasts

The LLA used the following forward-looking inflation forecasts from economists in its review of the 2024 Experience Study.

2024 Forward Looking Forecasts of CPI Inflation		
Time Horizon	**Median**	**No. of Sources**
10 years	2.32%	10
20 years	2.43%	5
30 years	2.29%	6

2024 Forward Looking Forecasts of CPI Inflation (From Professional Experts in the Field of Inflation Forecasting)	
Federal Reserve Board's Federal Open Market Committee (reaffirmed Jan 2024)	
Current "Long-run" Price Inflation Objective (<10 years):	
Objective since Jan 2012; Personal Consumer Expenditures (PCE) Deflator	2.00%
Consumer Price Index Inflation Objective (CPI = PCE + approx. 30 bps)	2.30%
Congressional Budget Office: *The Budget and Economic Outlook*	
Overall Consumer Price Index (February 2024; 10 Years)	2.30%
Overall Consumer Price Index (February 2024: 30 Years)	2.26%
2023 Social Security Trustees Report	
CPI-W 10-Year Intermediate Assumption	2.57%
CPI-W 20-Year Intermediate Assumption	2.49%
CPI-W 30-Year Intermediate Assumption	2.46%
CPI-W Ultimate (Long-Term) Intermediate Assumption	2.40%
U.S. Department of the Treasury (Avg in June 2024)	
10-Year Breakeven Inflation	2.25%
20-Year Breakeven Inflation	2.43%
30-Year Breakeven Inflation	2.32%
Federal Reserve Bank of St. Louis; FRED (June 2024)	
10-Year Expectation	2.26%
20-Year Expectation	2.43%
30-Year Expectation	2.27%
Federal Reserve Bank of Cleveland (June 2024)	
10-Year Expectation	2.37%
20-Year Expectation	2.41%
30-Year Expectation	2.46%
Federal Reserve Bank of Philadelphia	
Livingston Survey: 10-Year Median Forecast (June 2024)	2.25%
Survey of Professional Forecasters: 10-Year Median Forecast (2Q2024)	2.33%
Federal Reserve Bank of New York's Trading Desk (June 2024)	
Survey of Market Participants: 10-Year Median Expectation	2.40%
Survey of Primary Dealers: 10-Year Median Expectation	2.45%

APPENDIX B – Actuarial Disclosures

Intended Use

This Actuarial Review was prepared in accordance with La. R.S. 11:127(C) and 24:513(C)(1). This Review is intended for use by PRSAC and those designated or approved by PRSAC. This Actuarial Review may be provided to parties other than PRSAC only in its entirety and only with the permission of PRSAC. The Louisiana Legislative Auditor is not responsible for unauthorized use of this Actuarial Review.

This Actuarial Review should not be construed as providing tax advice, legal advice, or investment advice. It should not be relied on for any purpose other than the purposes described herein. This Actuarial Review assumes the continuing ability of the System to collect the contributions necessary. A determination regarding whether or not the System is actually willing and able to do so in the future is outside our scope of expertise and was not performed.

Actuarial Data, Methods and Assumptions

The findings in this Actuarial Review are based on data and other information as of the date of the 2024 Experience Study, and forecasts published for 2024. This Actuarial Review was based upon information furnished by the System, the System's investment consultant, the System's actuary, and by numerous external inflation and investment forecasters. We checked for internal reasonability and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by outside parties.

For certain calculations that may be presented herein, we have utilized commercially available valuation software and/or are relying on proprietary valuation models and related software developed by our actuarial contractor. We made a reasonable attempt to understand the intended purpose of, general operation of, major sensitivities and dependencies within, and key strengths and limitations of these models. In our professional judgment, the models have the capability to provide results that are consistent with the purposes of the analysis and have no material limitations or known weaknesses. Tests were performed to ensure that the model reasonably represents that which is intended to be modeled.

To the extent that this Actuarial Review relies on calculations performed by the Systems' actuaries, to the best of our knowledge, no material biases exist with respect to the data, methods or assumptions used to develop the analysis other than those specifically identified. We did not audit the information provided, but have reviewed the information for reasonableness and consistency with other information provided by or for the affected retirement System.

Conflict of Interest

There are no known conflicts that would compromise the ability to present an unbiased statement of actuarial opinion.

Risks Associated with Measuring Costs

This actuarial note is an actuarial communication, and is required to include certain disclosures in compliance with Actuarial Standards of Practice (ASOP) No. 51.

A full actuarial determination of the retirement System's costs, actuarially determined contributions and accrued liability require the use of assumptions regarding future economic and demographic events. The assumptions used to determine the retirement System's contribution requirement and accrued liability are summarized in the 2024 Experience Study being reviewed.

The actual emerging future experience, such as a retirement fund's future investment returns, may differ from the assumptions. To the extent that emerging future experience differs from the assumptions, the resulting shortfalls (or gains) must be recognized in future years by future taxpayers. Future actuarial measurements may also differ significantly from the current measurements due to other factors: changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period; or additional cost or contribution requirements based on the System's funded status); and changes in plan provisions or applicable law.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

(1) Investment risk – actual investment returns may differ from the expected returns (assumptions);
(2) Contribution risk – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;
(3) Salary and Payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
(4) Longevity and life expectancy risk – members may live longer or shorter than expected and receive pensions for a period of time other than assumed;
(5) Other demographic risks – members may terminate, retire or become disabled at times or with benefits at rates that differ from what was assumed, resulting in actual future accrued liability and contributions differing from expected.

The scope of this Actuarial Review does not include an analysis of the potential range of such future measurements or a quantitative measurement of the future risks of not achieving the assumptions. In certain circumstances, detailed or quantitative assessments of one or more of these risks as well as various plan maturity measures and historical actuarial measurements may be requested from the actuary. Additional risk assessments are generally outside the scope of an actuarial review. Additional assessments may include stress tests, scenario tests, sensitivity tests, stochastic modeling, and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability.

However, the general cost-effects of emerging experience deviating from assumptions can be known. For example, the investment return since the most recent actuarial valuation may be less (or more) than the assumed rate, or a cost-of-living adjustment may be more (or less) than the assumed rate, or life expectancy may be improving (or worsening) compared to what is assumed. In each of these situations, the cost of the plan can be expected to increase (or decrease).

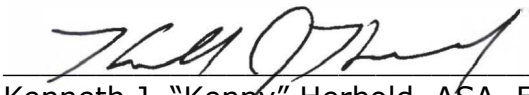
At the time of this writing, we considered the 2023 and 2024 forecasts of the future inflation and capital market assumptions (including future investment returns) from the subject matter experts to be suitable for development of the benchmark return assumption used in this Actuarial Review.

The use of reasonable assumptions and the timely receipt of the actuarially determined contributions are critical to support the financial health of the plan. However, employer contributions made at the actuarially determined rate do not necessarily guarantee benefit security.

Certification

All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board and with applicable statutes.

Kenneth J. Herbold is an Associate of the Society of Actuaries (ASA), Member of the American Academy of Actuaries (MAAA), and an Enrolled Actuarie (EA) under the Employees Retirement Income Security Act of 1974 and meets the US Qualification Standards necessary to render the actuarial opinion contained herein.



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January 23, 2025
Date