

ACTUARIAL REVIEW OF THE  
2020 ACTUARIAL VALUATION OF THE  
LOUISIANA STATE POLICE RETIREMENT SYSTEM



ACTUARIAL SERVICES

PRESENTED TO THE  
PUBLIC RETIREMENT SYSTEMS' ACTUARIAL COMMITTEE  
ON DECEMBER 14, 2020



LOUISIANA LEGISLATIVE AUDITOR  
DARYL G. PURPERA, CPA, CFE

November 30, 2020

Mr. Kevin Reed, Executive Director  
Louisiana State Police Retirement System  
9224 Jefferson Highway  
Baton Rouge, Louisiana 70809

***Re: Actuarial Review of the 2020 Actuarial Valuation***

Dear Mr. Reed:

To fulfill the requirements of R.S. 11:127(C) to the Public Retirement Systems' Actuarial Committee (PRSAC) for 2020, the Louisiana Legislative Auditor (LLA) has conducted an Actuarial Review for the Louisiana State Police Retirement System (LSPRS or System).

The remainder of this letter contains the results of our Actuarial Review of your June 30, 2020 Actuarial Valuation (prepared by G.S. Curran & Company and dated September 17, 2020). More specifically, we have evaluated for appropriateness certain actuarial assumptions and methods employed by the System and its actuary.

I would like to thank you, your staff, and the board's actuary for the cooperation and assistance provided for this review.

Sincerely,

Daryl G. Purpera, CPA, CFE  
Legislative Auditor

DGP:LPG:JJR:ch

cc: G.S. Curran & Company

2020 ACTUARIAL REVIEW FOR LSPRS

## **Scope of Review**

The 2020 actuarial valuation report for the Louisiana State Police Retirement System (LSPRS) for funding purposes was prepared by G.S. Curran & Company and dated September 17, 2020.

This Actuarial Review of that report was prepared by James J. Rizzo, Senior Consultant and Actuary, and Piotr Krekora, Consultant and Actuary, both employed by Gabriel, Roeder, Smith and Company (GRS). This Actuarial Review includes evaluations of the appropriateness of key actuarial assumptions and methods. However, a full actuarial valuation replicating the System actuary's results was not performed; nor was a full actuarial valuation performed using recommended assumptions and methods. Finally, we did not perform a full and detailed research analysis to determine our preferred or most appropriate net return assumption, but we applied reasonable estimating techniques to develop our recommendations.

This Actuarial Review is limited to (1) recommendations for a more appropriate treatment of LSPRS' gain-sharing COLA benefits, (2) recommendations for a more appropriate investment return assumption, (3) the actuary's use of acceptable mortality tables, and (4) sensitivity estimates on the funded ratio and the employer contribution rate.

## **Our Findings**

### **1. Gain-sharing Cost-of-Living Adjustments (COLAs).**

COLA benefits derived from investment earnings above certain thresholds are commonly called "gain-sharing" COLAs. The term "gain-sharing" derives from plan provisions that "share" higher-than-usual investment gains with members rather than using them, as is typically done, to help pay (indirectly) for the employer's required contribution. However, there is a cost to that "sharing."

An Experience Account is maintained (on an internal accounting basis) by the System to hold funds which ultimately are used to provide COLA benefits. The Experience Account is replenished with investment gains that exceed certain thresholds, subject to a series of complex formulas and rules set forth in the statutes.

LSPRS does not currently include the value of future COLA grants in its measurement of costs and liabilities. LSPRS does, however, recognize one fill-up of the Experience Account as an automatic benefit that would someday need to pay for a COLA. Beyond that one fill-up, no future COLA benefits are recognized.

However, the System's retirees are likely to receive future COLA benefit increases with some regularity. This likelihood reflects the expected future investment earnings, and the workings of the relevant state statutes coupled with the history of board members and legislators voting to grant COLAs whenever permitted to do so in accordance with the statutory template. Consider the following internal and external forces at play, which may influence board members, the Legislature, and the Governor to recommend and approve COLAs when allowed:

- a. The LSPRS board, like boards for many other retirement systems, have a sense of duty to serve the plan members. The LSPRS retirement board of trustees is composed of individuals who have a natural constituency to plan members. As a result, there may be a natural tendency to recommend COLAs when permitted.
- b. Social Security gives a COLA almost every year. In any given future year, if LSPRS retirees have not had a COLA in a couple years, and since they are not generally covered by Social Security, there may be a natural tendency to want to recommend a COLA if permitted by the statutes.
- c. Furthermore, if other Louisiana retirement systems (such as LASERS, TRSL and LSERS, or statewide systems) grant COLAs in a given year, LSPRS' board members, legislators, and the Governor may feel pressure to grant a COLA if permitted.
- d. Finally, if the funded ratio of the System continues to improve as it is expected to do, board members may feel compelled to share that success with the plan members by recommending a COLA.

The System's current practice of recognizing only one year's transfer to the Experience Account (and that no future COLA benefits would be granted) does not reflect the reasonable likelihood that COLAs will be granted in the future.

The frequency and magnitude of the future transfers to the Experience Account can be modelled actuarially using well-accepted techniques. Assuming legislators will grant template-driven COLAs whenever allowed by the statutes, it is actuarially appropriate to recognize the frequency and magnitude of future COLAs when performing an annual actuarial valuation of the System's costs and liabilities.

There is a reasonable expectation that COLAs will be granted at times in the future.

Conclusion – By not recognizing actuarially-expected future COLA benefits in the actuarial valuations, LSPRS is not advance-funding all the plan's benefits appropriately. The Actuary for the LLA recommends that the LSPRS board engage its actuary to undertake a quantitative actuarial analysis of the operation of the gain-sharing provisions in order to be able to advise the board about the long-term costs and liabilities associated with future gain-sharing COLAs.

Two years ago, the Actuary for the LLA prepared a detailed analysis for the 2018 valuation report (presented in an Actuarial Valuation Report dated December 20, 2018) concerning the costs and liabilities for future COLA benefits. The actuarial analysis concluded that LSPRS' future COLA benefits are actuarially equivalent to a fixed annual COLA of 0.60%. This is an actuarially reasonable approximation of the future workings of the actual statutory gain-sharing COLA template.

## 2. Investment Return Assumption

For this 2020 Actuarial Review, a detailed analysis of independent experts' 2020 forecasts for LSPRS' portfolio was not undertaken.

The last detailed analysis was prepared by the Actuary for the LLA for the 2018 valuation report (presented in an Actuarial Valuation Report dated December 20, 2018) using forecasts published in 2018. For this 2020 Actuarial Review, we present only observational commentary and estimates on the recommended return assumption.

LSPRS' 2018 valuation report used an annual return assumption of 7.0%. The 2018 Actuarial Valuation prepared by the LLA suggested a "most appropriate" return assumption of 6.50%, based on a consensus average among several independent national investment forecasters. These forecasters' expectations were applied to LSPRS' own asset allocation, investment expenses and expected cash flow.

The asset allocation targets embodied in the 2020 investment policy statement remain unchanged from 2019 and 2018.

The investment return assumption used in the System's 2020 Actuarial Valuation was 7.00%. In our opinion, the appropriate benchmark for whether 7.00% is conservative or optimistic would be to compare it to a consensus average of several expert investment forecasters and applying the fund's asset allocation, with adjustments for investment expenses and cash flow expectations.

Based on our 2018 analysis, the most appropriate investment return assumption was estimated to be 6.50% at the time.

LSPRS' board and actuary did not lower its return assumption for the 2019 or 2020 valuations, retaining the same 7.00% rate as in 2018. What we have seen in the mainstream of professional forecasters since 2018 was an increase in 2019's forecasts, then a decrease for 2020's mid-term and longer-term forecasts.

Based on a simplified analysis of these factors, we estimate the most appropriate return assumption for LSPRS' 2020 actuarial valuation would move from 6.50% in 2018 down to approximately 6.30% for 2020 (compared to the System's 7.00% assumption).

It's worth noting that over the last four years, the System's return assumptions have averaged approximately 40 basis points higher than the LLA's most appropriate rate.

An overly optimistic return assumption in a retirement system, applied repeatedly, can (a) create repeated actuarial losses, (b) cause underfunding, and (c) undermine the actuarial integrity of the pension-promise made to career public servants.

Furthermore, a return assumption that is an outlier compared to the mainstream of professional forecasters is not a "best estimate" and obscures the fair representation of future costs and liabilities in public financial disclosures.

## *Assessing the Reasonableness of a Return Assumption*

The appropriateness of a retirement system's return assumption for any given year's pension valuation is assessed with the same robust and disciplined process as we would employ for recommending and setting the return assumption. Such process would incorporate the following steps:

1. Obtain the future inflation rates (mid-term and long-term) expected by several reputable and independent professional inflation forecasters (mostly economists and investors). We agree with the general approach of the System's actuary when advising the Board in the 2018 Experience Study, to obtain several inflation forecasts from experts rather than just rely on one forecaster's expectation.
2. Obtain future capital market assumptions (mid-term and long-term) expected by several reputable and independent professional investment forecasters for relevant asset classes. Again, we agree with the general approach of the System's actuary when advising the Board, to obtain forecasts from several investment experts rather than just rely on one forecaster's expectation.

While experts' forecasts are not certain or guaranteed, in our opinion, they are the best sources for actuaries and decision-makers to turn for guidance – a consensus average of the collective expectations of independent subject matter experts applied to the System's own characteristics.

3. Apply these forecasts to the pension fund's own asset allocation targets. Rather than take averages of forecasters' raw expectations among their dissimilar asset classes to force them into a set of standardized asset classes, in our opinion, there is less statistical error introduced if each forecaster's expectations for LSPRS' own portfolio is calculated first, then take an average among the forecasters' expected returns for LSPRS' portfolio.
4. Reduce the portfolio's return expectations by its own expected investment-related expenses (both in-house and external) - for passive management fees, for custodial and trade-execution fees, and for external investment consulting.
5. Solve for a single equivalent return, lying between mid-term and long-term forecasts in order to recognize the pension plan's expected benefit cash flow timing over the mid-term and long-term, or the duration calculation (a proxy for adjustments due to expected benefit cash flows; whenever there is a different expectation for returns over the next 10 years as compared to years 11 through 30, Actuarial Standards of Practice (ASOP) No. 27 section 3.8.3(f) requires that actuaries address plan-specific factors like the expected benefits cash flow timing to recognize a time horizon somewhere between the mid-term and longer-term time horizons.

### *Time Horizon of Future Expectations*

In the supporting documentation for their investment return assumption in the 2018 Experience Study, LSPRS' actuary used the long-term (20-30 years) capital market assumptions from investment consulting firms. However, we believe an assumed rate of return between mid-term and long-term is more appropriate for LSPRS and for most other retirement systems. Long-term horizon forecasts (e.g., 20-30 years) are useful for one component of the process, but not to the exclusion of mid-term horizons. Pension funds are, indeed, usually long-term arrangements. However, in our opinion, 20-30 years is too long for the selection of most pension funds' assumed rate of return.

In most years, long-term expectations from reputable forecasting experts have been generally higher than mid-term expectations, creating a pattern that actuaries sometimes call select-and-ultimate expectations. This resembles a yield curve in the fixed income field. A lower rate expected during the select period (e.g., next 10 years) followed by a higher rate for the ultimate period (e.g., years 11 through 30).

Based on the 2018 valuation by the Actuary for the LLA, the majority of LSPRS' current assets will be paid out during the next 10 years – and will not be there to experience a higher return expected in the later years. That needs to be recognized in the selection of the return assumption, as indicated by ASOP No. 27 section 3.8.3(f).

Relying solely on a long-term time horizon may appear to justify a higher return assumption, but LSPRS has substantial negative cash flow (more benefits and expenses are leaving the fund than contributions coming in). It is what we often call a *mature pension plan*. This negative cash flow: (a) raises concern over the fund's ability to generate sufficient earnings to replace depleted assets and (b) is a sound actuarial reason not to employ a long-term time horizon to develop the return assumption while ignoring what is expected to happen in the mid-term. In our opinion, a 20-30-year time horizon for a return assumption is not appropriate for funding a mature pension plan. The return assumption time horizon should be a single equivalent rate somewhere between the mid-term and longer-term time horizons, recognizing a system's expected cash flow over the mid-term and long-term.

Conclusion – In the absence of conducting a detailed analysis using updated 2020 expert forecasts and in the absence of applying them to LSPRS' own asset allocation, investment expenses, and expected cash flow, the Actuary for the LLA estimates and recommends that the LSPRS' retirement board and actuary consider lowering the return assumption for the 2020 actuarial valuation to approximately 6.30%. Refer to Section 4 below for further discussion and sensitivity analysis associated with revised return assumptions.

Multiple large and reputable independent investment forecasters' current and recent expectations for the next 10 years' investment returns are mostly driven by high stock price valuations, compared to earnings, low inflation expectations, and currently low yields and interest rates. They are not expecting the next 10 years' investment returns to be anywhere near the high levels we have seen in many prior periods.

Improvements in the stock market since the dramatic COVID-induced lows in March have moved current forecasts back closer to previous expectations published prior to those COVID effects; but we have seen substantial volatility in the stock markets in the last several months and cannot predict where the economy and the markets will be in the coming fiscal years.

### 3. Mortality Assumption

The 2020 Actuarial Valuation (page 44) states that the mortality assumption:

- For active member mortality is “110% of the RP2014 Total Dataset Employee Table for males and 105% of the RP2014 Total Dataset Employee Table for females, each with the full generational MP2017 scale;”
- For annuitant and beneficiary mortality is “110% of the RP2014 Total Dataset Healthy Annuitant Table for males and 105% of the RP2014 Total Dataset Healthy Annuitant Table for females, each with the full generational MP2017 scale; and”
- For disabled lives mortality is: “RP2014 Total Dataset Disabled Tables for Males and Females with the full generational MP2017 scale.”

These 2020 mortality rates are the same as used in the 2019 valuation.

#### *Base Mortality Table*

A detailed analysis of the LSPRS base mortality tables was undertaken by the Actuary for the LLA for the 2018 valuation report (presented in an Actuarial Valuation Report dated December 20, 2018).

To evaluate the reasonableness of the mortality assumption, we reviewed the base mortality tables (RP-2014 Total Dataset) and the plan-specific adjustment factors (for males and for females) separately from the projection scale (MP-2017).

We note that the Pub-2010 Mortality Tables are more recently published mortality tables compared to RP-2014 (despite the earlier year in its title). The Pub-2010 Mortality Tables were derived from mortality experience of large public sector retirement systems and were published by the Retirement Plans Experience Committee (RPEC) of the Society of Actuaries (SOA) in January 2019. These tables constitute the most recent and reliable standard reference tables available for purposes of national estimates of mortality for public pension plans.

However, we find LSPRS’ base tables (RP-2014 with experience factors) used in its 2020 Actuarial Valuation to be fully appropriate.

Conclusion – The Actuary for the LLA considers the LSPRS’ base tables for mortality rates for non-disabled and disabled lives to be reasonable.



### *Mortality Improvement Scale*

Mortality assumptions are usually separated into base tables (discussed above) and mortality improvement tables to recognize future improvements in mortality rates expected following the central date of the base table.

The 2020 Actuarial Valuation (page 44) states that the mortality improvement table was the MP-2017 published by the Society of Actuaries' Retirement Plan Experience Committee.

A detailed analysis of the mortality improvement scale was also undertaken by the Actuary for the LLA for the 2018 valuation report (presented in an Actuarial Valuation Report dated December 20, 2018). We concluded that MP-2017 was reasonable for the 2018 actuarial valuation.

While we note that projection scale MP-2019 was a more recent projection scale available as of the 2020 valuation date, we find the projection scale MP-2017 used in LSPRS' 2020 actuarial valuation to be fully appropriate.

Conclusion – The Actuary for the LLA considers the mortality improvement scale as applied to both non-disabled and disabled lives to be reasonable.

#### **4. Sensitivity Estimates on Funded Ratio and Employer Contribution Rate**

LSPRS' 2020 actuarial valuation develops an unfunded actuarial accrued liability and funded ratio as of June 30, 2020 and a minimum recommended employer contribution rate for the year ending June 30, 2022.

The following tables prepared by the Actuary for the LLA provide the estimated June 30, 2020 funded ratio and the estimated FYE 2022 minimum recommended employer contribution rate for LSPRS under:

- The Actuary for the LLA's preferred method to recognize gain-sharing COLAs and
- Three different investment return assumptions selected by the Actuary for the LLA:
  1. An optimistic investment return assumption (6.80%),
  2. Our estimated most appropriate investment return assumption (6.30%), and
  3. A pessimistic investment return assumption (5.80%).

These investment return assumptions are consistent with the reasonable range around the most appropriate investment return assumption developed in the 2018 actuarial valuation prepared by the LLA (50 basis points above and 50 basis points below the 6.30% most appropriate investment return assumption). All other actuarial assumptions and methods remained unchanged.

<b>Estimated Sensitivity of Changes in Key Assumptions and Methods on June 30, 2020 Funded Ratio</b>	
<b>LSPRS</b>	<b>Funded Ratio</b>
Per LSPRS' June 30, 2020 Valuation	74.16%
After adjusting for LLA-recommended COLA Treatment <sup>1</sup>	70%
After adjustment for LLA-recommended COLA Treatment and LLA-derived Reasonable Range of Investment Return Assumption <sup>2</sup> :	
- Optimistic Investment Return Assumption (6.80%)	69%
- Most Appropriate Investment Return Assumption (6.30%)	65%
- Pessimistic Investment Return Assumption (5.80%)	61%

<b>Estimated Sensitivity of Changes in Key Assumptions and Methods on FYE 2022 Minimum Recommended Employer Contribution Rate</b>	
<b>LSPRS</b>	<b>Employer Contribution Rate</b>
Per LSPRS' June 30, 2020 Valuation	58.8%
After adjusting for LLA-recommended COLA Treatment <sup>1</sup>	69%
After adjustment for LLA-recommended COLA Treatment and LLA-derived Reasonable Range of Investment Return assumption <sup>2</sup> :	
- Optimistic Investment Return Assumption (6.80%)	73%
- Most Appropriate Investment Return Assumption (6.30%)	83%
- Pessimistic Investment Return Assumption (5.80%)	92%

<sup>1</sup>For details of the LLA-recommended COLA treatment, please refer to Section 1 of this 2020 Actuarial Review and to the 2019 Actuarial Review dated November 19, 2019.

<sup>2</sup>Please refer to the Appendices in the 2018 Actuarial Valuation prepared by the Actuary for the LLA dated December 20, 2018 for details of the LLA-derived Reasonable Range of Investment Return Assumptions, and to the commentary in Section 2 above concerning our estimate for the 2020 most appropriate return assumption.

We developed the estimates above by relying on:

- The LLA's 2018 Actuarial Valuation for the impact of changing to LLA's preferred method for recognizing future gain-sharing COLA benefits and
- The sensitivity exhibits presented in the System's 2020 Comprehensive Annual Financial Statement for the impact of changing the return assumption to different values.

These estimates are intended as illustration of the magnitude of changes in the valuation results developed under alternative methods and assumptions. They are not intended to replace results developed by the System's actuary. A full actuarial valuation (rather than an estimate) would be needed should a new set of results be desired.

### **Actuarial Certification**

This Actuarial Review report constitutes a Statement of Actuarial Opinion. It has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge the information contained in this report is accurate and fairly presents information it is purported to present. This review was performed in conformity with generally accepted actuarial principles and with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

James J. Rizzo and Piotr Krekora are members of the American Academy of Actuaries. These actuaries meet the Academy's Qualification Standards to render the actuarial opinions contained herein.

The signing actuaries are independent of the Louisiana State Police Retirement System.



James J. Rizzo, ASA, EA, MAAA  
Senior Consultant and Actuary  
Gabriel, Roeder, Smith & Company

November 30, 2020

Date



Piotr Krekora, ASA, EA, MAAA, PhD  
Consultant and Actuary  
Gabriel, Roeder, Smith & Company

November 30, 2020

Date