

ACTUARIAL REVIEW OF THE  
2021 ACTUARIAL VALUATION OF THE  
FIREFIGHTERS' RETIREMENT SYSTEM



ACTUARIAL SERVICES  
PRESENTED TO THE PUBLIC RETIREMENT SYSTEMS' ACTUARIAL COMMITTEE  
ON FEBRUARY 23, 2022



LOUISIANA LEGISLATIVE AUDITOR  
MICHAEL J. "MIKE" WAGUESPACK, CPA

January 24, 2022

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

***Re: Actuarial Review of FRS' 2021 Actuarial Valuation***

Dear Chairman DeVillier 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 Firefighters' Retirement System (FRS).

The following presents the results of our Actuarial Review of FRS' June 30, 2021 Actuarial Valuation (prepared by G.S. Curran & Company and dated November 1, 2021). In doing so, we have reviewed certain actuarial assumptions and methods employed by FRS and its actuary for appropriateness.

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

Sincerely,

Michael J. Waguespack, CPA  
Legislative Auditor

MJW:KJH:ch

cc: Mr. Steven Stockstill, Director and Legal Counsel  
Firefighters' Retirement System

Gregory Curran, FCA, MAAA, ASA  
G.S. Curran & Company, LTD

LLA'S ACTUARIAL REVIEW OF FRS' 2021 ACTUARIAL VALUATION

## Executive Summary

The Louisiana Legislative Auditor (LLA) performed an Actuarial Review (AR or Review) of the Firefighters' Retirement System (FRS) June 30, 2021 Actuarial Valuation dated November 1, 2021.

This Review is a limited scope review intended to:

1. Evaluate the appropriateness of certain actuarial assumptions and methods adopted by FRS' board.
2. Identify potential improvements to these actuarial assumptions and methods.
3. Identify any actuarial assumption or method that clearly violates any relevant Actuarial Standard of Practice (ASOPs).

### Summary of Conclusions

We did not identify any actuarial assumption or method that violates any ASOPs. Nevertheless, we offer the following recommendations for consideration by the FRS' board and by the Public Retirement Systems' Actuarial Committee:

1. *Cost-of-Living Adjustments (COLAs)*. Currently, FRS' board and its actuary do not anticipate future COLAs in the actuarial valuations. By not including actuarially-expected future COLA benefits, the actuarial valuations (a) ignore the reasonable expectation that COLAs will be granted in the future with some frequency and (b) push the cost of providing those COLAs out to future generations of taxpayers.

We recommend the FRS board engage its actuary to undertake a quantitative actuarial analysis of the operation of the current gain-sharing provisions, in order to be able to advise the board about the long-term costs and liabilities associated with all expected future gain-sharing COLAs.

2. *Investment Return Assumption*. The System's assumption remains approximately 90 basis points higher than the investment return benchmark calculated by the LLA. We recommend the System continue to lower its investment return assumption and consider:
  - Incorporating conservatism in the assumption by consistently targeting a rate that is closer to a 60% probability of achieving the assumption over time; and
  - Reflecting the impact of cash flow timing on total expected returns.

## Introduction

The Louisiana Legislative Auditor (LLA) performed an Actuarial Review (Review) of the Firefighters' Retirement System's (FRS or System) June 30, 2021 Actuarial Valuation dated November 1, 2021, as prepared by G.S. Curran & Company. This Review is being performed in accordance with La. R.S. 11:127(C) and 24:513(C)(1). This Review, in conjunction with the System's full actuarial valuation, is intended to fulfill the requirements of La. R.S. 11:127(C) to the Public Retirement Systems' Actuarial Committee (PRSAC).

Actuarial Standards of Practice (ASOPs) are principles-based, rather than prescriptive, in nature, and therefore actuarial valuations involve significant use of an actuary's professional judgement when developing actuarial assumptions and methods. This can result in different actuaries utilizing different assumptions and methodologies when approaching similar, or even the same, benefit structures and legislative constraints.

This Review is a limited scope review intended to:

1. Evaluate the appropriateness of certain actuarial assumptions and methods adopted by FRS' board.
2. Identify potential improvements to these actuarial assumptions and methods.
3. Identify any actuarial assumption or method that clearly violates any relevant ASOPs.

We hope the recommendations help the FRS board in its decision-making process, as well as PRSAC in its "review and study" of the retirement systems.

As a limited scope review, we relied on previously-published LLA analyses and, where necessary, reasonable estimating techniques to advance the analysis to the current valuation date. We did not attempt to replicate the System actuary's results; perform a full actuarial valuation using alternative assumptions and methods developed by the LLA; nor did we perform a full and detailed analysis of any assumptions or methods.

Further, the discussion included in this Review is limited to (1) the treatment of future COLA benefits and (2) the investment return assumption. The limited discussion does not indicate that other assumptions and methods were not considered, nor that recommendations for improvement in other assumptions and methods will not be included in future reviews.

This Review was prepared by Kenneth J. Herbold, Director of Actuarial Services for the LLA; and by James J. Rizzo, Senior Consultant and Actuary, and Piotr Krekora, Senior Consultant and Actuary, both employed by Gabriel, Roeder, Smith & Company (GRS). GRS is under contract with the LLA to provide backup, research, calculations, actuarial services, and advice.

## Our Recommendations

We did not identify any actuarial assumption or method that violates any ASOPs. Nevertheless, we offer the following recommendations for consideration by the FRS board and by PRSAC:

### 1. Cost-of-Living Adjustments (COLAs)

La. R.S. 11:241, 11:243, 11:246, and 11:2260(A)(7), outline the provisions for the funding and granting of COLAs. The board may grant ad-hoc COLAs subject to certain limitations. We are calling the ad-hoc COLAs outlined in statute a statutory “template” for granting COLAs.

#### FRS’ Methodology

Currently, FRS’ board and its actuary do not anticipate future COLAs in the actuarial valuations. Future COLAs are recognized only after they are granted.

Ad-hoc COLAs are a unique benefit feature that require professional judgement when determining if, and to what extent, they should be recognized in the liability measurement. Often, actuaries look for a pattern from the past, as one of several factors when deciding whether to assume COLAs would be granted in the future. In FRS’ case, the board has not granted any template-driven COLAs for the past six years (through 2020). However, the board was not *permitted* to do so by operation of the statutory template. Therefore, this should not be viewed as a pattern of “no COLAs.”

Given the statutory limitations, the analysis would look to whether, and when, the natural operation of the statutory template will *permit* COLAs in the future and if it is reasonable to assume the board will grant them. There is considerable pressure to grant COLAs when and if they are *permitted*, due to (a) the board responding to retirees’ needs, (b) COLAs being granted by Social Security and other Louisiana retirement systems, and (c) a lack of COLAs granted to members in the recent past. Refer to the explanations below for the workings of the statutory template supporting the reasonable expectation of future COLAs being *permitted* under the statutory template.

Further, the actuary must determine if including a particular provision in a model is appropriate for the purpose of the measurement. We believe it is appropriate and more transparent to recognize the frequency and magnitude of all reasonably likely future COLAs in the actuarial valuation for FRS, given the current statutory template. The expectation of the board’s inclination to grant COLAs when *permitted* may change, however, such as may be caused by increased employer contribution rates and/or a year or two when the board waives its right to grant a COLA when otherwise *permitted*. A decreased expectation that the board would always grant a COLA when *permitted* in the future can be reflected in the actuarial valuations while still recognizing some COLAs are still reasonably likely, if not always when *permitted*. As it stands currently, such circumstances have not occurred and there is still considerable weight to an assumption that whenever the board would be *permitted* to grant a COLA it would do so.

Finally, “excess earnings” are needed to finance current plan benefits. By not recognizing future COLA benefits that are reasonably likely to occur, the current FRS actuarial valuations (a) ignore

the reasonable expectation that COLAs will be granted in the future with some frequency and (b) push the cost of providing those COLAs out to future generations of taxpayers.

The frequency and magnitude of future COLAs can be actuarially modelled using well-accepted techniques. Assuming boards will recommend template-driven COLAs when *permitted* by the statutes (either 100% of the time *permitted* or with less regularity), it is actuarially appropriate to recognize the frequency and magnitude of future COLAs when performing an annual actuarial valuation of FRS' costs and liabilities.

### FRS' Statutory Template

The following exhibit illustrates the recent history of tests and rules relating to FRS' COLAs. While there are numerous trigger-points and moving parts in the statutory template mechanism, this exhibit illustrates the two primary statutory rules that govern how the statutes have not *permitted* the board of trustees in recent years to grant a gain-sharing COLA:

1. *The Window Rule.* This rule prevents a COLA from being permitted every year based on the funded ratio of the plan. The current funded ratio is 80.56%, as measured by the System's actuary using the Pension Benefit Obligation as the liability measure. Thus, a COLA may be granted (provided other conditions are satisfied) since a COLA has not been granted in any of the two most recent fiscal years. The window is now "open" and would then "close" for two or three years after a COLA is granted, then re-open. As the funded ratio improves in future years, the number of years the window remains closed becomes shorter, so that the window is open more frequently.
2. *The Sufficient Actuarial Return Rule.* A pension investment return assumption is a type of average return expected over the future, sometimes higher than the average and sometimes lower. After actuarially smoothing out the actual returns, an actual actuarial return is calculated for a given year. If the actuarially smoothed investment earnings for the year exceeds the assumed earnings, the Sufficient Actuarial Return Rule is satisfied.

For example, the 2020 actuarial valuation assumed a 7.00% return. For the year ending June 30, 2021, the actuarially smoothed rate of return was 9.9%. This Rule was satisfied for the 2021 valuation, the first time since 2014.

In the future, the fund's investment performance is fully expected to exceed the current 6.90% rate in some years, and fall short in other years. In years when the actual actuarial rate exceeds assumed actuarial rate, the Sufficient Actuarial Return Rule is satisfied.

Notice in the following exhibit, the Window Rule and the Sufficient Actuarial Return Rule must both be satisfied in a given year in order to be permitted to grant a COLA. For the year 2014, both rules were satisfied and the board granted a COLA. For the years 2015 through 2017, both rules were not satisfied and, thus, no template COLA was *permitted*. For the years 2018 through 2020, the Window was open but the Actuarial Return was not sufficient, thus, no template COLA was *permitted* either. For the year ending 2021, both rules are satisfied, and the board appears to be permitted to grant a COLA (subject to legal review).

COLA History for the Firefighters' Retirement System								
Actuarial Measurement Date	Statutory Conditions for Granting a COLA Under:		Authorizing Gain-sharing (G-s) COLAs Pct and Recipients <sup>1</sup>		Amount Granted by Board	Date Approved by Board	Effective Date of COLA	Comments
	The Window Rule <sup>2</sup> for any COLA	The Sufficient Actuarial Return Rule <sup>3</sup> for G-s COLAs	R.S. 11:2260(A)(7) G-s COLA [Up to 3%, to All Elg]	R.S. 11:246 G-s COLA [2% or Nothing, to Elg Over 65]				
6/30/2021	<u>Satisfied</u> (For YE 2022)	<u>Satisfied</u> (9.9% vs. 7.00%)	<u>3% Permitted</u> [To All Eligibles]	<u>2% Permitted</u> [To Elg Over 65]	TBD	TBD	TBD	TBD
6/30/2020	<u>Satisfied</u> (For YE 2021)	Not Satisfied (4.9% vs. 7.15%)	None Permitted [To All Eligibles]	None Permitted [To Elg Over 65]	NA	NA	NA	None permitted for failure of Actuarial Return Rule
6/30/2019	<u>Satisfied</u> (For YE 2020)	Not Satisfied (4.5% vs. 7.3%)	None Permitted [To All Eligibles]	None Permitted [To Elg Over 65]	NA	NA	NA	None permitted for failure of Actuarial Return Rule
6/30/2018	<u>Satisfied</u> (For YE 2019)	Not Satisfied (5.6% vs. 7.4%)	None Permitted [To All Eligibles]	None Permitted [To Elg Over 65]	NA	NA	NA	None permitted for failure of Actuarial Return Rule
6/30/2017	Not Satisfied (For YE 2018)	Not Satisfied (5.7% vs. 7.5%)	None Permitted [To All Eligibles]	None Permitted [To Elg Over 65]	NA	NA	NA	None permitted for failure to satisfy both Rules
6/30/2016	Not Satisfied (For YE 2017)	Not Satisfied (3.1% vs. 7.5%)	None Permitted [To All Eligibles]	None Permitted [To Elg Over 65]	NA	NA	NA	None permitted for failure to satisfy both Rules
6/30/2015	Not Satisfied (For YE 2016)	Not Satisfied (6.7% vs. 7.5%)	None Permitted [To All Eligibles]	None Permitted [To Elg Over 65]	NA	NA	NA	None permitted for failure to satisfy both Rules
6/30/2014 <sup>4</sup>	<u>Satisfied</u> (For YE 2015)	<u>Satisfied</u> (8.8% vs. 7.5%)	<u>2.25% Permitted</u> [To All Eligibles]	None Permitted [To Elg Over 65]	<u>2.25% Granted</u> [To All Eligibles]	12/11/2014	1/1/2015	Granted and effective during fiscal year ending 2015

<sup>1</sup> Per R.S. 11:2260(A)(7), the Board is authorized to provide a COLA of up to 3% to all eligible pensioners. Additionally, per R.S. 11:246, the Board is authorized to provide an additional or supplemental COLA of 2% to eligible pensioners over age 65. No COLA may be provided during any fiscal year until the lapse of at least one-half of the fiscal year.

<sup>2</sup> Per R.S. 11:243(G)(1) and (3), the Board may grant a benefit increase only if any of the following apply: (a) the system has a funded ratio of at least 90% and has not granted a benefit increase to retirees, survivors, or beneficiaries in the most recent fiscal year, (b) the system has a funded ratio of at least 80% and has not granted such an increase in any of the two most recent fiscal years, or (c) the system has a funded ratio of at least 70% and has not granted a benefit increase to retirees, survivors, or beneficiaries in any of the three most recent fiscal years. The funded ratio as of any fiscal year is the ratio of the actuarial value of assets to the actuarial accrued liability under the funding method prescribed by the office of the legislative auditor.

<sup>3</sup> Per R.S. 11:2260(A)(7), the Board is authorized to use interest earnings on investments of the system in excess of normal requirements to provide a supplemental COLA of up to 3% to all eligible pensioners. Additionally, per R.S. 11:246, the Board has the authority to provide an additional COLA of 2% to eligible pensioners over age 65 if there are sufficient excess interest earnings to fund the entire 2% additional COLA.

<sup>4</sup> The 6/30/14 valuation date marks the first year that Act 170 applies, after the trustees elected to be covered under R.S. 11:243 by 12/31/13.

The investment performance of the fund has been insufficient to satisfy the Actuarial Return Rule during any of the six years ending in 2020, while the investment performance and other template conditions were indeed sufficient to permit gain-sharing COLAs based on the 2021 valuation. It is fully expected that the actuarial rate of return in the future will exceed the current 6.90% assumed rate with some frequency. A simulation using well-accepted actuarial techniques can measure the expected frequency and magnitudes of future COLAs.

### Recommended Actuarial Method

The following summarizes two explicit methods of recognizing expected future COLAs in advance, under the current statutory template for FRS. Both methods use the same type of Monte Carlo stochastic simulation.

1. *Single equivalent annual COLA assumption.* An open group forecast valuation simulation spins off information about the frequency and magnitude of each year's ability to grant template-driven gain-sharing COLAs. The mean (average) of aggregate COLA amounts granted to all eligible members can be considered a variable benefit stream. Solving for  $x$ , an annual equivalent COLA having the same actuarial present value over the next 30 years as the average simulated variable amount can be determined. That single equivalent annual COLA becomes an actuarial assumption built into the usual actuarial valuation procedures to approximate the amount of future FRS COLAs.
2. *Single equivalent benefit load assumption.* Dividing that same stream of mean (average) aggregate COLAs for each year by the expected regular benefits payable for that year, as spun off from the open group forecast valuation simulation, provides an estimate of the "load" on regular benefits that approximates the average template-driven gain-sharing COLA amount. That load estimate becomes an actuarial assumption built into the usual actuarial valuation procedures to approximate the amount of future FRS COLAs.

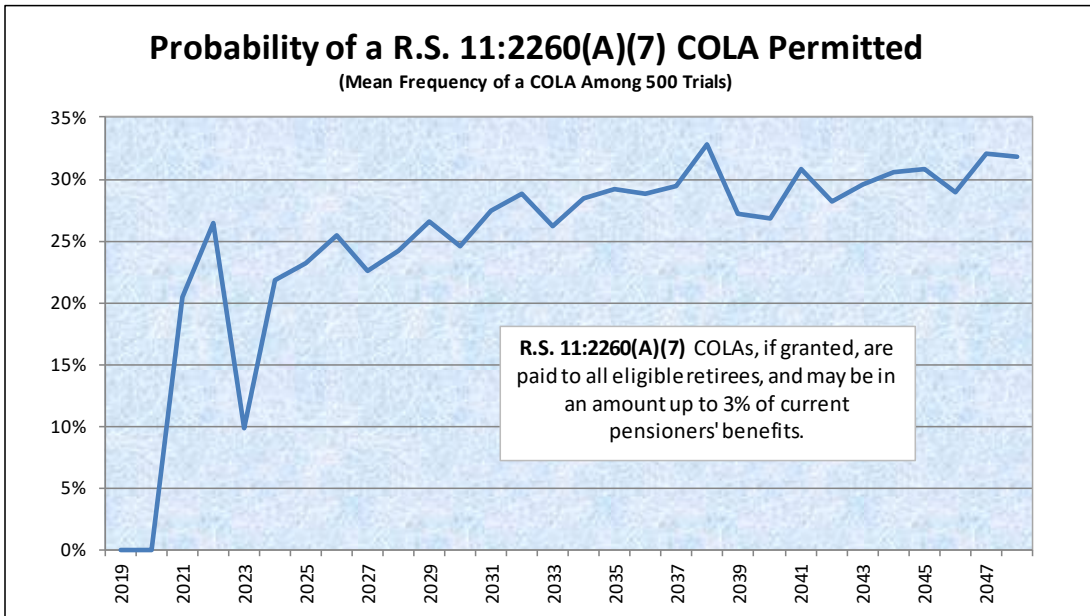
In other words, method 1 assumes a small annual COLA is granted, which is approximately equal to the present value of a semi-regular COLA granted less frequently than annually, while method 2 calculates how much the same present value would be as a percentage of the regular benefits' present value and then increases the total liability and normal cost by that percentage. Both methods 1 and 2 expect experience gains (in years when a COLA is not granted) and experience losses (in years when a COLA is granted) – but their volatility is dampened by recognizing both experience gains and losses, which are expected to offset each other.

### Modelling FRS' Current COLA Provisions

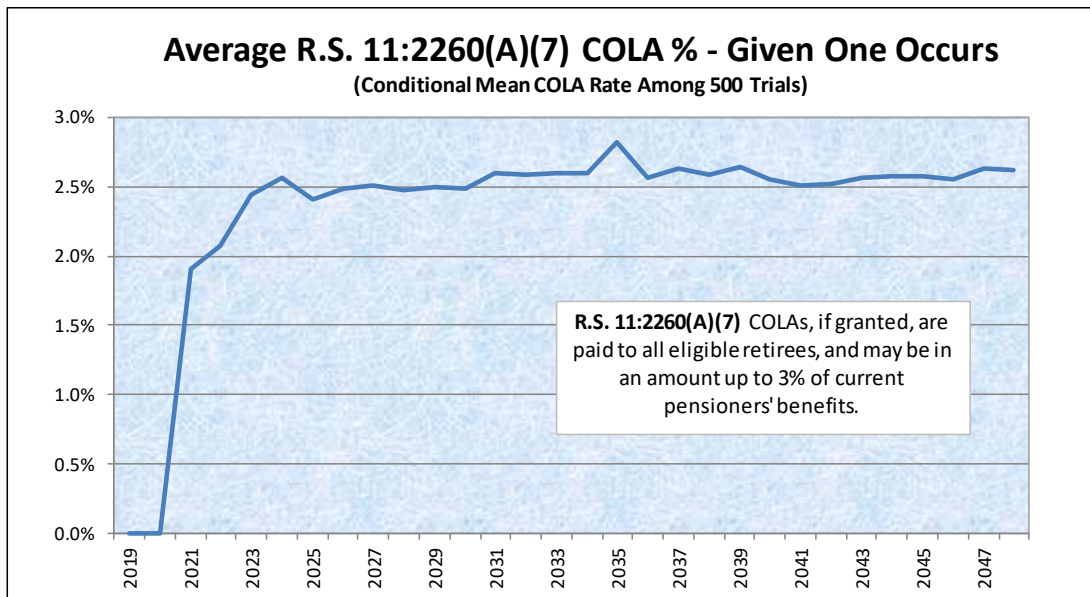
Method 1, above, was illustrated with a full stochastic simulation of the statutory template for expected future COLA benefits and presented in the LLA's *2019 Actuarial Valuation Report on the Firefighters' Retirement System* (dated January 15, 2020).

The following graphs present the results of those simulations of the frequency and magnitude of base COLAs, granted under provisions of La. R.S. 11:2260(A)(7).

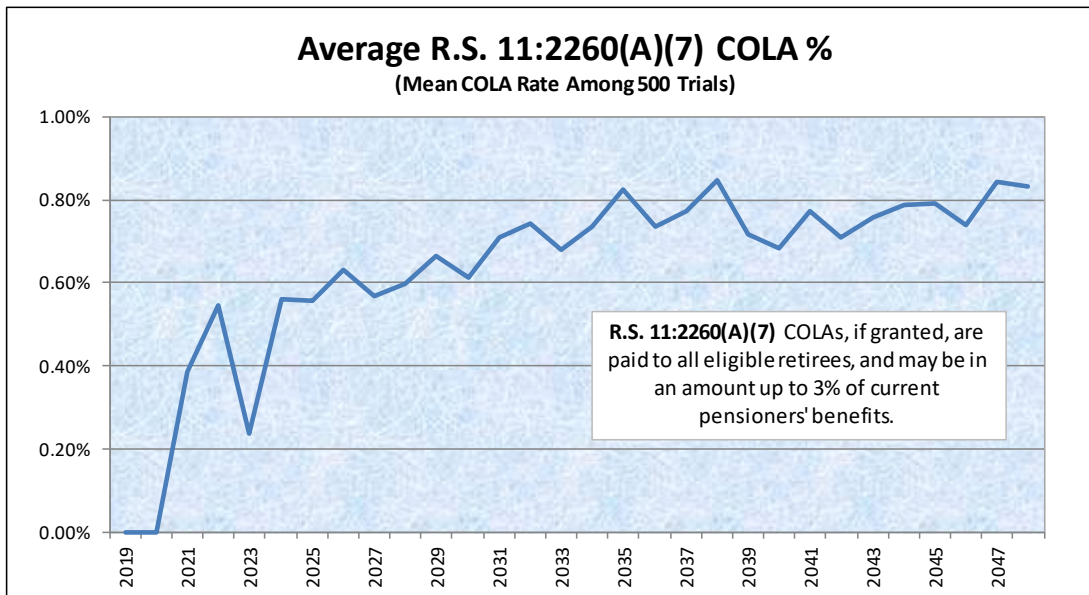




*Starting with the conditions in 2018, the probability of a base La. R.S. 11:2260(A)(7) COLA paid from excess investment earnings was estimated to be between 20% and 25% in the first 10 years, and lie mostly between 25% and 32% in years 11-30. That translates to approximately one out of every three to four years. Current conditions may change the results if re-estimated this year.*



*If a base COLA does occur in any given year during the next 30 years, pursuant to La. R.S. 11:2260(A)(7), it was estimated to average between 2.0% and 2.6%.*



Combining the frequency and magnitude of the expected La. R.S. 11:2260(A)(7) base COLAs, the average annual rate of increases is expected to fall between 0.40% and 0.80%.

A similar analysis was performed for *additional* COLAs governed by La. R.S. 11:246 which may be paid to all eligible members over age 65. This similar simulation analysis was performed assuming the base COLA is granted first from a year’s “excess earnings” and, if sufficient “excess earnings” remain, an additional COLA may be granted. This is a second type of gain-sharing COLA available to FRS that may be granted *in addition* to COLAs described in La. R.S. 11:2260(A)(7) which may be paid to all eligible members regardless of age.

The following table summarizes the results of the 2019 simulations. The template-driven conditions are sufficiently likely for advance recognition in annual valuations. Current conditions may change the results if re-estimated this year.

	<b>Base R.S. 11:2260(A)(7) COLA (up to 3% to all eligible)</b>	<b><u>Additional</u> R.S. 246 COLA (2% to all eligible over age 65)</b>
Expected Frequency (or Likelihood) over next 30 years	Approximately, once every three or four years	Approximately once every five to 10 years when a Base COLA is granted first
Actuarially Equivalent Annual COLA (approximating the irregular pattern from the template COLA provisions)	Approximately, 0.60% COLA granted every year	Approximately, 0.30% COLA granted every year

Refer to the LLA’s 2019 *Actuarial Valuation Report on the Firefighters’ Retirement System* dated January 15, 2020 for additional illustrations and discussion including actuarial assumptions and methods.

These are actuarially reasonable approximations of the future workings of the current statutory gain-sharing COLA template, and can be easily integrated into the System’s annual actuarial valuation to recognize FRS’ COLA provisions in advance.

## Conclusion

Currently, FRS' board and its actuary do not anticipate future COLAs in the actuarial valuations. By not including actuarially-expected future COLA benefits in the liabilities, FRS is not fully reflecting all significant plan benefits. We recommend the FRS 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 template COLAs.

## **2. Investment Return Assumption**

The last comprehensive analysis of the investment return assumption was prepared and presented in the LLA's *Comprehensive Actuarial Review of the 2020 Actuarial Valuation of the Firefighters' Retirement System* dated December 8, 2020, using forecasts published in 2020. Two significant changes have occurred since that analysis was completed: (i) professional investment forecasters have continued lowering their expectations for the mid-term and longer-term and (ii) FRS made certain changes to its long-term target asset allocation.

For this Review, a detailed analysis of independent experts' 2021 forecasts for FRS' portfolio was not undertaken. Instead, we provide an estimate of the return assumption calculated using the same methodology as prior LLA analyses, for consistency and illustrative purposes. Those results can be found in the section below entitled *Benchmark Investment Return Assumption*. We also present observational commentary.

### Selecting an Investment Return Assumption

ASOP No. 27 provides guidance for selecting "reasonable" economic assumptions. The ASOP outlines multiple characteristics to define what constitutes a reasonable assumption, including that it "is expected to have no significant bias (i.e., it is not significantly optimistic or pessimistic)." However, the ASOP specifically allows assumptions to be adjusted for conservatism.

This is particularly important when considering an appropriate investment return assumption, because the investment return assumption is tied directly to the discount rate, which has the single largest impact on the development of the liability. Small changes in the assumption can have a large impact, which is why an overly optimistic investment return assumption, applied repeatedly, can (a) create repeated actuarial losses, (b) cause underfunding by understating the required contribution, (c) impede the scheduled progress to pay off the unfunded liability and achieve full funding, and (d) undermine the actuarial integrity of the pension-promise.

FRS' board and actuary have consistently lowered the investment return assumption over the past few years, from 7.30% as of June 30, 2018 to 6.90% for the June 30, 2021 valuation. We commend FRS for lowering its investment return assumption.

### Benchmark Investment Return Assumption

In the supporting documentation for the investment return assumption, FRS' actuary used the long-term (20-30 years) capital market assumptions from various investment consulting firms.

The LLA has historically developed an investment return assumption that falls between the mid-term (10 years) and long-term expectations. The consensus average expected return is based on the capital market assumptions of several respected and independent professional investment forecasters, each of which was applied to a plan’s own asset allocation and its own expected benefit cash flow. Following are the professional investment forecasters whose capital market assumptions inform us in deriving a consensus average.

Participating Professional Investment Forecasters			
Aon/Hewitt	Blackrock	BNY/Mellon	Callan
Cambridge	J.P. Morgan	Meketa	Mercer
RVK	NEPC	Verus	Wilshire

For this Review, an *estimate* of the benchmark return assumption was developed based on (a) the most recent comprehensive analyses for FRS (2020), (b) our general understanding of the direction and change-magnitude of forecasters’ expectations in recent years (from 2020 to 2021) applied to FRS’ prior long-term target asset allocation, (c) the change in the System’s long-term target asset allocation, and (d) a slight increase in the expected rate of inflation embedded in return expectations (from 2020 to 2021). As outlined in the LLA’s 2020 Comprehensive Actuarial Review, the benchmark return falls between the mid-term (10 years) expectations and the longer-term (20-30 years) expectations.

The following table compares the System’s investment return assumption and the LLA developed benchmark:

Actuarial Valuation Date	Investment Return Assumption	Benchmark	Difference
June 30, 2021	6.90%	6.00%	0.90%
June 30, 2020	7.00%	6.00%	1.00%
June 30, 2019	7.15%	6.50%	0.65%
June 30, 2018	7.30%	6.30%	1.00%

Conclusion

The System’s assumption remains approximately 90 basis points higher than the investment return benchmark calculated by the LLA. We recommend the System continue to lower its investment return assumption and consider:

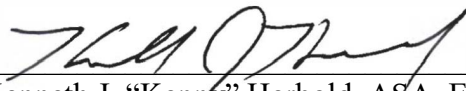
- Incorporating conservatism in the assumption by consistently targeting a rate that is closer to a 60% probability of achieving the assumption over time; and
- Reflecting the impact of cash flow timing on total expected returns.

## Actuarial Certification

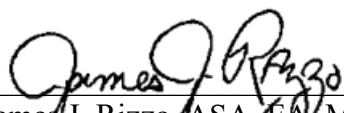
This Actuarial Review constitutes a Statement of Actuarial Opinion. It has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge the information contained in this report is accurate and fairly presents information it is purported 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.

Kenneth J. Herbold, James J. Rizzo, and Piotr Krekora are members of the American Academy of Actuaries and meet the U.S. Qualification Standards necessary to render the actuarial opinions contained herein.

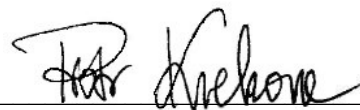
The signing actuaries are independent of the Firefighters' Retirement System.

  
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Kenneth J. "Kenny" Herbold, ASA, EA, MAAA  
Director of Actuarial Services  
Louisiana Legislative Auditor

January 24, 2022  
Date

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

January 24, 2022  
Date

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

January 24, 2022  
Date

## **Appendix**

### **Qualifications and Caveats**

This Actuarial Review was prepared in accordance with La. R.S. 11:127(C) and 24:513(C)(1). This Review, in conjunction with the System's full actuarial valuation, is intended to fulfill the requirements of La. R.S. 11:127(C) to the Public Retirement Systems' Actuarial Committee (PRSAC) for 2021 and 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 FRS to collect the contributions necessary to fund this Plan. A determination regarding whether or not FRS is actually willing and able to do so in the future is outside our scope of expertise and was not performed.

The findings in this Actuarial Review are based on data and other information as of June 30, 2021, and forecasts published for 2021. This Actuarial Review was based upon information furnished by FRS, 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.

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.

At the time of this writing, we consider the 2021 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 for the 2021 actuarial valuation. All actuarial projections have a degree of uncertainty because they are based on the probability of occurrence of future contingent events. Accordingly, actual results will be different from the results contained in the analysis to the extent actual future experience varies from the experience implied by the assumptions.

This Actuarial Review was prepared using GRS proprietary capital market asset model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of this report and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled. We are relying on the GRS actuaries and Internal Software, Training, and Processes Team who developed and maintain the model.