

COMPREHENSIVE ACTUARIAL REVIEW OF THE
2018 ACTUARIAL VALUATION OF THE
PAROCHIAL EMPLOYEES' RETIREMENT SYSTEM



ACTUARIAL SERVICES

PRESENTED TO THE PUBLIC RETIREMENT SYSTEMS' ACTUARIAL COMMITTEE
AUGUST 2, 2019

UPDATED TO INCLUDE RESPONSE FROM G.S. CURRAN & COMPANY, LTD.
AUGUST 5, 2019



LOUISIANA LEGISLATIVE AUDITOR
DARYL G. PURPERA, CPA, CFE

July 18, 2019

Ms. Dainna S. Tully
Administrative Director
Parochial Employees' Retirement System
Post Office Box 14619
Baton Rouge, Louisiana 70898

Re: Comprehensive Actuarial Review of the 2018 Actuarial Valuation

Dear Ms. Tully:

To fulfill the requirements of R.S. 11:127(C) to the Public Retirement Systems' Actuarial Committee (PRSAC) for 2018, the Louisiana Legislative Auditor (LLA) has conducted a Comprehensive Actuarial Review (CAR) for the Parochial Employees' Retirement System (PERS).

The remainder of this letter contains the results of our comprehensive review of your December 31, 2018 Actuarial Valuation (prepared by G.S. Curran & Company and dated June 13, 2019). More specifically, we have evaluated for reasonableness the actuarial assumptions and methods employed by the System and its actuary.

I would like to thank you and your staff for your cooperation and assistance with this review.

Sincerely,

Daryl G. Purpera, CPA, CFE
Legislative Auditor

DGP:JJR:LPG:ch

cc: G.S. CURRAN & COMPANY

2018 PERS COMPREHENSIVE ACTUARIAL REVIEW

Scope of Review

The December 31, 2018 Actuarial Valuation Report for PERS for funding purposes (2018 Funding Valuation) was prepared by the actuary for PERS' retirement board, GSC, and dated June 13, 2019.

This Comprehensive Actuarial Review (CAR) of that report was prepared by James J. Rizzo of Gabriel, Roeder, Smith & Company, who serve as staff to the actuary for the Louisiana Legislative Auditor. This CAR includes evaluations for appropriateness of key actuarial assumptions and methods employed in the valuation report as well as documented support for opinions presented herein. This CAR should be considered in connection with another CAR prepared by Mr. Rizzo and the actuary for the LLA in review of the 2018 Experience Study report prepared by the PERS' actuary.

However, a full actuarial valuation replicating the PERS actuary's results was not performed; nor was a full actuarial valuation performed using recommended assumptions and methods.

Summary of Findings

A summary of our findings follows. Additional details are addressed in the remainder of this report.

- 1. Return Assumption.** The actuary for the LLA considers that the approach and results for the assumed investment return assumption for Plan A and Plan B are appropriate. Refer to our Comprehensive Actuarial Review of the 2018 PERS Experience Study report for more details concerning how the PERS actuary developed the recommendation for the return assumption.
- 2. Treatment of Cost-of-Living Adjustments (COLAs).** The cost of future COLAs is currently not included in the 2018 Funding Valuation. This is an acceptable treatment for PERS for this year's funding requirements. Refer to the Section 2 Treatment of Cost of Living Adjustments below for more details.
- 3. Demographic Assumptions.** Careful analysis was undertaken by the PERS's actuary and presented in the 2018 Experience Study. This experience study was performed in accordance with methods outlined in current actuarial literature, specifically for assessing the degree of plan-specific mortality experience that should be recognized in the mortality tables assumed for the 2018 Funding Valuation. The current demographic assumptions are acceptable. Refer to our Comprehensive Actuarial Review of the 2018 PERS Experience Study report for more details.
- 4. Financing Calculations.** The actuary for the LLA reviewed the 2018 actuarial funding valuation report with additional emphasis on the exhibits presenting the financing calculations. All relevant and material financing calculations were complete and accurate.

Section 1: Return Assumption

This section sets forth a disciplined process for setting a return assumption that ensures it is mainstream and defensible, and provides the details for how we arrived at 6.25% as the most appropriate net return assumption and how we arrived at the conclusion that PERS' 6.50% return assumption is within the range of reasonableness around that most appropriate assumption.

As more fully described in our Comprehensive Actuarial Review of the 2018 PERS Experience Study report prepared by PERS' actuary, we considered the process and results presented in that report to be appropriate.

A Disciplined Process

The cost of being wrong is substantial, whether it is over a 10-year period or a 30-year period, and could be detrimental to both plan members and taxpayers. Consider the subsections below which describe a *process* for setting, recommending, evaluating or defending a net return assumption that:

- a. Is unbiased, objective, and free of agency risk;
- b. Is disciplined and robust;
- c. Is defensible; and
- d. Improves intergenerational equity, contribution stability, and benefit security of plan members.

This is the framework of our evaluation of the PERS actuarial assumptions as adopted for the 2018 actuarial valuation report.

Some of the most significant factors in setting or evaluating an assumed return are:

- a. The forecast-horizon over which net investment returns are expected;
- b. Future rates of inflation (forward-looking), as expected by a *consensus of experts* in the field of inflation forecasting who are both independent and nationally recognized;
- c. Current and future asset allocation percentages by asset class; and
- d. Future investment performance (forward-looking) and other capital market assumptions for various asset classes, as expected by a *consensus of experts* in the field of investment forecasting who are both independent and nationally recognized.

Forecast-horizons

There is an ongoing discussion over the time horizon for investment return forecasts that should be used to set the rate of return assumption for pension valuation.

Some have posited that pension plans are long-term propositions and their return assumptions should reflect a long-term horizon, for example, 30 years. Others believe that a shorter time horizon should be used. It is our opinion that a forward-looking mid-term horizon should influence the final choice of return assumptions. Investment forecasters generally issue 10-year horizon forecasts while some issue 20- or 30-year horizon forecasts. So the closest to a mid-term horizon would be to use the available 10-year horizon forecasts.

While it may be argued that reliance should be placed on the longest-term horizons, there are at least four reasons not to do so in an unqualified manner:

Reason #1: Underperformance in the mid-term is not sustainable.

If the forecasting experts are right, there may be a decade or two of lower pension plan returns, with a need for very high returns thereafter if their longer-term forecasts are to hold up.

For example, in correspondence dated May 6, 2016, the U.S. Treasury Department denied the application of the Board of Trustees of the Central States, Southeast and Southwest Areas Pension Plan for rolling back benefits under the Multiemployer Pension Reform Plan Act of 2014 in order to avoid insolvency. One of the reasons given in the ruling¹ was that the 7.5% and other embedded return assumptions were “significantly optimistic” and were “not reasonable.” More specifically, the ruling stated that the return assumptions used to support the application were not reasonable or appropriate for the purpose of the measurement, did not take into account relevant current economic and investment forecast data, and had significant bias by being significantly optimistic. This three-fold denouncement was made primarily on the basis of the assumption’s failure to recognize the lower expected returns in the first 10 to 20 years of the longer-term horizon.

Repeated underperformance (for the next decade or so) of actual returns compared to the assumed return undermines the confidence in defined benefit plans. If the experts are right about the next 10 years but the return assumption is significantly higher, legislators and taxpayers might insist on a retirement plan that transfers the investment risk onto the members. Repeated increases in contribution rates and repeated additions to the unfunded actuarial liability may not be tolerable.

In our opinion it is better to be more conservative in the return assumption over the mid-term time horizon while experts are forecasting lower compound annual returns.

Reason #2: Over-reliance on reversion to mean returns.

Long-term investment return forecasts (20-30 year horizons) often use a different methodology than mid-term forecasts. They often rely on the concept of “reversion to mean returns.” While almost everything about the future is not known for certain, two things are widely accepted – (1) The long-term picture will not be like the past and (2) Neither will the steps leading through it. Reversion to mean returns depends on the future environment being like the past.

The number of heads we see in an unbiased coin-flip experiment exhibits reversion to the mean. Given a large enough number of coin-flips, we can reasonably expect the future number of heads to be approximately the same as in the past (half the number of coin-flips), because the coin is unbiased and the future is very much like the past. This cannot be said of investment markets.

This weakness of long-term forecasts is not, by itself, sufficient to disregard experts’ long-term forecasts of the future entirely. But it should inform us not to rely on it to the exclusion of mid-term forecasts.

Reason #3: Return forecasts over a longer-term horizon are less reliable.

There is less certainty in the longer-term forecasts. Conventional risk management says that in the face of uncertainty, investors become more conservative. Thus, in our opinion decision-makers should consider being more conservative than the longer-term forecasts because the longer-term forecasts are more

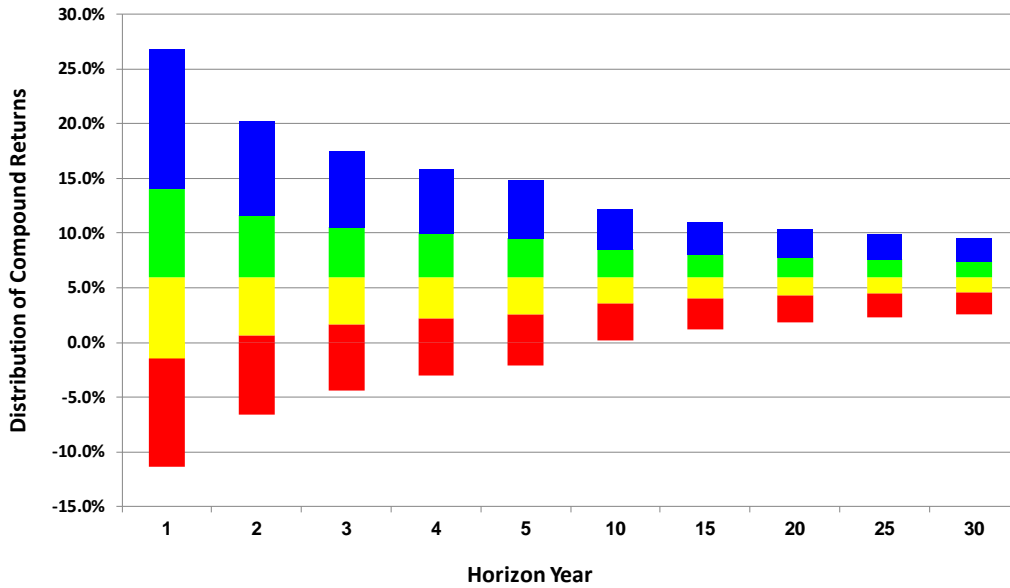
¹ <https://www.treasury.gov/services/Responses2/Central%20States%20Notification%20Letter.pdf>

uncertain. This is a principle in any forecasting profession, whether investment forecasting, election forecasting or hurricane forecasting. Longer-term forecasts are less reliable than mid-term forecasts.

There are two types of statistical error in forecasting –

1. Error around the mean (some have called this “risk”) and
2. Error in the mean (and some call this “uncertainty”).

Consider this graph of the expected dispersion of forecasted compound returns around the forecasted compound mean. This shows that the compounded error around the compounded mean decreases over time. But this type of error is not the one that brings the most uncertainty.



This dispersion graph *presumes* we know for certain what the statistical mean is for the ever-varying future investment returns, and illustrates merely what we think about how the varying returns will behave around that anchor-mean. The biggest uncertainty, here, is that no one knows for certain what the anchor-mean will be.

Many unexpected events will happen in the future that will throw off the anchor from our *presumption*. Even though the experts are reasonably accurate about the dispersion around the mean, they are likely to be off for their expectation of the future mean.

Many more things can insert themselves into our future over the next 30 years than over the next 10 years. So when we say, “*Return forecasts over a longer-term horizon are the less reliable*”, we do not refer to the dispersion illustrated in this graph (which might be misunderstood as proving the opposite). We are referring to how confident (or not) we are in the mean itself.

We can mitigate some of the uncertainty by aggregating the opinions or several experts as to what the long-term compound annual return will be, i.e., calculate the average (or consensus) of their forecasts. However, the consensus of long-term forecasts is still more unreliable than the consensus of mid-term forecasts. There will be many events in years 1-10 that will undermine the mid-term outcome, making the final result either higher or lower than the mid-term consensus forecast. But add other 20 years on top of that (years 11-30) and many more events can insert themselves in years 11-30 to undermine any such long-term forecast.

Reason #4: The system's own cash flow demands.

Possibly the most compelling reason *not* to accept the long-term forecasts, without regard to the mid-term forecasts is a purely actuarial reason. It is fundamental in setting actuarial assumptions to incorporate (explicitly so) a retirement system's own characteristics into the process.

- The most obvious factor is to incorporate a system's own investment policy's asset allocation, as required by ASOP 27 Section 3.8.3(a).
- Secondly, a system's own cash demands upon the fund should explicitly be incorporated into the assumption-setting math, as required by ASOP 27 Section 3.8.3(f). The timing of when benefit and expense payments place a drain on the fund affects how much the fund should be expected to earn while those assets are still in the fund.

Experts currently forecast investment returns to be lower over the mid-term horizon (years 1-10) than over the long-term (years 11-30). This means they must expect the later years to boost the compound average over 30 years compared to the compound average over the first 10 years.

Consider a newly formed retirement system (system A) which is expected to pay very little in benefits over the mid-term horizon and most of its benefits beginning in year 25. Consider another retirement system (system B) that is a "mature" retirement system. A mature retirement system is expected to pay a significant amount of its current accrued benefits over years 1-10. Mature retirement systems often pay out more in benefits than they take in from contributions (from employees, employers, or other sources).

Retirement system A can comfortably adopt a longer-term horizon for its expected investment return assumption because it has a long time to make up for the lower earnings that are expected in the mid-term (e.g., years 1-10) before it has to actually pay benefits out of the fund.

A large portion of retirement system B's current assets will not be around in years 11-30. They will be paid out of the fund over the next 1-10 years. Those assets will be earning only what is available in the marketplace over the next 1-10 years. They will not be around to make up for the lower earnings that are expected in the mid-term (e.g., years 1-10).

Even if one were to accept a long-term horizon for setting return assumptions, in disregard of the first three arguments outlined in the preceding pages, he or she would need to take into account the systems own benefit demands and adopt a return assumption somewhere between the mid-term and long-term expectations, so as to recognize the investment horizon or timetable for the benefit payments to be made over the next 10 years.

Furthermore, even the benefits expected to be paid out in years 11-20 will not be around for those last 10 years (years 20-30) and the first 10 years of earnings will drag down their average compounded return for the time remaining in the fund (years 1-20).

There are two actuarial calculations that take into account a plan's own cash flow, and which support the use of a mid-term forecast-horizon:

1. *Duration of the benefit cash flow liability.* PERS' benefit "duration" is approximately 12-13 years. "Duration" is the present value weighted average length of time till the benefits are paid. This emphasizes the usefulness of the 10-year forecasts as representative of a mid-term outlook. Long-term horizon forecasts (e.g., 20-30 years) are useful for discussion purposes, but not to the exclusion of mid-term horizons. Pension funds are, indeed, usually long-term arrangements.

However, this does not necessarily mean that a long-term forecast-horizon is more appropriate for setting a return assumption for pension valuation.

2. *Single equivalent rate of return.* Assume the experts are right that the next 10 years will provide much lower returns than the following 20 years (Years 11-30). The present value of all benefit payments, discounted from their respective year of payment to the present based on the experts' expected return over each of those respective time frames would result in discounted benefit values at rates that range from the short-term to mid-term to long-term. The single equivalent rate would be a blend of short-term, mid-term and long-term rates – closer to the mid-term rate, or possibly slightly higher. For the vast majority of retirement systems, that single equivalent rate would be slightly higher than the 10-year expected geometric return (or the 50th percentile of expected compound returns expected over the 10-year period), but less than the 20-30 year expected geometric return. This is consistent with the duration calculation discussed above.

In summary of Reason #4, a system's own cash flow should be explicitly integrated into the determination of a single return assumption for valuation, just as a system's own target asset allocations should be explicitly integrated into the determination.

Adopting a return assumption without recognizing a system's own expected cash flow and simply using investment consultants' broadly published long-term forecasts, even when that same forecaster publishes a mid-term forecast as well, is missing an important actuarial step.

In conclusion, these four reasons suggest that using a 10-year mid-term forecast-horizon (or slightly higher) is most appropriate.

Perspectives

There are two types of perspectives to consider when determining assumptions for a future net rate of return of a pension fund and a future rate of inflation. One is temporal – Do we *look* more to historical rates to inform decision-makers or more to forward-*looking* forecasts of the future? The other is social – Do we *look* more to what other retirement systems are doing or *look* more to what expert forecasters would expect for PERS' own portfolio in the future?

Temporal. Historical rates of return and inflation are viewed more as mere information, than used to defend or determine a current net return or inflation assumption. The past is indeed useful for understanding historical relationships among various economic forces and various statistical metrics such as standard deviations, correlation coefficients and P/E ratios; but even those have been known to change over time and may be different from their historical averages. Certainly, past performance should not be a driver in decision-making.

The current domestic and global environments are not like the past 10, 30, or 50 years; and the future domestic and global environments are certain to be different from the past. A forward-looking perspective should drive the defense or determination of a net return assumption for pension actuarial valuations. Strategically selecting historical returns (an X-year period ending on Y-date) to justify a net return assumption being applied to the next 10-, 20-, or 30-year period is not valid.

Past performance is not an indicator of future performance. The actuary for the LLA takes a forward-looking perspective of inputs into the process of setting a return assumption.

Social. Looking to what other peer retirement systems have adopted for their own net return assumptions should not be a driver in decision-making. Other retirement systems have their own asset allocation and

expense structure and their own set of politics, protectionism, budget issues, and agency risk. They are not the best source for determination or defense of a system’s net return assumption.

Independent, unbiased, expert sources of inflation and investment return forecasts are the best places to look for input when setting a net return assumption for pension valuations. These are much more objective and unfiltered sources – obtained directly from the experts themselves – to guide decision-makers.

Adopting a *process* that looks to a consensus of external subject matter experts’ forward-looking forecasts is the best way to avoid political and budget pressures that sometimes distract or influence assumption-setters away from their primary duty to set return assumptions as their unbiased best estimate of the future performance of its pension fund.

Inflation

An assumed rate of future inflation is a major component of both the return assumption and the salary increase assumption used in a pension valuation. When expected inflation rates are lower, the expected return and salary increases should be lower (unless there is a coincidental change in real returns or real salary increases that offset it). Conversely, when expected inflation rates are higher, the expected return and salary increases should be higher. Expected future inflation is a critical component of the other assumptions as well. Therefore, much care and attention should be given to the expected future rates of inflation.

PERS’ 2018 Funding Valuation (pages 5 and 6) states: “We have also lowered the inflation rate assumption from 2.50% to 2.40% implicit in both the assumed rate of return and rate of salary increases.”

We find an inflation assumption closer to the 2.20% is more supported by the research on expected inflation rates as illustrated in the exhibits below. However, we do not find the use of 2.40% in the PERS funding valuation to be unreasonable for the purpose at hand, particularly in light of the final return assumption adopted.

Currently, expert professional forward-looking inflation forecasts generally lie between 1.78% and 2.58% across mid-term and long-term horizons. Actuaries are not generally qualified to forecast future rates of inflation. Therefore, consider the forward-looking forecasts from the following subject matter experts.

Major National Inflation Forecasters	
Congressional Budget Office	Federal Reserve Bank of Cleveland
Federal Reserve Bank of Philadelphia	Federal Reserve Bank of New York
Federal Reserve Board	Social Security Trustees Report
Investment Forecaster Survey (GRS)	U.S. Department of the Treasury
State of Florida Office of Economic & Demographic Research	

Some of these expert organizations provide multiple measures of inflation for different time horizons, making a total of 18 forecasts from nine reputable sources.

December 2018 Forward-looking Forecasts of CPI Inflation		
Horizon	Average	Sources
27 - 30 ⁺ yrs	2.30%	5
20 yrs	1.99%	2
10 -15 yrs	2.21%	11

Our preferred inflation assumption would currently be 2.20% because it lies more comfortably near a consensus of the expectations in the summary table above and the detailed table below for the mid-term horizons. A 2.40% inflation expectation lies at the upper end (or even above) of the range of professional forecasters presented above.

Consider the following exhibit which presents 18 inflation forecasts from these nine large reputable experts in the field of inflation forecasting.

2019 Forward-looking Annual Inflation Forecasts (From Professional Experts in the Field of Forecasting Inflation)	
Federal Reserve Board's Federal Open Market Committee Current "Long-run" Price Inflation Objective: Objective since Jan 2012; Personal Consumer Expenditures (PCE) Consumer Price Index Inflation Objective (CPI = PCE + approx 40 bps)	2.00% 2.40%
Congressional Budget Office: <i>The Budget and Economic Outlook</i> Overall Consumer Price Index (January 2019; Ultimate) Overall Consumer Price Index (January 2019; 10 Years)	2.30% 2.38%
2019 Social Security Trustees Report CPI-W 10-Year Intermediate Assumption CPI-W 30-Year Intermediate Assumption	2.53% 2.58%
Federal Reserve Bank of Philadelphia Livingston Survey: 10-Year Median Forecast (December 2018) Survey of Professional Forecasters: 10-Year Median Forecast (1Q2019)	2.23% 2.20%
Federal Reserve Bank of New York's Trading Desk (December 2018) Survey of Market Participants: 10-Year Median Expectation Survey of Primary Dealers: 10-Year Median Expectation	2.16% 2.20%
Federal Reserve Bank of Cleveland (January 1, 2019) 10-Year Expectation 20-Year Expectation 30-Year Expectation	1.96% 2.12% 2.24%
U.S. Department of the Treasury (Ave in December 2018) 10-Year Breakeven Inflation 20-Year Breakeven Inflation 30-Year Breakeven Inflation	1.78% 1.85% 1.99%
2018 GRS Survey of Investment Consultants and Forecasters Median expectation among 14 firms (averaging a 10-year horizon) Median expectation among 6firms (averaging a 26-year horizon)	2.21% 2.41%
State of Florida Office of Economic & Demographic Research 2019 Consumer Price Index (calendar) 10-Year Forecast	2.25%

Asset Allocation

It has been generally accepted for many years that a fund’s asset allocation is responsible for the vast majority of a fund’s investment performance. Therefore, PERS’ asset allocation is a core element in process of setting and evaluating assumed future returns.

In our development of a most appropriate return assumption for PERS, we first relied on the 15 target asset allocation percentages set forth in System’s formal Investment Policy Statement (IPS) last updated June 2018.

Exhibit 4

2018 PERS Target Asset Allocation			
Risk Assets		Fixed Income Assets	
Large Cap Domestic Equity	21.0%	Core Fixed Income	13.0%
Mid Cap Domestic Equity	4.0%	High Yield	5.0%
Small Cap Domestic Equity	5.0%	Global Fixed Income	9.0%
Large Cap Non-US Equity	10.0%	Emerging Markets Debt	7.0%
Small/Mid Cap Non-US Equity	4.0%	Cash Equivalents	1.0%
Emerging Market Equity	8.0%		
Private Equity	3.0%	<i>Total Fixed Income Assets</i>	<i>35.0%</i>
Real Estate	5.0%		
Hedge Fund of Funds	3.0%		
Real Assets	2.0%		
<i>Total Risk Assets</i>	<i>65.0%</i>	<i>Total Asset Allocation</i>	<i>100.0%</i>

Source: Current PERS Investment Policy Statement (dated June 2018)

It should be noted that PERS’ asset allocation is more conservative than other state and statewide systems. Consequently, it is expected that the forecasted net returns would be lower than for the other state and statewide systems.

Consensus of Professional Investment Forecasts

Listed below are the national firms in our 2019 GRS Survey. These are very large and reputable investment consultants and investment managers.

Participating Investment Forecasters			
Aon/Hewitt ^{IC}	Blackrock ^{IM}	BNY/Mellon ^{IM}	Callan ^{IC}
Cambridge ^{IC}	J.P. Morgan ^{IM}	Marquette ^{IC}	Meketa ^{IC}
Mercer ^{IC}	RVK ^{IC}	NEPC ^{IC}	Summit ^{IC}
	VOYA ^{IM}		Wilshire ^{IC}

^{IC} In the top 25 largest investment consultants, according to the most recent survey from P&I.

^{IM} In the top 75 largest investment managers, according to the most recent survey from P&I/WTW.

We applied PERS' target asset allocations to the expectations of these 14 major national investment forecasters. All 14 investment forecasters provided GRS with their mid-term (10 years) horizon forecasts, and six of them provided GRS with their longer-term (20- to 30-year) horizon forecasts. Given the brevity of the descriptions of the asset classes identified, our mapping of PERS' 15 asset classes to the investment forecaster's asset classes may not be exact. We replaced the investment forecasters' respective inflation assumptions with 2.20%, our preferred assumption based on the consensus of expert inflation forecasters' expectations presented above in order to normalize for a consistent inflation assumption across all forecasters.

We reduced the respective forecasts for PERS' portfolio by the expected investment-related expenses and added alpha back in to replace active management expenses above expected passive management expenses, as permitted and limited by Actuarial Standard of Practice No. 27. This leaves a net reduction estimated to be for passive investments. This process results in normalized expected returns for any one given year in the forecast horizon (called the expected arithmetic return). Finally, we reduced the resultant one-year arithmetic returns for the correlation among asset classes and the volatility drag in the compound return expected over time, because pensions are all about compounding in a volatile environment over the horizon.

It matters not whether the field of forecasting is for hurricanes, earthquakes, elections, or inflation and investment returns, a *consensus average* of many reputable experts is proven to be more accurate than any one of those experts.

Below are the results of this process for the mid-term horizon.

Investment Forecaster	Distribution of 10-Year Compound Average Percentile Expectations			Probability of exceeding 6.50%
	40th	50th	60th	
(1)	(2)	(3)	(4)	(5)
1	3.47%	4.42%	5.38%	29.23%
2	4.31%	5.23%	6.17%	36.55%
3	4.36%	5.32%	6.30%	37.97%
4	4.78%	5.57%	6.37%	38.38%
5	5.12%	5.92%	6.72%	42.75%
6	5.09%	6.08%	7.09%	45.80%
7	5.08%	6.09%	7.12%	45.98%
8	5.15%	6.11%	7.08%	45.90%
9	5.29%	6.23%	7.17%	47.08%
10	5.30%	6.23%	7.17%	47.09%
11	5.69%	6.52%	7.35%	50.20%
12	5.78%	6.66%	7.55%	51.82%
13	5.71%	6.67%	7.64%	51.80%
14	6.19%	7.10%	8.01%	56.64%
Average	5.09%	6.01%	6.94%	44.80%

There are three important takeaways from the exhibit above:

- a. Over the mid-term horizon the range of expectations of the 50th percentile of compound average return runs from 4.42% to 7.10%.
- b. The 50th percentile consensus average mid-term forecast is 6.01%, or rounded to 6.00%.
- c. The consensus of these experts is that there is only a 44.80% chance of achieving at least the current 6.50% adopted by PERS over the mid-term horizon. This does not mean a 44.80% chance of achieving the 6.50% assumption in any year during the horizon; it means that the compound return over the next 10 years has a 44.80% chance of achieving at least the 6.50% assumption.

This is why, actuarially speaking, the 6.01% rate of return is the preferred assumption for funding because it is the 50th percentile expectation of compound returns over a mid-term horizon. The consensus is that there is a 50-50 chance of returning at least 6.01% when compounded over the next 10 years.

For use in an actuarial valuation for pensions, where the entire measurement and funding model is built on compounding (present values and future values), we believe the 50th percentile compound or geometric expectation over a mid-term horizon is the most appropriate choice of a net return assumption.

Again, no one knows the future for certain. When in doubt, in our opinion it is best to err of the side of conservatism (lower return assumptions), relying on the experts to form those opinions.

Adjustment for benefit outflow

The section above on *Forecast-horizons* discusses four reasons not to use a long-term horizon for pension valuations. Reason #4 addresses how a plan's own expected benefit outflow should be recognized in the determination of the most appropriate return assumption.

Due to the limited nature of this Comprehensive Actuarial Review, only an estimate can be provided for recognizing the benefit cash flow. The duration of the plan's benefit stream is 12-13 years; thus, we estimate the cash flow adjusted return assumption would be raised from 6.00% to approximately 6.25%.

Based on this analytical process for setting the return assumption, the actuary for the LLA considers 6.25% to be the most appropriate net return assumption.

Reasonable range

Fifty basis points above and below this most appropriate 6.25% return assumption is a reasonable range to account for various uncertainties in the process. This makes the reasonable range to be 5.75% to 6.75%.

Conclusion

Considering this analysis, considering PERS' duration and expected benefit cash flow, and considering a reasonable range around the most appropriate return assumption (or 50 basis points above and below), the actuary for the LLA considers PERS' current return assumption for its 2018 valuation of 6.50% to be an appropriate return assumption for funding purposes.

Section 2: Treatment of Cost-of-living Adjustments

The cost of future COLAs is currently not included in the 2018 funding valuation. Future COLAs are currently recognized in the calculations of costs and liabilities only after they are granted.

There are, basically, two broad categories of COLAs available to PERS:

1. “Gain-sharing COLA”. This is a COLA granted when the actuarial earnings exceed the actuarial assumption by a sufficient margin and
2. “FDA COLA”. This is a COLA granted and paid out of funds that have accumulated in the Funding Deposit Account (FDA).

There are many other rules for COLAs relating to: How often and when they may be granted, minimum and maximum percentage and dollar increases granted, and who is eligible to receive the increases.

Whether and how *future* COLAs should be recognized in annual actuarial valuations for funding purposes and for accounting purposes depends on whether the future COLAs expected are of the “Gain-sharing COLA” variety or the “FDA COLA” variety.

Actuarial treatment of “Gain-sharing COLAs”

When there is a reasonable expectation (not a guaranteed expectation) of “Gain-sharing COLAs” being granted in the future, an actuary should recognize the likelihood and magnitude of future “Gain-sharing COLAs” in the measurement of system costs and liabilities for both funding and accounting purposes. This is clear in both actuarial and accounting standards.

Actuarial treatment of “FDA COLAs”

However, when there is a reasonable expectation that future COLAs will be of the “FDA COLA” type, the actuarial treatment may be different:

- For funding purposes, future FDA COLAs are already being pre-funded by making higher contributions than what is required under a non-COLA version of the future. The excess contributions are set-aside and not counted as plan assets in the actuarial valuation until such time an FDA COLA is granted, when an equivalent amount is released from the FDA into the actuarial value of assets. Therefore, for funding purposes, if a reasonable expectation of future COLAs is that they would be granted from the balance in the FDA, then no actuarial advance-recognition is necessary.
- For accounting purposes, Governmental Accounting Standards Board (GASB) does not consider whether the contributions are exceeding a minimum calculation. They are not focused on funding, but on accounting. The GASB requires advance recognition of future COLAs when there is a reasonable pattern expected for granting future COLAs (whether they are FDA COLAs or otherwise).

PERS differs from most other Louisiana state and statewide retirement systems in that it has accumulated a substantial balance in its FDA for Plan A and Plan B by way of previous contributions that exceed the minimum recommended net direct employer contribution. PERS is one of two statewide systems that

have substantial FDA balances. The FDA balance in PERS may be used to fund COLAs when otherwise permitted under the rules.

The actuary for the LLA expects that future COLAs granted for PERS would be of the “FDA COLA” type. The last COLA granted was an FDA COLA, effective January 1, 2018. The following exhibit illustrates the recent history of PERS’ COLAs.

Actuarial Valuation Date	Amount Permitted By Statutory Template	Amount Granted by Board	Effective Date of COLA	Comments
12/31/2018	None	None yet		COLA may only be granted from Funding Deposit Account, but not from gain-sharing
12/31/2017	None	None		
12/31/2016	< 2.50% Supplemental COLA	2.50% Supplemental COLA	1/1/2018	COLA granted from Funding Deposit Account, not a gain-sharing COLA
12/31/2015	None	None		
12/31/2014	None	None		
12/31/2013	2.50% Supplemental COLA and 2% Additional COLA	2.50% Supplemental COLA	1/1/2015	Gain-Sharing COLA
12/31/2012	None	None		
12/31/2011	None	None		
12/31/2010	None	None		

Unless the balance in the FDA is used repeatedly for other purposes (e.g., reducing the net direct employer contribution or reducing the present value of future costs), thereby depleting the balance available for COLAs, the actuary for the LLA expects that future COLAs would be financed by using the balance in the FDA. This is not the opinion of the actuary for the LLA with respect to all statewide systems.

Conclusion -- For the 2018 PERS funding valuation, the actuary for the LLA accepts the current practice of not recognizing future COLAs in the funding calculations of costs and liabilities as appropriate treatment in this situation.

Section 3: Demographic Assumptions

Mortality Assumption

The 2018 Actuarial Valuation (page 67) states that the mortality assumption for annuitant and beneficiary mortality is the “Pub-2010 Public Retirement Plans Mortality Table for General Healthy Retirees multiplied by 130% for males and 125% for females, each with full generational projection using the MP2018 scale.”

Base table

To evaluate the reasonableness of the mortality assumption, we reviewed the base mortality (Pub-2010) separately from the projection scale (MP2018).

The Pub-2010 Public Retirement Plans Mortality Tables Report was published in January 2019. This table was developed by the Society of Actuaries based on data obtained from public sector pension plans across the US. It is the most recent reliable broad-base mortality table available, for purposes of national estimates of mortality for public pension plans. The selection of this base mortality table is a commendable decision by GSC.

In addition, the observed mortality rates were compared to the standard reference table in order to set the appropriate adjustment factors to determine the best fitting table to use for the final mortality assumption. Because the plan is too small for a full statistical credibility of its own mortality experience, observed rates were blended with standard tables. The resulting adjustment factor of 130% was determined by GSC to be the best fit for males and an adjustment factor of 125% was determined by GSC to be the best fit for females.

Therefore, we find the base table (before projection for future mortality) to be fully appropriate for the 2018 Actuarial Valuation.

Projection scales

Once the base table was found to be reasonable, we then turned our attention to the projection scale used in the mortality assumption to reflect expected mortality improvements over time. The 2018 Actuarial Valuation stated that the Pub-2010 table was projected generationally using scale MP2018. This projection scale is the most recent reliable projection scale available. This is also a commendable decision by GSC. Therefore, we find the projection scale MP2018 to be fully appropriate for the 2018 Actuarial Valuation.

Other Demographic Assumptions

In our opinion, all other demographic assumptions set forth in the Experience Study report prepared by the System's actuary (dated June 17, 2019) for the period from January 1, 2013, through December 31, 2017, and approved by the retirement board are generally suitable for use in PERS' 2018 Actuarial Valuation.

For more details on our analysis and commentary on the demographic assumptions, please refer to the Comprehensive Actuarial Review of the 2018 PERS Experience Study covering the period from January 1, 2013, through December 31, 2017.

Actuarial Certification

This report is considered to be a Statement of Actuarial Opinion. Therefore, we make the following certification:

I, James J. Rizzo, am a member of the American Academy of Actuaries, an Associate in the Society of Actuaries, an Enrolled Actuary, and I meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein.



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

July 18, 2019

Date

I, Lowell P. Good, am a member of the American Academy of Actuaries, an Associate in the Society of Actuaries, an Enrolled Actuary, and I meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein.



Lowell P. Good, ASA, EA, MAAA
Actuary for the Louisiana Legislative Auditor

July 18, 2019

Date

RESPONSE FROM
G.S. CURRAN & COMPANY, LTD.

G. S. CURRAN & COMPANY, LTD.

Actuarial Services

10555 N. Glenstone Place • Baton Rouge, Louisiana 70810 • (225) 769-4825

Gary S. Curran, FCA, MAAA, ASA, EA
Consulting Actuary

Gregory M. Curran, FCA, MAAA, ASA, EA
Consulting Actuary

July 29, 2019

Ms. Dainna Tully, Administrative Director
Parochial Employees' Retirement System
P.O. Box 14619
Baton Rouge, Louisiana 70898-4616

Dear Dainna:

We have completed our analysis of the Comprehensive Actuarial Review of the 2018 Actuarial Valuation and the Comprehensive Actuarial Review of the 2018 Experience Study for the Parochial Employees' Retirement System as published by the Louisiana Legislative Auditor (LLA). Within these reports, the actuaries for the LLA discuss their opinions and findings related to the assumptions used within the Fund's 2018 actuarial valuation report which were reset by the 2018 Experience Study.

In the LLA's review of the 2018 Experience Study, although the LLA continues to disagree with us as to the appropriate time frame over which to forecast future investment return assumptions, they do comment that they consider the process and results of our investment return assumption review to be appropriate. They further conclude that the most appropriate net return assumption would be 6.25% with a reasonable range of 5.75% through 6.75%. It appears that any difference we may have stems from the time frame over which to forecast future return assumptions. In recent years, we have provided significant discussion surrounding the time period we prefer for analyzing investment return assumptions. For an in depth discussion, please refer to our past correspondence on the matter.

With regard to salary scale, the LLA opines that the assumption seems high given the experience of these plans. We would agree that over the 5 year study period, salary increase rates were observed to be below the recommended assumption. We believe that our recommended assumption is appropriate for the following reasons:

1. Recent low salary increase rates are likely due in part to the lower rate of inflation during the study period (averaging around 1.5%). Given the significant difference when compared to our expected long-term inflation rate, we recommend incorporating the difference in setting long-term expected salary scale.
2. In our study of salary scale for PERS over the past 30 years, we have observed a cyclicity of salary increase rates that gives us pause in setting this assumption by heavily weighting the most recent five year experience. There are past periods where employers have provided substantial pay raises (increasing temporarily the real rate of salary increase) after prolonged periods of low salary growth. In order to avoid the trap of lowering the assumed salary increase rate based on recent experience only to experience higher future increases during the next five years we have opted to limit the decrease in our recommended salary scale assumption.
3. We continue to believe that conservatism in this important assumption is appropriate for PERS.

In the end, the LLA stated that they found our assumption to not be unreasonable.

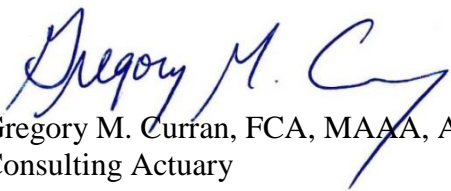
With regard to inflation, the LLA states that they find an inflation assumption closer to 2.20% to be more supported. This difference is likely related to their preferred time period and differences in the forecasts that we relied upon for our reviews. In the end, the LLA states that they do not find the use of 2.4% to be unreasonable. We have provided detailed discussion related to our differences in the past. For more information on the setting of this assumption, please refer to our previous responses.

With regard to the handling of COLAs in the actuarial valuation, the LLA discusses our decision to not include the value of future COLAs in the liabilities of the system. Given the substantial balance accumulated in the system's Funding Deposit Account (FDA) and the fact that they system has used the FDA to fund the most recent COLA, they conclude that it is appropriate to not recognize future COLAs in the funding liabilities.

After providing detailed analysis, the LLA concluded that the mortality, retirement, DROP Entry, DROP participation, and withdrawal assumptions were appropriate. The LLA discussed some issues with regard to disability rates. It appears that in our haste to meet the June meeting date with the valuation and experience study reports, a couple of typographical errors were included in the published report. We have looked into the matter, and the final rates used the 2018 actuarial valuation do match the intended rates set by our experience study. We have since provided an updated report containing necessary changes. If you have any further questions, please let us know so that we can provide greater detail.

In conclusion, we believe that the work being performed by the LLA to continually review the work that we do on behalf of the Board of Trustees is valuable for the retirement system. Their annual reviews promote a healthy discussion about the assumptions used in the actuarial valuation and provide the Board of Trustees with an additional actuarial opinion. I believe that this process has furthered the education of Board members with regard to actuarial matters and we are happy to discuss any matter contained within the annual actuarial review with the Board or any stakeholder.

Sincerely yours,



Gregory M. Curran, FCA, MAAA, ASA
Consulting Actuary