# 2017 Actuarial Valuation Report on the Louisiana State Employees' Retirement System


Actuarial Valuation as of
June 30, 2017
Issued December 2017

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# 2017 ACTUARIAL VALUATION REPORT

# LOUISIANA STATE EMPLOYEES' RETIREMENT SYSTEM

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LOUISIANA LEGISLATIVE AUDITOR
**DARYL G. PURPERA, CPA, CFE**

November 23, 2017

The Honorable John A. Alario, Jr.,
President of the Senate
The Honorable Taylor Barras,
Speaker of the House of Representatives

Dear Senator Alario and Representative Barras:

This report provides the results of an actuarial valuation of the Louisiana State Employees' Retirement System as of June 30, 2017, as required under R.S. 11:127(C).

The report contains our findings, conclusions, and recommendations. I hope this report will benefit you in your legislative decision-making process.

Sincerely,

Daryl G. Purpera, CPA, CFE
Legislative Auditor

DGP:PTR:ch

LASERS 2017 VALUATION

# SUMMARY AND CONCLUSIONS

# SUMMARY AND CONCLUSIONS

## 2017 Actuarial Report on the Louisiana State Employees' Retirement System

This valuation has been prepared as of June 30, 2017, based on plan provisions for the Louisiana State Employees' Retirement System (LASERS) as documented in Title 11 of Louisiana Revised Statutes (R.S.), Sections 401 through 621. The purpose of the valuation, in general, is to:

1. Measure and compare plan assets and liabilities as of June 30, 2017.

2. Determine the actuarially calculated employer contribution requirement for FYE 2018.

3. Determine the sources and amounts of gains and losses between June 30, 2016, and June 30, 2017.

4. Calculate projected employer contribution rates for FYE 2019.

5. Show measures of funding of the actuarial obligations of the retirement system.

As the actuary for the Louisiana Legislative Auditor (LLA), I am required by R.S. 11:127(C) to prepare an actuarial valuation for review by the Public Retirement Systems' Actuarial Committee (PRSAC). More specifically, R.S. 11:127(C) states:

> *The actuaries for the public retirement systems, plans, and funds and for the legislative auditor shall submit annual actuarial valuations to the committee. The committee shall review and analyze all the assumptions and valuations submitted. The committee shall, with the consent of the majority of members present and voting, approve a single valuation for each public retirement system, plan, or fund. Once consent of the members is obtained, the actuarial valuations in the form of the official valuations adopted by the committee shall be submitted to the House and Senate committees on retirement and the Joint Legislative Committee on the Budget.*

Furthermore, I am required by Actuarial Standards of Practice (ASOPs) to use an assumption set and a set of methods that I can support based on appropriate facts and evidence.

Because we did not prepare the 2016 valuation, we have prepared the June 30, 2017 valuation as if we are doing so for the first time. It is not uncommon under such circumstances for the reviewing actuary to use assumptions and methods that are more compatible with his own perspectives.

As a result, we have revised the following assumptions and methods in preparing the June 30, 2017 valuation for LASERS.

1. Mortality Tables,

2. The Investment Return assumption, the Inflation assumption and the Discount Rate assumption,

3 . Treatment of Administrative Expenses (changed due to statute),

4 . Treatment of Gain-Sharing COLA benefits.

The following sections provide a brief explanation of our assumptions and rationale. More details concerning the selection of these assumptions can be found in the Appendices.

*Mortality Tables*

We revised the mortality tables used in this valuation (for the employer contribution for FYE 2019) in order to employ current actuarial methodologies along with current published mortality tables and mortality improvement scales, while directly reflecting LASERS' own mortality experience.

The most recent experience study covered the period July 1, 2007, through June 30, 2012, and was dated March 27, 2013. For this actuarial valuation (specifically, for employer contribution rates for FYE 2019), we chose to reflect the actual mortality experience exhibited by the LASERS' active and retiree population directly into the mortality tables.

We recognize that experience studies for larger systems are generally performed every five years and the next one for LASERS is not scheduled until 2019. However, it is generally accepted among retirement system executives and actuaries that if events occur, or if better or new techniques emerge between experience studies that materially affect results, experience tables would be considered for change. Furthermore, Actuarial Standard of Practice (ASOP) No. 35 states that at each measurement date, the actuary should determine whether the assumptions continue to be reasonable, which includes the requirement to take into account historical and current demographic data that is relevant as of the measurement date. Therefore, for this actuarial valuation, we employed the changes in mortality tables as described in the Appendix B.

A table on page 5 presents the effect of this mortality change (as well as other changes) on the projected unfunded accrued liability and the employer contribution rate for FYE 2019.

*Investment Return, Inflation and Discount Rate*

To provide budget information used by participating employers, Louisiana law provides that a valuation for any given June 30 will be used to establish the projected employer contribution rate for the second fiscal year following the valuation date. The employer rate for the fiscal year immediately after the valuation date is referred to as the actuarial contribution requirement. To make these determinations, we must measure the gain or loss associated with the fiscal year ending on the valuation date and the projected gain or loss for the fiscal year on the June 30 immediately following the valuation date. These in turn are based on the accrued liability on June 30 of the year before the valuation date, the accrued liability on the valuation date, and the accrued liability on the June 30 of the year immediately following the valuation date.

Three sets of assumptions are needed for the June 30, 2017 valuation: (1) one set for June 30, 2016, (2) a second set for June 30, 2017, and (3) a third set for June 30, 2018. These assumption sets are summarized below in Exhibit 1.

**Exhibit 1**
**Summary of Assumptions and Methods**

| Assumption | June 30, 2016 | June 30, 2017 | June 30, 2018 |
|---|---|---|---|
| Rate of Investment Return | 8.15% | 8.25% | 6.75% |
| Rate of Inflation | 3.00% | 2.75% | 2.25% |
| Discount Rate | 7.75% | 7.70% | 6.75% |
| Treatment of Administrative Expenses | Implicit (15 bps) | Implicit (15 bps) | Explicit (0 bps) |
| Treatment of Gain-Sharing COLA Benefits | Implicit (25 bps) | Implicit (40 bps) | Explicit (0 bps) |
| Mortality | Second Most Recent Table and Methods | Second Most Recent Table and Methods | Most Recent Table and Methods |

Based on our research, many independent national experts in forecasting inflation, and investment returns, we have selected an appropriate and mainstream assumption for the net investment return on LASERS' portfolio to be 6.75%, without any further reductions for administrative expenses and Experience Account transfers. For more details on how the 6.75% was determined, refer to Appendix C.

As part of the building block approach to developing the 6.75% stated above, we assumed a mainstream inflation rate of 2.25%. This reduction (from 2.75%) in the assumed rate of inflation is also used to lower the assumed salary scale. Again, for more details on how the 2.25% was determined, refer to Appendix C.

In the interest of transparency, we treat the discount rate as equal to the net investment return assumption in our actuarial valuation for determining the employer contribution requirement for FYE 2019. No further reductions to the 6.75% are made for administrative expenses or for Experience Account transfers. The costs of such plan outflows are more transparently recognized in an explicit manner, as illustrated in Exhibit 1, above.

In short, a consensus of eight major national investment forecasters expects LASERS' investment portfolio to earn substantially less over the mid-term horizon. Therefore, taxpayer costs and liabilities are being measured as being larger in this valuation than in the prior year's valuation. The table on page 5 presents the effect of this net investment return change (as well as others) on the projected unfunded accrued liability and the employer contribution rate for FYE 2019.

*Treatment of Administrative Expenses*

Act 94 of 2016 requires that expected noninvestment-related administrative expenses for the contribution year be included in the actuarially-required employer contribution beginning with the first fiscal year in which the projected aggregate employer contribution rate, calculated without regard to any changes in the board-approved actuarial valuation rate, will not increase. That threshold was satisfied for the contribution year ending June 30, 2019.

In this actuarial valuation, we applied this direct explicit method to the determination of the contribution rate for the year ending June 30, 2019. We used a load on the normal cost of 0.95% of pay to fund for administrative expenses. For more information on this change in assumption/method,

refer to Appendix D. The table on page 5 presents the effect of the change in the treatment of administrative expenses (as well as others) on the projected unfunded accrued liability and the employer contribution rate for FYE 2019.

*Treatment of Gain-Sharing COLA Benefits*

In this actuarial valuation, we adopted an explicit method of recognizing the expected cost of gain-sharing COLA benefits of the plan. This is being accomplished by estimating (through stochastic modeling techniques) what would be a single *equivalent* annual COLA increase, and measuring that cost in the actuarial valuation.

By modeling the statutory template mechanism using the economic assumptions from eight major national investment forecasters (the same basis for developing the 6.75% net return assumption for valuation purposes), we determined that a 0.4% annual COLA benefit approximates future Experience Account transfers over the next 30 years. In other words, an annual COLA grant of 0.4% has a present value that is equal to the present value of the average COLA benefits to be granted in accordance with the current law.

Therefore, the final determination of employer contribution requirements for FYE 2019 presented herein was developed using an annual net return assumption (and discount rate) of 6.75% and a single equivalent COLA increase of 0.4% per year.

For more details on how the 0.4 % was determined and the advantages of this explicit approach, refer to Appendix E. The table on page 5 presents the effect of this change in the treatment gain-sharing COLA benefits (as well as others) on the projected unfunded accrued liability and the employer contribution rate for FYE 2019.

*The Effect of New Assumptions and Methods*

The following table presents employer contribution requirements for FYE 2019 and the unfunded accrued liability associated with each of the four new assumptions/methods described above as projected to July 30, 2018. The entries below isolate the effect of each new assumption/method individually and cumulatively. The cumulative entries in the last column present the total net effect of all new assumptions/methods.

**Exhibit 2**
**The Effect of Changes in Assumptions and Methods on Employer Contribution Rates**

| The Effects of Changes in Assumptions and Methods | Unfunded Accrued Liability Projected to 6/30/18 ($ Millions) | Employer Contribution Rate Projected for FYE 6/30/19 (as Pct of Projected Covered Pay) |
|---|---|---|
| **(1) Without Any Changes in Assumptions or Methods** *(benchmark values)* | 6,685.2 | 36.6% |
| **(2) Change in Mortality Table** *(effect of change in Mortality table against benchmark)* | 6,697.5 | 36.8% |
| a. Effect of the Change: (2)-(1) | 12.3 | 0.2% |
| **(3) New Investment Return Assumption** *(effect of changes to the Mortality Table and Investment Rate Assumption against benchmark)* | 9,402.6 | 46.9% |
| a. Effect of this Additional Change: (3)-(2) | 2,705.1 | 10.1% |
| **(4) New Treatment of Administrative Expense** *(effect of changes to the Mortality Table, Investment Rate Assumption, and New Treatment of Administrative Expenses against benchmark)* | 9,087.7 | 46.6% |
| a. Effect of this Additional Change: (4)-(3) | (314.9) | -0.3% |
| **(5) New Treatment of Gain-sharing COLA Benefits** *(effect of changes to the Mortality Table, Investment Rate Assumption, New Treatment of Administrative Expense, and New Treatment of Gain-sharing COLA against benchmark)* | 8,920.1 | 46.5% |
| a. Effect of this Additional Change: (5)-(4) | (167.6) | -0.1% |
| b. Effect of All four Changes: 2a+3a+4a+5a = (5)-(1) | 2,234.9 | 9.9% |

*Source: Developed by LLA's actuarial staff.*

(1) Benchmark values have been developed using assumptions employed in determination of the 6/30/2017 Unfunded Accrued Liabilities and 2017/2018 Employer Contribution rate without regard to assumption and method changes scheduled to to be adopted for the next year.

(2) Change in mortality tables from RP-2000 with *static* mortality improvement Scale AA to 2015 to applying LASERS-derived experience factors to RP-2014 with *generational* mortality improvement scale MP-2016

(3) Change in net investment return assumption from LASERS' 8.25% (not to be confused with LASERS' 7.70% discount rate) to LLA's 6.75% net investment return assumption

(4) Change in administrative expenses from LASERS' implicit reduction of net return assumption (down by 0.15%) to LLA's explicit normal cost load (of 0.95% of covered payroll)

(5) Change in gain-sharing COLA increases from LASERS' implicit reduction of net return assumption (down by 0.40%) to LLA's explicit single equivalent annual 0.40% COLA

The above table illustrates effects of implementing assumptions described on the previous pages.

## Alternative funding policies

If the LLA's actuarial valuation were to be adopted by PRSAC, it would constitute a significant increase in contribution requirements on participating entities all in one year. We recommend that PRSAC consider alternative methods of grading into these requirements over a reasonably short period of time.

The LLA's actuary and staff would be pleased to discuss such alternative methods – smoothing inputs or smoothing outputs. These are reasonable approaches to satisfying two worthy but competing objectives: (a) adoption of mainstream assumptions and (b) short-term affordability.

## Public Document

This valuation report is a public document. This report has been prepared for the following persons:

**Exhibit 3**
**Summary of Users of the Valuation Report**

| Potential Users | Definitions | Identified Persons |
|---|---|---|
| Principal | A client or employer of the actuary. | 1. The Legislative Auditor. |
| Intended Users | Any person the actuary identifies as able to rely on the actuarial findings of the report. | 1. The Louisiana Legislature.<br>2. PRSAC.<br>3. LASERS. |
| Other User | Any recipient of the report who is not an intended user. | 1. Other interested government entities or employees.<br>2. The public. |

***Source:*** *Developed by LLA's actuarial staff.*

A brief summary of information developed in this valuation and in prior-year valuations is presented on the following page.

## Summary and Conclusions

| | | | ----------Prior Years---------- | |
|---|---|---|---|---|
| | | **June 30, 2017** | **June 30, 2016** | **June 30, 2015** |
| **A.** | **Membership Data** | | | |
| | (1) Retirees | 48,679 | 48,201 | 47,643 |
| | (2) Actives | 39,055 | 39,284 | 40,194 |
| | (3) DROP | 1,520 | 1,609 | 1,682 |
| | (4) Terminated Vested | 3,794 | 3,865 | 3,953 |
| **B.** | **Annual Benefits** | $ 1,248,400,896 | $ 1,217,858,640 | $ 1,170,269,160 |
| **C.** | **Total Payroll** | 1,821,943,975 | 1,842,286,184 | 1,856,735,292 |
| **D.** | **Valuation Assets** | 11,976,792,982 | 11,630,816,397 | 11,318,433,015 |
| **E.** | **Experience Account** | 10,455,340 | 9,714,942 | 123,579,684 |
| **F.** | **Investment Returns** | | | |
| | (1) Market (Total Assets) | 14.51% | -2.64% | 1.34% |
| | (2) Market (excl. OPR & self-directed) | 15.18% | -2.86% | 1.30% |
| | (3) Net Actuarial Value | 7.62% | 5.43% | 10.64% |
| | (4) Rate for DROP Accounts | 7.12% | 4.93% | 10.14% |
| **G.** | **Normal Costs** | | | |
| | (1) Total in Dollars | $ 214,222,176 | $ 219,475,742 | $ 222,225,784 |
| | (2) Total Normal Cost Rate | 11.76% | 11.91% | 11.97% |
| | (3) Employer Normal Cost Rate | 3.75% | 3.93% | 4.00% |
| **H.** | **Accrued Liability** | $ 18,792,105,561 | $18,576,266,623 | $ 18,216,660,456 |
| **I.** | **Unfunded Accrued Liability** | $ 6,815,312,579 | $ 6,945,450,226 | $ 6,898,227,441 |
| **J.** | **Funded Percentage** | 63.7% | 62.6% | 62.1% |
| **K.** | **Funding Requirements for the Fiscal Year Following the Valuation Date** | | | |
| | (1) Employees | | | |
| | a) Contributions | $ 148,230,786 | $ 149,440,502 | $ 150,093,960 |
| | b) Rate | 8.010% | 7.980% | 7.970% |
| | (2) Employers | | | |
| | a) Contributions | $ 704,203,905 | $ 700,058,533 | $ 691,893,177 |
| | b) Rate | 38.05% | 37.38% | 36.74% |
| **L.** | **Funding Requirements for the Subsequent Fiscal Year** | | | |
| | (1) Employees | | | |
| | a) Contributions | $ 151,398,781 | $ 152,741,091 | $ 153,340,984 |
| | b) Rate | 8.010% | 7.980% | 7.970% |
| | (2) Employers | | | |
| | a) Contributions | $ 878,214,679 | $ 724,363,377 | $ 689,209,421 |
| | b) Rate | 46.46% | 37.84% | 35.80% |

## Contribution Rates for FYE 2019

Contribution requirements for LASERS for FYE 2019 vary from sub-plan to sub-plan. The total contribution rate for each sub-plan has one or more of the following component parts:

1. Total Normal Cost
2. Employee Normal Cost
3. Employer Normal Cost
4. UAL Costs that are shared by all sub-plans
5. UAL Costs specific to a particular sub-plan

Contribution rates are summarized below. More details are presented in Appendix A.

**Exhibit 5**

| Projected Contribution Rates for FYE 2019 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Admin | | Plan | Total |
| | | Total | Employee | Employer | Expense | Shared | Specific | Employer |
| | Status | NC | NC | NC | % | UAL | UAL | Cost |
| | | | | (C) = | | | | (F) = |
| Sub Plan | 7/1/2017 | (A) | (B) | (A) - (B) | (D) | (E) | (F) | (C) + (D) + (E) + (F) |
| Rank & File and Appellate Law Clerks | O | 13.48% | 7.72% | 5.76% | 0.95% | 39.64% | 0.05% | 46.40% |
| Pre 2011 Judges & Court Officers | C | 20.03% | 11.50% | 8.53% | 0.95% | 39.64% | 0.00% | 49.12% |
| Post 2011 Judges | O | 20.29% | 13.00% | 7.29% | 0.95% | 39.64% | 0.00% | 47.88% |
| Legislators | C | 23.90% | 11.50% | 12.40% | 0.95% | 39.64% | 0.00% | 52.99% |
| Corrections Officers Primary | C | 11.22% | 9.00% | 2.22% | 0.95% | 39.64% | 0.00% | 42.81% |
| Corrections Offs Secondary | C | 14.19% | 9.00% | 5.19% | 0.95% | 39.64% | 0.00% | 45.78% |
| Wildlife Officers | C | 25.40% | 9.50% | 15.90% | 0.95% | 39.64% | 0.00% | 56.49% |
| Peace Officers | C | 12.72% | 9.00% | 3.72% | 0.95% | 39.64% | 0.00% | 44.31% |
| ATC Officers | C | 9.34% | 9.00% | 0.34% | 0.95% | 39.64% | 0.00% | 40.93% |
| Bridge Police Officers | C | 13.04% | 8.40% | 4.64% | 0.95% | 39.64% | 0.00% | 45.23% |
| Harbor Police | C | 16.90% | 9.00% | 7.90% | 0.95% | 9.75% | 0.00% | 18.60% |
| Hazardous Duty Officers | O | 15.51% | 9.50% | 6.01% | 0.95% | 39.64% | 0.12% | 46.72% |
| Total | | 13.86% | 8.01% | 5.85% | 0.95% | 39.62% | 0.04% | 46.46% |

***Source:*** *Developed by LLA's actuarial staff.*

Status

O – Plan is open to new members.
C – Plan is closed to new members.

LASERS receives a direct payment from three special funds. The amount of normal cost and amortization cost received from each fund is summarized below:

**Exhibit 6**

| Payments From Special Funds for FYE 2019 | | | |
|---|---|---|---|
| **Special Fund** | **Normal Cost** | **Amortization Cost** | **Total Payment** |
| Adult Probation and Parole Officers | 52,294 | - | 52,294 |
| Peace Officers | 0 | 284,582 | 284,582 |
| Harbor Police | 0 | 682,158 | 682,158 |
| Total | 52,294 | 966,740 | 1,019,034 |

***Source:*** *Developed by LLA's actuarial staff.*

See Appendix A for more information pertaining to contributions for sub-plans.

## Funding Requirements Specific to Individual Sub-plans

Although most funding components are shared, some components apply only to an individual sub-plan or to a group of employees within a sub-plan. These situations are summarized below.

**Rank & File** − The disability accrual rate for members hired on or after July 1, 2006, was increased by Act 262 of the 2008 regular session of the legislature. Retirement eligibility for members hired on or after July 1, 2006, was changed by Act 992 of the 2010 session. The unfunded accrued liability associated with the Rank & File sub-plan increased as a result of this legislation. The increase in UAL is being amortized with level payments over a 30-year period. UAL payments pertaining to these benefit changes are being charged only to employers of Rank & File employees.

**Hazardous Duty Officers** – The normal form of benefit for members of LASERS who elect to join the hazardous duty plan was changed by Act 992 of the 2010 session. The resultant UAL is being amortized with level payments over a period of 10 years. Employers of hazardous duty personnel are responsible for this amortization payment.

**Alcohol Tobacco Control Officers** – Eligibility requirements for enforcement officers of Alcohol Tobacco Control were modified by Act 740 of the 2008 session. The resultant UAL is being amortized with level payments over a 10-year period. This amount is being paid from the Department of Revenue Alcohol and Tobacco Control Officers Fund.

**Peace Officers** – The benefit accrual rate for certain Peace Officers was increased by Act 414 of the 2007 session. The UAL created by this change is funded with level annual payments over 30 years. The UAL contribution is paid from the Department of Public Safety Peace Officers Fund.

**Adult Probation and Parole** – The benefit accrual rate for certain members of the Corrections Primary sub-plan was increased by Act 852 of the 2014 session. The increase in the UAL and the increase in the normal cost associated with the benefit increase are funded by appropriations from the Adult Probation and Parole Officer Retirement Fund (APPOR Fund). The first payment of $1,000,000 was made from the APPOR Fund on March 30, 2015. Accounting relative to LASERS and the APPOR Fund for the year ended June 30, 2017 is shown below.

| | | |
|---|---|---|
| **A. Normal Cost** | | |
| 1. Mid-Year Normal Cost Associated with Act 852 | $ | 53,563 |
| 2. Interest Adjustment from January 1, 2017 to June 30, 2017 | | 2,024 |
| 3. Normal Cost on June 30, 2017 | $ | 55,587 |
| **B. UAL Amortization** | | |
| 1. UAL Associated with Act 852 on July 1, 2016 | $ | 1,213,580 |
| 2. Interest Adjustment from July 1, 2016 to June 30, 2017 | | 93,446 |
| 3. UAL Associated with Act 852 on June 30, 2017 | $ | 1,307,026 |
| **C. Payments by the APPOR Fund to LASERS** | | |
| 1. Payment on March 30, 2017 | $ | 789,376 |
| 2. Interest Adjustment from March 30, 2017 to June 30, 2017 | | 14,775 |
| 3. Accumulated Payments on June 30, 2017 | $ | 804,151 |
| **D. Adjustment to the Act 852 UAL on June 30, 2017** | | |
| 1. Normal Cost | $ | 55,587 |
| 2. UAL Amortization Cost | | 1,307,026 |
| 3. Total Cost | $ | 1,362,613 |
| 4. Accumulated Payments | | 804,151 |
| 5. UAL Balance on June 30, 2017 = D3 – D4 | $ | 558,462 |
| **E. UAL Amortization Payment (Final Payment)** | $ | 580,013 |

The mid-year normal cost payment and mid-year amortization payment due from the APPOR Fund for FYE 2018 are $45,687 and $580,013 respectively, and the amortization base will be paid off at that time. The mid-year normal cost payment due from the APPOR Fund for FYE 2019 is $52,294 with no amortization payments remaining.

**Harbor Police** – Act 648 of the 2014 session provided for the development of a Cooperative Endeavor Agreement (CEA) between LASERS and the Harbor Police Retirement System (HPRS), which would identify the terms of a merger between the two systems. The CEA provides the following:

1. LASERS will create a new sub-plan for members of HPRS on June 30, 2014.

2. Any person employed by the Port of New Orleans on or after July 1, 2014, who otherwise would have joined HPRS, will become a member of the LASERS Hazardous Duty sub-plan.

3. A member of the Harbor Police sub-plan may elect to transfer to the Hazardous Duty sub-plan of LASERS and relinquish his benefit rights under the old HPRS plan.

4. The total contribution rate applicable to the Hazardous Duty sub-plan will apply to police officers of the Port of New Orleans.

5. The employer contribution rate for the Harbor Police sub- plan will be equal to the employer normal cost for the sub-plan. The Port of New Orleans will not pay either a shared amortization cost or a specific amortization cost on behalf of members of the Harbor Police sub-plan through FYE 2022.

6. The Port of New Orleans agrees to pay on or before June 30, 2022, the unfunded accrued liability of the HPRS as measured on July 1, 2015. This is considered to be LASERS' asset.

## Sources and Amounts of Gains and Losses for FYE 2017

Gains and losses during FYE 2017 have been identified below, and the unfunded accrued liability at the end of the year has been reconciled with the unfunded accrued liability on June 30, 2016.

| | | | | |
|---|---|---|---|---|
| **A.** | **Unfunded Accrued Liability on June 30,2016** | | **$** | **6,945,450,226** |
| **B.** | **Increases in the UAL Due to:** | | | |
| | 1. Interest on the UAL | $ 538,272,393 | | |
| | 2. Permanent Benefit Increase | 0 | | |
| | 3. Employer Contribution Shortfall | 27,473,914 | | |
| | 4. Assumption Change (Discount Rate) | 86,563,645 | | |
| | 5. Investment Loss | 14,362,813 | | |
| | 6. Experience Loss | 0 | | |
| | 7. Harbor Police | 0 | | |
| | 8. Total Increases = Bl + B2 + B3 + B4 + B5 + B6 + B7 | | **$** | **666,672,765** |
| **C.** | **Decreases in the UAL Due to:** | | | |
| | 1. Employer Amortization Payment | $ 652,321,102 | | |
| | 2. Disbursement from the Experience Account | 0 | | |
| | 3. Employer Contribution Surplus | 0 | | |
| | 4. Investment Gain | 0 | | |
| | 5. Experience Gain | 99,637,176 | | |
| | 6. Assumption Change (Salary Scale) | 44,851,884 | | |
| | 7. Appropriations due to Litter Fines | 250 | | |
| | 8. Total Decreases = Cl + C2 + C3 + C4 + C5 + C6 +C7 | | **$** | **796,810,412** |
| **D.** | **Unfunded Accrued Liability on June 30, 2017** = A + B8 - C8 | | **$** | **6,815,312,579** |

## Actuarial Certification

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

I, Paul T. Richmond, am the Manager of Actuarial Services for the Louisiana Legislative Auditor. I 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 opinion contained herein.

Paul T. Richmond

Paul T. Richmond

12/15/17

Date

# SECTION I:
# DEVELOPMENT OF EMPLOYER CONTRIBUTIONS

## 1. Employer Contribution Requirements for FYE 2018 – Combined Plan

Employer contribution requirements for FYE 2018, as measured for all sub-plans combined using assumptions and methods applicable to that fiscal year, are calculated below. These values have been determined as if the entire system had been measured as a single financial entity. Although R.S. 11:102C requires separate calculations of normal cost for each sub-plan within LASERS, values in the aggregate are useful for comparisons with contribution requirements for prior years.

| | | Dollar Amount | Percent of Salary |
|---|---|---|---|
| A. | Employer Portion of Normal Cost Net of Act 852 | $ 69,310,569 | 3.745360% |
| B. | Act 852 Normal Cost | 45,687 | n/a |
| C. | Shared Amortization Payments | 584,384,734 | 31.578607% |
| D. | Amortization Payments for Sub Plans | 2,625,461 | 0.141873% |
| E. | Contribution Variance Payments | 49,541,977 | 2.677118% |
| F. | Total Contribution = A + B + C + D + E | $ 705,908,428 | 38.145426% |
| G. | Act 414 Appropriation (Peace Officers Fund) | 304,045 | 0.016430% |
| H. | Act 740 Appropriation (ATC Officers Fund) | 80,967 | 0.004375% |
| I. | Harbor Police Amortization Appropriation | 515,325 | 0.027847% |
| J. | Act 852 AP&P Amortization Appropriation | 580,016 | 0.031343% |
| K. | Act 852 AP&P Normal Cost Appropriation | 45,687 | n/a |
| L. | Net Required Contribution = F - G - H - I - J - K | $ 704,382,388 | 38.062963% |
| M. | Projected Payroll for FYE 2018 | $ 1,850,571,613 | |
| N. | Total Contribution Rate for FYE 2018 = L / M | 38.1% | |
| O. | Minimum Contribution Rate | 15.5% | |
| P. | Minimum Required Contribution for FYE 2018 = M x O | $ 286,838,600 | 15.500000% |
| Q. | Required Employer Contribution for FYE 2018 = The Greater of L and P | $ 704,382,388 | 38.062963% |

## 2. Employer Contribution Requirements for FYE 2019 – Combined Plan

Employer contribution requirements for FYE 2019, as measured for all sub-plans combined using assumptions and methods applicable to that fiscal year, are calculated below. These values have been determined as if the entire system had been measured as a single financial entity. Although R.S. 11:102(C) requires separate calculations of normal cost for each sub-plan within LASERS, values in the aggregate are useful for comparisons with contribution requirements for prior years. Contribution requirements by sub-plan are presented in Appendix A.

| | | Dollar Amount | Percent of Salary |
|---|---|---|---|
| A. | Employer Portion of Normal Cost Net of Act 852 | $ 128,511,160 | 6.799093% |
| B. | Act 852 Normal Cost | 52,294 | N/A |
| C. | Shared Amortization Payments | 716,964,973 | 37.932204% |
| D. | Amortization Payments for Sub Plans | 1,817,092 | 0.096136% |
| E. | Contribution Variance Payments | 31,888,193 | 1.687097% |
| F. | Total Contribution = A + B + C + D + E | $ 879,233,713 | 46.517297% |
| G. | Act 414 Appropriation (Peace Officers Fund) | 284,582 | 0.015056% |
| H. | Act 740 Appropriation (ATC Officers Fund) | - | 0.000000% |
| I. | Harbor Police Amortization Appropriation | 682,158 | 0.036091% |
| J. | Act 852 AP&P Amortization Appropriation | - | 0.000000% |
| K. | Act 852 AP&P Normal Cost Appropriation | 52,294 | N/A |
| L. | Net Required Contribution = F - G - H - I - J - K | $ 878,214,679 | 46.463383% |
| M. | Projected Payroll for FYE 2019 | $ 1,890,122,115 | |
| N. | Total Contribution Rate for FYE 2019 = L / M | 46.5% | |
| O. | Minimum Contribution Rate | 15.5% | |
| P. | Minimum Required Contribution for FYE 2019 = M x O | $ 292,968,928 | 15.500000% |
| Q. | Required Employer Contribution for FYE 2019 = The Greater of L and P | $ 878,214,679 | 46.463383% |

# 3. Normal Cost Values – Combined Plan

## Employer and Employee Normal Costs

Funding rules under R.S. 11:21 require normal costs to be determined in accordance with the Entry Age Normal (EAN) funding method. Employee contributions and actuarially calculated employer normal cost values for FYE 2018 are based on the valuation of normal costs as of June 30, 2017. The total normal cost percentage is calculated as the total normal cost for FYE 2018 divided by the payroll as of June 30, 2017. The employee normal cost is calculated as employee contributions collected in FYE 2017 divided by the June 30, 2017 payroll. The employer normal cost percentage is equal to the difference between the total normal cost percentage and the employee normal cost percentage. These percentages are then multiplied by the projected payroll for FYE 2018 to determine dollar contribution amounts for FYE 2018.

Projected normal costs for FYE 2019 are calculated in a similar manner. The calculated normal cost percentages, however, are multiplied by projected payroll amounts for FYE 2019.

Normal costs and projected payroll values for FYE 2018 and 2019 are based on 7.70% and 6.75% discount rate, respectively. The basis for these rates is described in Appendix C – Basis For Economic Assumptions. Other assumption changes are also identified in the Appendices.

| | | June 30, 2017 Valuation | | June 30, 2016 Valuation | |
|---|---|---|---|---|---|
| | | Actuarial FYE 2018 | Projected FYE 2019 | Actuarial FYE 2018 | Projected FYE 2019 |
| **A.** | **Discount Rate** | 7.70% | 6.75% | 7.75% | 7.70% |
| **B.** | **Total Normal Cost** | | | | |
| | 1. Retirement Benefits | $ 140,772,747 | $ 169,364,692 | $ 145,746,775 | $ 147,408,316 |
| | 2. Disability Benefits | 4,837,059 | 5,894,832 | 4,723,807 | 4,762,659 |
| | 3. Survivor Benefits | 4,828,633 | 6,815,408 | 4,984,501 | 5,022,153 |
| | 4. Voluntary Terminations | 63,783,737 | 70,481,483 | 64,020,659 | 64,282,460 |
| | 5. Total Normal Cost | $ 214,222,176 | $ 252,556,415 | $ 219,475,742 | $ 221,475,588 |
| | 6. Act 852 Normal Cost | 46,096 | 52,294 | 53,563 | 49,201 |
| | 7. Load for Administrative Expenses | N/A | $ 17,308,468 | N/A | N/A |
| | 8. Total Normal Cost Net of Act 852 = B5 - B6 + B7 | $ 214,176,080 | $ 269,812,589 | $ 219,422,179 | $ 221,426,387 |
| **C.** | **Payroll** | | | | |
| | 1. On Valuation Date | $1,821,943,975 | $1,821,943,975 | $1,842,286,184 | $1,842,286,184 |
| | 2. Projected for FY after Valuation Date | 1,850,571,613 | n/a | 1,872,687,991 | n/a |
| | 3. Projected for 2nd FY after Valuation Date | n/a | 1,890,122,115 | n/a | 1,914,031,733 |
| **D.** | **Normal Cost Rates** | | | | |
| | 1. Total Normal Cost Rate = B8 / C1 | 11.755360% | 14.809050% | 11.910320% | 12.019109% |
| | 2. Employee Normal Cost Rate | 8.010000% | 8.010000% | 7.980071% | 7.980071% |
| | 3. Employer Normal Cost Rate = D1 – D2 | 3.745360% | 6.799050% | 3.930249% | 4.039038% |

# 3. Normal Cost Values – Combined Plan (Cont.)

| | June 30, 2017 Valuation | | June 30, 2016 Valuation | |
|---|---|---|---|---|
| | Actuarial FYE 2018 | Projected FYE 2019 | Actuarial FYE 2018 | Projected FYE 2019 |
| **E. Employer Normal Cost in Dollars Net of Act 852** | | | | |
| 1. For 1st FY after Valuation Date = C2 x D3 | $ 69,310,569 | n/a | $ 73,601,301 | n/a |
| 2. For 2nd FY after Valuation Date = C3 x D3 | n/a | $ 128,510,348 | n/a | $ 77,308,469 |
| **F. Employee Normal Cost** | | | | |
| 1. For 1st FY after Valuation Date = C2 x D2 | $ 148,230,786 | n/a | $ 149,441,831 | n/a |
| 2. For 2nd FY after Valuation Date = C3 x D2 | n/a | $ 151,398,781 | n/a | $ 152,741,091 |
| **G. Total Normal Cost** | | | | |
| 1. For FYE 2018 = E1 + F1 | $ 217,541,355 | n/a | $ 223,043,132 | n/a |
| 2. For FYE 2019 = E2 + F2 | n/a | $ 279,909,129 | n/a | $ 230,049,560 |

**Increases in Normal Cost Attributable to Assumption Changes**

The following assumptions will be changed effective June 30, 2018:

a. Mortality Tables;

b. Investment Return, Inflation, and the Discount Rate assumptions;

c. Treatment of Administrative Expenses; and

d. Treatment of Gain-sharing COLA benefits.

In particular, the discount rate will be changed from 7.70% to 6.75% on June 30, 2018. Please refer to the Appendices for further details pertaining to other assumption changes. The effect on normal costs has been measured effective June 30, 2017. It is assumed that the increase in the normal cost will be proportionate if it is measured on June 30, 2018, instead of June 30, 2017. Increases associated with the various components of the normal cost are shown on the following page.

## Development of Employer Contributions

| | | For the June 30, 2017 Valuation | | |
|---|---|---|---|---|
| | | Old Assumptions | New Assumptions | Increase/ (Decrease) |
| **A.** | **Discount Rate** | 7.70% | 6.75% | |
| **B.** | **Total Normal Cost** | | | |
| | 1. Retirement Benefits | $ 140,772,747 | $ 169,364,692 | $ 28,591,945 |
| | 2. Disability Benefits | 4,837,059 | 5,894,832 | 1,057,773 |
| | 3. Survivor benefits | 4,828,633 | 6,815,408 | 1,986,775 |
| | 4. Voluntary Terminations | 63,783,737 | 70,481,483 | 6,697,746 |
| | 5. Total Normal Cost | $ 214,222,176 | $ 252,556,415 | $ 38,334,239 |
| | 6. Act 852 Normal Cost | (46,096) | (52,294) | (6,198) |
| | 7. Load for Administrative Expenses | N/A | 17,308,468 | N/A |
| | 8. Total Normal Cost Net of Act 852 | $ 214,176,080 | $ 269,812,589 | $ 55,636,509 |
| **C.** | **Payrolls** | | | |
| | 1. Projected Payroll on June 30, 2017 | $ 1,821,943,975 | $ 1,821,943,975 | $ - |
| | 2. Projected Payroll for FYE 2018 | 1,850,571,613 | 1,850,571,613 | - |
| | 3. Projected Payroll for FYE 2019 | 1,890,122,115 | 1,890,122,115 | - |
| **D.** | **Normal Cost Rates** | | | |
| | 1. Total Normal Cost Rate Net of Act 852 = B8/C1 | 11.755360% | 14.809050% | 3.053690% |
| | 2. Employee Normal Cost Rate | 8.010000% | 8.010000% | 0.000000% |
| | 3. Employer Normal Cost Rate Net of Act 852 = D1 - D2 | 3.745360% | 6.799050% | 3.053690% |
| **E.** | **Employer Normal Costs Net of Act 852** | | | |
| | 1. Projected Cost for FYE 2018 = C2 x D3 | 69,310,569 | 125,821,289 | 56,510,720 |
| | 2. Projected Cost for FYE 2019 = C3 x D3 | 70,791,878 | 128,510,348 | 57,718,470 |
| **F.** | **Employee Normal Costs** | | | |
| | 1. Projected Cost for FYE 2018 = C2 x D2 | 148,230,786 | 148,230,786 | - |
| | 2. Projected Cost for FYE 2019 = C3 x D2 | 151,398,781 | 151,398,781 | - |

# 4. Unfunded Accrued Liability

## Unfunded Accrued Liability as of June 30, 2017

Funding rules under R.S. 11:21 require a measurement of the unfunded accrued liability for the plan to be calculated in accordance with the Entry Age Normal funding method. This measurement is to be made for all sub-plans combined. Accrued liability values as of June 30, 2017, are based on a 7.70% discount rate net of investment expenses, and other assumptions and methods applicable to FYE 2018 as described in Section IV of this report. The unfunded accrued liability is based on the actuarial value of assets measured on June 30, 2017.

The components of the unfunded accrued liability on June 30, 2017, and June 30, 2016, are shown below.

| | | June 30, 2017 | June 30, 2016 |
|---|---|---|---|
| **A.** | **Discount Rate** | 7.70% | 7.75% |
| **B.** | **Accrued Liability** | | |
| **1** | **Accrued Liability for Active Members** | | |
| | (a) Retirement Benefits | 4,685,254,899 | 4,747,738,482 |
| | (b) Disability Benefits | 65,485,353 | 68,781,779 |
| | (c) Survivor Benefits | 63,552,876 | 68,073,116 |
| | (d) Voluntary Terminations | - | - |
| | (e) Total | $ 4,814,293,128 | $ 4,884,593,377 |
| | (f) Ratio of Active Liability to Total Accrued Liability | 25.62% | 26.29% |
| **2** | **Accrued Liability for Retired and Inactive Members** | | |
| | (a) Regular Retirees | 10,311,169,162 | 10,039,272,375 |
| | (b) Disability Retirees | 271,595,562 | 281,289,586 |
| | (c) Survivors | 766,314,480 | 737,348,595 |
| | (d) Members with a Deferred Benefit | 340,779,746 | 333,434,315 |
| | (e) Contributions to be Refunded | 84,543,183 | 85,071,016 |
| | (f) Deferred Benefits for DROP Members | 1,128,452,897 | 1,172,501,053 |
| | (g) Account Balances for DROP Members | 1,069,402,732 | 1,037,139,136 |
| | (h) Account Balances for ORP Members | 5,554,671 | 5,617,170 |
| | (i) Total | $ 13,977,812,433 | $ 13,691,673,246 |
| | (j) Ratio of Inactive Liability to Total Accrued Liability | 74.38% | 73.71% |
| **3** | **Total Accrued Liability** | $ 18,792,105,561 | $ 18,576,266,623 |
| **C.** | **Valuation Assets** | $ 11,976,792,982 | $ 11,630,816,397 |
| **D.** | **Unfunded Accrued Liability** | 6,815,312,579 | 6,945,450,226 |
| **E.** | **Funded Ratio = C / B3** | 63.73% | 62.61% |

The unfunded accrued liability on June 30, 2017, is reconciled below with the unfunded accrued liability on June 30, 2016.

| | | | |
|---|---|---|---|
| **A.** | **Unfunded Accrued Liability on June 30, 2016** | **$** | **6,945,450,226** |
| **B.** | **Increases in the UAL Due to:** | | |
| | 1. Interest on the UAL | 538,272,393 | |
| | 2. Permanent Benefit Increase | - | |
| | 3. Employer Contribution Shortfall | 27,473,914 | |
| | 4. Assumption Change (Discount Rate) | 86,563,645 | |
| | 5. Investment Loss | 14,362,813 | |
| | 6. Experience Loss | - | |
| | 7. Total Increases | **$** | **666,672,765** |
| **C.** | **Decreases in the UAL Due to:** | | |
| | 1. Employer Amortization Payment | 652,321,102 | |
| | 2. Experience Account Disbursement | - | |
| | 3. Employer Contribution Surplus | - | |
| | 4. Investment Gain | - | |
| | 5. Experience Gain | 99,637,176 | |
| | 6. Assumption Change (Salary Scale) | 44,851,884 | |
| | 7. Appropriations due to Litter Fines | 250 | |
| | 8. Total Decreases | **$** | **796,810,412** |
| **D.** | **Unfunded Accrued Liability on June 30, 2017** = A + B7 – C8 | **$** | **6,815,312,579** |

**Projected Increases in Accrued Liabilities on June 30, 2018, Attributable to Assumption and Method Changes.**

The following assumptions and methods will be changed effective June 30, 2018.

a. The mortality table will be changed to reflect more recent mortality experience nationwide.
b. The return on Investments Assumption will be changed from 8.25% to 6.75%. The discount rate will be changed from 7.70% to 6.75%.
c. Methods used to account for administrative expenses will be changed from an implicit methodology to an explicit process.
d. Methods used to account for gain-sharing COLA benefits will be changed from an implicit methodology to an explicit process.

Liability values before and after these changes on June 30, 2017, have been calculated and projected to June 30, 2018. For this comparison, we have assumed that June 30, 2018, values with and without the assumption and method changes will be the same as June 30, 2017 values with and without assumption and method changes. Projected values as of June 30, 2018 are compared below.

| | | June 30, 2017 Old Assumptions 7.70% Discount Rate | June 30, 2017 New Assumptions 6.75% Discount Rate | Increase/ (Decrease) |
|---|---|---|---|---|
| **A.** | Accrued Liability for Active Members | $ 4,814,293,128 | $ 5,594,373,259 | $ 780,080,131 |
| **B.** | Accrued Liability for Retired and Inactive | 13,977,812,433 | 15,415,395,898 | 1,437,583,465 |
| **C.** | Accrued Liability on June 30, 2017 = A + B | 18,792,105,561 | 21,009,769,157 | 2,217,663,596 |
| **D.** | Interest Adjustment | 1,446,992,128 | 1,418,159,418 | (28,832,710) |
| **E.** | Normal Cost | 217,588,182 | 256,524,757 | 38,936,575 |
| **F.** | Interest Adjustment for One Half Year | 8,221,811 | 8,516,344 | 294,533 |
| **G.** | Estimated Benefit Payments | 1,347,386,437 | 1,346,757,928 | (628,509) |
| **H.** | Interest Adjustment for One-Half Year | 50,912,486 | 44,710,903 | (6,201,583) |
| **I.** | Projected Accrued Liability on June 30, 2018 = C + D + E + F – G – H | $ 19,066,608,759 | $ 21,301,500,844 | $ 2,234,892,086 |

## Projected Unfunded Accrued Liability on June 30, 2018

The calculation of the projected unfunded accrued liability as of June 30, 2018, is shown below.

| | | | |
|---|---|---|---|
| **A.** | **Unfunded Accrued Liability on June 30, 2017** | | **$ 6,815,312,578** |
| **B.** | **Increases in the UAL Due to:** | | |
| | 1. Interest on the UAL | 524,779,069 | |
| | 2. Expected Employer Contribution Shortfall | 5,761,493 | |
| | 3. Recognition of Gain Sharing | - | |
| | 4. Change in Assumptions | 2,234,892,086 | |
| | 5. Total Increases = B1 + B2 + B3 + B4 | | **$ 2,765,432,648** |
| **C.** | **Decreases in the UAL Due to:** | | |
| | 1. Employer Amortization Payment | 660,604,999 | |
| | 2. Employer Contribution Surplus | - | |
| | 3. Total Decreases = C1 + C2 | | **$ 660,604,999** |
| **D.** | **Projected Unfunded Accrued Liability on June 30, 2018** = A + B5 – C3 | | **$ 8,920,140,227** |

# 5. Assets

## A. Actuarial Value of Assets

The actuarial value of assets is the market value of assets adjusted to phase in realized and unrealized investment gains and losses that occurred over the four-year period immediately prior to the valuation date.

| A. Investment Gain/(Losses) Based on Market | June 30, 2017 | June 30, 2016 | June 30, 2015 | June 30, 2014 |
|---|---|---|---|---|
| 1. BOY Market Value | $10,723,714,826 | $11,415,150,926 | $11,624,853,426 | $10,327,598,351 |
| 2. Contributions | 839,563,997 | 886,025,786 | 888,347,447 | 786,502,145 |
| 3. Legislative Appropriations | 250 | 10,790,721 | 4,540,773 | 2,465,608 |
| 4. Benefit Payments | 1,312,067,062 | 1,274,505,193 | 1,237,388,009 | 1,244,595,931 |
| 5. Administrative Expenses | 18,536,860 | 17,018,181 | 18,011,841 | 17,638,128 |
| 6. EOY Market Value | $11,753,275,850 | $10,723,714,826 | $11,415,150,926 | $11,624,853,426 |
| 7. Actual Investment Income = A6 – A1 – A2 – A3 + A4 + A5 | 1,520,600,699 | (296,729,233) | 152,809,130 | 1,770,521,381 |
| 8. Expected Investment Income Based on the Discount Rate | 812,060,122 | 869,797,447 | 886,702,860 | 807,178,592 |
| 9. Gain/(Loss) = A7 – A8 | $ 708,540,577 | $(1,166,526,680) | $ (733,893,730) | $ 963,342,789 |

| B. Market Value Adjustment | Gain/(Loss) (a) | Factor (b) | Market Value Adjustment (c) = (a) x (b) |
|---|---|---|---|
| 1. Adjustment for 2017 | $ 708,540,587 | 80% | $ 566,832,470 |
| 2. Adjustment for 2016 | (1,166,526,680) | 60% | (699,916,008) |
| 3. Adjustment for 2015 | (733,893,730) | 40% | (293,557,492) |
| 4. Adjustment for 2014 | 963,342,789 | 20% | 192,668,558 |
| 5. Total Market Value Adjustment | | | $ (233,972,472) |

| | |
|---|---|
| **C. Preliminary Actuarial Value** | |
| 1. Market Value on June 30, 2015 = A6 | 11,753,275,850 |
| 2. Market Value Adjustment = B5 | (233,972,472) |
| 3. Preliminary Actuarial Value = C1 – C2 | 11,987,248,322 |
| **D.** Corridor Values | |
| 1. 80% x Market Value | 9,402,620,680 |
| 2. 120% x Market Value | 14,103,931,020 |
| **E.** Actuarial Value of Assets = Preliminary Value if Preliminary Value is inside the Corridor. Otherwise the Actuarial Value = the average between the Preliminary Value and the Corridor | $11,987,248,322 |

## B. Investment Gain/(Loss)

The Investment gain/(loss) is measured as the difference between actuarial and expected investment earnings during FYE 2017.

| | | |
|---|---|---|
| **A.** | **Components of the Gain/(Loss) Calculation** | |
| | 1. Net Actuarial Value of Assets on June 30, 2016 | $11,122,775,487 |
| | 2. Contributions for FYE 2017 | 766,018,360 |
| | 3. Legislative Appropriations | 250 |
| | 4. Benefits Paid for FYE 2017 | 1,253,867,598 |
| | 5. Administrative Expenses Paid for FYE 2017 | 18,536,860 |
| | 6. Net Actuarial Value of Assets on June 30, 2017 | $11,444,785,605 |
| | 7. Expected Rate of Return on Assets | 7.75% |
| **B.** | Actual Investment Earnings = A6 – A1 – A2 – A3 + A4 + A5 | $ 828,395,966 |
| **C.** | Expected Investment Earnings | $ 842,758,769 |
| | | 842,392,639 |
| **D.** | Investment Gain/(Loss) = B – C | $ (14,362,803) |

## C. Allocation of Investment Gains to the Experience Account

According to R.S. 11:542, 50% of the total investment gain, not associated with DROP accounts, in excess of $100 million will be transferred from the regular asset pool to the Experience Account. For the Fiscal Year beginning July 1, 2017, the $100 million hurdle will be indexed by the increase in the actuarial value of assets, if any. Moreover, the transfer to the Experience Account will be capped by the maximum COLA if the retirement system is less than 80% funded and two COLAs otherwise.

| Funded Ratio | Maximum COLA |
|---|---|
| < 55% | 0% |
| 55% to < 65% | 1.5% |
| 65% to < 75% | 2.0% |
| 75% to < 80% | 2.5% |
| 80% + | 3.0% |

The amount of assets to be transferred under R.S. 11:542 from the regular pool of assets to the Experience Account is calculated below.

| | | | |
|---|---|---|---|
| **A.** | **Excess Investment Earnings = Investment Gain** | $ | 0 |
| **B.** | **Excess Investment Earnings Paid to DROP Accounts** | | |
| | 1. DROP Accounts Eligible for System Investment Earnings | | |
| | a. Total of all DROP and IBO accounts | $ | 1,038,947,234 |
| | b. DROP accounts for Actives not entitled to system earnings | | 74,367,361 |
| | c. Self-directed DROP accounts not entitled to system earnings | | 536,908,046 |
| | d. DROP accounts entitled to system earnings = B1a – B1b – B1c | $ | 427,671,827 |
| | 2. Rate of Return Attributable to Excess Earnings on DROP Accounts | | |
| | a. Adjusted Actual rate of return on investments for DROP accounts | | 7.121231% |
| | b. Adjusted Expected rate of return for DROP accounts | | 7.250000% |
| | c. Rate of return attributable to excess earnings = B2a – B2b | | 0.000000% |
| | 3. Excess Investment Earnings Paid to DROP Accounts = B1d x B2c | $ | 0 |
| **C.** | **Benefit Disbursements** | $ | - |
| **D.** | **Actuarial Return Gain/(Loss) Paid to the Experience Account (EA)** | | |
| | 1. Experience Account Assets Entitled to System Earnings | $ | 9,714,942 |
| | 2. Actuarial Rate of Return on the Actuarial Value of Assets | | 7.621231% |
| | 3. Preliminary Investment Earnings Payable to the EA = D1 x D2 | | 740,398 |
| | 4. Maximum Fund in the Experience Account = Present Value of a 1.5% PBI | | 127,814,368 |
| | 5. Maximum Investment Earnings Payable to the Experience Account = D4 - (D1 - C) | | 118,099,426 |
| | 6. Investment Earnings Payable to the EA = lesser of D5 and D3 | | 740,398 |
| | 7. Investment Earnings to be Treated as an Investment Gain = D6 - D3 | | 0 |
| | 8. Experience Account End of Period = lesser of D4 and (D1 - C + D3) | | 10,455,340 |
| | 9. Maximum Excess Investment Earnings that Can be Applied to EA = D4 - D8 | $ | 117,359,028 |
| **E.** | **Net Excess Investment Earnings = A – B3 + D7** | $ | 0 |
| **F.** | **Allocation of Excess Investment Earnings to the Experience Account** | | |
| | 1. Net Excess Investment Earnings = E | $ | 0 |
| | 2. Administrative Expense | | 0 |
| | 3. Threshold Gain | | 104,765,207 |
| | 4. Gain Available for Gain Sharing = F1 – F2 – F3, but not less than 0 | | 0 |
| | 5. Gain Sharing Percentage | | 50% |
| | 6. Preliminary Allocation of Excess Gains to the Experience Account | | 0 |
| | 7. Maximum Excess Investment Earnings that Can be Applied to EA = D9 | | 117,359,028 |
| | 8. Allocation of Excess Gains to the Experience Account = lesser F6 and F7 | $ | 0 |

## D. Employer Shortfall/(Surplus)

### Employer Contribution Shortfall/(Surplus) for FYE 2017

Total contributions received from participating employers were higher in FYE 2017 than were expected. As a result, asset values are more than what they would have been otherwise. The unfunded accrued liability has decreased because of the contribution surplus. The surplus will be used to reduce the Original Amortization Base (OAB), without a recalculation of amortization payments. The calculation of the surplus as of June 30, 2017, is shown below.

| | | |
|---|---|---|
| **A.** | **Actual Employer Contributions** | |
| | 1. Employer Contributions | $ 675,166,965 |
| | 2. ORP Contributions | 416,785 |
| | 3. Payment to Harbor Police | 171,994 |
| | 4. Net Employer Contributions = A1 + A2 - A3 | $ 675,411,756 |
| **B.** | **Expected Employer Contributions** | |
| | 1. Member Contributions | $ 149,931,242 |
| | 2. Employee Contribution Rate | 8.01000000% |
| | 3. Salaries on which Contributions were Received = B1 / B2 | $ 1,871,800,774 |
| | 4. Employer Normal Cost Rate for FYE 2017 | 3.93029610% |
| | 5. Members Affected by Act 852 of the 2014 Session | 0.00286022% |
| | 6. Total Employer Normal Cost Rate = B4 + B5 | 3.93315632% |
| | 7. Expected Employer Normal Costs = B3 x B6 | $ 73,620,850 |
| | 8. Contributions to the Employer Credit Account for FYE 2017 | 0 |
| | 9. Amortization Payments for FYE 2017 | 573,048,893 |
| | 10. Payments toward Contribution Variances for FYE 2017 | 55,209,450 |
| | 11. Expected Employer Contributions | $ 701,879,193 |
| **C.** | **Mid-Year Employer Shortfall/(Surplus) for FYE 2017 = B11 – A3** | $ 26,467,437 |
| **D.** | **Interest at 7.75% for 1/2 Year and Adjustment for Rounding** | $ 1,006,477 |
| **E.** | **Employer Shortfall/(Surplus) on June 30, 2017 = C + D** | $ 27,473,914 |

## Projected Employer Contribution Shortfall/(Surplus) for FYE 2018

A surplus in employer contributions is expected to occur for FYE 2018 because the actual employer contribution rate, 38.1% of pay for FYE 2018, is less than the projected 37.8% rate of pay established by PRSAC a year ago. The expected surplus of employer contributions is calculated below.

| | | | |
|---|---|---|---|
| A. | Actual Employer Contributions Required in Mid-Year for FYE 2018 | $ | 705,067,785 |
| B. | Projected Employer Contributions Expected in Mid-Year for FYE 2018 | | 699,516,070 |
| C. | Shortfall/(Surplus) of Employer Contributions Expected for Mid-Year for FYE 2018 = A - B | $ | 5,551,715 |
| D. | Interest on Shortfall at 7.70% per Year from Mid-Year to End of Year | | 209,778 |
| E. | Total Employer Contribution Shortfall/(Surplus) on June 30, 2018 = C + D | $ | 5,761,493 |

## E. Asset Allocation (Market Values)

| | | | |
|---|---|---|---|
| **A.** | **Short-Term Assets** | | |
| | 1. Cash/Cash Equivalents | $ 197,912,884 | $ 52,222,180 |
| | 2. Short-Term Investments | 142,663,861 | 317,630,817 |
| **B.** | **Bonds** | | |
| | 1. Domestic Issues | 1,388,750,646 | 1,302,223,446 |
| | 2. International Issues | 447,375,296 | 343,290,464 |
| **C.** | **Equities** | | |
| | 1. Domestic Stock | 2,666,613,896 | 2,432,754,709 |
| | 2. International Stock | 3,798,051,961 | 3,202,542,903 |
| **D.** | **Other Assets** | | |
| | 1. Fixed Assets | 3,855,740 | 4,331,820 |
| | 2. Real Estate and Alternative Investments | 3,048,043,546 | 3,040,659,840 |
| **E.** | **Receivables Minus Payables** | 59,897,298 | 28,699,953 |
| **F.** | **Securities Lending (Assets minus Liabilities)** | 110,722 | (641,306) |
| **G.** | **Total Assets** | $ 11,753,275,850 | $ 10,723,714,826 |

## F. Income Statement (Market Value)

| | FYE June 30, 2017 | FYE June 30, 2016 |
|---|---|---|
| **A. Income** | | |
| **1. Contribution Income** | | |
| a. Member Contributions | $ 149,931,242 | $ 152,233,771 |
| b. Employer Contributions | 675,166,965 | 718,163,026 |
| c. ORP Contributions | 416,785 | 443,488 |
| d. Total = A1a + A1b + A1c | $ 825,514,992 | $ 870,840,285 |
| **2. Other Income** | | |
| a. Legislative Appropriations | $ 250 | $ 10,790,721 |
| b. Transfers/Purchases | 9,989,730 | 10,578,354 |
| c. Miscellaneous | 4,059,275 | 4,607,147 |
| d. Total = A2a + A2b + A2c | $ 14,049,255 | $ 25,976,222 |
| **3. Net Investment Income** | | |
| a. Investments Income | $ 1,596,128,574 | $ (229,507,349) |
| b. Investment Expense | 75,527,875 | 67,221,884 |
| c. Net Investment Income = A3a – A3b | $ 1,520,600,699 | $ (296,729,233) |
| **Total Income = A1d + A2e + A3c** | $ 2,360,164,946 | $ 600,087,274 |
| **B. Expense** | | |
| **1. Operating Expense** | | |
| a. General Administration | $ 17,074,984 | $ 15,615,605 |
| b. Post-Employment Benefits | 904,975 | 982,858 |
| c. Other Expenses | 556,901 | 419,718 |
| d. Total = B1a + B1b + B1c | $ 18,536,860 | $ 17,018,181 |
| **2. Benefit Payments** | | |
| a. Pension Benefits | $ 1,274,461,022 | $ 1,238,507,932 |
| b. Return of Employee Contributions | 37,606,040 | 35,997,261 |
| c. Total = B2a + B2b | $ 1,312,067,062 | $ 1,274,505,193 |
| **3. Total Expense = B1d + B2c** | $ 1,330,603,922 | $ 1,291,523,374 |
| **C. Net Income = A4 – B3** | $ 1,029,561,024 | $ (691,436,100) |

## G. Allocation of Assets to Sub-accounts

| | | FYE June 30, 2017 | FYE June 30, 2016 |
|---|---|---|---|
| **A.** | **Employer Credit Account** | | |
| | 1. Beginning Balance for Current Year | $ - | $ - |
| | 2. Allocation for Current Year | - | - |
| | 3. Disbursements for Current Year | - | - |
| | 4. Accumulated Interest for Current Year | - | - |
| | 5. Ending Balance for Current Year = A1 + A2 – A3 + A4 | $ - | $ - |
| **B.** | **Initial UAL Amortization Fund** | | |
| | 1. Beginning Balance for Current Year | $ - | $ - |
| | 2. Allocation for Current Year | - | - |
| | 3. Disbursements for Current Year | - | - |
| | 4. Accumulated Interest | - | - |
| | 5. Ending Balance for Current Year = B1 + B2 – B3 + B4 | $ - | $ - |
| **C.** | **Experience Account Fund** | | |
| | 1. Beginning Balance for Current Year | $ 9,714,942 | $ 123,579,684 |
| | 2. Allocation for Current Year | - | - |
| | 3. Disbursements for Current Year | - | 120,572,581 |
| | 4. Accumulated Interest | 740,398 | 6,707,839 |
| | 5. Ending Balance for Current Year = C1 + C2 - C3 + C4 | $ 10,455,340 | $ 9,714,942 |
| **D.** | **Valuation Assets** | | |
| | 1. Actuarial Value of Assets | $ 11,987,248,322 | $ 11,640,531,339 |
| | 2. Employer Credit Account = A5 | - | - |
| | 3. Initial UAL Amortization Fund = B5 | - | - |
| | 4. Experience Account Fund = C5 | 10,455,340 | 9,714,942 |
| | 5. Valuation Assets = D1 – D2 – D3 – D4 | $ 11,976,792,982 | $ 11,630,816,397 |

# 6. Rates of Return on Investments

## A. Rates of Return on Investments Based on Market Values

The market value of assets includes funds that have been invested outside the trust fund by members with money in ORP and self-directed accounts. Column (a) shows the rate of return on investments with these account funds included; column (b) shows the rate of return associated with ORP and self-directed account funds; and column (c) shows the rate of return with these funds excluded.

| | | Market Value (a) | Self-Directed & ORP Values (b) | Net Market Value (c) = (a) – (b) |
|---|---|---|---|---|
| **A.** | Asset Value on June 30, 2016 | $ 10,723,714,826 | $ 517,755,852 | $ 10,205,958,974 |
| **B.** | Contributions | 839,564,247 | 73,545,637 | 766,018,610 |
| **C.** | Benefit Payments | 1,312,067,062 | 58,199,464 | 1,253,867,598 |
| **D.** | Administrative Expenses | 18,536,860 | - | 18,536,860 |
| **E.** | Asset Value on June 30, 2017 | $ 11,753,275,850 | $ 542,462,717 | $ 11,210,813,133 |
| **F.** | Investment Income = E – A – B + C + D | $ 1,520,600,699 | $ 9,360,692 | $ 1,511,240,007 |
| **G.** | Unrounded Rates of Return | 14.512048% | 1.781533% | 15.184120% |
| **H.** | Rounded Rate of Return on Investments | 14.51% | 1.78% | 15.18% |

## B. Rates of Return on Investments Based on Actuarial Values

The actuarial value of assets includes funds that have been invested outside the trust fund by members with money in ORP and self-directed accounts. Column (a) shows the rate of return on investments with these account funds included; column (b) shows the rate of return associated with ORP and self-directed account funds; and column (c) shows the rate of return with these funds excluded.

| | | Actuarial Value (a) | Self-Directed & ORP Values (b) | Net Actuarial Value (c) = (a) – (b) |
|---|---|---|---|---|
| **A.** | Asset Value on June 30, 2016 | $ 11,640,531,339 | $ 517,755,852 | $ 11,122,775,487 |
| **B.** | Contributions | 839,564,247 | 73,545,637 | 766,018,610 |
| **C.** | Benefit Payments | 1,312,067,062 | 58,199,464 | 1,253,867,598 |
| **D.** | Administrative Expenses | 18,536,860 | - | 18,536,860 |
| **E.** | Asset Value on June 30, 2017 | $ 11,987,248,322 | $ 542,462,717 | $ 11,444,785,605 |
| **F.** | Investment Income = E – A – B + C + D | $ 837,756,658 | $ 9,360,692 | $ 828,395,966 |
| **G.** | Unrounded Rates of Return | 7.351960% | 1.781533% | 7.621231% |
| **H.** | Rounded Rate of Return on Investments | 7.35% | 1.78% | 7.62% |

## C. Rate of Return to Be Granted on Drop Accounts

| | | |
|---|---|---|
| **A.** | Rounded Rate of Return on the Net Actuarial Value of | 7.62% |
| **B.** | Reduction for Administrative Expenses | 0.50% |
| **C.** | Rate of Return to Be Granted on DROP Accounts | 7.12% |

## D. Summary of Rates of Return on Investments

| | | Rates Measured on June 30 | | | | |
|---|---|---|---|---|---|---|
| | | **2017** | **2016** | **2015** | **2014** | **2013** |
| **A.** | Total Market Value | 14.51% | -2.64% | 1.34% | 17.55% | 11.81% |
| **B.** | Market Value Net of Self-Directed and ORP Accounts | 15.18% | -2.86% | 1.30% | 18.19% | 12.19% |
| **C.** | Actuarial Value Net of Self-Directed and ORP Accounts | 7.62% | 5.43% | 10.64% | 13.45% | 14.05% |
| **D.** | Five-Year Geometric Average of the Actuarial Value Net of Self-Directed and ORP Accounts | 10.19% | 9.69% | 9.69% | 7.97% | 3.62% |
| **E.** | Interest Credited to Self-Directed and ORP Accounts | 7.12% | 4.93% | 10.14% | 12.95% | 13.55% |

# 7. Amortization Payments for FYE June 30, 2018

| Year | Description | Amortization Method | Amortization Period | Initial Liability | Years Remaining | Balance on June 30, 2017 | Mid-Year Payment | Balance on June 30, 2018 |
|---|---|---|---|---|---|---|---|---|
| **Shared Bases** | | | | | | | | |
| 2010 | OAB | I | 19 | $ 1,936,750,759 | 12 | $ 1,585,628,383 | $ 198,266,840 | $ 1,501,963,197 |
| 2010 | EAAB | I | 30 | 2,493,227,298 | 23 | 2,385,531,722 | 224,415,570 | 2,336,322,304 |
| 2009 | Assumption Change | L | 30 | (221,451,744) | 22 | (200,587,931) | (18,500,685) | (196,833,448) |
| 2009 | Change in Liability | L | 30 | 1,381,087,874 | 22 | 1,250,970,321 | 115,379,864 | 1,227,555,416 |
| 2010 | Change in Liability | L | 30 | 630,583,407 | 23 | 580,493,261 | 52,625,635 | 570,577,089 |
| 2011 | Change in Liability | L | 30 | 86,983,753 | 24 | 81,262,854 | 7,252,002 | 79,994,067 |
| 2012 | Assumption Change | L | 30 | 357,645,630 | 25 | 338,642,125 | 29,789,008 | 333,802,950 |
| 2012 | Change in Liability | L | 30 | 272,743,878 | 25 | 258,251,629 | 22,717,374 | 254,561,229 |
| 2013 | Asset Method Change | L | 30 | (85,105,147) | 26 | (81,608,501) | (7,084,774) | (80,539,876) |
| 2013 | Change in Liability | L | 30 | (539,829,321) | 26 | (517,649,789) | (44,939,336) | (510,871,404) |
| 2014 | Liability Gain | L | 30 | (61,187,556) | 27 | (59,356,454) | (5,091,082) | (58,643,447) |
| 2014 | Assumption Change | L | 30 | 725,253,130 | 27 | 703,549,175 | 60,344,349 | 695,097,935 |
| 2014 | Funding Method Change | L | 30 | 622,016,608 | 27 | 603,402,114 | 51,754,603 | 596,153,869 |
| 2014 | Reduction in EA Deposit | L | 5 | (181,814,713) | 2 | (80,946,954) | (43,559,970) | (41,973,938) |
| 2014 | Gain from $50 to $100 M | L | 5 | (50,000,000) | 2 | (22,260,837) | (11,979,220) | (11,543,053) |
| 2014 | Remaining Investment Gain | L | 5 | (186,404,837) | 2 | (82,990,553) | (44,659,691) | (43,033,619) |
| 2015 | Remaining Gains | L | 30 | (181,167,204) | 28 | (177,689,239) | (15,072,531) | (175,729,247) |
| 2015 | Experience Loss | L | 30 | 27,584,310 | 28 | 27,054,760 | 2,294,926 | 26,756,334 |
| 2016 | Other Experience Gain | L | 30 | (80,839,360) | 29 | (80,071,185) | (6,723,199) | (79,259,424) |
| 2016 | Investment Experience Loss | L | 30 | 249,797,074 | 29 | 247,467,616 | 20,778,687 | 244,958,790 |
| 2017 | Change in Assumptions | L | 30 | 41,711,761 | 30 | 41,711,761 | 3,469,679 | 41,322,782 |
| 2017 | Experience Gain | L | 30 | (85,274,363) | 30 | (85,274,363) | (7,093,315) | (84,479,145) |
| Total | | | | $ 7,152,311,237 | | $ 6,715,529,915 | $ 584,384,734 | $ 6,626,159,361 |
| **Plan Specific Bases** | | | | | | | | |
| 2007 | Act 414 Liab Change | L | 30 | 3,631,308 | 20 | 3,168,362 | 304,045 | 3,096,792 |
| 2008 | Act 262 Liab Change | L | 10 | 1,999,338 | 1 | 276,004 | 286,433 | - |
| 2008 | Act 740 Liab Change | L | 10 | 565,160 | 1 | 78,019 | 80,967 | - |
| 2010 | Act 992 2010 Change | L | 10 | 5,036,841 | 3 | 1,931,947 | 718,458 | 1,335,101 |
| 2011 | Act 992 2011 Change | L | 10 | 452,190 | 4 | 222,730 | 64,366 | 173,082 |
| 2012 | Act 992 2012 Change | L | 10 | 533,971 | 5 | 316,806 | 75,854 | 262,480 |
| 2014 | Act 852 2014 Change | L | 10 | 5,278,524 | 1 | 558,895 | 580,013 | - |
| 2016 | Harbor Police | L | 6 | 3,358,474 | 5 | 2,725,773 | 515,325 | 2,400,860 |
| Total | | | | $ 20,855,806 | | $ 9,278,536 | $ 2,625,461 | $ 7,268,315 |
| **Total Outstanding Balances** | | | | | | $ 6,724,808,451 | $ 587,010,195 | $ 6,633,427,676 |
| **Employers Credit Balance** | | | | | | | | |
| 2013 | Contribution Variance | L | 5 | 78,318,188 | 1 | 18,103,252 | 18,787,303 | - |
| 2014 | Contribution Variance | L | 5 | 100,910,314 | 2 | 44,926,961 | 24,176,537 | 23,296,263 |
| 2015 | Contribution Variance | L | 5 | - | 3 | - | - | - |
| 2016 | Contribution Variance | L | 5 | - | 4 | - | - | - |
| 2017 | Contribution Variance | L | 5 | 27,473,914 | 5 | 27,473,914 | 6,578,137 | 22,762,706 |
| Total | | | | $ 206,702,416 | | $ 90,504,127 | $ 49,541,977 | $ 46,058,969 |
| **Grand Total** | | | | | | **$6,815,312,578** | **$ 636,552,172** | **$6,679,486,645** |

# 8. Amortization Payments for FYE June 30, 2019

| Year | Description | Amortization Method | Amortization Period | Initial Liability | Years Remaining | Balance on June 30, 2018 | Mid-Year Payment | Balance on June 30, 2019 |
|---|---|---|---|---|---|---|---|---|
| **Shared Bases** | | | | | | | | |
| 2010 | OAB | I | 19 | $ 1,936,750,759 | 11 | $ 1,501,963,197 | $ 194,434,171 | $ 1,402,456,539 |
| 2010 | EAAB | I | 30 | 2,493,227,298 | 22 | 2,336,322,304 | 209,540,466 | 2,277,527,078 |
| 2009 | Assumption Change | L | 30 | (221,451,744) | 21 | (196,833,448) | (17,230,173) | (192,317,510) |
| 2009 | Change in Liability | L | 30 | 1,381,087,874 | 21 | 1,227,555,417 | 107,456,292 | 1,199,391,683 |
| 2010 | Change in Liability | L | 30 | 630,583,407 | 22 | 570,577,089 | 48,895,626 | 558,572,135 |
| 2011 | Change in Liability | L | 30 | 86,983,753 | 23 | 79,994,068 | 6,722,595 | 78,447,890 |
| 2012 | Assumption Change | L | 30 | 357,645,630 | 24 | 333,802,949 | 27,553,459 | 327,866,444 |
| 2012 | Change in Liability | L | 30 | 272,743,878 | 24 | 254,561,230 | 21,012,524 | 250,033,996 |
| 2013 | Asset Method Change | L | 30 | (85,105,147) | 25 | (80,539,875) | (6,539,149) | (79,220,075) |
| 2013 | Change in Liability | L | 30 | (539,829,321) | 25 | (510,871,404) | (41,478,387) | (502,499,799) |
| 2014 | Liability Gain | L | 30 | (61,187,556) | 26 | (58,643,446) | (4,689,361) | (57,756,836) |
| 2014 | Assumption Change | L | 30 | 725,253,130 | 26 | 695,097,934 | 55,582,768 | 684,588,989 |
| 2014 | Funding Method Change | L | 30 | 622,016,608 | 26 | 596,153,868 | 47,670,810 | 587,140,825 |
| 2014 | Reduction in EA Deposit | L | 5 | (181,814,713) | 1 | (41,973,938) | (43,367,427) | - |
| 2014 | Gain from $50 to $100 M | L | 5 | (50,000,000) | 1 | (11,543,053) | (11,926,270) | - |
| 2014 | Remaining Investment Gain | L | 5 | (186,404,837) | 1 | (43,033,619) | (44,462,289) | 1 |
| 2015 | Remaining Gains | L | 30 | (181,167,204) | 27 | (175,729,247) | (13,855,768) | (173,275,207) |
| 2015 | Experience Loss | L | 30 | 27,584,310 | 27 | 26,756,335 | 2,109,663 | 26,382,686 |
| 2016 | Other Experience Gain | L | 30 | (80,839,360) | 28 | (79,259,424) | (6,168,690) | (78,235,951) |
| 2016 | Investment Experience Loss | L | 30 | 249,797,074 | 28 | 244,958,790 | 19,064,922 | 241,795,652 |
| 2017 | Change in Assumptions | L | 30 | 41,711,761 | 29 | 41,322,782 | 3,177,676 | 40,828,898 |
| 2017 | Experience Gain | L | 30 | (85,274,363) | 29 | (84,479,145) | (6,496,353) | (83,469,462) |
| 2018 | Assum Change: Mortality | L | 30 | 12,288,799 | 30 | 12,288,799 | 934,532 | 12,152,735 |
| 2018 | Assum Change: Discount | L | 30 | 2,705,059,118 | 30 | 2,705,059,118 | 205,712,879 | 2,675,108,285 |
| 2018 | Assum Change: Admin Exp. | L | 30 | (314,902,000) | 30 | (314,902,000) | (23,947,498) | (311,415,357) |
| 2018 | Assum Change: COLA | L | 30 | (167,553,834) | 30 | (167,553,834) | (12,742,044) | (165,698,651) |
| Total | | | | $ 9,387,203,320 | | $ 8,861,051,447 | $ 716,964,973 | $ 8,718,404,988 |
| **Plan Specific Bases** | | | | | | | | |
| 2007 | Act 414 Liab Change | L | 30 | 3,631,308 | 19 | 3,096,792 | 284,582 | 3,011,796 |
| 2010 | Act 992 2010 Change | L | 10 | 5,036,841 | 2 | 1,335,101 | 712,230 | 689,345 |
| 2011 | Act 992 2011 Change | L | 10 | 452,190 | 3 | 173,082 | 63,543 | 119,112 |
| 2012 | Act 992 2012 Change | L | 10 | 533,971 | 4 | 262,480 | 74,579 | 203,142 |
| 2016 | Harbor Police | L | 6 | 3,358,474 | 4 | 2,400,860 | 682,158 | 1,858,113 |
| Total | | | | $ 13,012,784 | | $ 7,268,315 | $ 1,817,092 | $ 5,881,508 |
| **Total Outstanding Balances** | | | | | | $ 8,868,319,762 | $ 718,782,065 | $ 8,724,286,496 |
| **Employers Credit Balance** | | | | | | | | |
| 2014 | Contribution Variance | L | 5 | 100,910,314 | 1 | 23,296,263 | 24,069,674 | - |
| 2015 | Contribution Variance | L | 5 | - | 2 | - | - | - |
| 2016 | Contribution Variance | L | 5 | - | 3 | - | - | - |
| 2017 | Contribution Variance | L | 5 | 27,473,914 | 4 | 22,762,706 | 6,467,587 | 17,616,885 |
| 2018 | Contribution Variance | L | 5 | 5,761,493 | 5 | 5,761,493 | 1,350,932 | 4,754,612 |
| Total | | | | $ 134,145,721 | | $ 51,820,462 | $ 31,888,193 | $ 22,371,497 |
| **Grand Total** | | | | | | **$ 8,920,140,224** | **$ 750,670,258** | **$ 8,746,657,993** |

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# SECTION II
# VALUATION OF THE GAIN-SHARING COLA PROGRAM

# 1. Actuarial Basis for the Valuation of the Gain-Sharing COLA Program

## A. Challenges in Interpreting Louisiana Law

The current gain-sharing COLA program was originally enacted during the 1991 legislative session. The program contained two components:

1. **Gain-sharing** – A portion of investment gains (and until 2004, investment losses) was to be transferred from the pool of assets reserved for regular retirement benefits to the Experience Account, which would be used to fund COLAs. Funds would remain in the Experience Account until a COLA was granted. The law limited the amount of assets that could be held in the Experience Account to no more than two times the cost of a full COLA. Whenever a COLA was granted, assets equal to the present value of the COLA benefits granted were then transferred back to the regular pool of assets to cover the COLA liabilities that had been created.

2. **COLAs** – COLAs would be granted if specified conditions were satisfied and if there were sufficient assets in the Experience Account to cover the additional liability created by the COLA grant.

Although the program has been modified several times since its inception, the basic format has remained unchanged; there is a gain-sharing component and a COLA grant component.

The gain-sharing component is a legislative mandate. Transfers to the Experience Account occur automatically. No approvals are necessary; if the conditions are satisfied, a transfer must occur unless the Experience Account has been capped out.

The COLA component is not a legislative mandate. Historically and currently, a COLA can be granted only if specified conditions are satisfied, there are sufficient assets in the Experience Account to pay for the COLA, and the COLA is approved by the LASERS' board and the legislature.

The structure of the gain-sharing COLA program creates an actuarial dilemma. If we assume the COLA component is not part of current law, then the only liability that must be accounted for are transfers to the Experience Account. However, if COLA grants are not part of current law, then the Experience Account will reach its limit, and no additional transfers will occur. The only additional liability that will be incurred by the system is the difference between the Experience Account limit and the amount already in the Experience Account.

Alternatively, if we assume the COLA component is part of current law, we must further assume the frequency for which the LASERS' board will recommend and the legislature will enact a COLA payment when all other conditions necessary for a COLA grant have been satisfied. Monte Carlo simulations then allow us to estimate the average annual transfer to the Experience Account.

In light of the discussion set forth above, we have valued the gain-sharing COLA program in accordance with the following assumptions and methods.

1. The COLA component is part of current law that must be valued.

2. The LASERS board and the legislature will grant a COLA if there are sufficient funds in the Experience Account and if all other necessary conditions have been satisfied.

Using stochastic modeling, we can then calculate a deterministic assumption for an automatic COLA whose actuarial present value equals the estimated transfers to the Experience Account. We have determined that the automatic COLA assumption should be a 0.4% annual COLA to account for the gain-sharing COLA program. This is our current best estimate. This estimate may change for future valuations as circumstances change.

## B. Gains and Losses Associated with the Gain-Sharing COLA Account

If the automatic COLA used to value plan liabilities is 0.40% per year, then funding for the gain-sharing COLA program has been accounted for actuarially. An experience gain will occur if no COLA is granted or a smaller COLA than 0.40% is granted with funds in the Experience Account. An experience loss will occur if a COLA is granted larger than 0.40%.

The Louisiana Constitution provides the following.

> *F) Benefit Provisions; Legislative Enactment. Benefit provisions for members of any public retirement system, plan, or fund that is subject to legislative authority shall be altered only by legislative enactment. No such benefit provisions having an actuarial cost shall be enacted unless approved by two-thirds of the elected members of each house of the legislature. Furthermore, no such benefit provision for any member of a state retirement system having an actuarial cost shall be approved by the legislature unless a funding source providing new or additional funds sufficient to pay all such actuarial cost within ten years of the effective date of the benefit provision is identified in such enactment. This Paragraph shall be implemented as provided by law.*
>
> Underlining added to identify relevant content.

For the purpose of this valuation, we have assumed that the constitutional language applies only if the COLA approved by the legislature exceeds that which would have been granted under current law. Therefore, an additional liability is created only to the extent that the cost of the COLA grant exceeds the cost of the COLA grant that otherwise would be available under current law. Such an increase would be subject to 10-year amortization.

## C. Experience Account Transfers for the June 30, 2017 Valuation

No investment gains were transferred to the Experience Account on June 30, 2017 as there were no investment experience gains. The rate of return on the Actuarial Value of Assets was 7.62%, which is below the discount rate of 7.75%. Calculations associated with this analysis are shown in Section I(5)(C).

# 2. Summary of Benefit Provisions for the Gain-Sharing COLA Program

Benefit and funding provisions associated with the LASERS gain-sharing COLA program are contained in R.S. 11:102.1 and 11:542. According to R.S. 542, a special account, called the Experience Account, is established and maintained to fund COLAs. Experience Account rules have changed several times since the Account's inception in 1991. For example, Act 497 of the 2009 session required all funds in the Experience Account to be transferred back to the regular pool of assets. The balance in the Experience Account was set to $0. Additional changes were made to Experience Account rules by Act 399 of the 2014 session. Provisions associated with the gain-sharing COLA program as amended through Act 399 are summarized below.

## A. Experience Account Provisions

Rules pertaining to debits and credits to the Experience Account are summarized below.

1. The first transaction on June 30 of a given year is the transfer of assets from the Experience Account, if any, to the regular pool of assets to offset the liability associated with any COLA grant that becomes effective on the next day, July 1.

2. The second transaction is the transfer of investment earnings on the balance in the Experience Account on the July 1 prior to the valuation date. Assets in the Experience Account are invested in the same manner as assets in the regular pool of assets. The Experience Account is credited with investment earnings based on the actuarial rate of return on assets for the system as a whole. The following rules apply.

    a. If the Experience Account balance on the prior July 1 plus investment earnings for the FYE on the valuation date is less than the maximum amount allowed in the Experience Account on the valuation date, then all investment earnings on the July 1 balance may be credited.

    b. If the Experience Account balance on the prior July 1 plus investment earnings for the FYE on the valuation date equals or exceeds the maximum amount allowed in the Experience Account on the valuation date, then investment earnings on the Experience Account balance will be reduced sufficiently to restrict the Experience Account balance on the valuation date to the maximum limit.

    c. Any investment earnings not credited to the Experience Account are transferred to or retained by the regular pool of assets.

    d. These credits, if any, occur on the June 30 valuation date.

3. The third transaction is the transfer of the allocation of investment gains as calculated in accordance with LASERS' interpretation of the law. On each valuation date, LASERS calculates the amount of investment gain or loss that has occurred during the system's fiscal year. The investment gain for this purpose, based on an interpretation of law made by the legal staff for LASERS, increases the investment gain that otherwise would be calculated. Under LASERS' interpretation, the ***actual*** investment gain is calculated net of investment expenses, but the ***expected*** investment gain is determined as net of investment expenses, net of administrative expenses and net of gain sharing. The following rules apply.

   a. This transaction occurs after items 1 and 2 have been completed.

   b. Fifty percent (50%) of any investment gain as determined by LASERS that exceeds a specified threshold (currently set at $100 million) potentially will be transferred from the regular pool of assets to the Experience Account. The effective date of this transfer is June 30 of the fiscal year in which the investment gain occurs. The $100 million threshold is indexed: the threshold value will increase (but not decrease) in any year by the ratio of the actuarial value of assets at the end of the year to the actuarial value of assets at the beginning of the year. The first such increase may occur no earlier than June 30, 2017.

   c. The transfer amount may not exceed the amounts shown in Table 1.

**Table 1**

| **Funded Ration on Valuation Date** | **Transfer May Not Exceed:** |
|---|---|
| At least 80% | The difference between **two** times the cost of a full 3% COLA and the amount already in the Experience Account. |
| At least 75% but less than 80% | The difference between the cost of a full 2.5% COLA and the amount already in the Experience Account. |
| At least 65% but less than 75% | The difference between the cost of a full 2.0% COLA and the amount already in the Experience Account. |
| At least 55% but less than 65% | The difference between the cost of a full 1.5% COLA and the amount already in the Experience Account. |
| Less than 55% | No transfer is allowed. |

   d. If the Experience Account balance (on June 30) plus the investment gain allocation to the Experience Account is less than the maximum amount allowed in the Experience Account, then the full allocation will be transferred from the regular pool of assets and credited to the Experience Account.

e. If the Experience Account balance plus the investment gain allocation equals or exceeds the maximum amount, then the allocation is reduced sufficiently to restrict the Experience Account on the valuation date to the maximum.

f. Any gain allocation not transferred to the Experience Account is retained by the regular pool of assets.

g. These credits, if any, will occur on the June 30 valuation date.

The value of the Experience Account balance cannot be less than $0, except under special circumstances.

## B. Benefit Provisions

Current law provides a legal template that the legislature may choose to adopt in the enactment of a cost-of-living adjustment. This template specifies eligibility criteria, which is generally age 60 with one year of retirement, and the basis for the amount of a COLA grant, which is the CPI-U. There is no requirement that COLA legislation follow the template. Nor is there any guarantee that COLAs in the future will even be based on the balance in the Experience Account.

The COLA template contains the following provisions:

1. Eligibility:

   The following retirees and beneficiaries of LASERS will be eligible for a COLA to be paid on the July 1 following the date the board of trustees and the legislature approve a COLA:

   a. Each retiree who satisfies all of the following criteria on the July 1 immediately following the valuation date:

      - Has received a benefit for at least one year, and
      - Has attained at least age 60.

   b. Each non-retiree beneficiary (including each survivor of a deceased active member) receiving a benefit on the July 1 immediately following the valuation date who satisfies all of the following criteria:

      - The deceased member or beneficiary or both combined have received benefits for at least one year, and
      - The deceased member would have been at least age 60 had he lived.

   c. Each disability retiree and each beneficiary who is receiving benefits based on the death of a disability retiree, who also on the valuation date has been receiving benefits for at least one year.

2. COLAs:

   a. The maximum COLA that may be granted on the July 1 immediately following the valuation date is equal to the lesser of:

      1. 3% x the benefit payable on the valuation date, or:

      2. The increase in the CPI-U for the calendar year immediately prior to the valuation date (December to December) x the benefit payable on the valuation date.

   b. If the rate of return on the actuarial value of assets for the FYE on the June 30 prior to the valuation date is less than 8.25% (8.25% is hard coded into the law), then a COLA may be granted on July 1. However, the maximum COLA that may be granted is the lesser of:

      1. 2% x the benefit payable on the valuation date, or:

      2. The increase in the CPI-U for the calendar year immediately prior to the valuation date (December to December) x the benefit payable on the valuation date.

   c. No COLA may be granted on July 1 if the actuarial return on system assets for the FYE on the June 30 prior to the valuation date is less than the discount rate on that date (currently 7.75%) and the funded ratio of the system is less than 80%.

   d. If the balance in the Experience Account is less than the actuarial present value of the full COLA determined above, then no COLA may be granted.

   e. COLAs will be based on the portion of a retiree's benefit on the valuation date that is less than $60,000. This limit is indexed to the CPI-U.

3. The amount of COLA that may be granted in a single year also depends on the funded ratio of the system (see Table 2 on the next page).

**Table 2**

| Funded Percentage of the System | Maximum COLA Percentage |
|---|---|
| At least 80% | 3.00% |
| At least 75% but less than 80% | 2.50% |
| At least 65% but less than 75% | 2.00% |
| At least 55% but less than 65% | 1.50% |
| Less than 55% | No COLA |

## C. Approval Process

### Prior to the June 30, 2011, Valuation

A COLA potentially becomes payable whenever there is an increase in the cost of living based on the Consumer Price Index for all urban consumers (CPI-U) and other specified numerical measures are satisfied. Prior to June 30, 2011, a COLA could be granted only in accordance with the following approval process.

1. The actuary for LASERS must determine that the necessary conditions exist for a COLA to be granted and then determines the actuarial cost that will be incurred by the Experience Account should such an increase be approved.

2. The LASERS' actuary must also declare that there are sufficient dollars in the Experience Account to cover the actuarial cost of the COLA.

3. The actuary for the Louisiana Legislative Auditor must review the actuarial cost analysis and must not disagree with the assessment prepared by the LASERS' actuary.

4. The LASERS' board of trustees must approve the COLA.

5. The LASERS board of trustees must ask the Speaker of the House and the President of the Senate for a concurrent resolution to authorize the COLA. A COLA is granted with a 50% majority vote by the legislature on the concurrent resolution.

6. The COLA becomes effective on the first day of the fiscal year following the legislative session.

**Effective with the June 30, 2011, Valuation**

As discussed above, it is more likely than not COLAs will be granted only if a bill to make such a grant is introduced to the legislature, the bill passes both houses with a two-thirds vote, and is then signed into law by the governor. This is not to be construed as a legal opinion. It is merely our best judgment based on information available to us during the preparation of this valuation report.

This valuation has recognized a liability associated with automatic transfers of investment gains to the Experience Account.

# 3. Compliance with Actuarial Standards of Practice

The method we are using to account for the LASERS' gain-sharing COLA program as described in Section II(1)(A) and (B) complies with Actuarial Standards of Practice.

According to Section 3.5.3 of Actuarial Standards of Practice No. 4:

> *Plan Provisions that are Difficult to Measure — Some **plan provisions** may create pension obligations that are difficult to appropriately measure using traditional valuation procedures. Examples of such **plan provisions** include the following:*
>
> *a. gain-sharing provisions that trigger benefit increases when investment returns are favorable but do not trigger benefit decreases when investment returns are unfavorable;*
> *b. floor-offset provisions that provide a minimum defined benefit in the event a **participant's** account balance in a separate plan falls below some threshold;*
> *c. benefit provisions that are tied to an external index, but subject to a floor or ceiling, such as certain cost of living adjustment provisions and cash balance crediting provisions; and*
> *d. benefit provisions that may be triggered by an event such as a plant shutdown or a change in control of the plan sponsor.*
>
> *For such **plan provisions**, the actuary **should consider** using alternative valuation procedures, such as stochastic modeling, option-pricing techniques, or deterministic procedures in conjunction with assumptions that are adjusted to reflect the impact of variations in experience from year to year. When selecting alternative valuation procedures for such **plan provisions**, the actuary should use professional judgment based on the purpose of the measurement and other relevant factors.*

According to Section 2.1 of Actuarial Standards of Practice No. 1:

> *The words "must" and "should" are used to provide guidance in the ASOPs. "Must" as used in the ASOPs means that the ASB does not anticipate that the actuary will have any reasonable alternative but to follow a particular course of action. In contrast, the word "should" indicates what is normally the appropriate practice for an actuary to follow when rendering actuarial services. Situations may arise where the actuary applies professional judgment and concludes that complying with this practice would be inappropriate, given the nature and purpose of the assignment and the principal's needs, or that under the circumstances it would not be reasonable or practical to follow the practice.*
>
> *Failure to follow a course of action denoted by either the term "must" or "should" constitutes a deviation from the guidance of the ASOP. In either event, the actuary is directed to ASOP No. 41, Actuarial Communications.*

*The terms "must" and "should" are generally followed by a verb or phrase denoting action(s), such as "disclose," "document," "consider," or "take into account." For example, the phrase "should consider" is often used to suggest potential courses of action. If, after consideration, in the actuary's professional judgment an action is not appropriate, the action is not required and failure to take this action is not a deviation from the guidance in the standard.*

Bold, italics and underline have been added for emphasis and identification.

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# SECTION III
# BASIS FOR THE VALUATION

# 1. Introduction

The June 30, 2017, valuation is used to determine actuarial liabilities as of June 30, 2017, actual employer contribution requirements for FYE 2018, and projected employer contribution requirements for FYE 2018. Census data, actuarial methods, and actuarial assumptions used in the preparation of June 30, 2017 assets, liabilities, and employer contribution requirements for FYE 2018 are shown in this section of the report. Additional information is provided whenever a change has been made since the June 30, 2016, valuation or it is expected that a change will be made in the preparation of the June 30, 2018, valuation.

## 2. Census Data

Census data used in the preparation of the June 30, 2017, valuation is summarized below. The census data was provided by LASERS. The accuracy of the data was audited by Financial Audit Services within the Louisiana Legislative Auditor. A comparison of these census numbers with census summaries prepared by the LASERS actuary confirms the reasonability of the census data used in preparing this report.

| | June 30 Valuation Date | | |
|---|---|---|---|
| **Membership Status** | **2017** | **2016** | **2015** |
| Rank and File Including Appellate Law Clerks | 32,352 | 32,481 | 33,271 |
| Legislators | 7 | 8 | 9 |
| Special Legislators | 0 | 0 | 1 |
| Judges Prior 2011 | 214 | 219 | 229 |
| Judges Post 2011 | 95 | 88 | 81 |
| Wildlife | 157 | 160 | 169 |
| Corrections Primary | 192 | 237 | 266 |
| Corrections Secondary | 1,701 | 1,895 | 2,060 |
| Peace Officers | 51 | 57 | 62 |
| Alcohol Tobacco Control | 12 | 12 | 12 |
| Bridge Police | 5 | 5 | 5 |
| Harbor Police | 27 | 32 | N/A |
| Hazardous Duty Plan | 2,624 | 2,440 | 2,272 |
| Post DROP | 1,618 | 1,650 | 1,757 |
| **Total Active Members** | **39,055** | **39,284** | **40,194** |
| DROP Participants | 1,520 | 1,609 | 1,682 |
| Regular Retirees | 40,482 | 39,998 | 39,352 |
| Disability Retirees | 2,325 | 2,401 | 2,457 |
| Survivors | 5,872 | 5,802 | 5,834 |
| Terminated Vested & Reciprocal | 3,794 | 3,865 | 3,953 |
| **Total Inactive Members** | **53,993** | **53,675** | **53,278** |
| **Total Active and Inactive Members** | **93,048** | **92,959** | **93,472** |
| Terminated Due Refund | 53,573 | 52,837 | 52,193 |
| **Total Members** | **146,621** | **145,796** | **145,665** |

## Membership Reconciliation

| | Active (Pre DROP) | Active (After DROP) | Terminated Vested | In DROP | Retired, Disabled, Survivor | Total |
|---|---|---|---|---|---|---|
| **Members on June 30, 2016** | **37,634** | **1,650** | **3,865** | **1,609** | **48,201** | **92,959** |
| **Additions to Census** | | | | | | |
| Initial Membership | 4,175 | 0 | 0 | 0 | 0 | 4,175 |
| Rehired Members | 532 | 0 | 0 | 0 | 0 | 532 |
| Data Revisions | 0 | 2 | 5 | 1 | 34 | 42 |
| **Total Additions** | **4,707** | **2** | **5** | **1** | **34** | **4,749** |
| **Change in Status** | | | | | | |
| Active to Term Vested | (514) | 0 | 514 | 0 | 0 | 0 |
| Active to In DROP | (517) | 0 | 0 | 517 | 0 | 0 |
| Active to Retired | (877) | 0 | 0 | 0 | 877 | 0 |
| Disabled to Active | 2 | 0 | 0 | 0 | (2) | 0 |
| Terminated Vested to Active | 133 | 0 | (133) | 0 | 0 | 0 |
| Terminated Vested to Retiree | 0 | 0 | (195) | 0 | 195 | 0 |
| Terminated Vested to DROP | 0 | 0 | (4) | 4 | 0 | 0 |
| In DROP to Active After | 0 | 311 | 0 | (311) | 0 | 0 |
| In DROP to Retiree | 0 | 0 | 0 | (299) | 299 | 0 |
| Active After DROP to Retiree | 0 | (349) | 0 | 0 | 349 | 0 |
| Data Revisions | 0 | 7 | 1 | 1 | (9) | 0 |
| **Total Changes** | **(1,773)** | **(31)** | **183** | **(88)** | **1,709** | **0** |
| **Eliminated from Census** | | | | | | |
| Refunded | (1,573) | 0 | (212) | 0 | 0 | (1,785) |
| Terminated, Due Refund | (1,515) | 0 | (25) | 0 | 0 | (1,540) |
| Deceased | (20) | (3) | (17) | (2) | (1,204) | (1,246) |
| Data Revisions | (23) | 0 | (5) | 0 | (61) | (89) |
| **Total Eliminated** | **(3,131)** | **(3)** | **(259)** | **(2)** | **(1,265)** | **(4,660)** |
| **Members on June 30, 2017** | **37,437** | **1,618** | **3,794** | **1,520** | **48,679** | **93,048** |

**LASERS MEMBERSHIP PROFILE**
**Regular Members Before July 2006**

**CELLS DEPICT** **Member Count** **Valuation Date** **6/30/2017**
**Total Salary**

| Age/Service | (0-1) | [1-5) | [5-10) | [10-15) | [15-20) | [20-25) | [25-30) | [30-35) | [35+ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-24)** | - | - | - | - | - | - | - | - | - | - |
| | $ - | - | - | - | - | - | - | - | - | $ - |
| **[25-29)** | - | - | - | 2 | - | - | - | - | - | 2 |
| | - | - | - | 56,826 | - | - | - | - | - | 56,826 |
| **[30-34)** | 4 | 8 | 9 | 200 | 19 | 1 | - | - | - | 241 |
| | 75,026 | 203,590 | 291,157 | 8,431,989 | 855,734 | 41,018 | - | - | - | 9,898,514 |
| **[35-39)** | 1 | 20 | 39 | 897 | 404 | 30 | - | - | - | 1391 |
| | 18,765 | 531,413 | 1,781,567 | 45,093,276 | 20,143,020 | 1,720,947 | - | - | - | 69,288,988 |
| **[40-44)** | 2 | 27 | 33 | 641 | 942 | 332 | 29 | - | - | 2006 |
| | 51,180 | 1,127,515 | 1,345,501 | 32,102,506 | 51,896,991 | 18,208,653 | 2,078,148 | - | - | 106,810,494 |
| **[45-49)** | 2 | 20 | 23 | 588 | 979 | 857 | 422 | 14 | - | 2905 |
| | 79,168 | 695,258 | 1,216,822 | 29,151,998 | 53,074,415 | 50,753,350 | 26,533,108 | 1,277,171 | - | 162,781,290 |
| **[50-54)** | 5 | 11 | 21 | 537 | 803 | 812 | 963 | 113 | 9 | 3274 |
| | 70,701 | 444,530 | 910,540 | 24,603,871 | 41,107,600 | 44,300,141 | 61,356,202 | 8,084,728 | 552,609 | 181,430,922 |
| **[55-59)** | 2 | 7 | 24 | 606 | 759 | 782 | 262 | 112 | 67 | 2621 |
| | 29,619 | 285,741 | 928,694 | 27,488,275 | 36,236,859 | 41,823,609 | 17,527,055 | 8,467,210 | 4,164,336 | 136,951,398 |
| **[60-64)** | 1 | 7 | 24 | 307 | 347 | 218 | 155 | 77 | 63 | 1199 |
| | 2,378 | 311,241 | 1,101,447 | 15,586,103 | 17,315,597 | 12,502,550 | 9,834,508 | 5,572,118 | 4,868,627 | 67,094,569 |
| **[65-69)** | - | - | 5 | 104 | 149 | 110 | 70 | 35 | 30 | 503 |
| | - | - | 185,208 | 5,047,220 | 7,474,257 | 6,703,105 | 4,385,547 | 2,390,104 | 2,658,158 | 28,843,599 |
| **[70+** | - | 1 | 2 | 38 | 48 | 43 | 41 | 14 | 16 | 203 |
| | - | 20,515 | 122,623 | 1,612,171 | 2,722,326 | 2,349,868 | 2,370,362 | 869,859 | 938,855 | 11,006,579 |
| **TOTAL** | 17 | 101 | 180 | 3920 | 4450 | 3185 | 1942 | 365 | 185 | 14,345 |
| | $326,837 | 3,619,803 | 7,883,559 | 189,174,235 | 230,826,799 | 178,403,241 | 124,084,930 | 26,661,190 | 13182585 | $774,163,179 |

| | | |
|---|---|---|
| AVERAGES | Attained Age | 50.94 |
| | Service Years | 18.98 |
| | Annual Salary | $53,967 |

**LASERS MEMBERSHIP PROFILE**
**Regular Members After July 2006**

**CELLS DEPICT** **Member Count**
**Total Salary**

**Valuation Date** **6/30/2017**

| Age/Service | (0-1) | [1-5) | [5-10) | [10-15) | [15-20) | [20-25) | [25-30) | [30-35) | [35+ | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-24)** | 633 | 512 | 8 | - | - | - | - | - | - | 1153 |
| | $14,032,627 | 12,932,616 | 235,113 | - | - | - | - | - | - | $27,200,356 |
| **[25-29)** | 706 | 1543 | 283 | 12 | - | - | - | - | - | 2544 |
| | 18,404,939 | 51,153,834 | 10,740,466 | 412,826 | - | - | - | - | - | 80,712,065 |
| **[30-34)** | 564 | 1495 | 1017 | 218 | 3 | - | - | - | - | 3297 |
| | 16,250,069 | 54,494,264 | 46,179,743 | 10,178,003 | 141,567 | - | - | - | - | 127,243,646 |
| **[35-39)** | 413 | 1028 | 887 | 312 | 8 | - | - | - | - | 2648 |
| | 12,494,271 | 39,574,785 | 41,760,836 | 15,207,638 | 398,111 | - | - | - | - | 109,435,641 |
| **[40-44)** | 352 | 789 | 665 | 280 | 13 | - | - | - | - | 2099 |
| | 10,144,575 | 31,500,375 | 30,609,291 | 14,641,063 | 805,570 | - | - | - | - | 87,700,874 |
| **[45-49)** | 300 | 770 | 626 | 223 | 11 | 4 | - | - | - | 1934 |
| | 9,406,935 | 31,524,799 | 29,589,638 | 10,875,496 | 654,833 | 233,158 | - | - | - | 82,284,859 |
| **[50-54)** | 230 | 679 | 613 | 226 | 13 | 7 | 3 | - | - | 1771 |
| | 6,928,520 | 26,193,377 | 27,901,617 | 10,614,179 | 753,140 | 433,457 | 158,088 | - | - | 72,982,378 |
| **[55-59)** | 159 | 488 | 564 | 203 | 17 | 5 | - | - | - | 1436 |
| | 5,035,002 | 19,059,329 | 24,309,783 | 9,161,821 | 1,010,806 | 405,771 | - | - | - | 58,982,512 |
| **[60-64)** | 46 | 192 | 356 | 133 | 7 | 1 | 1 | - | - | 736 |
| | 1,557,669 | 7,923,205 | 16,115,247 | 6,189,460 | 631,249 | 69,285 | 56,618 | - | - | 32,542,733 |
| **[65-69)** | 15 | 47 | 107 | 41 | 4 | - | - | - | - | 214 |
| | 557,884 | 2,686,111 | 5,152,771 | 2,266,270 | 467,032 | - | - | - | - | 11,130,068 |
| **[70+** | 4 | 13 | 21 | 7 | - | - | - | - | - | 45 |
| | 94,287 | 487,764 | 1,179,862 | 453,066 | - | - | - | - | - | 2,214,979 |
| **TOTAL** | 3422 | 7556 | 5147 | 1655 | 76 | 17 | 4 | - | - | 17,877 |
| | $94,906,777 | 277,530,459 | 233,774,367 | 79,999,822 | 4,862,308 | 1,141,671 | 214,706 | - | - | $692,430,110 |

| | | |
|---|---|---|
| AVERAGES | Attained Age | 40.42 |
| | Service Years | 4.48 |
| | Annual Salary | $38,733 |

**LASERS MEMBERSHIP PROFILE**
**Appellate Law Clerks**

**CELLS DEPICT** **Member Count** **Valuation Date** **6/30/2017**
**Total Salary**

| Age/Service | (0-1) | [1-5) | [5-10) | [10-15) | [15-20) | [20-25) | [25-30) | [30-35) | [35+ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-24)** | - | - | - | - | - | - | - | - | - | - |
| | $ - | - | - | - | - | - | - | - | - | $ - |
| **[25-29)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[30-34)** | - | - | 4 | - | - | - | - | - | - | 4 |
| | - | - | 262,479 | - | - | - | - | - | - | 262,479 |
| **[35-39)** | - | - | 7 | 4 | - | - | - | - | - | 11 |
| | - | - | 469,727 | 292,647 | - | - | - | - | - | 762,374 |
| **[40-44)** | - | - | 1 | 12 | 4 | 2 | - | - | - | 19 |
| | - | - | 64,970 | 841,421 | 304,060 | 138,908 | - | - | - | 1,349,359 |
| **[45-49)** | - | - | 3 | 7 | 9 | 5 | - | - | - | 24 |
| | - | - | 238,778 | 517,865 | 714,714 | 396,658 | - | - | - | 1,868,015 |
| **[50-54)** | - | - | 1 | 2 | 10 | 6 | 4 | 3 | - | 26 |
| | - | - | 93,013 | 151,609 | 839,333 | 568,245 | 359,314 | 289,876 | - | 2,301,390 |
| **[55-59)** | - | - | 3 | 3 | 7 | 4 | 4 | 5 | 2 | 28 |
| | - | - | 205,177 | 261,494 | 587,368 | 361,832 | 381,451 | 507,521 | 241,480 | 2,546,323 |
| **[60-64)** | - | - | 1 | 4 | 3 | 1 | 1 | 2 | - | 12 |
| | - | - | 65,625 | 286,565 | 275,270 | 78,734 | 81,110 | 209,703 | - | 997,007 |
| **[65-69)** | - | - | 1 | 2 | - | 1 | 1 | - | - | 5 |
| | - | - | 65,647 | 152,238 | - | 81,662 | 96,339 | - | - | 395,886 |
| **[70+** | - | - | - | 1 | - | - | - | - | - | 1 |
| | - | - | - | 69,063 | - | - | - | - | - | 69,063 |
| **TOTAL** | - | - | 21 | 35 | 33 | 19 | 10 | 10 | 2 | 130 |
| | $ - | - | 1,465,416 | 2,572,902 | 2,720,745 | 1,626,039 | 918,214 | 1,007,100 | 241480 | $10,551,896 |

| | | |
|---|---|---|
| AVERAGES | Attained Age | 50.95 |
| | Service Years | 17.53 |
| | Annual Salary | $81,168 |

**LASERS MEMBERSHIP PROFILE**
**Participating Legislators**

**CELLS DEPICT** **Member Count**
**Total Salary**

**Valuation Date** **6/30/2017**

| Age/Service | (0-1) | [1-5) | [5-10) | [10-15) | [15-20) | [20-25) | [25-30) | [30-35) | [35+ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-24)** | - | - | - | - | - | - | - | - | - | - |
| | $ - | - | - | - | - | - | - | - | - | $ - |
| **[25-29)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[30-34)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[35-39)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[40-44)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[45-49)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[50-54)** | - | - | - | 1 | - | - | - | - | - | 1 |
| | - | - | - | 38,407 | - | - | - | - | - | 38,407 |
| **[55-59)** | 1 | - | - | - | - | - | - | - | - | 1 |
| | 124,303 | - | - | - | - | - | - | - | - | 124,303 |
| **[60-64)** | - | - | - | - | - | 1 | - | 1 | - | 2 |
| | - | - | - | - | - | 38,259 | - | 37,473 | - | 75,732 |
| **[65-69)** | - | 1 | - | - | - | - | - | - | 1 | 2 |
| | - | 37,153 | - | - | - | - | - | - | 38,559 | 75,712 |
| **[70+** | - | 1 | - | - | - | - | - | - | - | 1 |
| | - | 87,661 | - | - | - | - | - | - | - | 87,661 |
| **TOTAL** | 1 | 2 | - | 1 | - | 1 | - | 1 | - | 7 |
| | $124,303 | 124,814 | - | 38,407 | - | 38,259 | - | 37,473 | - | $401,815 |

| AVERAGES | | |
|---|---|---|
| | Attained Age | 64.19 |
| | Service Years | 17.73 |
| | Annual Salary | $57,402 |

**LASERS MEMBERSHIP PROFILE**
**Active Judges Pre-2011**

**CELLS DEPICT** **Member Count**
**Total Salary**

**Valuation Date** **6/30/2017**

| Age/Service | (0-1) | [1-5) | [5-10) | [10-15) | [15-20) | [20-25) | [25-30) | [30-35) | [35+ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-24)** | - | - | - | - | - | - | - | - | - | - |
| | $ - | - | - | - | - | - | - | - | - | $ - |
| **[25-29)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[30-34)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[35-39)** | - | - | 1 | - | - | - | - | - | - | 1 |
| | - | - | 120,663 | - | - | - | - | - | - | 120,663 |
| **[40-44)** | - | - | 3 | 2 | - | - | - | - | - | 5 |
| | - | - | 390,606 | 180,776 | - | - | - | - | - | 571,382 |
| **[45-49)** | - | 1 | 16 | 4 | 4 | 1 | - | - | - | 26 |
| | - | 18,737 | 2,200,734 | 501,395 | 560,160 | 150,018 | - | - | - | 3,431,044 |
| **[50-54)** | - | - | 10 | 9 | 8 | 6 | 2 | - | - | 35 |
| | - | - | 1,472,744 | 1,174,804 | 1,136,106 | 856,028 | 306,113 | - | - | 4,945,795 |
| **[55-59)** | 1 | 1 | 14 | 12 | 8 | 17 | 5 | 1 | - | 59 |
| | 81,760 | 150,018 | 2,003,696 | 1,789,152 | 1,179,282 | 2,464,968 | 762,278 | 132,443 | - | 8,563,597 |
| **[60-64)** | - | - | 6 | 7 | 8 | 18 | 7 | - | - | 46 |
| | - | - | 908,211 | 938,566 | 1,207,193 | 2,772,519 | 1,025,653 | - | - | 6,852,142 |
| **[65-69)** | - | - | - | 6 | 5 | 9 | 11 | - | - | 31 |
| | - | - | - | 903,442 | 756,885 | 1,330,598 | 1,625,464 | - | - | 4,616,389 |
| **[70+** | - | - | - | 3 | 1 | 3 | 3 | 1 | - | 11 |
| | - | - | - | 426,447 | 150,018 | 468,285 | 463,995 | 150,018 | - | 1,658,763 |
| **TOTAL** | 1 | 2 | 50 | 43 | 34 | 54 | 28 | 2 | - | 214 |
| | 81,760 | 168,755 | 7,096,654 | 5,914,582 | 4,989,644 | 8,042,416 | 4,183,503 | 282,461 | - | $30,759,775 |

| AVERAGES | | |
|---|---|---|
| | Attained Age | 58.44 |
| | Service Years | 16.94 |
| | Annual Salary | $143,737 |

**LASERS MEMBERSHIP PROFILE**
**Active Judges Post 2011**

**CELLS DEPICT** **Member Count**
**Total Salary**

**Valuation Date** **6/30/2017**

| Age/Service | (0-1) | [1-5) | [5-10) | [10-15) | [15-20) | [20-25) | [25-30) | [30-35) | [35+ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-24)** | - | - | - | - | - | - | - | - | - | - |
| | $ - | - | - | - | - | - | - | - | - | $ - |
| **[25-29)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[30-34)** | 1 | 1 | - | - | - | - | - | - | - | 2 |
| | 47,148 | 150,318 | - | - | - | - | - | - | - | 197,466 |
| **[35-39)** | 1 | 7 | - | 1 | - | - | - | - | - | 9 |
| | 148,818 | 962,444 | - | 150,018 | - | - | - | - | - | 1,261,280 |
| **[40-44)** | 2 | 13 | 1 | - | - | - | - | - | - | 16 |
| | 228,155 | 1,864,247 | 150,018 | - | - | - | - | - | - | 2,242,420 |
| **[45-49)** | - | 15 | 4 | - | - | - | - | - | - | 19 |
| | - | 2,082,431 | 603,855 | - | - | - | - | - | - | 2,686,286 |
| **[50-54)** | 1 | 18 | 2 | 1 | 1 | - | - | - | - | 23 |
| | 148,818 | 2,690,454 | 300,036 | 150,729 | 147,572 | - | - | - | - | 3,437,609 |
| **[55-59)** | - | 6 | 1 | - | 1 | - | - | - | - | 8 |
| | - | 911,361 | 150,018 | - | 150,018 | - | - | - | - | 1,211,397 |
| **[60-64)** | 2 | 7 | 5 | - | - | - | - | - | - | 14 |
| | 302,912 | 1,042,523 | 756,167 | - | - | - | - | - | - | 2,101,602 |
| **[65-69)** | - | 2 | 1 | - | - | - | - | - | - | 3 |
| | - | 305,212 | 150,018 | - | - | - | - | - | - | 455,230 |
| **[70+** | - | 1 | - | - | - | - | - | - | - | 1 |
| | - | 91,270 | - | - | - | - | - | - | - | 91,270 |
| **TOTAL** | 7 | 70 | 14 | 2 | 2 | - | - | - | - | 95 |
| | $875,851 | 10,100,260 | 2,110,112 | 300,747 | 297,590 | - | - | - | - | $13,684,560 |

| | | |
|---|---|---|
| AVERAGES | Attained Age | 50.63 |
| | Service Years | 3.65 |
| | Annual Salary | $144,048 |

**LASERS MEMBERSHIP PROFILE**
**Hazardous Duty**

**CELLS DEPICT** **Member Count**
**Total Salary**

**Valuation Date** **6/30/2017**

| Age/Service | (0-1) | [1-5) | [5-10) | [10-15) | [15-20) | [20-25) | [25-30) | [30-35) | [35+ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-24)** | 316 | 183 | 5 | - | - | - | - | - | - | 504 |
| | $6,788,464 | 5,313,360 | 168,221 | - | - | - | - | - | - | $12,270,045 |
| **[25-29)** | 198 | 280 | 41 | - | - | - | - | - | - | 519 |
| | 5,524,752 | 9,238,432 | 1,555,450 | - | - | - | - | - | - | 16,318,634 |
| **[30-34)** | 109 | 199 | 55 | 13 | - | - | - | - | - | 376 |
| | 3,311,368 | 6,825,129 | 2,068,949 | 588,758 | - | - | - | - | - | 12,794,204 |
| **[35-39)** | 69 | 153 | 50 | 27 | 9 | 3 | - | - | - | 311 |
| | 1,873,805 | 5,089,064 | 2,049,732 | 1,431,149 | 455,084 | 181,362 | - | - | - | 11,080,196 |
| **[40-44)** | 60 | 94 | 38 | 23 | 23 | 8 | - | - | - | 246 |
| | 1,566,385 | 3,290,130 | 1,561,008 | 1,151,696 | 1,328,728 | 460,561 | - | - | - | 9,358,508 |
| **[45-49)** | 52 | 126 | 29 | 19 | 18 | 21 | 3 | - | - | 268 |
| | 1,355,611 | 4,507,141 | 1,328,190 | 929,921 | 963,356 | 1,191,811 | 272,468 | - | - | 10,548,498 |
| **[50-54)** | 35 | 98 | 42 | 12 | 15 | 10 | 3 | - | - | 215 |
| | 1,142,096 | 3,774,106 | 1,687,694 | 595,493 | 704,960 | 485,791 | 273,762 | - | - | 8,663,902 |
| **[55-59)** | 21 | 66 | 15 | 8 | 9 | 7 | 3 | - | - | 129 |
| | 650,463 | 2,571,420 | 694,774 | 383,154 | 464,723 | 324,780 | 171,969 | - | - | 5,261,283 |
| **[60-64)** | 10 | 22 | 4 | 2 | 2 | 1 | 1 | - | - | 42 |
| | 296,948 | 779,349 | 190,441 | 116,557 | 106,539 | 53,999 | 46,047 | - | - | 1,589,880 |
| **[65-69)** | 2 | 6 | 3 | - | 1 | - | - | - | - | 12 |
| | 52,185 | 214,377 | 104,710 | - | 41,549 | - | - | - | - | 412,821 |
| **[70+** | 1 | - | 1 | - | - | - | - | - | - | 2 |
| | 26,000 | - | 67,685 | - | - | - | - | - | - | 93,685 |
| **TOTAL** | 873 | 1227 | 283 | 104 | 77 | 50 | 10 | - | - | 2,624 |
| | $22,588,077 | 41,602,508 | 11,476,854 | 5,196,728 | 4,064,939 | 2,698,304 | 764,246 | - | - | $88,391,656 |

| AVERAGES | | |
|---|---|---|
| | Attained Age | 36.72 |
| | Service Years | 3.83 |
| | Annual Salary | $33,686 |

## LASERS MEMBERSHIP PROFILE
### Corrections Primary

**CELLS DEPICT** **Member Count**
**Total Salary**

**Valuation Date** **6/30/2017**

| Age/Service | (0-1) | [1-5) | [5-10) | [10-15) | [15-20) | [20-25) | [25-30) | [30-35) | [35 + | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-24)** | - | - | - | - | - | - | - | - | - | - |
| | $ - | - | - | - | - | - | - | - | - | $ - |
| **[25-29)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[30-34)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[35-39)** | - | 1 | - | - | 1 | - | - | - | - | 2 |
| | - | 29,240 | - | - | 65,953 | - | - | - | - | 95,193 |
| **[40-44)** | - | - | - | 1 | 18 | 6 | - | - | - | 25 |
| | - | - | - | 45,377 | 908,037 | 316,776 | - | - | - | 1,270,190 |
| **[45-49)** | - | - | - | - | 16 | 13 | - | - | - | 29 |
| | - | - | - | - | 783,550 | 707,561 | - | - | - | 1,491,111 |
| **[50-54)** | - | - | - | - | 27 | 8 | 6 | 2 | - | 43 |
| | - | - | - | - | 1,359,035 | 434,321 | 354,030 | 205,525 | - | 2,352,911 |
| **[55-59)** | - | - | - | - | 38 | 17 | 7 | 1 | - | 63 |
| | - | - | - | - | 1,857,636 | 934,781 | 450,269 | 54,455 | - | 3,297,141 |
| **[60-64)** | - | - | - | 1 | 12 | 6 | 2 | 2 | - | 23 |
| | - | - | - | 45,173 | 553,564 | 339,127 | 119,684 | 142,085 | - | 1,199,633 |
| **[65-69)** | - | - | - | - | 2 | 3 | - | 1 | - | 6 |
| | - | - | - | - | 98,295 | 142,519 | - | 67,496 | - | 308,310 |
| **[70+** | - | - | - | - | - | 1 | - | - | - | 1 |
| | - | - | - | - | - | 54,576 | - | - | - | 54,576 |
| **TOTAL** | - | 1 | - | 2 | 114 | 54 | 15 | 6 | - | 192 |
| | $ - | 29,240 | - | 90,550 | 5,626,070 | 2,929,661 | 923,983 | 469,561 | - | $10,069,065 |

| AVERAGES | | |
|---|---|---|
| | Attained Age | 53.94 |
| | Service Years | 20.1 |
| | Annual Salary | $52,443 |

**LASERS MEMBERSHIP PROFILE**
**Corrections Secondary**

**CELLS DEPICT** **Member Count**
**Total Salary**

**Valuation Date** **6/30/2017**

| Age/Service | (0-1) | [1-5) | [5-10) | [10-15) | [15-20) | [20-25) | [25-30) | [30-35) | [35+ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-24)** | - | - | - | - | - | - | - | - | - | - |
| | $ - | - | - | - | - | - | - | - | - | - |
| **[25-29)** | - | - | 38 | 3 | - | - | - | - | - | 41 |
| | - | - | 1,357,781 | 118,970 | - | - | - | - | - | 1,476,751 |
| **[30-34)** | 2 | 1 | 81 | 69 | 10 | - | - | - | - | 163 |
| | 57,853 | 31,282 | 3,168,380 | 2,917,244 | 462,130 | - | - | - | - | 6,636,889 |
| **[35-39)** | 1 | - | 62 | 111 | 85 | 6 | - | - | - | 265 |
| | 13,683 | - | 2,393,857 | 5,028,657 | 4,163,034 | 340,398 | - | - | - | 11,939,629 |
| **[40-44)** | - | 2 | 40 | 77 | 132 | 61 | 1 | - | - | 313 |
| | - | 51,533 | 1,577,303 | 3,520,204 | 7,028,690 | 3,653,733 | 81,695 | - | - | 15,913,158 |
| **[45-49)** | - | - | 42 | 63 | 109 | 121 | 27 | - | - | 362 |
| | - | - | 1,683,893 | 2,694,207 | 5,594,778 | 7,457,538 | 1,935,798 | - | - | 19,366,214 |
| **[50-54)** | 2 | 2 | 38 | 66 | 77 | 53 | 37 | 6 | - | 281 |
| | 66,280 | 48,421 | 1,427,341 | 2,812,226 | 3,850,246 | 3,095,173 | 2,748,687 | 481,113 | - | 14,529,487 |
| **[55-59)** | 1 | - | 33 | 40 | 57 | 20 | 11 | 3 | - | 165 |
| | 35,298 | - | 1,307,475 | 1,684,816 | 2,839,341 | 1,152,120 | 640,124 | 281,403 | - | 7,940,577 |
| **[60-64)** | - | 1 | 23 | 21 | 17 | 5 | 3 | 2 | 3 | 75 |
| | - | 31,098 | 915,373 | 898,411 | 828,201 | 287,812 | 180,795 | 144,047 | 199,740 | 3,485,477 |
| **[65-69)** | - | - | 8 | 9 | 6 | 3 | 1 | 1 | - | 28 |
| | - | - | 272,077 | 414,854 | 354,938 | 182,720 | 41,403 | 80,891 | - | 1,346,883 |
| **[70+** | - | - | 4 | 2 | 2 | - | - | - | - | 8 |
| | - | - | 171,593 | 76,065 | 112,799 | - | - | - | - | 360,457 |
| **TOTAL** | 6 | 6 | 369 | 461 | 495 | 269 | 80 | 12 | 3 | 1,701 |
| | $173,114 | 162,334 | 14,275,073 | 20,165,654 | 25,234,157 | 16,169,494 | 5,628,502 | 987,454 | 199740 | $82,995,522 |

| | | |
|---|---|---|
| AVERAGES | Attained Age | 46.01 |
| | Service Years | 15.31 |
| | Annual Salary | $48,792 |

**LASERS MEMBERSHIP PROFILE**
**Wildlife**

**CELLS DEPICT** **Member Count**
**Total Salary**

**Valuation Date** **6/30/2017**

| Age/Service | (0-1) | [1-5) | [5-10) | [10-15) | [15-20) | [20-25) | [25-30) | [30-35) | [35+ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-24)** | - | - | - | - | - | - | - | - | - | - |
| | $ - | - | - | - | - | - | - | - | - | $ - |
| **[25-29)** | - | - | 3 | - | - | - | - | - | - | 3 |
| | - | - | 167,510 | - | - | - | - | - | - | 167,510 |
| **[30-34)** | - | - | 14 | 11 | 1 | - | - | - | - | 26 |
| | - | - | 773,036 | 623,609 | 57503 | - | - | - | - | 1,454,148 |
| **[35-39)** | - | - | 4 | 26 | 7 | - | - | - | - | 37 |
| | - | - | 219,731 | 1,610,775 | 484,246 | - | - | - | - | 2,314,752 |
| **[40-44)** | - | - | 4 | 8 | 23 | 3 | - | - | - | 38 |
| | - | - | 221,561 | 518,374 | 1,740,987 | 215,679 | - | - | - | 2,696,601 |
| **[45-49)** | - | - | - | 6 | 15 | 9 | 2 | - | - | 32 |
| | - | - | - | 353,985 | 1,147,075 | 761,054 | 152,906 | - | - | 2,415,020 |
| **[50-54)** | - | - | - | 3 | 4 | 6 | 4 | - | - | 17 |
| | - | - | - | 187,959 | 281,404 | 467,084 | 357,217 | - | - | 1,293,664 |
| **[55-59)** | - | - | - | - | 1 | - | 2 | 1 | - | 4 |
| | - | - | - | - | 88533 | - | 239,257 | 130,258 | - | 458,048 |
| **[60-64)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[65-69)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[70+** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **TOTAL** | - | - | 25 | 54 | 51 | 18 | 8 | 1 | - | 157 |
| | $ - | - | 1,381,838 | 3,294,702 | 3,799,748 | 1,443,817 | 749,380 | 130,258 | - | $10,799,743 |

| | | |
|---|---|---|
| AVERAGES | Attained Age | 41.89 |
| | Service Years | 15.23 |
| | Annual Salary | $68,788 |

## LASERS MEMBERSHIP PROFILE
### Peace Officers

**CELLS DEPICT** **Member Count**
**Total Salary**

**Valuation Date** **6/30/2017**

| Age/Service | (0-1) | [1-5) | [5-10) | [10-15) | [15-20) | [20-25) | [25-30) | [30-35) | [35+ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-24)** | - | - | - | - | - | - | - | - | - | - |
| | $ - | - | - | - | - | - | - | - | - | $ - |
| **[25-29)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[30-34)** | - | - | 1 | 1 | - | - | - | - | - | 2 |
| | - | - | 43,585 | 56,600 | - | - | - | - | - | 100,185 |
| **[35-39)** | - | - | - | 6 | 2 | - | - | - | - | 8 |
| | - | - | - | 297,668 | 100,883 | - | - | - | - | 398,551 |
| **[40-44)** | - | - | 1 | 4 | 2 | 4 | - | - | - | 11 |
| | - | - | 34,951 | 219,670 | 115,498 | 203,667 | - | - | - | 573,786 |
| **[45-49)** | - | - | - | 3 | 2 | 1 | 5 | - | - | 11 |
| | - | - | - | 131,875 | 90,622 | 44,214 | 333,139 | - | - | 599,850 |
| **[50-54)** | - | - | - | - | 1 | 4 | 6 | - | - | 11 |
| | - | - | - | - | 65,358 | 252,383 | 412,405 | - | - | 730,146 |
| **[55-59)** | - | - | - | 1 | 1 | 1 | - | - | - | 3 |
| | - | - | - | 38,557 | 57,528 | 70,496 | - | - | - | 166,581 |
| **[60-64)** | - | - | - | 1 | - | - | - | - | - | 1 |
| | - | - | - | 73,902 | - | - | - | - | - | 73,902 |
| **[65-69)** | - | - | 1 | 1 | 1 | - | - | - | - | 3 |
| | - | - | 83,297 | 39,725 | 75,604 | - | - | - | - | 198,626 |
| **[70+** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **TOTAL** | - | - | 4 | 17 | 9 | 10 | 11 | - | - | 51 |
| | $ - | - | 227,582 | 857,997 | 505,493 | 570,760 | 745,544 | - | - | $2,907,376 |

| | | |
|---|---|---|
| AVERAGES | Attained Age | 48.19 |
| | Service Years | 17.93 |
| | Annual Salary | $57,007 |

**LASERS MEMBERSHIP PROFILE**
**Alcohol Tobacco Control**

**CELLS DEPICT** **Member Count**
**Total Salary**

**Valuation Date** **6/30/2017**

| Age/Service | (0-1) | [1-5) | [5-10) | [10-15) | [15-20) | [20-25) | [25-30) | [30-35) | [35+ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-24)** | - | - | - | - | - | - | - | - | - | - |
| | $ - | - | - | - | - | - | - | - | - | $ - |
| **[25-29)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[30-34)** | - | - | 1 | - | - | - | - | - | - | 1 |
| | - | - | 42,530 | - | - | - | - | - | - | 42,530 |
| **[35-39)** | - | - | - | 2 | - | - | - | - | - | 2 |
| | - | - | - | 107,804 | - | - | - | - | - | 107,804 |
| **[40-44)** | - | - | 1 | 1 | 2 | - | - | - | - | 4 |
| | - | - | 47,426 | 58,011 | 101,062 | - | - | - | - | 206,499 |
| **[45-49)** | - | - | - | - | - | 2 | - | - | - | 2 |
| | - | - | - | - | - | 104,737 | - | - | - | 104,737 |
| **[50-54)** | - | - | - | - | - | - | 1 | - | - | 1 |
| | - | - | - | - | - | - | 125,547 | - | - | 125,547 |
| **[55-59)** | - | - | - | - | - | 1 | 1 | - | - | 2 |
| | - | - | - | - | - | 66,264 | 69,638 | - | - | 135,902 |
| **[60-64)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[65-69)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[70+** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **TOTAL** | - | - | 2 | 2 | - | 3 | 2 | - | - | 12 |
| | $ - | - | 89,956 | 101,062 | - | 171,001 | 195,185 | - | - | $723,019 |

| | | |
|---|---|---|
| AVERAGES | Attained Age | 44.77 |
| | Service Years | 17.71 |
| | Annual Salary | $60,252 |

**LASERS MEMBERSHIP PROFILE**
**Bridge Police**

**CELLS DEPICT** **Member Count**
**Total Salary**

**Valuation Date** **6/30/2017**

| Age/Service | (0-1) | [1-5) | [5-10) | [10-15) | [15-20) | [20-25) | [25-30) | [30-35) | [35+ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-24)** | - | - | - | - | - | - | - | - | - | - |
| | $ - | - | - | - | - | - | - | - | - | $ - |
| **[25-29)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[30-34)** | - | - | 1 | - | - | - | - | - | - | 1 |
| | - | - | 45,561 | - | - | - | - | - | - | 45,561 |
| **[35-39)** | - | - | - | 2 | 1 | - | - | - | - | 3 |
| | - | - | - | 89,180 | 48,720 | - | - | - | - | 137,900 |
| **[40-44)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[45-49)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[50-54)** | - | - | - | - | - | - | - | 1 | - | 1 |
| | - | - | - | - | - | - | - | 64,056 | - | 64,056 |
| **[55-59)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[60-64)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[65-69)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[70+** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **TOTAL** | - | - | 1 | 2 | - | - | 1 | - | - | 5 |
| | $ - | - | 45,561 | 89,180 | - | - | 64,056 | - | - | $247,517 |

| | | |
|---|---|---|
| AVERAGES | Attained Age | 40.72 |
| | Service Years | 15.82 |
| | Annual Salary | $49,503 |

**LASERS MEMBERSHIP PROFILE**
**Harbor Police**

**CELLS DEPICT** **Member Count**
**Total Salary**

**Valuation Date** **6/30/2017**

| Age/Service | (0-1) | [1-5) | [5-10) | [10-15) | [15-20) | [20-25) | [25-30) | [30-35) | [35+ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-24)** | - | 1 | - | - | - | - | - | - | - | 1 |
| | $ - | 40967 | - | - | - | - | - | - | - | $40,967 |
| **[25-29)** | - | - | - | - | - | - | 1 | - | - | 1 |
| | - | - | - | - | - | - | 43,862 | - | - | 43,862 |
| **[30-34)** | 1 | 1 | 2 | - | - | - | 1 | - | - | 4 |
| | $66,440 | 40967 | 93,527 | - | - | - | 45,250 | - | - | 179,744 |
| **[35-39)** | 1 | - | - | 1 | - | - | - | - | - | 1 |
| | $11,423 | - | - | 42,141 | - | - | - | - | - | 42,141 |
| **[40-44)** | - | 1 | - | 3 | - | - | 2 | - | - | 6 |
| | - | 42255 | - | 169,622 | - | - | 90,877 | - | - | 302,754 |
| **[45-49)** | - | - | 2 | 3 | 2 | - | - | - | - | 7 |
| | - | - | 103,521 | 172,236 | 124,921 | - | - | - | - | 400,678 |
| **[50-54)** | 1 | - | - | 1 | - | 2 | - | - | - | 3 |
| | $21,796 | - | - | 52,550 | - | 140,514 | - | - | - | 193,064 |
| **[55-59)** | - | - | - | - | - | 1 | - | - | - | 1 |
| | - | - | - | - | - | 59,781 | - | - | - | 59,781 |
| **[60-64)** | - | - | 1 | - | 1 | - | - | - | - | 2 |
| | - | - | 64,274 | - | 65,505 | - | - | - | - | 129,779 |
| **[65-69)** | - | - | - | 1 | - | - | - | - | - | - |
| | - | - | - | 54,424 | - | - | - | - | - | - |
| **[70+** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **TOTAL** | - | 3 | 5 | 9 | 3 | 3 | 4 | - | - | 27 |
| | $ - | 124189 | 261,322 | 490,973 | 190,426 | 200,295 | 179,989 | - | - | $1,447,194 |

| | | |
|---|---|---|
| AVERAGES | Attained Age | 44.4 |
| | Service Years | 14.89 |
| | Annual Salary | $53,600 |

**LASERS MEMBERSHIP PROFILE**
**DROP Participants**

**CELLS DEPICT** **Member Count**
**Total Benefit**

**Valuation Date** **6/30/2017**

| Age/Years Retired | (0-1) | [1-2) | [2-3) | [3-4) | [4-5) | [5-10) | [10-14) | [15-20) | [20+ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-40)** | - | - | - | - | - | - | - | - | - | - |
| | $ - | - | - | - | - | - | - | - | - | $ - |
| **[40-44)** | 2 | - | - | - | - | - | - | - | - | 2 |
| | $102,972 | - | - | - | - | - | - | - | - | $102,972 |
| **[45-49)** | 15 | 6 | 8 | 1 | - | - | - | - | - | 30 |
| | $681,096 | 309516 | 303312 | 39360 | - | - | - | - | - | $1,333,284 |
| **[50-54)** | 81 | 61 | 99 | - | - | - | - | - | - | 241 |
| | $3,627,024 | 2635452 | 4153776 | - | - | - | - | - | - | $10,416,252 |
| **[55-59)** | 221 | 199 | 182 | - | - | - | - | - | - | 602 |
| | $8,215,728 | 7948020 | 7037088 | - | - | - | - | - | - | $23,200,836 |
| **[60-64)** | 197 | 208 | 215 | 1 | - | - | - | - | - | 621 |
| | $4,203,180 | 5161752 | 4947684 | 34944 | - | - | - | - | - | $14,347,560 |
| **[65-69)** | 1 | 10 | 9 | - | - | - | - | - | - | 20 |
| | $2,976 | 80760 | 75972 | - | - | - | - | - | - | $159,708 |
| **[70-74)** | - | 2 | 2 | - | - | - | - | - | - | 4 |
| | - | 24492 | 76788 | - | - | - | - | - | - | $101,280 |
| **[75-79)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[80-84)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[85-89)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[90+** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **TOTAL** | 517 | 486 | 515 | 2 | - | - | - | - | - | 1520 |
| | $16,832,976 | 16,159,992 | 16,594,620 | 74,304 | - | - | - | - | - | $ 49,661,892 |

| AVERAGES | | |
|---|---|---|
| | Attained Age | 58.21 |
| | Years Retired | 1.5 |
| | Yearly Benefit | $32,672 |

## LASERS MEMBERSHIP PROFILE
### After DROP

**CELLS DEPICT** **Member Count**
**Total Salary**
**Total Benefit**

**Valuation Date** **6/30/2017**

| Age/Service | (0-1) | [1-2) | [2-3) | [3-4) | [4-5) | [5-10) | [10-14) | [15+ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| **[0-45)** | - | - | - | - | - | - | - | - | - |
| | $ - | - | - | - | - | - | - | - | $ - |
| | $ - | - | - | - | - | - | - | - | $ - |
| **[45-49)** | 1 | 1 | - | - | 1 | - | - | - | 3 |
| | 16,538 | 64,958 | - | - | 65549 | - | - | - | 147,045 |
| | 37,332 | 32,268 | - | - | 36516 | - | - | - | 106,116 |
| **[50-54)** | 37 | 33 | 26 | 8 | - | 6 | 3 | - | 113 |
| | 1,348,677 | 2,257,593 | 1,609,572 | 562,696 | - | 472,061 | 244,480 | - | 6,495,079 |
| | 1,548,012 | 1,400,928 | 1,015,428 | 338,640 | - | 152,400 | 54,636 | - | 4,510,044 |
| **[55-59)** | 116 | 86 | 79 | 52 | 43 | 50 | 7 | 2 | 435 |
| | 3,698,048 | 5,049,573 | 5,385,173 | 3,476,382 | 2,537,182 | 3,324,807 | 582,181 | 300,036 | 24,353,382 |
| | 4,870,548 | 3,243,492 | 3,420,024 | 2,141,340 | 1,538,484 | 1,665,684 | 145,212 | 193,668 | 17,218,452 |
| **[60-64)** | 128 | 97 | 76 | 67 | 46 | 117 | 24 | 3 | 558 |
| | 3,512,994 | 4,934,626 | 4,828,719 | 4,421,448 | 2,704,195 | 7,247,807 | 1,604,180 | 258,440 | 29,512,409 |
| | 3,572,136 | 2,042,904 | 2,782,416 | 2,616,816 | 1,560,000 | 3,761,136 | 554,412 | 46,380 | 16,936,200 |
| **[65-69)** | 22 | 14 | 70 | 33 | 33 | 110 | 44 | 6 | 332 |
| | 907,744 | 830,289 | 4,012,412 | 1,989,615 | 1,533,750 | 7,282,211 | 3,538,356 | 482,689 | 20,577,066 |
| | 383,700 | 192,396 | 1,620,684 | 659,220 | 574,008 | 2,926,020 | 1,434,624 | 126,792 | 7,917,444 |
| **[70+** | 3 | 4 | 4 | 1 | 3 | 67 | 66 | 29 | 177 |
| | 114,410 | 188,520 | 153,148 | 32,802 | 115,029 | 3,817,681 | 4,161,349 | 1,738,214 | 10,321,153 |
| | 71,628 | 37,680 | 31,884 | 7,560 | 26,868 | 1,082,088 | 1,298,628 | 520,188 | 3,076,524 |
| **TOTAL** | 307 | 235 | 255 | 161 | 126 | 350 | 144 | 40 | 1,618 |
| | $9,598,411 | 13,325,559 | 15,989,024 | 10,482,943 | 6,955,705 | 22,144,567 | 10,130,546 | 2,779,379 | $91,406,134 |
| | $10,483,356 | 6,949,668 | 8,870,436 | 5,763,576 | 3,735,876 | 9,587,328 | 3,487,512 | 887,028 | $49,764,780 |

| AVERAGES | | |
|---|---|---|
| | Attained Age | 62.88 |
| | Service Years | 4.37 |
| | Annual Salary | $56,493 |
| | Yearly Benefit | $30,757 |

**LASERS MEMBERSHIP PROFILE**
**Post Retirement Service**

**CELLS DEPICT** **Member Count**
**Total Salary**

**Valuation Date** **6/30/2017**

| Age/Service | (0-1) | [1-5) | [5-10) | [10-15) | [15-20) | [20-25) | [25-30) | [30-35) | [35+ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-24)** | - | - | - | - | - | - | - | - | - | - |
| | $ - | - | - | - | - | - | - | - | - | $ - |
| **[25-29)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[30-34)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[35-39)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[40-44)** | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - |
| **[45-49)** | - | - | - | 5 | - | - | - | - | - | 5 |
| | - | - | - | 283,910 | - | - | - | - | - | 283,910 |
| **[50-54)** | 2 | 5 | 1 | 11 | - | - | - | - | - | 19 |
| | 110,000 | 300,502 | 42,931 | 695,098 | - | - | - | - | - | 1,148,531 |
| **[55-59)** | 7 | 7 | 4 | 19 | 1 | - | - | - | - | 38 |
| | 265,000 | 399,394 | 202,959 | 1,015,045 | 59,987 | - | - | - | - | 1,942,385 |
| **[60-64)** | 20 | 9 | 2 | 16 | 4 | - | - | - | - | 51 |
| | 720,000 | 663,012 | 100,884 | 1,068,985 | 277,197 | - | - | - | - | 2,830,078 |
| **[65-69)** | 22 | 4 | 2 | 22 | 1 | - | - | - | - | 51 |
| | 770,000 | 201,527 | 109,879 | 1,336,777 | 54,576 | - | - | - | - | 2,472,759 |
| **[70+** | 19 | 11 | 3 | 20 | 4 | - | - | - | - | 57 |
| | 711,000 | 427,094 | 142,137 | 759,240 | 283,535 | - | - | - | - | 2,323,006 |
| **TOTAL** | 70 | 36 | 12 | 93 | 10 | - | - | - | - | 221 |
| | $2,576,000 | 1,991,529 | 598,790 | 5,159,055 | 675,295 | - | - | - | - | $11,000,669 |

| AVERAGES | | |
|---|---|---|
| | Attained Age | 65.46 |
| | Service Years | 3.71 |
| | Annual Salary | $49,777 |

**LASERS MEMBERSHIP PROFILE**
**Regular Retirees**

**CELLS DEPICT** **Member Count**
**Total Benefits**

**Valuation Date** **6/30/2017**

| Age/Years Retired | (0-1) | [1-2) | [2-3) | [3-4) | [4-5) | [5-10) | [10-14) | [15-20) | [20+ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-40)** | - | - | 1 | 1 | - | - | - | - | - | 2 |
| | - | - | 14,988 | 8,232 | - | - | - | - | - | $23,220 |
| **[40-44)** | 15 | 6 | 5 | 16 | 10 | - | - | - | - | 52 |
| | 288,696 | 160,932 | 142,068 | 200,892 | 135,144 | - | - | - | - | 927,732 |
| **[45-49)** | 51 | 38 | 41 | 73 | 102 | 22 | 1 | - | - | 328 |
| | 1,778,952 | 1,351,404 | 1,032,228 | 1,431,096 | 1,688,544 | 495,132 | 25,080 | - | - | 7,802,436 |
| **[50-54)** | 83 | 92 | 114 | 259 | 328 | 295 | 69 | 19 | - | 1,259 |
| | 3,350,784 | 3,351,120 | 3,853,644 | 7,295,616 | 8,879,400 | 8,780,280 | 1,310,676 | 305,112 | - | 37,126,632 |
| **[55-59)** | 172 | 182 | 230 | 511 | 729 | 1770 | 411 | 178 | 21 | 4,204 |
| | 6,493,908 | 6,975,588 | 8,393,364 | 16,819,080 | 26,136,576 | 64,423,500 | 9,395,916 | 2,935,872 | 376,644 | 141,950,448 |
| **[60-64)** | 462 | 473 | 504 | 661 | 773 | 3001 | 1702 | 429 | 121 | 8,126 |
| | 10,343,496 | 10,967,316 | 11,899,836 | 16,925,448 | 22,982,220 | 113,127,072 | 52,197,672 | 8,568,624 | 2,164,884 | 249,176,568 |
| **[65-69)** | 149 | 183 | 202 | 284 | 482 | 3224 | 3291 | 1304 | 281 | 9,400 |
| | 4,281,720 | 4,772,148 | 5,389,236 | 6,388,944 | 11,428,800 | 78,098,892 | 103,127,808 | 37,678,884 | 6,225,252 | 257,391,684 |
| **[70-74)** | 52 | 52 | 82 | 65 | 169 | 943 | 2484 | 2033 | 904 | 6,784 |
| | 1,384,620 | 1,199,280 | 2,881,356 | 1,305,276 | 4,140,456 | 20,374,836 | 50,644,332 | 59,209,116 | 25,083,672 | 166,222,944 |
| **[75-79)** | 8 | 17 | 19 | 23 | 39 | 206 | 545 | 1892 | 1690 | 4,439 |
| | 208,752 | 528,972 | 768,816 | 607,104 | 1,133,892 | 5,026,308 | 9,075,960 | 35,667,576 | 44,015,868 | 97,033,248 |
| **[80-84)** | 5 | 4 | 5 | 3 | 9 | 62 | 136 | 489 | 2383 | 3,096 |
| | 143,028 | 64,452 | 221,856 | 76,404 | 312,816 | 1,880,892 | 2,776,632 | 8,499,852 | 49,139,628 | 63,115,560 |
| **[85-89)** | 1 | - | - | - | 1 | 11 | 17 | 124 | 1669 | 1,823 |
| | 2940 | - | - | - | 18,792 | 255,684 | 334,872 | 2,383,560 | 30,040,680 | 33,036,528 |
| **[90+** | - | - | - | - | - | 1 | 1 | 19 | 948 | 969 |
| | - | - | - | - | - | 43,380 | 9,276 | 380,964 | 14,433,540 | 14,867,160 |
| **TOTAL** | 998 | 1,047 | 1,203 | 1,896 | 2,642 | 9,535 | 8,657 | 6,487 | 8,017 | 40,482 |
| | $28,276,896 | 29,371,212 | 34,597,392 | 51,058,092 | 76,856,640 | 292,505,976 | 228,898,224 | 155,629,560 | 171,480,168 | $1,068,674,160 |

| | | |
|---|---|---|
| AVERAGES | Attained Age | 69.41 |
| | Years Retired | 12.79 |
| | Yearly Benefit | $26,399 |

**LASERS MEMBERSHIP PROFILE**
**Disability Benefits**

**CELLS DEPICT** **Member Count**
**Total Benefits**

**Valuation Date** **6/30/2017**

| Age/Years Retired | (0-1) | [1-5) | [5-10) | [10-15) | [15-20) | [20-25) | [25-30) | [30-35) | [35+ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-40)** | 2 | 4 | 1 | 1 | 1 | - | - | - | - | 9 |
| | $18,528 | 43,536 | 20,064 | 13,116 | 19,104 | - | - | - | - | $114,348 |
| **[40-44)** | 4 | 7 | 3 | 5 | 1 | 1 | 1 | - | - | 22 |
| | 72,588 | 114,684 | 52,392 | 75,864 | 27,732 | 15,240 | 8,508 | - | - | 367,008 |
| **[45-49)** | 11 | 40 | 7 | 9 | 5 | 2 | 2 | - | - | 76 |
| | 179,760 | 598,452 | 169,344 | 158,736 | 100,260 | 27,684 | 54,648 | - | - | 1,288,884 |
| **[50-54)** | 24 | 103 | 27 | 24 | 10 | 3 | 2 | 1 | - | 194 |
| | 392,592 | 1,949,760 | 416,880 | 348,528 | 235,032 | 40,512 | 33,228 | 14,328 | - | 3,430,860 |
| **[55-59)** | 43 | 180 | 57 | 29 | 16 | 4 | 3 | 2 | 1 | 335 |
| | 798,636 | 2,957,844 | 833,088 | 477,012 | 275,640 | 50,484 | 48,312 | 43,632 | 14,460 | 5,499,108 |
| **[60-64)** | 71 | 299 | 56 | 49 | 10 | 10 | 4 | 1 | - | 500 |
| | 1,086,288 | 4,804,416 | 849,960 | 686,244 | 194,940 | 262,668 | 76,332 | 23,136 | - | 7,983,984 |
| **[65-69)** | 66 | 222 | 60 | 46 | 20 | 6 | 3 | - | 1 | 424 |
| | 875,604 | 3,139,908 | 876,084 | 707,652 | 247,596 | 82,308 | 43,932 | - | 16,104 | 5,989,188 |
| **[70-74)** | 56 | 191 | 38 | 32 | 11 | 2 | 2 | 1 | 1 | 334 |
| | 684,540 | 2,394,120 | 428,124 | 332,124 | 123,672 | 8,652 | 37,392 | 13,992 | 20,316 | 4,042,932 |
| **[75-79)** | 37 | 117 | 34 | 19 | 6 | 3 | 4 | - | - | 220 |
| | 342,780 | 1,325,040 | 352,884 | 193,764 | 69,372 | 32,520 | 54,060 | - | - | 2,370,420 |
| **[80-84)** | 24 | 72 | 14 | 12 | 4 | 1 | - | 1 | - | 128 |
| | 241,104 | 683,604 | 111,900 | 128,496 | 39,084 | 13,008 | - | 4,260 | - | 1,221,456 |
| **[85-89)** | 8 | 28 | 5 | 6 | 7 | 1 | - | - | 1 | 56 |
| | 73,980 | 286,908 | 47,352 | 57,864 | 78,660 | 10,068 | - | - | 12,024 | 566,856 |
| **[90+** | 2 | 21 | 2 | 1 | - | - | - | 1 | - | 27 |
| | 31,524 | 178,464 | 23,412 | 7,008 | - | - | - | 11,220 | - | 251,628 |
| **TOTAL** | 348 | 1284 | 304 | 233 | 91 | 33 | 21 | 7 | 4 | 2,325 |
| | $4,797,924 | 18,476,736 | 4,181,484 | 3,186,408 | 1,411,092 | 543,144 | 356,412 | 110,568 | 62,904 | $33,126,672 |

| AVERAGES | | |
|---|---|---|
| | Attained Age | 66.04 |
| | Years Retired | 16.41 |
| | Yearly Benefit | $14,248 |

**LASERS MEMBERSHIP PROFILE**
**Survivor Benefits**

**CELLS DEPICT** **Member Count**
**Total Benefits**

**Valuation Date** **6/30/2017**

| Age/Years Retired | (0-1) | [1-2) | [2-3) | [3-4) | [4-5) | [5-10) | [10-14) | [15-20) | [20+ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-40)** | 12 | 14 | 15 | 10 | 14 | 86 | 107 | 97 | 127 | 482 |
| | $580,356 | 475,164 | 433,344 | 189,336 | 420,588 | 2,307,156 | 2,203,044 | 1,687,872 | 1,724,112 | $10,020,972 |
| **[40-44)** | 1 | - | 2 | 2 | 3 | 7 | 20 | 12 | 43 | 90 |
| | 31,944 | - | 33,072 | 8,304 | 47,064 | 119,616 | 394,464 | 208,068 | 604,644 | 1,447,176 |
| **[45-49)** | - | 2 | 2 | 4 | 2 | 17 | 14 | 13 | 43 | 97 |
| | - | 80,592 | 50,484 | 73,188 | 72,864 | 316,128 | 193,044 | 163,332 | 605,340 | 1,554,972 |
| **[50-54)** | 2 | 1 | 2 | 10 | 6 | 22 | 23 | 23 | 18 | 107 |
| | 79,956 | 23,724 | 40,104 | 234,096 | 139,728 | 473,088 | 386,064 | 349,008 | 237,384 | 1,963,152 |
| **[55-59)** | 2 | 4 | 7 | 7 | 10 | 58 | 49 | 48 | 56 | 241 |
| | 76,452 | 131,844 | 158,964 | 232,032 | 223,896 | 1,314,504 | 930,144 | 658,680 | 751,044 | 4,477,560 |
| **[60-64)** | 2 | 6 | 12 | 16 | 13 | 73 | 120 | 72 | 100 | 414 |
| | 52,488 | 112,980 | 240,012 | 327,192 | 424,656 | 1,698,168 | 2,562,984 | 1,172,388 | 1,431,036 | 8,021,904 |
| **[65-69)** | - | 7 | 4 | 11 | 10 | 98 | 178 | 131 | 187 | 626 |
| | - | 225,312 | 106,548 | 158,652 | 221,724 | 2,129,544 | 3,562,236 | 2,914,392 | 3,089,160 | 12,407,568 |
| **[70-74)** | 1 | 1 | 3 | 3 | - | 40 | 131 | 188 | 419 | 786 |
| | 103,164 | 27,168 | 90,624 | 107,148 | - | 915,348 | 2,376,768 | 3,907,968 | 6,778,956 | 14,307,144 |
| **[75-79)** | 2 | 1 | - | 1 | - | 23 | 64 | 155 | 666 | 912 |
| | 24,612 | 58,164 | - | 23,172 | - | 482,664 | 1,191,732 | 2,428,524 | 10,312,884 | 14,521,752 |
| **[80-84)** | - | - | - | 1 | 1 | 5 | 13 | 77 | 811 | 908 |
| | - | - | - | 19,908 | 45,324 | 75,996 | 157,320 | 1,070,292 | 11,238,624 | 12,607,464 |
| **[85-89)** | - | - | - | 1 | - | 2 | 7 | 23 | 660 | 693 |
| | - | - | - | 17,292 | - | 42,324 | 122,892 | 345,684 | 8,771,784 | 9,299,976 |
| **90+** | - | - | - | - | - | - | - | 5 | 511 | 516 |
| | - | - | - | - | - | - | - | 88,680 | 6,234,252 | 6,322,932 |
| **TOTAL** | 22 | 36 | 47 | 66 | 59 | 431 | 726 | 844 | 3,641 | 5,872 |
| | $948,972 | 1,134,948 | 1,153,152 | 1,390,320 | 1,595,844 | 9,874,536 | 14,080,692 | 14,994,888 | 51,779,220 | $96,952,572 |

| AVERAGES | | |
|---|---|---|
| | Attained Age | 71.72 |
| | Years Retired | 23 |
| | Yearly Benefit | $16,511 |

**LASERS MEMBERSHIP PROFILE**
**Terminated Vested**

**CELLS DEPICT** **Member Count**
**Total Benefits**

**Valuation Date** **6/30/2017**

| Age/Service | (0-1) | [1-5) | [5-10) | [10-15) | [15-20) | [20-25) | [25-30) | [30-35) | [35+ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **[0-24)** | - | - | - | - | - | - | - | - | - | - |
| | $- | - | - | - | - | - | - | - | - | $- |
| **[25-29)** | - | - | 28 | - | - | - | - | - | - | 28 |
| | - | - | 153,600 | - | - | - | - | - | - | 153,600 |
| **[30-34)** | - | 1 | 206 | 24 | - | - | - | - | - | 231 |
| | - | 1,848 | 1,438,176 | 278,292 | - | - | - | - | - | 1,718,316 |
| **[35-39)** | 1 | 3 | 190 | 188 | 21 | - | - | - | - | 403 |
| | 216 | 20,364 | 1,381,512 | 2,738,592 | 378,120 | - | - | - | - | 4,518,804 |
| **[40-44)** | - | 1 | 133 | 284 | 72 | 4 | - | - | - | 494 |
| | - | 6,276 | 1,051,068 | 4,575,768 | 1,605,900 | 131,208 | - | - | - | 7,370,220 |
| **[45-49)** | - | 2 | 113 | 352 | 167 | 34 | 9 | - | - | 677 |
| | - | 5,784 | 1,017,372 | 5,703,348 | 4,028,292 | 1,051,656 | 334,140 | - | - | 12,140,592 |
| **[50-54)** | 1 | 3 | 86 | 351 | 203 | 54 | 24 | 2 | - | 724 |
| | 360 | 8,736 | 672,960 | 5,727,876 | 4,459,596 | 1,657,308 | 899,052 | 96,648 | - | 13,522,536 |
| **[55-59)** | 1 | 3 | 126 | 460 | 245 | 61 | 9 | - | - | 905 |
| | 1,080 | 21,696 | 952,764 | 6,540,696 | 4,974,588 | 1,467,564 | 471,240 | - | - | 14,429,628 |
| **[60-64)** | 1 | 3 | 32 | 114 | 52 | 13 | 1 | 1 | - | 217 |
| | 516 | 14424 | 396,516 | 1,474,392 | 1,003,200 | 283,488 | 37,812 | 43524 | - | 3,253,872 |
| **[65-69)** | - | 1 | 6 | 38 | 12 | 6 | 3 | - | 1 | 67 |
| | - | 14,916 | 80,760 | 318,792 | 185,664 | 104,556 | 81,864 | - | 74280 | 860,832 |
| **[70+** | 1 | - | 3 | 26 | 8 | 3 | 3 | 2 | 2 | 48 |
| | 348 | - | 3,888 | 130,920 | 50,856 | 31,104 | 10,404 | 45,492 | 169608 | 442,620 |
| **TOTAL** | 5 | 17 | 923 | 1,837 | 780 | 175 | 49 | 5 | 3 | 3,794 |
| | $2,520 | 94,044 | 7,148,616 | 27,488,676 | 16,686,216 | 4,726,884 | 1,834,512 | 185,664 | 243888 | $58,411,020 |

| | | |
|---|---|---|
| AVERAGES | Attained Age | 49.84 |
| | Service Years | 12.44 |
| | Yearly Benefit | $15,396 |

## 3. Plan Provisions

**EFFECTIVE DATE:**

July 1, 1947

**EMPLOYEE:**

Any person who legally occupies a position in state service.

**EMPLOYER:**

The State of Louisiana or any of its boards, commissions, departments, agencies, and courts which are contributing members and those approved for membership by the legislature from which any employee receives his compensation.

**ELIGIBILITY FOR PARTICIPATION:**

Condition of employment in state service except the following: elected or appointed officials or employees who are contributing members of any other state system; public officials and state employees who receive a per diem in lieu of compensation; persons employed prior to January 1, 1973, who work on a part-time basis and elect not to participate; patient or inmate help in state charitable, penal, or correctional institutions; part-time students, interns, and resident physicians; independent contractors; employees who are age 60 or older at time of employment; retirees of the retirement system who return to work under certain conditions; judges who failed to elect membership prior to October 2, 1976; civilian employees who on November 1, 1981, were within five years of retirement eligibility in the Federal Civil Service Retirement and Disability Fund; teachers employed after September 10, 1982; nurses employed from employment pools at state charity hospitals; temporary, seasonal, part-time employees of DOTC, or as defined in Federal law.

**SERVICE:**

Service as an "Employee," defined above.

**CREDITABLE SERVICE:**

For service prior to January 1, 1973: 1/4 year granted for each 89 day interval of service, not to exceed one credit per fiscal year. Minimum 15 days required for 1st Quarter credit.

For service on or after January 1, 1973, a member shall receive credit based on the ratio of actual pay to the annual base per calendar year. Fractional service shall be rounded to the next highest 1/10th, not to exceed 100 percent per year.

**ADDITIONAL CREDITABLE SERVICE:**

1. Credit for service canceled by withdrawal of accumulated contributions may be restored by member by paying into system the amount withdrawn plus interest at the Actuarial Valuation rate.

2. Maximum of four years of credit for military service may be obtained for each member with at least two years of service, contingent on payment of Actuarial Cost.

3. Credit for service which was classified as a job appointment or emergency appointment where the intended duration of employment exceeds two years of service.

4. At retirement, all accumulated unused sick and annual leave shall be credited based on the following schedule:

| | |
|---|---|
| l - 26 Days | 10% of a Year |
| 27 - 52 Days | 20% of a Year |
| 53 - 78 Days | 30% of a Year |
| 79 - 104 Days | 40% of a Year |
| 105 - 130 Days | 50% of a Year |
| 131 - 156 Days | 60% of a Year |
| 157 - 182 Days | 70% of a Year |
| 183 - 208 Days | 80% of a Year |
| 209 - 234 Days | 90% of a Year |
| 235 - 260 Days | 100% of a Year |

Service credit for unused leave can be used for computation purpose only, not for eligibility. An actuarial equivalent lump sum is available after August 15, 1993.

**EARNABLE COMPENSATION:**

The base pay earned by an employee for a given pay period as reported by the employing agency. This includes the full amount earned by an employee, overtime, and per diem earned by an employee of the House of Representatives, the Senate, or an agency of the Legislature, and expense allowances and per diem paid to members of the Legislature, the Clerk, or Sergeant at Arms of the House of Representatives and President and Secretary or Sergeant at Arms of the Senate.

**AVERAGE FINAL COMPENSATION FOR BENEFIT PURPOSES:**

The average annual earned compensation for the 36 highest months of successive employment, or the highest 36 successive joined months where interruption of service occurred; part-time employees use the base pay the part-time employee would have received had employment been full-time. Per Act 75 of 2005, average final

compensation for Regular members, Bridge Police, and Appellate Law Clerks hired on or after July, 1, 2006, is determined as the 60 highest months of successive employment. Per Act 992 of 2010, average final compensation for Judges hired on or after January 1, 2011, and all members of the Hazardous Duty Plan is based on the highest 60 months. Compensation is limited by the 401(a)(17) compensation limit of the Internal Revenue Code for certain members.

**ACCUMULATED CONTRIBUTIONS:**

The sum of all amounts deducted from the earned compensation of a member and credited to the individual account in the employee's savings account, together with regular interest credited prior to July 1971.

**EMPLOYEE CONTRIBUTIONS:**

| Sub Plan | Contribution Rate |
|---|---|
| Rank & File Employees and Appellate Law Clerks | 7.5% |
| Pre Act 75 (Hired before 7/1/2006) | 8.0% |
| Post Act 75 (Hired after 6/30/2006) | 11.5% |
| Pre 2011 Judges and Court Officers | 13.0% |
| Post 2011 Judges | 11.5% |
| Legislators | 9.5% |
| Special Legislative | |

| Sub Plan | Contribution Rate |
|---|---|
| Correction-Primary | 9.0% |
| Corrections-Secondary | 9.0% |
| Wildlife Officers | 9.5% |
| Peace Officers | 9.0% |
| ATC Officers | 9.0% |
| Bridge Police | 8.5% |
| Hazardous Duty | 9.5% |

**EMPLOYER CONTRIBUTIONS:**

Act 81 of 1988 requires the employer's rate to be actuarially determined and set annually, based on the Public Retirement Systems' Actuarial Committee's recommendation to the Legislature. Act 1026 of the 2010 Legislative Session further requires that the employer contribution rate be determined separately by sub-plan. The normal cost portion of each plan's employer contribution rate varies based upon that plan's benefits, member demographics, and the rate contributed by employees. The shared UAL contribution rate is determined in aggregate for all plans. The UAL established due to a specific plan or group of plans due to legislation will be allocated entirely to the applicable plan(s).

**RETIREMENT BENEFIT:**

NORMAL RETIREMENT:

Eligibility and Benefit:

Members whose first employment which makes them eligible for membership in a Louisiana state retirement system occurs on or after July 1, 2015:

1. Regular Plan: Eligible with 5 years at age 62. Benefit accrual rate is 2.5%.

2. Judges: Eligible with 5 years at age 62. Benefit accrual is 3.5%, plus regular plan benefits for prior service.

3. Hazardous Duty Plan: Eligible with 12 years at age 55, or 25 years at any age. Benefit accrual rate is 3.33% for service earned in the Hazardous Duty Plan if the last 10 years of service was earned in a hazardous duty position; otherwise, the accrual rate is 2.5%.

Members whose first employment which makes them eligible for membership in a Louisiana state retirement system occurs between January 1, 2011, and June 30, 2015:

1. Regular Plan: Eligible with 5 years at age 60. Benefit accrual rate is 2.5%.

2. Judges: Eligible with 5 years at age 60. Benefit accrual is 3.5%, plus regular plan benefits for prior service.

3. Hazardous Duty Plan: Eligible with 12 years at age 55 or 25 years at any age. Benefit accrual rate is 3.33% for service earned in the Hazardous Duty Plan if the last 10 years of service was earned in a hazardous duty position; otherwise, the accrual rate is 2.5%.

Members whose first employment which makes them eligible for membership in a Louisiana state retirement system occurs prior to January 1, 2011:

1. Regular members hired prior to July 1, 2006: Eligible with 10 years at age 60, 25 years at age 55, or 30 years at any age. Regular members hired on or after July 1, 2006, are eligible with 5 years at age 60. Benefit accrual rate is 2.5% for all years of service.

2. Judges, Court Officers, and Appellate Law Clerks: Eligible with 18 years at any age, 10 years at age 65, 20 total years with at least 12 years as a judge or court officer at age 50, 12 years at age 55, or age 70 regardless of service. Judges and Court Officers earn 3.5% per year of service, plus regular plan benefits for prior service. Appellate Law Clerks earn 2.5% for all years of service.

3. Members of the Legislature, Governor, Lieutenant Governor and State Treasurer: Eligible with 16 years of service at any age, 20 total years with at least 12 years as a member of this class at age 50, or 12 years at age 55. Members earn 3.5% per year of service, plus regular plan benefits for prior service.

4. Plans for certain employees of the Department of Public Safety and Corrections:
   a. Corrections Primary hired before 8/15/1986: Eligible with 10 years at age 60, or 20 years at any age. Benefit accrual rate is 2.5%.
   b. Corrections Primary hired between 8/15/1986 and 12/31/2001: Eligible with 10 years at age 60, or 20 years at age 50. Benefit accrual rate is 2.5%.
   c. Corrections Primary hired prior to 12/31/2001 and employed as a probation and parole officers in the office of adult services of the Department of Corrections: Eligibility is as stated above. Benefit accrual rate is 3.0% for service earned prior to 7/1/2014 and 3.33% for service earned after 6/30/2014.
   d. Corrections Secondary Plan hired after 1/1/2002 or transferred from Corrections Primary Plan: Eligible with 10 years at age 60, or 25 years at any age. Benefit accrual rate is 3.33%.

5. Wildlife and Fisheries:
   a. Members hired before July 1, 2003: 10 years at age 55, or 20 years at any age. Benefit accrual is 3.0% for service earned prior to July 1, 2003 and 3.33% for service earned after July 1, 2003.
   b. Members hired on or after July 1, 2003: 10 years at age 60, or 25 years at any age. Benefit accrual is 3.33%.

6. Peace Officers: Eligible with 10 years of service at age 60, 25 years at age 55, or 30 years at any age. Benefit accrual is 3.33%.

7. Alcohol Tobacco Control: Eligible with 10 years of service at age 60, or 25 years of service at any age. Benefit accrual is 3.33%.

8. Bridge Police: Eligible with 10 years at age 60, or 25 years at any age. Benefit accrual is 2.5%

NOTES:

A. Benefit is limited to 100% of average compensation.

B. Retirees who return to work will continue to receive unreduced benefits if compensation does not exceed 50% of the annual benefit during the fiscal year. Earnings above this limit will result in a corresponding reduction to benefits. Retirees who return to work may choose to suspend their retirement benefits and resume making contributions in the system. Upon subsequent retirement, benefits will resume. If post-retirement employment is at least 36 months, a supplemental benefit will be calculated based on current final average salary. Otherwise, a supplemental benefit will be calculated based on the frozen final average salary at the original retirement date.

C. A $300 annual supplemental benefit is provided to persons who become members of the retirement system prior to July 1, 1986 (Act 608 of 1986).

D. For members employed after January 1, 1990, the annual pension paid from the trust cannot exceed the maximum benefit provided under Section 415(b) of the Internal Revenue Service Code, and related Section 415 regulations, as adjusted for inflation and form of benefit other than life annuity or qualified joint and survivor annuity for retirement ages as follows:

| Age | Maximum | Age | Maximum | Age | Maximum |
|---|---|---|---|---|---|
| 48 | $62,674 | 56 | $122,937 | 64 | $215,000 |
| 49 | 68,035 | 57 | 134,139 | 65 | 215,000 |
| 50 | 73,895 | 58 | 146,473 | 66 | 215,000 |
| 51 | 80,309 | 59 | 160,071 | 67 | 215,000 |
| 52 | 87,329 | 60 | 175,083 | 68 | 215,000 |
| 53 | 95,025 | 61 | 191,670 | 69 | 215,000 |
| 54 | 103,469 | 62 | 210,000 | 70 | 215,000 |
| 55 | 112,745 | 63 | 210,000 | | |

## ACTUARIALLY REDUCED RETIREMENT:

Members with 20 years of service credit at any age are eligible for an actuarially reduced benefit from the earliest date the member would have been eligible if employment had continued to the earliest normal retirement date, based on service earned to date. This does not apply to the correctional secondary plan members or wildlife agents hired on or after July 1, 2003.

## POST RETIREMENT INCREASES:

Provisions pertaining to cost-of-living adjustments are summarized in Section II(2).

## MINIMUM BENEFITS:

Effective September 1, 2001, retirees and beneficiaries receiving retirement benefits shall be entitled to a minimum benefit which is not less than $30.00 per month for each year of creditable service. The minimum benefit is adjusted for the option elected at retirement.

## DISABILITY RETIREMENT:

Eligibility:

Ten years of creditable service and certification of disability by medical board. (Medical examination may be required once per year for the first five years of disability retirement, and once every three years thereafter, until age 60.)

Benefit*:

(1) The disability retirement annuity shall be equivalent to the regular retirement formula without reduction by reason of age for all classes of membership.

(2) For judges and court officers, the benefit in (1) above, but not less than 50% of current salary.

(3) Members of the Corrections Primary Plan with disabilities incurred in the line of duty may retire with 60% of their final average compensation, regardless of years of service. Disabilities not incurred in the line of duty shall receive benefits according to (1) above.

(4) Members of the Corrections Secondary Plan with disabilities incurred in the line of duty may retire with 40% of their final average compensation regardless of service. If the member has 10 or more years of service, the benefit will be the greater of 40% of final average compensation or the benefit determined by (1) above. Disabilities not incurred in the line of duty shall receive benefits according to (1) above.

(5) For certain Wildlife agents, partial disabilities not eligible for (1) above receive 75% of the benefit in (1); members totally disabled while in the line of duty receive 60% of average compensation.

(6) Members of the Hazardous Duty Plan with disabilities incurred in the line of duty may retire with 75% of their final average compensation, regardless of years of service. Disabilities not incurred in the line of duty shall receive benefits according to (1) above.

* Because of a lack of enough data to differentiate disability for in-line of duty versus not-in-line of duty, disability benefits for certain sub-plans are valued as a retirement benefit in (1). This assumption has no material impact on liabilities.

**SURVIVOR'S BENEFITS:**

Members whose first employment, making them eligible for membership in a Louisiana state retirement system, occurs on or after January 1, 2011, or members of the Hazardous Duty Plan regardless of when hired:

Eligibility and Benefit:

1. Regular Members and Judges
   a. Surviving spouse with minor children of a deceased member with five years of service credit, two of which were earned immediately prior to death, or 20 years of service will receive 50% of the retirement benefit that would have been due the member, or $600 per month if greater. Each qualifying child will receive 50% of

the spouses benefit, up to two children. The total paid to the spouse and children subject to a minimum based on the Option 2A equivalent for the surviving spouse.

b. Surviving spouse, legally married one year prior to death, of a deceased member with 10 years of service credit, two of which were earned immediately prior to death, or 20 years of service regardless of date earned will receive the Option 2A equivalent of the retirement benefit that would have been due the member, or $600 per month if greater.

c. Surviving minor children will each (up to two) receive 50% of the benefit paid to a surviving spouse with children. This amount will be divided equally among all eligible children.

d. Surviving handicapped or mentally retarded children continue to receive a minor child's benefit described above in (1) or (3) whichever is applicable.

2. Hazardous duty members:
   a. Surviving spouse and children of members who did not die in the line of duty receive benefits described for non-Hazardous Duty members.
   b. Surviving spouse and children of members who died in the line of duty receive 80% of the member's final average compensation. The benefit is shared equally.
   c. Surviving spouse of a retired member will receive 75% of members' monthly benefit. If no spouse, then surviving children receive 1.c. above.

3. If no one is eligible to receive a survivor benefit, then the named beneficiary will receive the member's accumulated contributions.

Members whose first employment which makes them eligible for membership in a Louisiana state retirement system occurs prior to January 1, 2011:

Eligibility and Benefit:

1. Regular members:
   a. Surviving spouse, legally married one year prior to death, of a deceased member with 10 years of service credit, two of which were earned immediately prior to death, or 20 years of service regardless of date earned, receive the greater of 50% of member's average compensation or $200 per month.
   b. If member with no spouse has surviving minor children and 5 years of service credit, two of which were earned immediately prior to death, or 20 years of service regardless of date earned, minor children shall receive the greater of 75% of member's average compensation or $300 per month.
   c. For surviving spouse with minor children, the spouse must be eligible per (a) above and the children per (b) above to receive these benefits. If either one is ineligible, then the criteria in (a) or (b) would apply accordingly.
   d. Surviving handicapped or mentally retarded children continue to receive a minor child's benefit described above in (1a) or (1c) whichever is applicable.

2. Surviving spouse of a judge or court officer receive survivor's benefit described in (1a) or (1b), but not less than the greater of 1/3 the member's current compensation, 50% of the retirement pay which such member was entitled or receiving prior to death, or 50% of the member’s final average compensation (if the provisions of R.S. 11:471 are met). Benefit limited to 75% of average compensation.

3. Corrections
   a. In the line of duty:
      i. Surviving spouse with no minor children: 60% of average compensation if member had less than 25 years of service, or 75% of average compensation if member had 25 or more years of service.
      ii. Minor children or disabled children and no spouse: 60% of average compensation if member had less than 5 years of service (25 years for Secondary Plan), or 75% of average compensation if member had 5 or more years of service (25 years for Secondary Plan).
      iii. Surviving spouse with minor children: 60% of average compensation if member had less than 5 years of service (25 years for secondary plan) and benefit divided 1/3 to spouse and 2/3 to minor children equally. 75% of average compensation if member had 5 or more years of service (25 years for Secondary Plan) and benefit divided 1/3 to spouse and 2/3 to minor children equally.
   b. Not in the line of duty surviving spouse receives benefits in accordance with the provisions for regular members.

4. Wildlife agents
   a. In line of duty:
      i. Surviving spouse receives 75% of average compensation if member has 25 or more years of service, otherwise, spouse receives 60% of compensation. Benefits cease upon remarriage.
      ii. Children under age 18: one child - 30% of average compensation, 2 children - 40%, 3 children - 50%, 4 or more children - 60%, divided equally among children.
   b. Not in the line of duty benefit to surviving spouse and children: Surviving spouse receives a benefit as if the member retired on the date of death, until remarried. If a member dies prior to age 55 with at least 15 years of service, benefit computed based on years of service without regard to age.
   c. Survivors of retired wildlife agents will receive 75% of the retiree benefit in priority order: surviving spouse (until remarriage), children under age 18, parents who derive main support from retired agent.

5. If no one is eligible to receive a survivor benefit, then the named beneficiary will receive the member's accumulated contributions.

**OPTIONAL FORMS OF BENEFIT:**

In lieu of receiving a normal retirement benefit, members may elect to receive an actuarial equivalent retirement allowance in a reduced form as follows:

Option 1 If a member dies before receiving present value of annuity in monthly payments, balance paid to designated beneficiary.

Option 2 100% of reduced retirement allowance, if member dies, to be continued to designated beneficiary for his lifetime.

Option 3 50% of reduced retirement allowance, if member dies, to be continued to designated beneficiary for his lifetime.

Option 4 Other benefits of equal actuarial value may be elected with approval of board.

A. 90% of the maximum retirement allowance to member; when member dies, 55% of the maximum retirement allowance continued to beneficiary.

B. Reduced retirement allowance to member; if member dies, 55% of the maximum retirement allowance continues to beneficiary, adjusted based on the age and relationship of the beneficiary to the member.

C. Special reversionary annuities to Options 2, 3, and 4. Member's reduced benefit reverts to the maximum if the beneficiary predeceases the annuitant.

If divorced after retirement, optional benefit can revert to maximum benefit with actuarial adjustment.

Automatic COLA Option – An increasing annuity option permits the member to make an irrevocable election at retirement to receive an actuarially reduced benefit, which increases 2.5% annually. The increases begin on the first retirement anniversary date, but not before the retiree attains age 55 or would have attained age 55 in the case of a surviving spouse. This option can be chosen in combination with the above options.

Initial Benefit Option – Maximum benefit actuarially reduced for partial lump sum equal to not more than 36 months of maximum monthly pension.

**REFUND OF CONTRIBUTIONS:**

If a member ceases to be a member, except by death or retirement, he shall be paid such part of the amount of the accumulated contributions credited to his individual account in annuity savings fund as he shall demand, plus any accumulated interest thereon as of June 30, 1971; if member of legislature, no interest. No interest credited after June 30, 1971. Death prior to retirement - accumulated contributions credited to individual account in annuity savings fund are returnable to designated beneficiary, if any; otherwise, to his estate.

**DEFERRED RETIREMENT OPTION PLAN:**

Instead of terminating employment and accepting a service retirement allowance, any member who has met the normal eligibility requirements may participate in the Deferred Retirement Option Plan (DROP).

Normal Eligibility:

Any member who is eligible for unreduced service retirement allowance may begin participation on the first retirement eligibility date for a period not to exceed the third anniversary of retirement eligibility.

Benefit:

Upon termination of employment, a participant will receive, at his option:

(1) Lump sum payment (equal to the payments to the account);
(2) A true annuity based upon his account; or
(3) Other methods of payment approved by the Board of Trustees.

If a participant dies during the period of participation in the program, his account balance shall be paid to the beneficiary, or if none, to his estate in any form approved by the Board of Trustees.

If employment is not terminated at the end of DROP participation, then:

(1) Payment into account shall cease;
(2) Payment from account only upon termination of employment; and
(3) The participant shall resume active contributing membership.

Then, upon termination of employment, the benefit payments indicated above shall be paid. The participant shall receive an additional retirement benefit based on additional service rendered since termination of participation in the fund, usually the normal method of computation of benefit subject to the following:

(1) If additional service was less than the period used to determine the average compensation, then the average compensation figure used to calculate the additional benefit shall be based on compensation used to determine the initial benefit.
(2) If additional service was greater than the period used to determine the average compensation, the average compensation figure used to calculate the additional benefit shall be based on compensation earned during the period of additional service.

DROP accounts for members who become eligible for retirement prior to January 1, 2004, and participate in DROP shall earn interest, following termination of DROP, at a rate of 0.5% below the actuarial rate of the System's investment portfolio.

Members eligible for retirement on or after January 1, 2004, must invest their DROP accounts in self-directed accounts approved by the Board of Trustees.

## 4. Funding Policies

LASERS' funding policy is generally described in Sections 102 and 102.1 of Title 11 of Louisiana Revised Statutes. LASERS is funded from employee and employer contributions using the Entry Age Normal funding method. The total contribution requirement consists of the normal cost (the value of benefits earned by current active employees allocated to the current year) and the amortization cost (amortization payments necessary to liquidate the unfunded accrued liability). The total contribution percentage is determined as the total contribution requirement divided by the payroll applicable to active members. Employee contribution requirements are set forth in R.S. 11:62. The employer contribution rate is equal to the total contribution rate minus the employee rate.

Employer contribution requirements are determined one year in advance of the fiscal year for which the requirement is used. Differences between projected contributions and actual contributions are defined as a contribution variance. The contribution process is defined below:

a. **Projected Employer Dollar Contribution for FYE 2017** − The June 30, 2015, valuation established the projected employer contribution rate for FYE 2017. The projected dollar contribution for FYE 2017 is equal to the projected employer contribution rate, multiplied by the projected active member payroll for FYE 2017.

b. **Actual Employer Dollar Contribution for FYE 2017** – Actual dollar contributions for FYE 2017 are obtained from system financial statements.

c. **Contribution Variance** – The difference between the Actual Dollar Contribution for FYE 2017 and the Projected Dollar Contribution for FYE 2017, adjusted for investment earnings, is equal to the Contribution Variance. A positive variance means that a contribution surplus occurred for FYE 2017. A negative variance indicates a contribution shortfall or deficit.

d. **Actuarially Determined Employer Contribution Rate for FYE 2018 -** The actuarially determined contribution rate for FYE 2018 is determined by the June 30, 2017, valuation. The normal cost rate for FYE 2018 is equal to the dollar normal cost for FYE 2018 divided by the projected payroll for FYE 2018. The amortization cost rate for FYE 2018 is equal to the sum of all amortization payments for FYE 2018 divided by the projected payroll for FYE 2018. The total contribution rate is the sum of the normal cost rate and the amortization cost rate.

e. **Actuarially Determined Employer Dollar Contribution for FYE 2018 –** The actuarially determined employer dollar contribution for FYE 2018 is determined by the June 30, 2017, actuarial valuation and is equal to the actuarially determined employer contribution rate for FYE 2018 multiplied by the projected payroll for FYE 2018.

f. **Projected Employer Contribution Rate for FYE 2019** − The June 30, 2017, valuation establishes the projected employer contribution rate for FYE 2019. The rate is equal to the projected employer dollar contributions for FYE 2019 divided by the projected active member payroll for FYE 2019.

g. **Projected Employer Dollar Contribution for FYE 2019** − The June 30, 2017 valuation establishes the projected employer contribution rate for FYE 2019. It is equal to the projected employer contribution rate multiplied by the projected active member payroll.

From time to time, additional funding is provided directly by the state out of non-recurring revenue in accordance with Article VII, Section 10(D)(2)(b)(ii). This provision of the Constitution requires such funds to be used to reduce the Original Amortization Base (OAB), which includes the Initial Unfunded Accrued Liability (IUAL). These amounts have been about 1% of the total contribution paid to the retirement system annually since the inception of this constitutional provision in 2014.

According to Article X(29)(E)(2)(a) of the Louisiana Constitution, the minimum employer contribution that may be made to LASERS is equal to 10.9% and 11.7%, depending on whether the employee was hired on or before June 30, 2006, or on or after July 1, 2006, respectively. The legislature established a larger minimum employer contribution rate in the 2004 session. This legislative minimum is 15.5% of pay. Any amount made in excess of the legislative minimum will be deposited and accumulated in the Employer Credit Account. Amounts in the Employer Credit Account may be used only to reduce any UAL established before July 1, 2004.

## 5. Actuarial Methods

**Cost Method**:

The Entry Age Normal (EAN) funding method is the method required under R.S. 11:22 of Louisiana law to produce annual employer contribution requirements. The EAN method generally produces normal costs that are level as a percentage of salary through an individual's working career. The EAN method produces an unfunded accrued liability that changes annually. Various methods were used prior to June 30, 2015, to amortize new credits or debits to the unfunded accrued liability. Unfunded accrued liability charges or credits established on June 30, 2015, or in later years, will be amortized in the following manner:

a. Increases or decreases resulting from changes in benefit provisions are amortized with level payments over 10 years.

b. Increases or decreases resulting from decrement gains and losses are amortized with level payments over 30 years.

c. Increases or decreases resulting from changes in actuarial assumptions and methods are amortized with level payments over a 30-year period.

d. Contributions actually made for a given fiscal year will be more or less than the amount actually required. Contribution deficits will be amortized with level payments over a 5-year period. Contribution surpluses will be used to reduce the OAB through FYE 2040 (i.e., immediate amortization). Thereafter, surpluses will be amortized with level payments over 5 years.

e. Increases resulting from actual contributions being less than the actual dollar required contribution are amortized with level payments over 5 years. Decreases resulting from actual contributions being greater than the dollar contribution requirement are used to reduce the OAB through FYE 2040 (i.e., immediate amortization). Decreases thereafter will be amortized with level payments over a 5-year period.

f. Amortization rules pertaining to investment gains and losses are summarized below:

1. Investment losses are amortized with level payments over a 30-year period. Once the system becomes 85% funded, investment gains will be amortized over a 20-year period.

2. Investment gains up to the first investment hurdle ($50 million) are used to reduce the outstanding balance of the OAB. However, the OAB payment schedule will remain the same and the OAB will be paid off sooner than it would otherwise.

3. Investment gains between the first hurdle ($50 million) and the second hurdle ($100 million) are used to reduce the outstanding balance of the Experience Account Amortization Base (EAAB). However, the EAAB payment schedule will remain the

same and the EAAB will be paid off sooner than it would otherwise.

4. Investment gains exceeding the second hurdle, net of transfer to the Experience Account, will not be transferred to the Experience Account, but rather will be amortized over 30 years. Once the system becomes 70% funded, investment gains exceeding the second hurdle will be amortized over a 20-year period.

g. Increases in the unfunded accrued liability resulting from investment gains being transferred from the regular pool of assets to the Experience Account are to be amortized over a 30-year period. Such increases are to be amortized over a 10-year period beginning with the June 30, 2016 valuation.

   This creates a need for remedial legislation, because the gain-sharing COLA program is being accounted for twice. It is first accounted for by the 40 basis point automatic COLA assumption. It is also accounted for through this amortization requirement. One or the other method is needed, not both. We believe that the former method is superior. This issue did not affect the June 30, 2017, valuation because no funds were transferred to the Experience Account on June 30, 2017.

These rules comply with Actuarial Standards of Practice. However, the rules are viewed as a not-recommended practice under the CCA PPC white paper because:

a. Some UAL bases have amortization periods that are longer than 25 years.
b. Increases and decreases in UAL produced by the same cause are not always symmetrical.

The Louisiana Legislature has changed amortization periods several times since 1989. LLA is currently monitoring this type of legislative action and will alert the appropriate legislators and retirement committees if changes are made that would cause the retirement system to fail in its constitutionally mandated requirement to be actuarially sound.

The funding policy described above is consistent with the plan accumulating adequate assets to make benefit payments when due and consistent with improving the funded status of the plan by fully amortizing the unfunded accrued liability. This retirement system is sustainable as long as actuarially determined contributions are paid when due and all actuarial assumptions are realized.

## Asset Valuation Method

The actuarial value of assets is equal to the market value of assets for the current valuation date plus an adjustment to phase in investment gains and losses occurring over the past four year. For June 30, 2017, the preliminary actuarial value is equal to the market value of assets on June 30, 2013, plus 80% of investment gains/losses for FYE 2014, plus 60% of investment gains/losses for FYE 2015, plus 40% of investment gains/losses for FYE 2016, plus 20% of investment gains/losses for FYE 2017.

If the preliminary actuarial value of assets exceeds 120% of the market value on June 30, 2017, then the actuarial value is equal to the average of the preliminary value and 120% of the market value. If the preliminary value is less than 80% of the market value, then the actuarial value is equal to the average of the preliminary value and 80% of the market value. Otherwise, the actuarial value is equal to the preliminary value.

Asset valuation formulas are shown in Section I(5).

## Methods for the Experience Account

A detailed analysis of the Experience Account is presented in Section II. The 2010 amendment to the Louisiana Constitution (Article (10)(29)(F)) and discussions with the LLA's General Counsel and with Legislative staff have led us to reconsider the treatment of the Experience Account process. We have concluded the following:

a. Laws pertaining to transfers of gains to the Experience Account are still in force.

b. However, laws pertaining to COLAs require additional legislation to implement.

c. Therefore, LASERS still has an obligation under the law to fund the Experience Account as determined by Act 399 of 2014. However, disbursements from the Experience Account will occur only after a bill is introduced by the Legislature, passed each house with a two-thirds vote, and signed by the Governor.

We have prepared our employer contribution requirements for FYE 2019 in accordance with our understanding of the law as summarized above and as summarized in Section II.

## Accelerated Reduction of the OAB and EAAB

Specified actuarial gains are used to reduce the outstanding balances of the OAB and the EAAB. These gains include the following special allocations:

a. Specified legislative appropriations reduce the outstanding balance of the OAB.

b. Positive Contribution Variances (or surpluses) reduce the outstanding balance of the OAB.

c. Investment gains falling between $0 and $50 million reduce the outstanding balance of the OAB.

d. Investment gains falling between $50 million and $100 million reduce the outstanding balance of the EAAB.

However, the amortization payment schedule is unaffected by the reduction in the outstanding balance. Although not identified as such in the law, the end result is that the OAB and the EAAB will each consist of two separate accounts – an Amortization Account and an Offset Account. These accounts operate in the following manner:

a. Amortization payments and outstanding balances in the Amortization Account will be unaffected by the special allocation to the OAB and EAAB cited above. This account will operate as if the special allocations did not exist.

b. The special allocations will be accumulated in the Offset Account. The outstanding balance will grow annually with new special allocations and interest based on the discount rate.

c. The outstanding balance of the OAB on any June 30 will be equal to the outstanding balance of the Amortization Account minus the outstanding balance on the Offset Account.

Eventually, the Offset Account will equal or exceed the Amortization Account and the OAB or EAAB will be fully paid.

## Valuation Approval Process

The approval process for annual actuarial valuations for LASERS, as specified in Louisiana law, is summarized below:

a. The LASERS actuary prepares an actuarial valuation which is presented to the LASERS board of trustees for review and approval.

b. The L L A actuary also prepares an actuarial valuation.

c. The actuaries present their valuations to PRSAC. PRSAC approves one of the two valuations presented.

d. The valuation approved by PRSAC is then submitted to the House and Senate Committees on Retirement and the Joint Legislative Committee on the Budget.

e. The PRSAC approved valuation receives automatic approval unless one of the legislative committees elects to overturn the PRSAC approval.

## Benchmarking

Valuation results were tested by comparing normal costs and liability values produced by our

valuation system with values produced by valuation software used by Foster & Foster. Comparisons of values were made for each sub-plan, for each member status category, and for each type of decrement. In aggregate, our accrued liability values were generally within 0.064% of values produced by Foster & Foster. Normal costs were within 0.378%. Comparisons of values by sub-plan, by status category, and by decrement showed larger deviations, but on the whole produced values acceptable for valuation purposes.

Because we could not precisely match results produced by Foster & Foster, normal cost values in our valuation for FYE 2019 were calculated according to the following formula.

**Value = A x B / C, where**

| | | |
|---|---|---|
| A | = | The value produced by Foster & Foster for FYE 2018 using the current set of assumptions. |
| B | = | The value produced by the LLA for FYE 2018 using the revised set of assumptions, and |
| C | = | The value produced by the LLA for FYE 2018 using the current set of assumptions. |

# 6. Actuarial Assumptions

LASERS typically conducts an experience study every five years, but the scope of such a study is not necessarily limited to a 5-year period. However, the observation period for the most recent experience study in general was 2009-2013. Rates used in this valuation are provided separately for Regular Members, Corrections, Wildlife and Fisheries, and Judges. Actuarial assumptions used in the June 30, 2017 valuation are summarized in this section of the report.

## Economic Assumptions

### Assumed Rate of Return on the Actuarial Value of Assets

The assumed rate of return on the actuarial value of assets used for the preparation of actuarially calculated employer contribution requirements for FYE 2018 is 8.25%. The assumed rate of return used to prepare projected employer contribution requirements for FYE 2019 is 6.75%. These rates are net of investment expenses. This 6.75% rate is based on research undertaken by the LLA's actuary and staff.

### The Cost of the Gain-Sharing COLA Program

Unfunded actuarial liabilities as of June 30, 2017 and contribution rates for FYE 2018 were developed using the same assumptions employed by LASERS and its actuary; specifically, a reduction of the net return assumption of 40 basis points.

For contribution rates for FYE 2019, the treatment of the cost of LASERS' gain-sharing COLA program is based on a wholly updated approach. Please refer to Appendix E – Basis For Treatment of Gain-Sharing Cost-of-Living Benefits for further details.

### Assumed Discount Rate

Unfunded actuarial liabilities as of June 30, 2017 and contribution rates for FYE 2018 were developed using the same assumptions employed by LASERS and its actuary; specifically, a discount rate of 7.70%.

For contribution rates for FYE 2019, the discount rate used is 6.75%. Please refer to Appendix C – Basis for Economic Assumptions for further details.

### Assumed Rate of Inflation

The assumed rate of inflation is a component of salary growth and the assumed rate of return.

Unfunded actuarial liabilities as of June 30, 2017 and contribution rates for FYE 2018 were developed using the same assumptions employed by LASERS and its actuary; specifically, an inflation rate of 2.75%.

For contribution rates for FYE 2019, the inflation rate used is 2.25%. Please refer to Appendix C – Basis for Economic Assumptions for further details.

## Administrative Expense

Unfunded actuarial liabilities as of June 30, 2017 and contribution rates for FYE 2018 were developed using the same assumptions employed by LASERS and its actuary; specifically, a reduction of the net return assumption by 15 basis points to account for administrative expenses.

For contribution rates for FYE 2019, the cost of administrative expenses was recognized as an additional normal cost of 0.95% of active member covered payroll. Please refer to Appendix C – Basis for Treatment of Administrative Expenses for further details.

## Mortality Assumption

Unfunded actuarial liabilities as of June 30, 2017 and contribution rates for FYE 2018 were developed using the same assumptions employed by LASERS and its actuary.

For contribution rates for FYE 2019, the treatment of the cost of LASERS' gain-sharing COLA program is based on a wholly updated approach. The mortality assumption has been updated to the RP-2014 mortality tables, adjusted by LASERS-derived mortality experience factors, with mortality improvement projected using the MP-2016 improvement scale (published in 2016). Please refer to Appendix B – Basis For Mortality Assumptions for further details.

## Disability Assumption

Rates of total and permanent disability, based upon attained age, are projected in accordance with the most recent experience study. Mortality assumptions for disability benefits are based upon the RP-2000 disability mortality table with no projection for mortality improvement.

## Retirement/DROP Assumption

Eligibility for normal retirement benefits and participation in DROP is based on age and service requirements that vary by sub-plan. Retirement/DROP decrements differ from one sub-plan to another. These decrements are generally based on the 2013 experience study.

## Termination Assumption

Voluntary termination or withdrawal rates are based on the 2013 Experience Study. Rates for Regular members and Corrections/Hazardous Duty members are based on a combination of age and service. Rates for Judges and Wildlife are based on service. For members hired before July 1, 2015, and terminating with vested benefits, it is assumed that 20% will elect to withdraw their accumulated employee contribution, and 80% will receive a benefit beginning at age 60. For members hired on or after July 1, 2015, and terminating with vested benefits, it is assumed that 20% will elect to withdraw their accumulated employee contribution, and 80% will receive a benefit beginning at age 62.

## Salary Growth

The rates of annual salary growth are based upon the member's years of service and are based on the most recent experience study. The rates include anticipated productivity growth, merit adjustments, and a 2.25% inflation component, which is consistent with the inflation assumptions used to develop the discount rate. For valuation purposes, current salaries and projected future salaries are limited to the

Section 401(a)(17) of the Internal Revenue Service Code 401(a)(17) limit, with future indexed increases.

## Family Statistics

The composition of the family is based upon Current Population Reports published by the United States Census Bureau. Seventy-five percent of the membership is assumed to be married. The wife is assumed to be three years younger than the husband. Sample rates for the assumed number of minor children are as follows:

| Age of Member | Number of Minor Children | Years for Youngest Child to Attain Majority |
|---|---|---|
| 25 | 1.2 | 17 |
| 30 | 1.4 | 15 |
| 35 | 1.7 | 13 |
| 40 | 1.7 | 10 |
| 45 | 1.4 | 8 |
| 50 | 1.1 | 4 |

## Assumption for Incomplete Data

Records identified as containing suspicious data or errors in data were assumed to possess the same characteristics of "good data" in the same cohort of members.

## Converted Leave

Leave credit is accrued throughout a member's career and converted to service credit or paid as a lump sum. Converted leave rates below represent the percentage increase in a retiree's accrued benefit upon conversion of the leave to benefits. The rates, shown below, are based on the most recent experience study.

| | Regular Retirement | Disability |
|---|---|---|
| **Regular Members** | 3.50% | 1.50% |
| **Judicial Members** | 1.00% | 1.00% |
| **Corrections** | 5.00% | 3.00% |
| **Wildlife** | 6.00% | 3.00% |

## Capital Market Assumptions

The assumed investment return on the actuarial value of assets used in the preparation of June 30, 2017 liabilities and contribution requirements for FYE 2018 is 8.25%. The assumed investment return on the actuarial value of assets used in the preparation of projected June 30, 2018 liabilities and contribution requirements for FYE 2019 is 6.75%.

## RP-2000 MORTALITY TABLE WITH PROJECTION TO 2015 WITH SCALE AA FOR ALL SUB PLANS

| | Mortality Rate | | | Mortality Rate | | | Mortality Rate | |
|---|---|---|---|---|---|---|---|---|
| Age | Male | Female | Age | Male | Female | Age | Male | Female |
| 18 | 0.000237 | 0.000152 | 53 | 0.002154 | 0.001841 | 88 | 0.139683 | 0.101042 |
| 19 | 0.000248 | 0.000151 | 54 | 0.002360 | 0.002085 | 89 | 0.154366 | 0.113903 |
| 20 | 0.000259 | 0.000150 | 55 | 0.002718 | 0.002409 | 90 | 0.172706 | 0.125879 |
| 21 | 0.000272 | 0.000148 | 56 | 0.003198 | 0.002823 | 91 | 0.188113 | 0.138232 |
| 22 | 0.000283 | 0.000150 | 57 | 0.003629 | 0.003226 | 92 | 0.207060 | 0.150672 |
| 23 | 0.000297 | 0.000155 | 58 | 0.004140 | 0.003639 | 93 | 0.223365 | 0.165391 |
| 24 | 0.000309 | 0.000160 | 59 | 0.004667 | 0.004119 | 94 | 0.239646 | 0.177391 |
| 25 | 0.000323 | 0.000168 | 60 | 0.005297 | 0.004689 | 95 | 0.259578 | 0.188755 |
| 26 | 0.000345 | 0.000179 | 61 | 0.006119 | 0.005393 | 96 | 0.275506 | 0.199303 |
| 27 | 0.000354 | 0.000186 | 62 | 0.006981 | 0.006175 | 97 | 0.290981 | 0.212034 |
| 28 | 0.000365 | 0.000196 | 63 | 0.008104 | 0.007094 | 98 | 0.310600 | 0.220611 |
| 29 | 0.000382 | 0.000207 | 64 | 0.009130 | 0.007995 | 99 | 0.325288 | 0.227940 |
| 30 | 0.000412 | 0.000227 | 65 | 0.010309 | 0.009003 | 100 | 0.339424 | 0.233930 |
| 31 | 0.000463 | 0.000272 | 66 | 0.011841 | 0.010161 | 101 | 0.358628 | 0.244834 |
| 32 | 0.000521 | 0.000310 | 67 | 0.013210 | 0.011282 | 102 | 0.371685 | 0.254498 |
| 33 | 0.000585 | 0.000344 | 68 | 0.014464 | 0.012471 | 103 | 0.383040 | 0.266044 |
| 34 | 0.000651 | 0.000374 | 69 | 0.016027 | 0.013784 | 104 | 0.392003 | 0.279055 |
| 35 | 0.000717 | 0.000402 | 70 | 0.017702 | 0.015529 | 105 | 0.397886 | 0.293116 |
| 36 | 0.000780 | 0.000429 | 71 | 0.019586 | 0.016975 | 106 | 0.400000 | 0.307811 |
| 37 | 0.000839 | 0.000455 | 72 | 0.021747 | 0.018881 | 107 | 0.400000 | 0.322725 |
| 38 | 0.000881 | 0.000484 | 73 | 0.024223 | 0.020673 | 108 | 0.400000 | 0.337441 |
| 39 | 0.000919 | 0.000517 | 74 | 0.027024 | 0.022912 | 109 | 0.400000 | 0.351544 |
| 40 | 0.000957 | 0.000563 | 75 | 0.030622 | 0.024916 | 110 | 0.400000 | 0.364617 |
| 41 | 0.000997 | 0.000617 | 76 | 0.034131 | 0.027451 | 111 | 0.400000 | 0.376246 |
| 42 | 0.001045 | 0.000679 | 77 | 0.038547 | 0.030694 | 112 | 0.400000 | 0.386015 |
| 43 | 0.001100 | 0.000747 | 78 | 0.043489 | 0.033835 | 113 | 0.400000 | 0.393507 |
| 44 | 0.001166 | 0.000820 | 79 | 0.049071 | 0.037355 | 114 | 0.400000 | 0.398308 |
| 45 | 0.001239 | 0.000882 | 80 | 0.055360 | 0.041291 | 115 | 0.400000 | 0.400000 |
| 46 | 0.001308 | 0.000946 | 81 | 0.062905 | 0.045702 | 116 | 0.400000 | 0.400000 |
| 47 | 0.001382 | 0.001010 | 82 | 0.071350 | 0.050664 | 117 | 0.400000 | 0.400000 |
| 48 | 0.001460 | 0.001092 | 83 | 0.079534 | 0.056255 | 118 | 0.400000 | 0.400000 |
| 49 | 0.001543 | 0.001180 | 84 | 0.089800 | 0.062565 | 119 | 0.400000 | 0.400000 |
| 50 | 0.001628 | 0.001296 | 85 | 0.099680 | 0.070761 | 120 | 1.000000 | 1.000000 |
| 51 | 0.001837 | 0.001454 | 86 | 0.110516 | 0.080120 | | | |
| 52 | 0.001970 | 0.001633 | 87 | 0.124300 | 0.090716 | | | |

## RP-2014 MORTALITY TABLE (158% MALE/136% FEMALE)
## PROJECTED GENERATIONALLY WITH SCALE MP-2016 (No Projection in Table)

| | Mortality Rate | | | Mortality Rate | | | Mortality Rate | |
|---|---|---|---|---|---|---|---|---|
| Age | Male | Female | Age | Male | Female | Age | Male | Female |
| 18 | 0.000518 | 0.000214 | 53 | 0.004160 | 0.002249 | 88 | 0.171574 | 0.115913 |
| 19 | 0.000583 | 0.000220 | 54 | 0.004698 | 0.002501 | 89 | 0.191968 | 0.129966 |
| 20 | 0.000641 | 0.000220 | 55 | 0.005278 | 0.002772 | 90 | 0.214735 | 0.145691 |
| 21 | 0.000709 | 0.000220 | 56 | 0.005909 | 0.003066 | 91 | 0.239089 | 0.162852 |
| 22 | 0.000771 | 0.000220 | 57 | 0.006596 | 0.003388 | 92 | 0.264527 | 0.181287 |
| 23 | 0.000804 | 0.000226 | 58 | 0.007347 | 0.003747 | 93 | 0.290767 | 0.200899 |
| 24 | 0.000815 | 0.000230 | 59 | 0.008173 | 0.004149 | 94 | 0.317697 | 0.221641 |
| 25 | 0.000765 | 0.000235 | 60 | 0.009081 | 0.004606 | 95 | 0.345323 | 0.243486 |
| 26 | 0.000730 | 0.000243 | 61 | 0.010083 | 0.005125 | 96 | 0.373725 | 0.266428 |
| 27 | 0.000709 | 0.000254 | 62 | 0.011187 | 0.005714 | 97 | 0.402993 | 0.290448 |
| 28 | 0.000702 | 0.000267 | 63 | 0.012407 | 0.006382 | 98 | 0.433189 | 0.315508 |
| 29 | 0.000705 | 0.000280 | 64 | 0.013753 | 0.007135 | 99 | 0.464280 | 0.341527 |
| 30 | 0.000714 | 0.000296 | 65 | 0.015239 | 0.007986 | 100 | 0.496101 | 0.368367 |
| 31 | 0.000732 | 0.000314 | 66 | 0.016797 | 0.008995 | 101 | 0.528297 | 0.395814 |
| 32 | 0.000754 | 0.000332 | 67 | 0.018522 | 0.010128 | 102 | 0.560266 | 0.423564 |
| 33 | 0.000777 | 0.000351 | 68 | 0.020434 | 0.011401 | 103 | 0.591748 | 0.451384 |
| 34 | 0.000803 | 0.000370 | 69 | 0.022555 | 0.012829 | 104 | 0.622492 | 0.479036 |
| 35 | 0.000826 | 0.000389 | 70 | 0.024912 | 0.014434 | 105 | 0.652273 | 0.506291 |
| 36 | 0.000847 | 0.000408 | 71 | 0.027529 | 0.016234 | 106 | 0.680895 | 0.532930 |
| 37 | 0.000871 | 0.000432 | 72 | 0.030437 | 0.018251 | 107 | 0.708199 | 0.558755 |
| 38 | 0.000901 | 0.000461 | 73 | 0.033674 | 0.020511 | 108 | 0.734055 | 0.583592 |
| 39 | 0.000940 | 0.000496 | 74 | 0.037281 | 0.023042 | 109 | 0.758379 | 0.607300 |
| 40 | 0.000992 | 0.000539 | 75 | 0.041307 | 0.025882 | 110 | 0.781114 | 0.629763 |
| 41 | 0.001060 | 0.000589 | 76 | 0.045817 | 0.029074 | 111 | 0.790000 | 0.650901 |
| 42 | 0.001146 | 0.000649 | 77 | 0.050884 | 0.032676 | 112 | 0.790000 | 0.670666 |
| 43 | 0.001253 | 0.000719 | 78 | 0.056595 | 0.036757 | 113 | 0.790000 | 0.680000 |
| 44 | 0.001384 | 0.000801 | 79 | 0.063051 | 0.041396 | 114 | 0.790000 | 0.680000 |
| 45 | 0.001537 | 0.000894 | 80 | 0.070369 | 0.046688 | 115 | 0.790000 | 0.680000 |
| 46 | 0.001717 | 0.000997 | 81 | 0.078676 | 0.052745 | 116 | 0.790000 | 0.680000 |
| 47 | 0.001920 | 0.001110 | 82 | 0.087731 | 0.058815 | 117 | 0.790000 | 0.680000 |
| 48 | 0.002146 | 0.001232 | 83 | 0.097954 | 0.065695 | 118 | 0.790000 | 0.680000 |
| 49 | 0.002394 | 0.001361 | 84 | 0.109478 | 0.073484 | 119 | 0.790000 | 0.680000 |
| 50 | 0.002781 | 0.001570 | 85 | 0.122445 | 0.082285 | 120 | 1.000000 | 1.000000 |
| 51 | 0.003204 | 0.001785 | 86 | 0.137005 | 0.092209 | | | |
| 52 | 0.003664 | 0.002011 | 87 | 0.153320 | 0.103376 | | | |

## RANK AND FILE SUB PLAN (INCLUDING APPELLATE LAW CLERKS)
## ACTUARIAL TABLES AND RATES

| Age | Disability Rates | Termination Rates | | | | | | | | | Duration | Salary Merit Scale* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | < 1 Year | 1 Year | 2-3 Years | 4-5 Years | 6 Years | 7 Years | 8 Years | 9 Years | >=10 Years | | |
| 18 | 0.0000 | 0.450 | 0.300 | 0.220 | 0.140 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 0 | 0.0971 |
| 19 | 0.0000 | 0.450 | 0.300 | 0.220 | 0.140 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 1 | 0.0485 |
| 20 | 0.0000 | 0.450 | 0.300 | 0.220 | 0.140 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 2 | 0.0388 |
| 21 | 0.0000 | 0.400 | 0.300 | 0.220 | 0.140 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 3 | 0.0340 |
| 22 | 0.0000 | 0.350 | 0.250 | 0.220 | 0.140 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 4 | 0.0291 |
| 23 | 0.0000 | 0.290 | 0.250 | 0.220 | 0.130 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 5 | 0.0267 |
| 24 | 0.0000 | 0.290 | 0.210 | 0.210 | 0.120 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 6 | 0.0248 |
| 25 | 0.0000 | 0.290 | 0.207 | 0.200 | 0.118 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 7 | 0.0233 |
| 26 | 0.0000 | 0.290 | 0.204 | 0.200 | 0.116 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 8 | 0.0223 |
| 27 | 0.0000 | 0.290 | 0.201 | 0.190 | 0.114 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 9 | 0.0214 |
| 28 | 0.0000 | 0.290 | 0.198 | 0.180 | 0.112 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 10 | 0.0204 |
| 29 | 0.0001 | 0.290 | 0.195 | 0.170 | 0.110 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 11 | 0.0194 |
| 30 | 0.0001 | 0.290 | 0.192 | 0.170 | 0.108 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 12 | 0.0184 |
| 31 | 0.0001 | 0.290 | 0.189 | 0.160 | 0.106 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 13 | 0.0175 |
| 32 | 0.0001 | 0.290 | 0.186 | 0.150 | 0.104 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 14 | 0.0165 |
| 33 | 0.0001 | 0.290 | 0.183 | 0.130 | 0.102 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 15 | 0.0155 |
| 34 | 0.0001 | 0.290 | 0.180 | 0.130 | 0.100 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 16 | 0.0146 |
| 35 | 0.0004 | 0.290 | 0.177 | 0.130 | 0.098 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 17 | 0.0136 |
| 36 | 0.0004 | 0.285 | 0.174 | 0.130 | 0.096 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 18 | 0.0126 |
| 37 | 0.0004 | 0.280 | 0.171 | 0.120 | 0.094 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 19 | 0.0117 |
| 38 | 0.0004 | 0.275 | 0.168 | 0.120 | 0.092 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 20 | 0.0107 |
| 39 | 0.0004 | 0.270 | 0.165 | 0.120 | 0.090 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 21 | 0.0097 |
| 40 | 0.0004 | 0.265 | 0.162 | 0.110 | 0.088 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 22 | 0.0097 |
| 41 | 0.0014 | 0.260 | 0.159 | 0.110 | 0.086 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 23 | 0.0097 |
| 42 | 0.0014 | 0.255 | 0.156 | 0.110 | 0.084 | 0.100 | 0.080 | 0.070 | 0.060 | 0.050 | 24 | 0.0097 |
| 43 | 0.0014 | 0.250 | 0.153 | 0.080 | 0.082 | 0.080 | 0.070 | 0.060 | 0.050 | 0.040 | 25 | 0.0097 |
| 44 | 0.0014 | 0.245 | 0.150 | 0.080 | 0.080 | 0.080 | 0.070 | 0.060 | 0.050 | 0.040 | 26 | 0.0097 |
| 45 | 0.0022 | 0.240 | 0.147 | 0.080 | 0.078 | 0.080 | 0.070 | 0.060 | 0.050 | 0.040 | 27 | 0.0097 |
| 46 | 0.0022 | 0.235 | 0.144 | 0.080 | 0.076 | 0.080 | 0.070 | 0.060 | 0.050 | 0.040 | 28 | 0.0097 |
| 47 | 0.0022 | 0.230 | 0.141 | 0.080 | 0.074 | 0.080 | 0.070 | 0.060 | 0.050 | 0.040 | 29 | 0.0097 |
| 48 | 0.0028 | 0.225 | 0.138 | 0.080 | 0.072 | 0.080 | 0.070 | 0.060 | 0.050 | 0.040 | 30 | 0.0097 |
| 49 | 0.0028 | 0.220 | 0.135 | 0.080 | 0.070 | 0.080 | 0.070 | 0.060 | 0.050 | 0.040 | 31 | 0.0097 |
| 50 | 0.0028 | 0.215 | 0.132 | 0.080 | 0.068 | 0.080 | 0.070 | 0.060 | 0.050 | 0.040 | 32 | 0.0097 |
| 51 | 0.0028 | 0.210 | 0.129 | 0.080 | 0.066 | 0.080 | 0.070 | 0.060 | 0.050 | 0.040 | 33 | 0.0097 |
| 52 | 0.0036 | 0.205 | 0.126 | 0.080 | 0.064 | 0.080 | 0.070 | 0.060 | 0.050 | 0.040 | 34 | 0.0097 |
| 53 | 0.0036 | 0.200 | 0.123 | 0.080 | 0.062 | 0.080 | 0.070 | 0.060 | 0.050 | 0.040 | 35 | 0.0097 |
| 54 | 0.0036 | 0.195 | 0.120 | 0.080 | 0.060 | 0.080 | 0.070 | 0.060 | 0.050 | 0.040 | 36 | 0.0097 |
| 55 | 0.0036 | 0.190 | 0.117 | 0.080 | 0.058 | 0.080 | 0.070 | 0.060 | 0.050 | 0.040 | 37 | 0.0097 |
| 56 | 0.0036 | 0.185 | 0.114 | 0.080 | 0.056 | 0.080 | 0.070 | 0.060 | 0.050 | 0.040 | 38 | 0.0097 |
| 57 | 0.0048 | 0.180 | 0.111 | 0.080 | 0.054 | 0.080 | 0.070 | 0.060 | 0.050 | 0.040 | 39 | 0.0097 |
| 58 | 0.0048 | 0.175 | 0.108 | 0.080 | 0.052 | 0.080 | 0.070 | 0.060 | 0.050 | 0.040 | >=40 | 0.0097 |
| 59 | 0.0040 | 0.170 | 0.105 | 0.080 | 0.050 | 0.080 | 0.070 | 0.060 | 0.050 | 0.040 | | |
| >=60 | 0.0000 | 0.165 | 0.102 | 0.080 | 0.048 | 0.080 | 0.070 | 0.060 | 0.050 | 0.040 | | |

*Salary Scale is (1+ Inflation) x (1+ Salary Merit)

The inflation rate for the Fiscal Year 2018 contributions is 2.75%; however, the inflation rate beginning with the Fiscal Year 2019 contribution will be 2.25%.

## RANK AND FILE SUB PLAN (EXCLUDING APPELLATE LAW CLERKS) ACTUARIAL TABLES AND RATES

*Retirement Rates for Appellate Law Clerks are the same as Judges on the next page

| Age | Retirement/DROP Rates* | | | | |
|---|---|---|---|---|---|
| | 0-9 Years | 10-19 Years | 20-24 Years | 25-29 Years | >=30 Years |
| <=34 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 35 | 0.000 | 0.000 | 0.020 | 0.030 | 0.000 |
| 36 | 0.000 | 0.000 | 0.020 | 0.030 | 0.000 |
| 37 | 0.000 | 0.000 | 0.020 | 0.030 | 0.000 |
| 38 | 0.000 | 0.000 | 0.020 | 0.030 | 0.000 |
| 39 | 0.000 | 0.000 | 0.020 | 0.030 | 0.000 |
| 40 | 0.000 | 0.000 | 0.020 | 0.030 | 0.000 |
| 41 | 0.000 | 0.000 | 0.020 | 0.030 | 0.000 |
| 42 | 0.000 | 0.000 | 0.020 | 0.030 | 0.000 |
| 43 | 0.000 | 0.000 | 0.020 | 0.030 | 0.000 |
| 44 | 0.000 | 0.000 | 0.020 | 0.030 | 0.000 |
| 45 | 0.000 | 0.000 | 0.020 | 0.030 | 0.030 |
| 46 | 0.000 | 0.000 | 0.020 | 0.030 | 0.030 |
| 47 | 0.000 | 0.000 | 0.020 | 0.030 | 0.500 |
| 48 | 0.000 | 0.000 | 0.020 | 0.060 | 0.500 |
| 49 | 0.000 | 0.000 | 0.020 | 0.070 | 0.500 |
| 50 | 0.000 | 0.000 | 0.030 | 0.070 | 0.430 |
| 51 | 0.000 | 0.000 | 0.030 | 0.070 | 0.400 |
| 52 | 0.000 | 0.000 | 0.030 | 0.080 | 0.470 |
| 53 | 0.000 | 0.000 | 0.030 | 0.120 | 0.440 |
| 54 | 0.000 | 0.000 | 0.060 | 0.280 | 0.470 |
| 55 | 0.000 | 0.000 | 0.080 | 0.550 | 0.300 |
| 56 | 0.000 | 0.000 | 0.080 | 0.320 | 0.250 |
| 57 | 0.000 | 0.000 | 0.080 | 0.300 | 0.220 |
| 58 | 0.000 | 0.000 | 0.080 | 0.280 | 0.200 |
| 59 | 0.000 | 0.000 | 0.250 | 0.350 | 0.180 |
| 60 | 0.100 | 0.330 | 0.550 | 0.300 | 0.240 |
| 61 | 0.250 | 0.180 | 0.210 | 0.180 | 0.220 |
| 62 | 0.250 | 0.160 | 0.200 | 0.180 | 0.250 |
| 63 | 0.250 | 0.160 | 0.150 | 0.250 | 0.250 |
| 64 | 0.250 | 0.170 | 0.150 | 0.180 | 0.250 |
| 65 | 0.250 | 0.240 | 0.250 | 0.250 | 0.250 |
| 66 | 0.250 | 0.160 | 0.250 | 0.200 | 0.300 |
| 67 | 0.250 | 0.230 | 0.300 | 0.180 | 0.350 |
| 68 | 0.250 | 0.230 | 0.100 | 0.180 | 0.200 |
| 69 | 0.250 | 0.230 | 0.250 | 0.400 | 0.200 |
| 70 | 0.750 | 0.230 | 0.250 | 0.350 | 0.250 |
| 71 | 0.750 | 0.230 | 0.250 | 0.350 | 0.250 |
| 72 | 0.750 | 0.230 | 0.250 | 0.350 | 0.250 |
| 73 | 0.750 | 0.230 | 0.250 | 0.350 | 0.250 |
| 74 | 0.750 | 0.230 | 0.250 | 0.350 | 0.250 |
| >=75 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

## PRE 2011 JUDGES SUB PLAN AND POST 2011 JUDGES SUB PLAN ACTUARIAL TABLES AND RATES

| | | Retirement Rates | | | | | |
|---|---|---|---|---|---|---|---|
| | Disability | (Also Applies to Appellate Law Clerks) | | | | Termination | Salary Merit |
| Age | Rates | 0-14 Years | 15-19 Years | >=20 Years | Duration | Rates | Scale* |
| <=45 | 0.000 | 0.000 | 0.000 | 0.000 | 0 | 0.000 | 0.0243 |
| 46 | 0.000 | 0.000 | 0.200 | 0.000 | 1 | 0.030 | 0.0000 |
| 47 | 0.000 | 0.000 | 0.200 | 0.000 | 2 | 0.040 | 0.0000 |
| 48 | 0.000 | 0.000 | 0.200 | 0.000 | 3 | 0.030 | 0.0000 |
| 49 | 0.000 | 0.000 | 0.200 | 0.050 | 4 | 0.020 | 0.0000 |
| 50 | 0.000 | 0.000 | 0.200 | 0.050 | 5 | 0.010 | 0.0000 |
| 51 | 0.000 | 0.000 | 0.100 | 0.050 | 6 | 0.010 | 0.0000 |
| 52 | 0.000 | 0.000 | 0.100 | 0.050 | 7 | 0.010 | 0.0000 |
| 53 | 0.000 | 0.000 | 0.100 | 0.050 | 8 | 0.010 | 0.0000 |
| 54 | 0.000 | 0.000 | 0.200 | 0.050 | 9 | 0.010 | 0.0000 |
| 55 | 0.000 | 0.050 | 0.200 | 0.100 | 10 | 0.010 | 0.0000 |
| 56 | 0.000 | 0.050 | 0.100 | 0.060 | 11 | 0.010 | 0.0000 |
| 57 | 0.000 | 0.100 | 0.020 | 0.060 | 12+ | 0.010 | 0.0000 |
| 58 | 0.000 | 0.050 | 0.020 | 0.060 | | | |
| 59 | 0.000 | 0.050 | 0.020 | 0.080 | | | |
| 60 | 0.000 | 0.100 | 0.020 | 0.080 | | | |
| 61 | 0.000 | 0.100 | 0.020 | 0.120 | | | |
| 62 | 0.000 | 0.200 | 0.020 | 0.120 | | | |
| 63 | 0.000 | 0.200 | 0.020 | 0.060 | | | |
| 64 | 0.000 | 0.150 | 0.100 | 0.060 | | | |
| 65 | 0.000 | 0.500 | 0.100 | 0.060 | | | |
| 66 | 0.000 | 0.100 | 0.100 | 0.110 | | | |
| 67 | 0.000 | 0.100 | 0.100 | 0.100 | | | |
| 68 | 0.000 | 0.100 | 0.100 | 0.100 | | | |
| 69 | 0.000 | 0.100 | 0.100 | 0.100 | | | |
| 70 | 0.000 | 0.100 | 0.100 | 0.100 | | | |
| 71 | 0.000 | 0.050 | 0.400 | 0.400 | | | |
| 72 | 0.000 | 0.050 | 0.400 | 0.400 | | | |
| 73 | 0.000 | 0.050 | 0.400 | 0.400 | | | |
| 74 | 0.000 | 0.050 | 0.400 | 0.400 | | | |
| >=75 | 0.000 | 1 | 1 | 1 | | | |

*Salary Scale is (1+ Inflation) x (1+ Salary Merit)

The inflation rate for the Fiscal Year 2018 contributions is 2.75%; however, the inflation rate beginning with the Fiscal Year 2019 contribution will be 2.25%.

## HAZARDOUS DUTY, CORRECTIONS AND WILDLLIFE ACTUARIAL TABLES AND RATES

| Age | Disability Rates | Retirement/DROP Rates | | Termination Rates (Hazardous Duty and Corrections Only) | | Duration | Termination Rates (Wildlife Only) | Salary Merit Scale |
|---|---|---|---|---|---|---|---|---|
| | | 0-24 Years | >=25 Years | 0-9 Years | >=10 Years | | | |
| <=17 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0 | 0.080 | 0.1117 |
| 18 | 0.000 | 0.200 | 0.250 | 0.500 | 0.000 | 1 | 0.080 | 0.0519 |
| 19 | 0.000 | 0.200 | 0.250 | 0.500 | 0.000 | 2 | 0.080 | 0.0388 |
| 20 | 0.000 | 0.200 | 0.250 | 0.460 | 0.000 | 3 | 0.080 | 0.0379 |
| 21 | 0.000 | 0.200 | 0.250 | 0.420 | 0.000 | 4 | 0.050 | 0.0330 |
| 22 | 0.000 | 0.200 | 0.250 | 0.380 | 0.000 | 5 | 0.050 | 0.0320 |
| 23 | 0.000 | 0.200 | 0.250 | 0.350 | 0.100 | 6 | 0.030 | 0.0316 |
| 24 | 0.000 | 0.200 | 0.250 | 0.320 | 0.100 | 7 | 0.030 | 0.0311 |
| 25 | 0.000 | 0.200 | 0.250 | 0.290 | 0.100 | 8 | 0.030 | 0.0306 |
| 26 | 0.000 | 0.200 | 0.250 | 0.270 | 0.100 | 9 | 0.030 | 0.0301 |
| 27 | 0.000 | 0.200 | 0.250 | 0.250 | 0.100 | 10 | 0.030 | 0.0296 |
| 28 | 0.000 | 0.200 | 0.250 | 0.230 | 0.100 | 11 | 0.030 | 0.0291 |
| 29 | 0.000 | 0.200 | 0.250 | 0.210 | 0.100 | 12 | 0.030 | 0.0286 |
| 30 | 0.000 | 0.200 | 0.250 | 0.200 | 0.100 | 13 | 0.030 | 0.0282 |
| 31 | 0.000 | 0.200 | 0.250 | 0.200 | 0.100 | 14 | 0.030 | 0.0277 |
| 32 | 0.000 | 0.200 | 0.250 | 0.200 | 0.100 | 15 | 0.030 | 0.0272 |
| 33 | 0.000 | 0.200 | 0.250 | 0.200 | 0.080 | 16 | 0.030 | 0.0267 |
| 34 | 0.000 | 0.200 | 0.250 | 0.200 | 0.080 | 17 | 0.030 | 0.0262 |
| 35 | 0.002 | 0.200 | 0.250 | 0.200 | 0.080 | 18 | 0.030 | 0.0257 |
| 36 | 0.002 | 0.200 | 0.250 | 0.180 | 0.060 | 19 | 0.030 | 0.0252 |
| 37 | 0.002 | 0.200 | 0.250 | 0.180 | 0.060 | 20 | 0.030 | 0.0248 |
| 38 | 0.002 | 0.200 | 0.250 | 0.180 | 0.060 | 21 | 0.030 | 0.0243 |
| 39 | 0.002 | 0.200 | 0.250 | 0.180 | 0.060 | 22 | 0.030 | 0.0243 |
| 40 | 0.003 | 0.200 | 0.250 | 0.180 | 0.050 | 23 | 0.030 | 0.0238 |
| 41 | 0.003 | 0.200 | 0.250 | 0.180 | 0.050 | 24 | 0.030 | 0.0238 |
| 42 | 0.003 | 0.200 | 0.250 | 0.180 | 0.050 | 25 | 0.030 | 0.0243 |
| 43 | 0.003 | 0.200 | 0.250 | 0.180 | 0.050 | 26 | 0.030 | 0.0243 |
| 44 | 0.003 | 0.200 | 0.250 | 0.180 | 0.060 | 27 | 0.030 | 0.0155 |
| 45 | 0.003 | 0.200 | 0.250 | 0.170 | 0.060 | 28 | 0.030 | 0.0155 |
| 46 | 0.003 | 0.200 | 0.250 | 0.170 | 0.060 | 29 | 0.030 | 0.0150 |
| 47 | 0.003 | 0.200 | 0.250 | 0.170 | 0.060 | 30 | 0.030 | 0.0058 |
| 48 | 0.003 | 0.200 | 0.250 | 0.170 | 0.060 | 31 | 0.030 | 0.0058 |
| 49 | 0.003 | 0.200 | 0.250 | 0.170 | 0.070 | 32 | 0.030 | 0.0058 |
| 50 | 0.003 | 0.350 | 0.200 | 0.130 | 0.070 | 33 | 0.030 | 0.0058 |

*Salary Scale is (1+ Inflation) x (1+ Salary Merit)

The inflation rate for the Fiscal Year 2018 contributions is 2.75%; however, the inflation rate beginning with the Fiscal Year 2019 contribution will be 2.25%.

## HAZARDOUS DUTY, CORRECTIONS AND WILDLLIFE
## ACI'UARIAL TABLES AND RATES

| Age | Disability Rates | Retirement/DROP Rates | | Termination Rates (Hazardous Duty and Corrections Only) | | Duration | Termination Rates (Wildlife Only) | Salary Merit Scale |
|---|---|---|---|---|---|---|---|---|
| | | 0-24 Years | >=25 Years | 0-9 Years | >=10 Years | | | |
| 51 | 0.003 | 0.100 | 0.250 | 0.130 | 0.070 | 34 | 0.030 | 0.0058 |
| 52 | 0.005 | 0.250 | 0.350 | 0.130 | 0.070 | 35 | 0.030 | 0.0058 |
| 53 | 0.005 | 0.250 | 0.350 | 0.130 | 0.070 | 36 | 0.030 | 0.0058 |
| 54 | 0.005 | 0.300 | 0.350 | 0.130 | 0.100 | 37 | 0.030 | 0.0058 |
| 55 | 0.008 | 0.300 | 0.350 | 0.130 | 0.100 | 38 | 0.030 | 0.0058 |
| 56 | 0.008 | 0.300 | 0.350 | 0.130 | 0.100 | 39 | 0.030 | 0.0058 |
| 57 | 0.008 | 0.300 | 0.350 | 0.130 | 0.100 | >=40 | 0.030 | 0.0058 |
| 58 | 0.008 | 0.300 | 0.350 | 0.130 | 0.100 | | | |
| 59 | 0.008 | 0.300 | 0.350 | 0.130 | 0.100 | | | |
| 60 | 0.000 | 0.450 | 0.500 | 0.130 | 0.100 | | | |
| 61 | 0.000 | 0.400 | 0.500 | 0.130 | 0.100 | | | |
| 62 | 0.000 | 0.400 | 0.500 | 0.130 | 0.100 | | | |
| 63 | 0.000 | 0.400 | 0.500 | 0.130 | 0.100 | | | |
| 64 | 0.000 | 0.400 | 0.500 | 0.130 | 0.100 | | | |
| 65 | 0.000 | 0.350 | 0.500 | 0.130 | 0.100 | | | |
| 66 | 0.000 | 0.350 | 0.500 | 0.130 | 0.100 | | | |
| 67 | 0.000 | 0.350 | 0.500 | 0.130 | 0.100 | | | |
| 68 | 0.000 | 0.350 | 0.500 | 0.130 | 0.100 | | | |
| 69 | 0.000 | 0.350 | 0.500 | 0.130 | 0.100 | | | |
| 70 | 0.000 | 0.500 | 0.500 | 0.130 | 0.100 | | | |
| 71 | 0.000 | 0.500 | 0.500 | 0.130 | 0.100 | | | |
| 72 | 0.000 | 0.500 | 0.500 | 0.130 | 0.100 | | | |
| 73 | 0.000 | 0.500 | 0.500 | 0.130 | 0.100 | | | |
| 74 | 0.000 | 0.500 | 0.500 | 0.130 | 0.100 | | | |
| >=75 | 0.000 | 1.000 | 1.000 | 0.130 | 0.100 | | | |

*Salary Scale is (1+ Inflation) x (1+ Salary Merit)
The inflation rate for the Fiscal Year 2018 contributions is 2.75%; however, the inflation rate beginning with the Fiscal Year 2019 contribution will be 2.25%.

# APPENDIX A CONTRIBUTION RATES FOR SUB-PLANS

# Appendix A: Employer Contribution Requirements for FYE 2019 - Sub-plans and Special Funds

The calculations of employer contribution rates for FYE 2019 for employers participating in each sub-plan of LASERS are shown below. These contribution requirements are based on revised assumptions and methods.

**A. Rank and File Sub Plan**

| | Dollar Contribution | Projected Payroll | Contribution Rate |
|---|---|---|---|
| Normal Cost | $ 108,282,384 | $ 1,613,964,294 | 6.709094% |
| Shared Amortization Costs | 639,753,041 | | 39.638612% |
| Plan Specific Costs | 712,230 | | 0.044129% |
| Total | $ 748,747,655 | | 46.391835% |

**B. Appellate Law Clerks Sub Plan**

| | Dollar Contribution | Projected Payroll | Contribution Rate |
|---|---|---|---|
| Normal Cost | $ 737,214 | $ 10,096,733 | 7.301510% |
| Shared Amortization Costs | 4,002,205 | | 39.638612% |
| Plan Specific Costs | - | | 0.000000% |
| Total | $ 4,739,419 | | 46.940122% |

**C. Pre-2011 Judges and Court Officers Sub Plan**

| | Dollar Contribution | Projected Payroll | Contribution Rate |
|---|---|---|---|
| Normal Cost | $ 3,022,158 | $ 31,893,710 | 9.475719% |
| Shared Amortization Costs | 12,642,224 | | 39.638613% |
| Plan Specific Costs | - | | 0.000000% |
| Total | $ 15,664,382 | | 49.114331% |

**D. Post-2011 Judges Sub Plan**

| | Dollar Contribution | Projected Payroll | Contribution Rate |
|---|---|---|---|
| Normal Cost | $ 1,505,590 | $ 18,275,540 | 8.238277% |
| Shared Amortization Costs | 7,244,170 | | 39.638610% |
| Plan Specific Costs | - | | 0.000000% |
| Total | $ 8,749,760 | | 47.876888% |

**E. Legislators Sub Plan**

| | Dollar Contribution | Projected Payroll | Contribution Rate |
|---|---|---|---|
| Normal Cost | $ 43,157 | $ 323,333 | 13.347436% |
| Shared Amortization Costs | 128,165 | | 39.638701% |
| Plan Specific Costs | - | | 0.000000% |
| Total | $ 171,322 | | 52.986136% |

**G. Corrections Officers Primary Sub Plan**

| | Dollar Contribution | Projected Payroll | Contribution Rate |
|---|---|---|---|
| Normal Cost | $ 361,047 | $ 11,382,091 | 3.172061% |
| Shared Amortization Costs | 4,511,703 | | 39.638614% |
| Plan Specific Costs | - | | 0.000000% |
| Total | $ 4,872,750 | | 42.810675% |

**H. Adult Probation and Parole Officers Fund**

| | Dollar Contribution | Projected Payroll | Contribution Rate |
|---|---|---|---|
| Normal Cost | $ 52,294 | Not Applicable | Not Applicable |
| Amortization Cost | - | | |
| Total | $ 52,294 | | |

**I. Corrections Officers Secondary Sub Plan**

| | Dollar Contribution | Projected Payroll | Contribution Rate |
|---|---|---|---|
| Normal Cost | $ 4,565,540 | $ 74,338,904 | 6.141521% |
| Shared Amortization Costs | 29,466,910 | | 39.638612% |
| Plan Specific Costs | - | | 0.000000% |
| Total | $ 34,032,450 | | 45.780133% |

**J. Wildlife Officers Sub Plan**

| | Dollar Contribution | Projected Payroll | Contribution Rate |
|---|---|---|---|
| Normal Cost | $ 1,757,983 | $ 10,434,512 | 16.847773% |
| Shared Amortization Costs | 4,136,096 | | 39.638615% |
| Plan Specific Costs | - | | 0.000000% |
| Total | $ 5,894,079 | | 56.486388% |

**K. Peace Officers Sub Plan**

| | Dollar Contribution | Projected Payroll | Contribution Rate |
|---|---|---|---|
| Normal Cost | $ 127,524 | $ 2,729,931 | 4.671339% |
| Shared Amortization Costs | 1,082,107 | | 39.638620% |
| Plan Specific Costs | - | | 0.000000% |
| Total | $ 1,209,631 | | 44.309959% |

**L. Peace Officers Fund**

| | Dollar Contribution | Projected Payroll | Contribution Rate |
|---|---|---|---|
| Normal Cost | $ 0 | Not Applicable | Not Applicable |
| Amortization Cost | 15,617,243 | | |
| Total | $ 15,617,243 | | |

**M. Alcohol Tobacco Control Officers Sub Plan**

| | Dollar Contribution | Projected Payroll | Contribution Rate |
|---|---|---|---|
| Normal Cost | $ 7,735 | $ 601,713 | 1.285542% |
| Shared Amortization Costs | 238,511 | | 39.638666% |
| Plan Specific Costs | - | | 0.000000% |
| Total | $ 246,246 | | 40.924208% |

**N. ATC Officers Fund**

| | Dollar Contribution | Projected Payroll | Contribution Rate |
|---|---|---|---|
| Normal Cost | $ 0 | Not Applicable | Not Applicable |
| Amortization Cost | - | | |
| Total | $ - | | |

**O. Bridge Police Officers Sub Plan**

| | Dollar Contribution | Projected Payroll | Contribution Rate |
|---|---|---|---|
| Normal Cost | $ 12,438 | $ 222,650 | 5.586419% |
| Shared Amortization Costs | 88,255 | | 39.638395% |
| Plan Specific Costs | - | | 0.000000% |
| Total | $ 100,693 | | 45.224813% |

**P. Harbor Police Officers Sub Plan**

| | Dollar Contribution | Projected Payroll | Contribution Rate |
|---|---|---|---|
| Normal Cost | $ 108,068 | | 8.850501% |
| Amortization Cost | 118,998 | $ 1,221,037 | 9.745655% |
| Total | $ 227,066 | | 18.596155% |

**Q. Hazardous Duty Officers Sub Plan**

| | Dollar Contribution | Projected Payroll | Contribution Rate |
|---|---|---|---|
| Normal Cost | $ 7,977,185 | | 6.958607% |
| Shared Amortization Costs | 45,440,780 | $ 114,637,667 | 39.638612% |
| Plan Specific Costs | 138,122 | | 0.120486% |
| Total | $ 53,556,087 | | 46.717705% |

**R. Total for All Sub Plans**

| | Dollar Contribution | Projected Payroll | Contribution Rate |
|---|---|---|---|
| Normal Cost | $ 128,508,022 | | 6.798927% |
| Shared Amortization Costs | 748,853,165 | $ 1,890,122,115 | 39.619301% |
| Plan Specific Costs | 850,352 | | 0.044989% |
| Total | $ 878,211,539 | | 46.463217% |

**S. Total for All Funds**

| | Dollar Contribution | Projected Payroll | Contribution Rate |
|---|---|---|---|
| Normal Cost | $ 52,294 | | |
| Amortization Cost | 966,740 | Not Applicable | Not Applicable |
| Total | $ 1,019,034 | | |

# APPENDIX B
# BASIS FOR MORTALITY ASSUMPTIONS

The actuary for the LLA is required by R.S. 11:127(C) to prepare an actuarial valuation for review by PRSAC. As such, we accepted most of the actuarial assumptions currently used by the retirement board and its actuary. Among a few exceptions is the mortality assumption, for which we employed a different approach for current and future mortality rates used in our actuarial valuation of the system's costs and liabilities.

This Appendix B describes our approach to development of new mortality tables.

## Plan Experience

The mortality tables employed in the actuarial valuation were developed directly from the mortality experience of the group.

*Experience Study*

An Actuarial Experience Study was prepared by Foster & Foster for the period from July 1, 2008, through June 30, 2013, for the Louisiana State Employees' Retirement System. Their experience study report, dated January 16, 2014, summarized the results. The following table shows the mortality experience during the exposure period:

| | Males | | Females | |
|---|---|---|---|---|
| Age | Exposures | Actual Deaths | Exposures | Actual Deaths |
| <20 | 386 | 9 | 270 | 5 |
| 20-24 | 3,364 | 34 | 3,713 | 28 |
| 25-29 | 7,290 | 11 | 12,708 | 19 |
| 30-34 | 8,167 | 38 | 16,001 | 58 |
| 35-39 | 8,964 | 42 | 16,963 | 75 |
| 40-44 | 10,872 | 81 | 19,417 | 95 |
| 45-49 | 13,296 | 88 | 25,197 | 121 |
| 50-54 | 16,494 | 118 | 31,946 | 141 |
| 55-59 | 18,038 | 137 | 33,429 | 189 |
| 60-64 | 17,389 | 185 | 28,225 | 204 |
| 65-69 | 12,263 | 219 | 19,028 | 203 |
| 70-74 | 9,801 | 338 | 14,921 | 287 |
| 75-79 | 7,241 | 377 | 11,990 | 424 |
| 80-84 | 5,093 | 411 | 10,427 | 625 |
| 85-89 | 2,688 | 369 | 7,208 | 671 |
| 90-94 | 902 | 173 | 3,081 | 536 |
| 95-99 | 167 | 49 | 673 | 171 |
| 100+ | 24 | 6 | 86 | 27 |
| Total | 142,439 | 2,685 | 255,283 | 3,879 |

*Credibility*

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

Full credibility means that the data is fully reliable as a reasonable predictor of future experience and "adjustment factors" can be developed and applied to a standard reference table to obtain a new mortality table that make full use of the group's own experience. This retains the shape of the standard reference table, but adjusts the rates to exactly reflect the group's own actual experience.

If an experience study's data is partially credible, a weighted average adjustment factor should be applied to the standard reference table's individual mortality rates to obtain new mortality rates for each individual age that partially reflects the group's own experience and partially reflects the standard reference table.

For the purpose of this analysis, full credibility was assigned a confidence level of 90% of being within 5% margin from the correct value. The credibility was assessed separately for males and females (combining actives and retirees because the experience study report did not separate actives' experience from retirees' experience). In order to be fully credible, the experience study is required to have at least 1,082 deaths during the exposure period for each subgroup.

Based on the information in the above table, the LASERS experience study data is fully credible for each group (males and females) since their respective numbers of deaths are more than 1,082 each. The credibility factors are therefore 100% for the male members and the female members. This means 100% of the experience study results can be taken into account in the determination of the mortality assumption for male members and female members.

*Formula*

This process is outlined in actuarial literature.[1] Following is the basic formula for determining new mortality rates for each age (and for each gender) to be used in this valuation.

$$\left[\left(\frac{\boldsymbol{q_A^{ES}}}{\boldsymbol{q_A^{SR}}}\right) \times (\mathbf{C}) \; + \; (\mathbf{1.0}) \times (\mathbf{1} - \mathbf{C})\right] \; \times \; \boldsymbol{q_x^{SR}} = \boldsymbol{q_x^{V}}$$

Where,

[1] A few examples in actuarial literature on reflecting fully credible and partially credible mortality experience in selecting mortality assumptions for pension valuations include: (a) A Public Policy Practice Note "*Selecting and Documenting Mortality Assumptions for Pensions"*, Revised June 2015, published by the American Academy of Actuaries (see especially Appendix 2), found at http://www.actuary.org/files/Mortality_PN_060515_0.pdf, (b) "*Selecting Mortality Tables: A Credibility Approach*", by Gavin Benjamin published by the Society of Actuaries in October 2008, found at www.soa.org/files/research/projects/research-2008-benjamin.pdf and (c) "*Credibility Theory for Pension Actuaries Webcast*", June 23, 2017 sponsored by the Society of Actuaries, found at https://www.soa.org/prof-dev/events/2016-credibility-theory-pension-actuaries/.

$q_x^V$ is the probability (absolute rate) of a member age **x** dying before attaining age x+1, as used in this actuarial **V**aluation;

$q_x^{SR}$ is the probability (absolute rate) of a member age **x** dying before attaining age x+1, as taken from the **S**tandard **R**eference table;

**C** is the **C**redibility factor assigned to the data in the experience study; C and (1-C) serve as weights in the weighted average adjustment factor (for LASERS, the Credibility factors for males and females are both 100%);

$q_A^{ES}$ is the **A**verage probability (absolute rate), derived as an average or composite rate for the whole group from the **E**xperience **S**tudy, i.e., total deaths divided by total exposures; and

$q_A^{SR}$ is the **A**verage probability (absolute rate), derived as an average or composite rate for the whole group expected by the **S**tandard **R**eference table.

## RP-2014/MP-2016

*Base RP-2014 Mortality Tables*

The RP-2014 Mortality Tables, the most recently developed broad-based mortality tables, were issued by the Retirement Plans Experience Committee (RPEC) of the Society of Actuaries. These were published in October 2014. These tables constitute the most recent and reliable standard reference tables available.

The RP-2014 mortality tables are therefore used as the standard reference tables in determining the mortality assumption for this valuation. The RP-2014 mortality tables were not used as the base mortality table assumption in this actuarial valuation. The shape of RP-2014 was retained; but the mortality rates actually used as the base table in this actuarial valuation were the RP-2014 rates multiplied by a LASERS-derived adjustment factor.

The experience study report did not present the mortality information for active and retiree members separately. Since the RP-2014 did not publish a combined mortality table, the active table and retiree table from RP-2014 were combined into a single table (the two tables overlap for ages 50 through 80) for males and another table for females by age. The two gender-specific combined RP-2014 mortality tables are therefore used as the standard reference tables in determining the mortality assumption.

The following table shows the mortality rates based on the combined RP-2014 healthy life mortality tables for different ages:

| Sample Attained Age | Probability of Death Next Year | |
|---|---|---|
| | Male | Female |
| 50 | 0.29% | 0.19% |
| 55 | 0.43% | 0.26% |
| 60 | 0.62% | 0.38% |
| 65 | 0.96% | 0.59% |
| 70 | 1.53% | 0.96% |
| 75 | 2.50% | 1.59% |
| 80 | 4.18% | 2.66% |
| 85 | 7.75% | 6.05% |

*LASERS-derived adjustment factors*

LASERS-derived adjustment factors to be applied to the combined (active and retiree) RP-2014 mortality tables were calculated separately for males and females. To do so, the combined RP-2014 mortality tables were projected backward to 2011 (using projection scale MP-2014) to match the central year of the experience study. These tables became the new standard reference table so as to line up with the central year of the experience study.

The ratio of the average/composite mortality rate from the experience study ($q_A^{ES}$) to the average/composite mortality rate of the combined RP-2014 mortality table projected backward to 2011 ($q_A^{SR}$) was calculated for each group (male and female).

a. For male members, the LASERS-derived adjustment factor is 158%. That ratio was calculated by dividing the average/composite mortality rate (1.89%) from the LASERS-derived experience by the average mortality/composite rate of the RP-2014 mortality table projected backward to 2011 (1.19%).

b. For female members, the LASERS-derived adjustment factor is 136%. That ratio was calculated by dividing the average/composite mortality rate (1.52%) from the LASERS-derived experience by the average/composite mortality rate of the RP-2014 mortality table projected backward to 2011 (1.12%).

Again, in the formula, above, the credibility factor is 100% and the adjustment factor is the part in brackets. The fact that both of these LASERS-derived adjustment factors are above 100% indicate that LASERS' mortality experience (at the 2011 central year of the study) was worse than the national standard reference table (projected back to 2011).

It is not preferable to ignore credible data from a group's own experience study and simply use the standard reference table without adjustment. Nor is it preferable to merely eye-ball the results and margins. It was a simple enough process to follow standard and generally accepted actuarial practice (and formula above) to develop experience-based tables with a standard mortality improvement scale.

*Impact on mortality rates*

| Mortality table | Average/Composite Mortality Rate |
|---|---|
| (a) Experience Study Results | 1.65% |
| (b) RP-2000 projected to 2015 with Scale AA | 1.28% |
| (c) Experience-adjusted RP-2014 (base rates) | 1.65% |

The above table compares (a) the average/composite mortality rates from the raw results of the experience study, (b) the average/composite mortality rate assumed by LASERS' actuary using the older RP-2000 table projected to 2015 with the older Scale AA and (c) the average/composite mortality rate assumed by the LLA's actuary using the experience-adjusted RP-2014 table before any projection of mortality improvement.

Our base table average/composite mortality rate is exactly equal to the one from the experience study since the experience study was fully credible and was incorporated in the determination of the mortality assumption.

*MP-2016 Improvement Scale*

The improvement scale projects the mortality rates from the base year (2014) of the mortality table to future years to account for future improvement in the mortality rates. The MP-2016 improvement scale, released in October 2016, is intended to be used along with the RP-2014 mortality tables and is the most recent improvement scale available as of the valuation date. The MP-2016 improvement scale is therefore used. The MP-2016 generational improvement scale was applied to the LASERS-adjusted version of RP-2014 base table.

The actuarial profession (as represented by the RPEC of the Society of Actuaries) prefers this generational approach for recognizing future mortality improvement, rather than simply projecting improvements to a static future date.

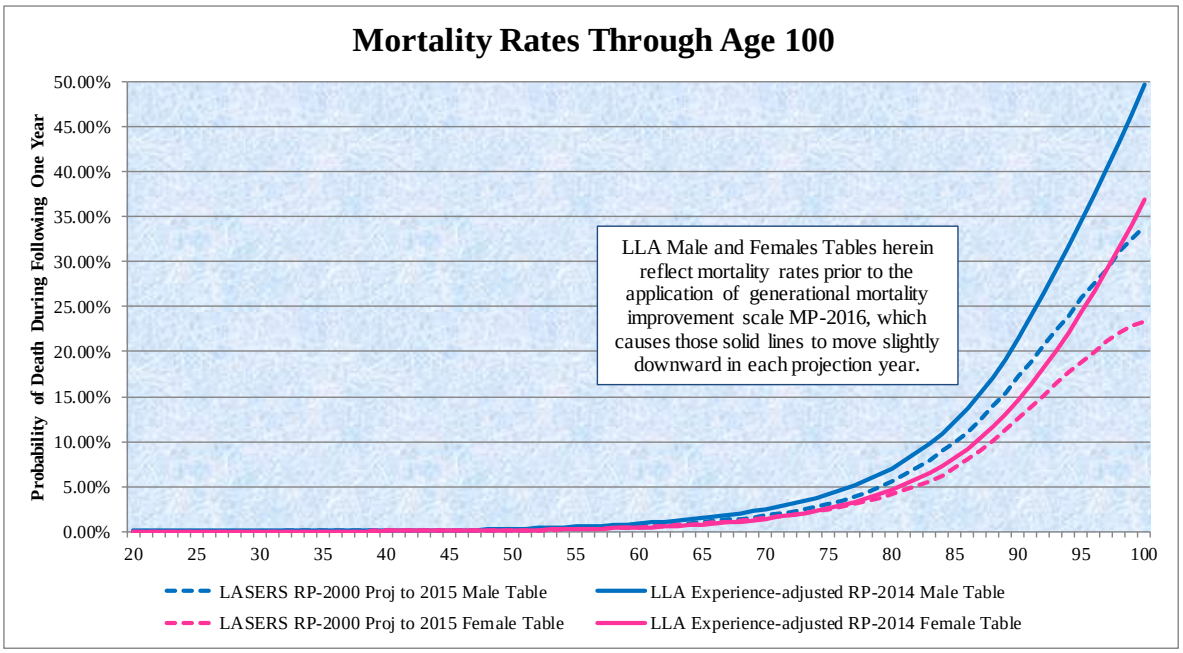
Four graphs on the following pages show the mortality rates for the current mortality assumption (RP-2000 mortality tables projected to 2015 with improvement scale AA) and the new mortality assumption (experience-adjusted RP-2014 mortality tables) *prior to* the application of the MP-2016 improvement scale. The graphs show the mortality rates for males and females for ages 20 to 100 (the last three graphs show a breakdown of the first graph for separate age ranges).

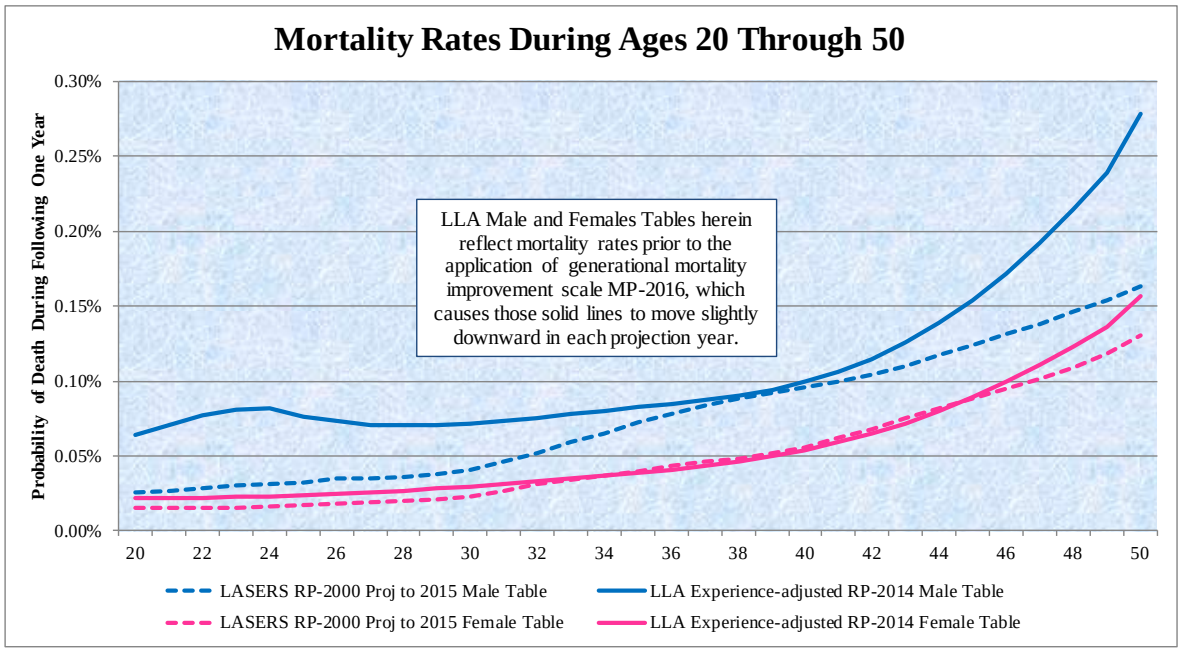
## Actuarial Practice

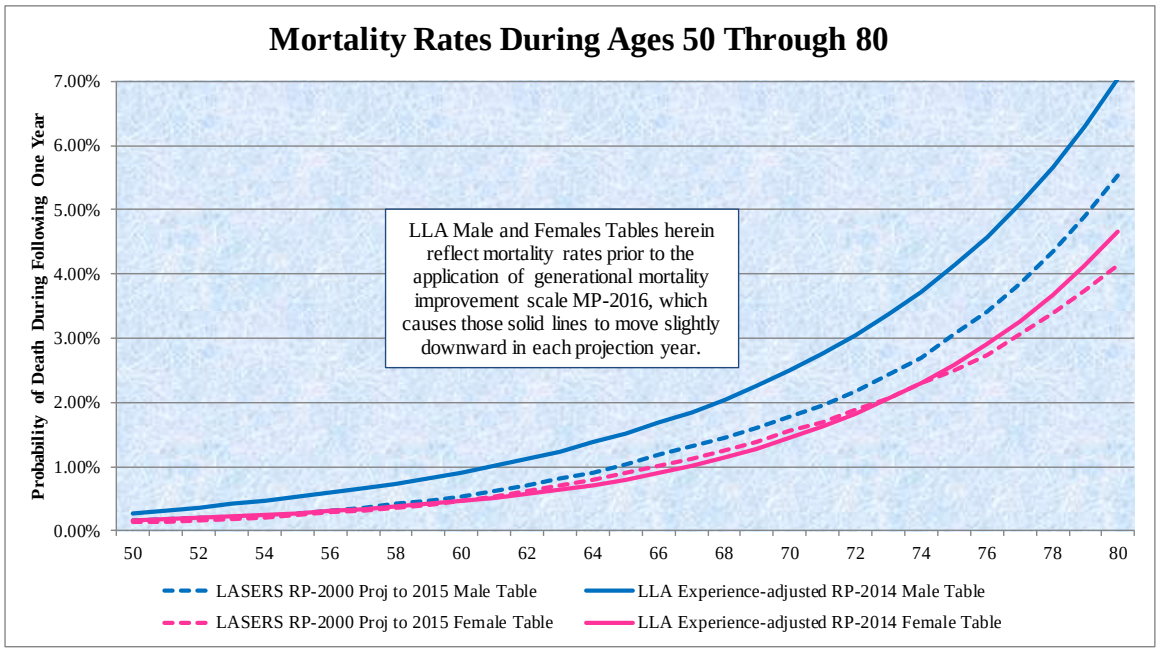
We recognize that experience studies for larger systems are generally performed every five years, and the next such study for LASERS is not scheduled until 2018. However, it is also generally accepted among retirement system executives, board members and actuaries that if events occur or if better or new techniques emerge between experience studies that materially affect results, they would be considered for change.

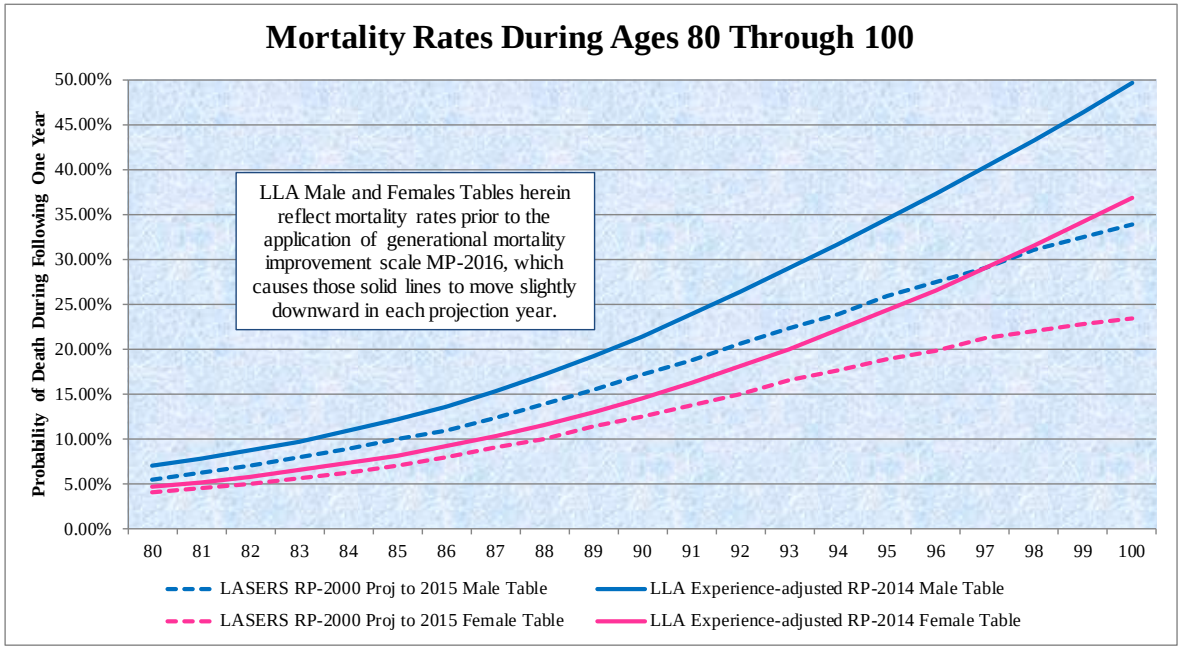
Furthermore, Actuarial Standard of Practice (ASOP) No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*, states that at each measurement date the actuary should determine whether the assumptions continue to be reasonable, which includes the requirement to take into account historical and current demographic data that is relevant as of the measurement date.

We believe the mortality table used in the 2017 actuarial valuation (developed as described above) satisfies that ASOP and current actuarial literature.




Mortality Rates During Ages 50 Through 80
Probability of Death During Following One Year
7.00%
6.00%
5.00%
4.00%
3.00%
2.00%
1.00%
0.00%
50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80
LLA Male and Females Tables herein reflect mortality rates prior to the application of generational mortality improvement scale MP-2016, which causes those solid lines to move slightly downward in each projection year.
LASERS RP-2000 Proj to 2015 Male Table
LLA Experience-adjusted RP-2014 Male Table
LASERS RP-2000 Proj to 2015 Female Table
LLA Experience-adjusted RP-2014 Female Table


Mortality Rates During Ages 80 Through 100
Probability of Death During Following One Year
50.00%
45.00%
40.00%
35.00%
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100
LLA Male and Females Tables herein reflect mortality rates prior to the application of generational mortality improvement scale MP-2016, which causes those solid lines to move slightly downward in each projection year.
LASERS RP-2000 Proj to 2015 Male Table
LLA Experience-adjusted RP-2014 Male Table
LASERS RP-2000 Proj to 2015 Female Table
LLA Experience-adjusted RP-2014 Female Table

# APPENDIX C
# BASIS FOR ECONOMIC ASSUMPTIONS

The actuary for the LLA is required by R.S. 11:127(C) to prepare an actuarial valuation for review by PRSAC. As such, we accepted most of the actuarial assumptions currently used by the LASERS retirement board and its actuary. Two exceptions are the future inflation and net investment return assumptions. We developed and employed different inflation and return assumptions in our actuarial valuation of the system's costs and liabilities.

This Appendix C describes our approach to developing the return assumption (including the inflation assumption).

**Principles for Setting Pension Return Assumptions**

The purpose of the return assumption is to be a forecast of what the pension portfolio is expected to earn in the future. While we are cognizant of the financial burden that pension contributions place on participating employers, our responsibility is to measure costs and liabilities without being unduly influenced by the resulting contribution requirement for a given return assumption.

The pension return assumption should be a reasonable and defensible best estimate of the future net investment return of the pension portfolio over the given horizon. It should be based on the professional forecasts of independent subject matter experts and should be appropriate for use in an actuarial valuation of a retirement system. While we understand that different professionals may have differing opinions about the future, the pension return assumption should not be a lever to adjust up or down depending on what is affordable at the time.

Our primary focus is on following a robust and analytical process for objectively adopting an appropriate forecast of the pension portfolio's future earnings. We recognize the initial contribution shock caused by a change in return assumption of this magnitude (reducing the return assumption form 8.25% to 6.75%). But we choose to separate the setting of a return assumption from budget implications; not to ignore the budget implications, but to address them in a separate discussion.

a. Our primary role is to submit our actuarial valuation based on our assumptions and advise PRSAC accordingly.

b. Whether the participating employers can continue to afford the required contributions in the near term is a separate and important discussion concerning:

   - Affordable benefit levels and

   - A sustainable funding policy to phase into the contributions and liabilities presented in this valuation report. We have potential solutions for PRSAC to consider for phasing into the contributions and liabilities presented in this valuation report, which are outside the scope of this actuarial valuation and which can be discussed at the January 2018 PRSAC meeting.

Nevertheless, a reasonable and defensible best estimate of future net investment returns:

a. Provides the most unbiased measure of the unfunded actuarial liability that is reported to the public,

b. Provides the most responsible funding levels for the benefit security of plan members and

c. Achieves an appropriate balance of intergenerational equity (does not unduly "kick the can down the road").

This *purpose* of the return assumption is what drives our *process* for setting the assumption used in this actuarial valuation (6.75%).

**Process for Setting the Pension Return Assumption**

We follow a robust and disciplined process for setting the return assumption (including the inflation assumption). The process includes these elements:

a. Perspectives.
b. Horizon.
c. Inflation forecasts from independent experts.
d. Asset Allocation.
e. Investment return forecasts from independent experts.
f. Consensus of multiple independent experts.

***Perspectives***

There are two types of perspectives to consider when defending or 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 the System's own portfolio in the future?

Temporal. Looking backwards at historical rates of return and inflation is not considered to be reliable supporting documentation for current pension actuarial assumptions of future net returns and inflation. 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.

The current domestic and global environment is not like the past 10, 30, or 50 years; and the future domestic and global environment is certain to be different from the past. The System's portfolio and its managers are not even the same now as they were in the past; nor will they be the same in the future as they are now.

A forward-looking perspective should drive the defense or determination of a net return or inflation assumption for pension actuarial valuations. Strategically selecting historical returns (an X-year period ending on Y-date) to justify a return assumption being applied to the next 10, 20, or 30 year period is not valid.

Therefore, LASERS' historical returns had minimal relevance to us. We chose instead to develop our net return and inflation assumptions based on *forward-looking* forecasts from subject matter experts.

Social. Looking to what other peer retirement systems are doing is generally not a well-placed focus. 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 to turn to for validation of another system's return assumption. We prefer to set our return assumption from basic principles and the robust process described herein, rather than take comfort in what others in the crowd are doing.

While it may be interesting, even important, to know what investment return assumption is used by other large public sector retirement systems, that information is not useful for discharging our duties for adopting a net investment return assumption for the LLA's 2017 actuarial valuation of LASERS. It is not useful for actually informing us concerning the economic forecasts applicable to LASERS.

a. *Different environments*. Public retirement systems across the United States each have their own environmental challenges and sets of agency risk. Their assumption-setters may not have adhered to mainstream and objective forecasts of experts, but may have been influenced by budgets, protectionism, and politics. These are not best qualities to be emulated when setting assumptions.

b. *Different asset allocations*. Other retirement systems are certain to have a different asset allocation than LASERS, either more aggressive or less aggressive. That would make it a false comparison.

c. *Different horizon*. Other retirement systems may have been influenced by their consultants advocating a long-term horizon for the net investment return assumption. This is fairly common, but as discussed below, a mid-term horizon in more appropriate for the reasons stated.

Independent, unbiased, expert sources of inflation and investment return forecasts are the best places to look for input when setting a return assumption for pension valuations. These are much more objective and unfiltered sources, 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 the 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 earnings of the portfolio.

***Horizon***

Projecting pension costs is a long-term proposition. Forecasts of future inflation and future returns come in short-term horizons (1-5 years), mid-term horizons (5-20 years), and longest-term horizons (20-30 years). Long-term forecasts are appealing and tempting, usually producing higher

returns than mid-term horizon forecasts. While it may be argued that reliance should be placed on the longest-term horizons, there are at least four compelling reasons not to do so:

a. *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 large returns thereafter.

   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 ruling[2] 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.

b. *The longest return horizon forecasts are the least reliable.* There is much less certainty in the longest-term forecasts. Conventional wisdom says that in the face of uncertainty, investors become more conservative. Thus, decision-makers should consider being more conservative than the longest-term forecasts because the longest-term forecasts are more uncertain. This is a principle in any forecasting profession, whether investment forecasting, election forecasting or hurricane forecasting. Long-term forecasts are less reliable than mid-term forecasts.

c. *Even though pensions are long-term propositions, we live in a short-term and mid-term world.* We should not need to wait 20 or 30 years to be vindicated for an assumption for which we have so little confidence in anyway. In *The Tract on Monetary Reform (*1923), John Maynard Keynes said, "*But this long run is a misleading guide to current affairs. In the long run we are all dead. Economists set themselves too easy, too useless a task if in tempestuous seasons they can only tell us that when the storm is past the ocean is flat again.*" Many financial economists, many in the press and many academics are calling for much lower investment return assumptions. The optics are not good for continuing to hold too to a long-term horizon of 20-30$^{+}$ years, when so many mid-term years are forecasted by the experts to be underperforming.

d. *The duration of the liabilities is approximately 12 years*. The "duration" of the liabilities is the average length of time until each future benefit payment. It can be thought of as a weighted average length of time until benefits are paid, where each future year is weighted with the present value of that year's benefits. As of June 30, 2017, the duration of LASERS' future benefit stream is approximately 12 years.

   Therefore, approximately half the liability is expected to be paid in the first 12 years. The assets used to pay those benefits do not have a chance to generate earnings in years 13

[2] https://www.treasury.gov/services/Responses2/Central%20States%20Notification%20Letter.pdf

through 30 or more. This speaks to the preferable use of a mid-term horizon for the expected net return, rather than a 30-year horizon.

Therefore, we have opted for a mid-term horizon for return forecasts.

***Inflation Forecasts from Independent Experts***

Expected rates of inflation are critical components of expected rates of return. We applied considerable care to obtain relevant research and opinions from inflation forecasting experts.

Average historical rates of inflation, such as the Consumer Price Index (CPI), over various time periods are relatively easy to calculate and readily available. Therefore, it is tempting to rely on historical rates when building up the net return forecasts.

However, there are many professional sources available to actuaries and investment consultants that forecast inflation on a forward-looking basis. In our opinion, as mentioned earlier, forward-looking forecasts are more appropriate than historical rates.

Currently, experts' forward-looking inflation forecasts generally lie between 1.73% and 2.60%. Consider the forward-looking forecasts from the following subject matter experts.

| Eight Major National Inflation Forecasters | |
|---|---|
| Bond Investors | Congressional Budget Office |
| Federal Reserve Bank of Philadelphia | Federal Reserve Bank of Cleveland |
| Federal Reserve Board | GRS Survey |
| HAS Survey | Social Security Trustees Report |

Some of them provide multiple measures of inflation for different time horizons, making a total of 19 forecasts from eight reputable sources.

| 2017 Measures of Inflation | | |
|---|---|---|
| **Horizon** | **Average** | **Number of Sources** |
| 26.3 - 30 yrs | 2.20% | 7 |
| 20 yrs | 2.06% | 3 |
| 9.40 -15 yrs | 2.16% | 9 |

Our preferred inflation assumption would currently be 2.25% because it lies more comfortably near a consensus of the expectations in the summary table above and the detailed table below (actually a little on the higher side). In our opinion, it would not be reasonable for us to select an assumed future inflation rate at the top end of 19 mid-term and long-term forecasts from inflation experts.

Consider the exhibit below, which shows inflation forecasts of these eight large reputable experts in the field of inflation forecasting.

| **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 (Since Jan 2012; Personal Consumer Expenditures) | 2.00% |
| **Congressional Budget Office: *The Budget and Economic Outlook*** | |
| Overall Consumer Price Index (June 2017; Ultimate) | 2.40% |
| Overall Consumer Price Index (June 2017; 11 Years) | 2.36% |
| Personal Consumer Expenditures (June 2017; Ultimate) | 2.00% |
| Personal Consumer Expenditures (June 2017; 11 Years) | 1.98% |
| **2017 Social Security Trustees Report** | |
| CPI-W 15-Year Intermediate Assumption | 2.60% |
| CPI-W 30-Year Intermediate Assumption | 2.60% |
| GDP Deflator 15-Year Intermediate Assumption | 2.20% |
| GDP Deflator 30-Year Intermediate Assumption | 2.20% |
| **Quarterly Survey of Professional Forecasters** | |
| 2Q2017 Federal Reserve Bank of Philadelphia 10-Year Forecast | 2.30% |
| **Federal Reserve Bank of Cleveland** | |
| 30-Year Expectation on June 1, 2017 | 2.13% |
| 20-Year Expectation on June 1, 2017 | 1.97% |
| 10-Year Expectation on June 1, 2017 | 1.73% |
| **Bond Investors (Excess Yield of Non-indexed Treasuries Over Indexed Treasuries)** | |
| 30-Year Expectation on June 30, 2017 | 1.85% |
| Median 30-year Expectation over 6/30/12 - 6/30/17 | 2.09% |
| 20-Year Expectation on June 30, 2017 | 1.77% |
| Median 20-year Expectation over 6/30/12 - 6/30/17 | 2.02% |
| 10-Year Expectation on June 30, 2017 | 1.73% |
| Median 10-year Expectation over 6/30/12 - 6/30/17 | 1.96% |
| **Investment Consultants and Forecasters** | |
| 2017 GRS Survey major national investment forecasters and consultants | |
| Median expectation among 8 firms (averaging 9.4 years) | 2.25% |
| Median expectation among 4 firms (averaging 26.3 years) | 2.21% |
| 2017 HAS Survey of 12 investment advisors: Median (10 years) | 2.32% |
| 2017 HAS Survey of 12 investment advisors: Median (20 years) | 2.44% |

A supportable inflation assumption is a critical component for setting the net investment return assumption. In addition, the 2.25% inflation assumption also replaced the 2.75% inflation assumption built into LASERS' actuary's salary scale.

***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, the asset allocation of the System is a core element in setting and evaluating assumed future returns.

We relied on the 13 target asset allocation percentages set forth in the System's formal Investment Policy Statement last updated in May 2016. These percentages agree with the targets presented in a report ("Louisiana Legislative Auditor Request: 2017 Asset Allocation Assumptions") from the System's investment consultant.

| **2017 LASERS Target Asset Allocation** | | | |
|---|---|---|---|
| **Risk Assets** | | **Fixed Income Assets** | |
| Domestic Large Cap | 14.0% | Core Fixed Income | 4.0% |
| Domestic Mid Cap | 4.0% | Global Multi-Sector | 4.0% |
| Domestic Small Cap | 7.0% | Domestic High Yield | 4.0% |
| Established International (Lg Cap) | 15.0% | Emerging Market Debt | 2.0% |
| Established International (Sm Cap) | 5.0% | | |
| Emerging International Equity | 12.0% | *Total Fixed Income Assets* | *14.0%* |
| Private Equity | 14.0% | | |
| Absolute Return | 8.0% | | |
| Global Asset Allocation | 7.0% | | |
| *Total Risk Assets* | *86.0%* | *Total Asset Allocation* | *100.0%* |

*Source: Current LASERS Investment Policy Statement (dated May 19, 2016)*

LASERS' asset allocation is somewhat riskier than other pension funds; but it is, therefore, expected to earn somewhat more than others with more conservative portfolios. As a result, LASERS' expected rate of return *should* be greater than other retirement systems with lower allocations to risk assets.

***Investment Return Forecasts from Independent Experts***

We applied the target asset allocations to the expectations in the GRS Survey of 10 major national investment consultants and forecasters. Eight of these 10 investment consultants/forecasters provided GRS with their mid-term (10 years) horizon forecasts, and four of them provided GRS

with their longer-term (20 to 30 years) horizon forecasts. Given the brevity of the descriptions of the asset classes identified, our mapping of these 13 asset classes to the investment consultant's asset classes may not be exact.

Listed below are the national firms in our 2017 GRS Survey. These are very large and reputable investment consultants and forecasters.

| Eight Major National Investment Consultants and Forecasters | | |
|---|---|---|
| BNY/Mellon* | J. P. Morgan* | Marquette Asscoiates |
| Mercer* | NEPC * | Pension Consulting Alliance* |
| Principal | Voya | |

**Each firm has between $1 trillion and $10 trillion in worldwide assets under management or advisement; the others are large managers and advisors below $1 trillion.*

We applied the investment forecasters' expected returns to LASERS' asset allocation. We replaced the investment forecasters' respective inflation assumptions with 2.25%, 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 LASERS by the expected investment-related expenses. We also added sufficient alpha back in to replace active management expenses above expected passive management expenses, as permitted and limited by ASOP 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 volatility drag in the compound return expected over time, because pensions are all about compounding in a volatile environment over the horizon.

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

| Expected Likelihood of Achieving Forecast Results Based on a 10 Year Time Horizon | | | | |
|---|---|---|---|---|
| Investment Consultant 10 Year Horizon | Distribution of 10-Year Average Geometric-Compound Net Nominal Return (Percentiles) | | | Probability of exceeding |
| | 40th | 50th | 60th | 8.25% |
| (1) | (2) | (3) | (4) | (5) |
| 1 | 4.54% | 5.59% | 6.66% | 26.52% |
| 2 | 5.35% | 6.43% | 7.52% | 33.72% |
| 3 | 5.50% | 6.54% | 7.58% | 33.97% |
| 4 | 5.00% | 6.26% | 7.53% | 34.63% |
| 5 | 5.54% | 6.72% | 7.91% | 37.28% |
| 6 | 6.55% | 7.63% | 8.73% | 44.30% |
| 7 | 6.27% | 7.46% | 8.66% | 43.36% |
| 8 | 5.78% | 7.24% | 8.71% | 43.07% |
| **Average** | **5.57%** | **6.73%** | **7.91%** | **37.11%** |

There are three important takeaways from this exhibit:

a. Over the mid-term horizon, the range of expert expectations of the 50th percentile of compound average return runs from 5.59% to 7.63%.

b. The 50th percentile consensus expert mid-term forecast is 6.73%, or rounded to 6.75%.

c. The consensus of these experts is that there is only a 37.11% chance of achieving at least the current 8.25% over the mid-term horizon. This does not mean a 37.11% chance of achieving the 8.25% assumption in any year during the horizon; it means that the compound return over the next 10 years has a 37.11% of achieving at least the 8.25% assumption.

This is why, actuarially speaking, the 6.73% 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 6.73% when compounded over the next 10 years.

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

| Expected Likelihood of Achieving Forecast Results Based on a 25 Year Time Horizon | | | | |
|---|---|---|---|---|
| Investment Consultant 20-30 Year Horizon | Distribution of 25-Year Average Geometric-Compound Net Nominal Return (Percentiles) | | | Probability of exceeding |
| | 40th | 50th | 60th | 8.25% |
| (1) | (2) | (3) | (4) | (5) |
| 1 | 6.09% | 6.80% | 7.52% | 30.53% |
| 2 | 6.34% | 7.08% | 7.84% | 34.76% |
| 3 | 6.43% | 7.17% | 7.92% | 35.78% |
| 4 | 7.17% | 7.93% | 8.69% | 45.70% |
| **Average** | **6.51%** | **7.25%** | **7.99%** | **36.69%** |

There are three important takeaways from this exhibit:

1. Over the long-term horizon, the range of expert expectations of the 50th percentile of compound average return runs from 6.80% to 7.93%.

2. The 50th percentile expectation of the consensus average for the long-term horizon is 7.25%.

3. The consensus of these experts is that there is only a 36.69% chance of achieving at least the current 8.25% over the long-term horizon. This does not mean a 36.69% chance of achieving the 8.25% assumption in any year during the horizon; it means the compound return over the next 25 years has a 36.69% of achieving at least the 8.25% assumption.

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

***Consensus of Multiple Independent Experts***

Rather than rely on just one or two experts, we follow conventional wisdom and track the consensus (average) of the expert forecasts.

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.

This ensures we are in the mainstream consensus of reputable national experts.

# APPENDIX D
# BASIS FOR TREATMENT OF ADMINISTRATIVE EXPENSES

## Appendix D: Basis for Treatment of Administrative Expenses

As mentioned in the Summary and Conclusions of this actuarial report, currently, LASERS recognizes the cost of paying administrative expenses required to deliver plan benefits by reducing the net investment return assumption by 15 basis points (i.e., 0.15% of plan assets). For the purpose of disclosing the June 30, 2017, unfunded actuarial liability and re-calculating the contribution rate for the year ending June 30, 2018, we retained this treatment.

Act 94 of 2016 requires that the expected noninvestment-related administrative expenses for the contribution year be included in the actuarially required employer contribution beginning with the first fiscal year in which the projected aggregate employer contribution rate, calculated without regard to any changes in the board-approved actuarial valuation rate, will not increase. That threshold was satisfied for the contribution year ending June 30, 2019.

We applied this direct explicit method to the determination of the contribution rate for the year ending June 30, 2019. The LLA actuary used a 0.95% of pay load on the normal cost to fund for administrative expenses. The table below supports the selection of 0.95% of covered payroll as reasonable approximation.

# Appendix D: Basis for Treatment of Administrative Expenses

| Administrative Expenses (for Year Ending June 30) | 2010 | 2011 | 2012 | 2013 | 2014* | 2015* | 2016* | 2017* |
|---|---|---|---|---|---|---|---|---|
| General Administrative Expenses | 15,201,829 | 14,951,127 | 15,500,163 | 15,907,599 | 14,810,539 | 15,877,682 | 15,615,605 | 17,074,984 |
| As a Percent of Expected Covered Payroll | 0.60% | 0.62% | 0.66% | 0.81% | 0.82% | 0.86% | 0.85% | 0.94% |
| Other Post-Employment Benefits Expense | 1,561,605 | 1,310,517 | 999,650 | 982,754 | 1,103,488 | 940,845 | 982,858 | 904,975 |
| Depreciation and Amortization Expense | 2,134,563 | 1,919,628 | 1,941,249 | 2,041,894 | 1,724,101 | 1,193,314 | 419,718 | 556,901 |
| Total Administrative Expenses | 18,897,997 | 18,181,272 | 18,441,062 | 18,932,247 | 17,638,128 | 18,011,841 | 17,018,181 | 18,536,860 |
| As a Percent of Expected Covered Payroll | 0.74% | 0.75% | 0.79% | 0.97% | 0.97% | 0.97% | 0.92% | 1.02% |
| As a Percent of Beginning Market Value | 0.27% | 0.23% | 0.19% | 0.20% | 0.17% | 0.15% | 0.15% | 0.17% |
| Expected Covered Payroll for the Year | 2,546,456,790 | 2,408,839,604 | 2,341,703,286 | 1,951,987,750 | 1,813,759,357 | 1,856,735,292 | 1,842,286,184 | 1,821,943,975 |
| Beginning Market Value of Total Fund | 7,100,333,387 | 8,054,678,765 | 9,703,496,641 | 9,515,774,342 | 10,327,598,351 | 11,624,853,426 | 11,415,150,926 | 10,723,714,826 |

Source: LASERS Comprehensive and Component Unit Annual Financial Reports

* General Administrative Expenses exclude investment-related Administrative Expenses for 2014 and later.

# APPENDIX E
# BASIS FOR TREATMENT OF
# GAIN-SHARING COST-OF-LIVING BENEFITS

## Appendix E: Basis for Treatment of Gain-Sharing

LASERS' retirees are likely to receive future cost-of-living (COLA) benefit increases with some regularity. This likelihood comes from the workings of the relevant state statutes coupled with the tendency and history of Legislators voting to grant COLAs whenever allowed in accordance with the statutory template. A notional Experience Account is maintained 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. We call this type of COLA provision a gain-sharing COLA.

The mathematical and logical rules set forth in the statutory template lend themselves to actuarial modeling. The frequency and magnitude of the future transfers to the Experience Account can be modelled actuarially using well-accepted techniques. Given the presumption that Legislators will grant a template COLA whenever allowed by the statutes, it is actuarial appropriate to recognize the frequency and magnitude of future COLAs when performing an annual actuarial valuation of the System's costs and liabilities.

The LASERS board and actuary have included the value of future COLAs, as described above, in each of the last several annual funding valuations. We concur that it is essential to recognize the costs and liabilities of future COLAs in all actuarial valuations, and have done so in this valuation.

We have seen three actuarial methods employed to measure the costs and liabilities of future COLAs, all of which require stochastic modeling techniques to simulate the operation of the statutory mechanism. The statutory COLA provisions applicable to LASERS are complex, but can be modeled actuarially. Each actuarial method involves an estimate of one statistic or another, which should be re-calculated every few years unless something changes or the actuarial programming is improved. Nevertheless, as with all assumptions, it should be reviewed every year for reasonableness.

The three actuarial methods are described below, along with our rationale for why we employed the third one in this actuarial valuation rather than either of the first two.

a. The first actuarial method is an implicit recognition of future COLAs by *reducing the return assumption* by an annual amount expected (on average) to be syphoned off from the core pension fund and transferred to the experience account. This is the least preferable because:

    1. It creates a confusing difference between the return assumption and discount rate;

    2. It is not permitted for GASB financial reporting;

    3. It is not fully transparent in isolating the stream of COLA benefits;

    4. The implicit approach is out of favor among actuaries; and

    5. It causes some confusion and interpretive questions when applying the statutory rules and determining the actuarial gains and losses in connection with the use of a return assumption, the board-approved valuation rate, and/or the discount rate.

b. The second actuarial method is more explicit and *adds a load* to the benefit stream to approximate the effect of granting future COLAs. This load is added to the normal cost and actuarial accrued liability as an estimate of the additional benefits generated by the workings of the COLA provisions (after transfers to the Experience Account and after approvals of permanent benefit increases). This is preferable to the first method because it leaves the return assumption equal to the discount rate. However, it lacks additional management information available under the third actuarial method.

c. The third actuarial method is also the most explicit and transparent of the three actuarial methods. It determines a *single equivalent annual COLA* benefit which is calculated as equivalent to the stochastically modelled statutory template (after transfers to the Experience Account and after approvals of permanent benefit increases).

   It substitutes an assumed annual COLA to measure the plan's future costs and liabilities. It is only hypothetically applied annually, in the actuarial valuation as an approximation of the actual COLA provisions.

   1. This is preferable to the first method because it leaves the return assumption equal to the discount rate, thereby avoiding a lot of confusion.

   2. It is preferable to the first two methods because it gives management of the System and Legislators an idea of how much of an annual COLA is equivalent to the statutory template.

   3. It is preferable to the first two methods because the statistic being estimated is not a number of investment basis point earnings, nor a load factor, but an equivalent annual COLA – the very thing that is being promised in the statutes.

   4. It is useful information for members who want a rough equivalent annual COLA value. We do not believe use of this actuarial estimate or assumption in the annual actuarial valuation will automatically give members an expectation of an annual COLA. The statutes prevail; and knowledgeable parties should understand that COLAs are not allowed to be granted annually until the funded status reaches a higher level. This is just an estimated equivalency.

*Modeling results for the third actuarial method*

The third actuarial method projects the expected streams of future gain-sharing transfers into the experience account using the investment-related assumptions adopted by the LLA's actuary. This explicit model stochastically generated net investment returns for the next 30 years, and did so 500 times (i.e., 500 trials). This means that 15,000 annual rates of return (single-year rates) were randomly selected from a lognormal distribution with mean of 7.76% and standard deviation of 14.87% to simulate the operation of LASERS' complex gain-sharing COLA program. The mean and standard deviation are the average (consensus) of the eight major national investment

forecasters in the GRS Survey. The mean is not the expected compound return over time, which is much lower (6.75%) and more appropriate for actuarial valuations.

The model applied the various internal statutory rules and limitations on the amounts that might be transferred to the Experience Account. It assumes that every year for which the statutes permit a permanent benefit increase to be granted, it will be granted and will be the maximum allowed. There is substantial evidence for this assumption from both historical statistics and behavioral expectations.

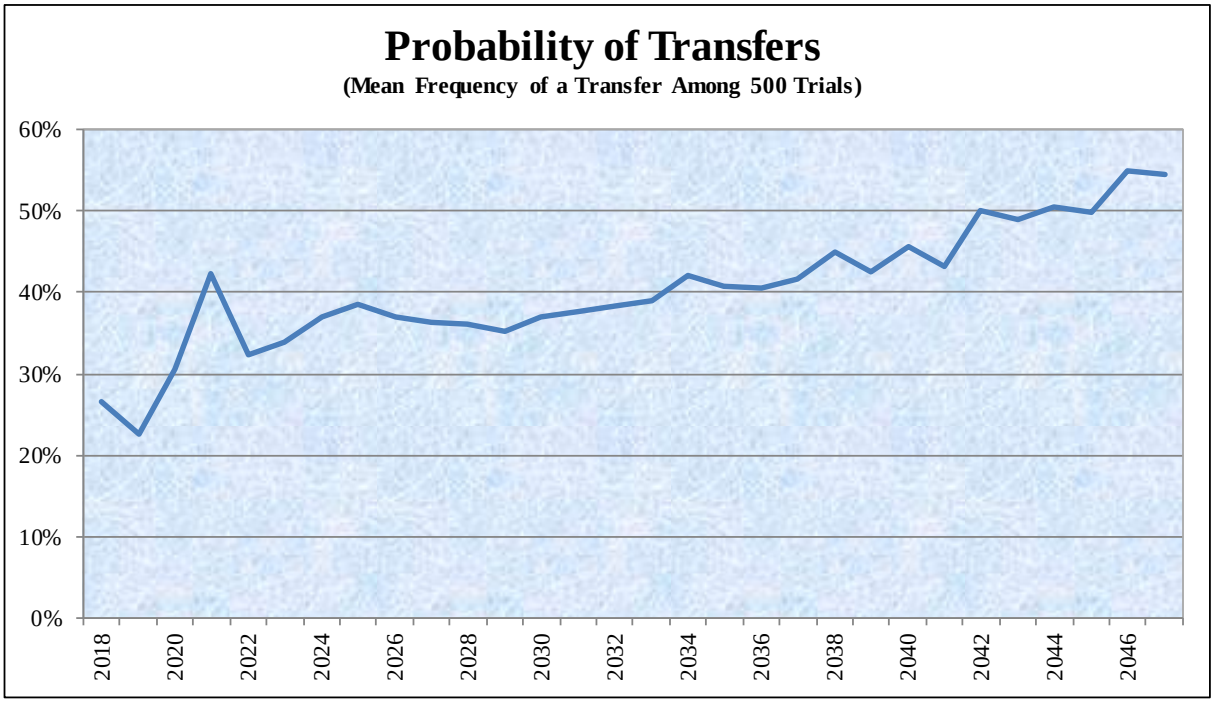
The model built for this purpose includes the following primary steps, as well as numerous other intermediary tests and calculations:

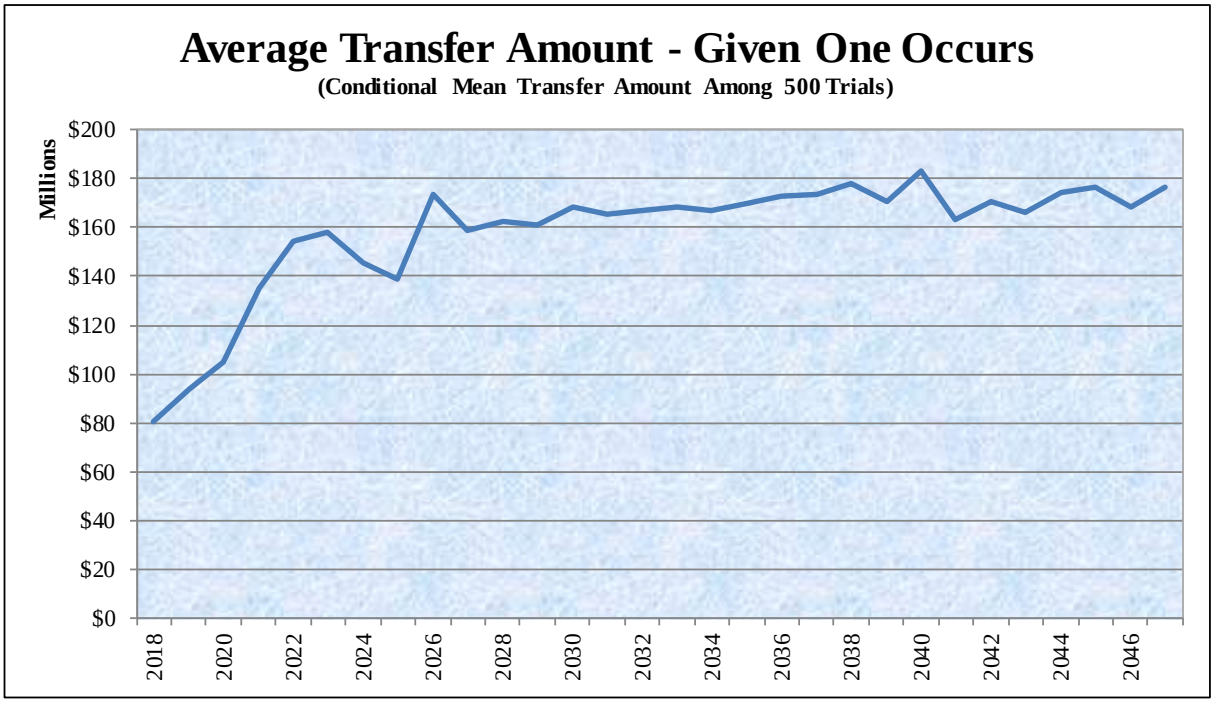
a. Modeling future new hires and future actuarial valuations,
b. Modeling the markets and future rates of return using generally acceptable techniques,
c. Modeling the actuarial rate of return,
d. Modeling the dollar hurdle,
e. Modeling the limitations on the Experience Account,
f. Modeling the restrictions on the permanent benefit increase, and
g. Modeling the amount of the permanent benefit increase.

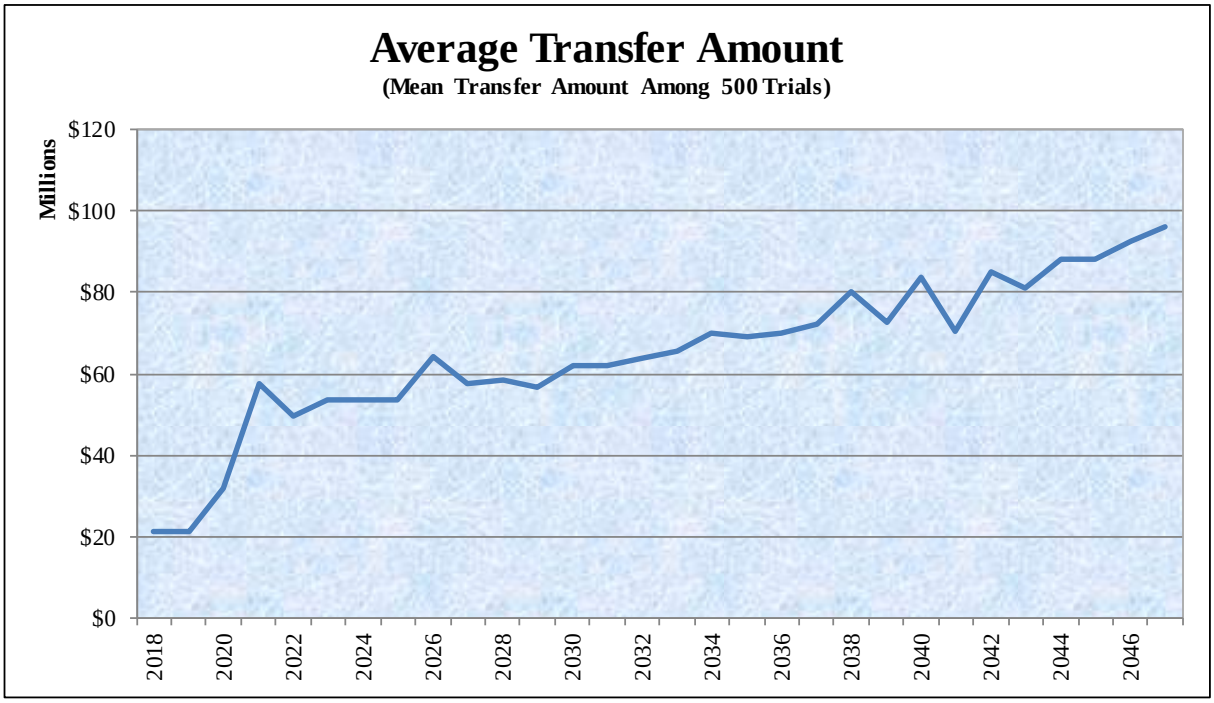
In some years, the model expects a transfer to the Experience Account and in some years expects none. For each year in which the model expects a transfer, the amount can vary widely.

The mean (average) amount expected to be transferred to the Experience Account each year was captured and their present value calculated. It was determined that a 0.40% annual cost-of-living increase (COLA) would produce the same additional present value. This is the same results obtained last year. It is, therefore, considered the single equivalent COLA that approximates the working of the statutory gain-sharing mechanism.

Consider the following graphs illustrating the results (Experience Account transfers) of the simulations in the stochastic model of LASERS' gain-sharing COLA program.


Probability of Transfers
(Mean Frequency of a Transfer Among 500 Trials)
60%
50%
40%
30%
20%
10%
0%
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
2042
2044
2046


Average Transfer Amount - Given One Occurs
(Conditional Mean Transfer Amount Among 500 Trials)
Millions
$200
$180
$160
$140
$120
$100
$80
$60
$40
$20
$0
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
2042
2044
2046


Average Transfer Amount
(Mean Transfer Amount Among 500 Trials)
Millions
$120
$100
$80
$60
$40
$20
$0
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
2042
2044
2046