Florida Retirement System
Actuarial Assumption Estimating Conference
Executive Summary

The Florida Retirement System Actuarial Assumption Conference met on October 31, 2018, to consider the methodological and economic assumptions to be used for the actuarial valuation of Florida's Retirement System (FRS). The preliminary results for July 1, 2018, show that the FRS continues to have an unfunded actuarial liability (UAL). Using the 2018 data and 2017 assumptions, the projected UAL is expected to decrease slightly from the $28.0 billion shown in 2017's final valuation to $27.9 billion in 2018. Similarly, the system would improve slightly to being 84.8% funded on an actuarial basis. The Conference agreed on changes to the investment rate assumptions that will affect the final results.

Expected asset performance over the next thirty years is expected to be weaker than the past. The return in FY 2016-17 was strong at 13.77%. However, since then, FY 2017-18 and the FY 2018-19 year-to-date returns have been relatively lower. The final FY 2017-18 return was 8.98%, and the FY 2018-19 year-to-date return was -1.95% as of October 30th. The tables below show the actual investment returns for the past five fiscal years and the cumulative returns over a 5-year, 10-year, 15-year and 20-year timeframe.

Fiscal Year	Investment Return
2013-14	17.40%
2014-15	3.67%
2015-16	0.54%
2016-17	13.77%
2017-18	8.98%

	Investment Return
3-year	7.62%
5-year	8.69%
10-year	6.85%
15-year	7.86%
20-year	6.34%

The state's actuary, the State Board of Administration (SBA), and the SBA's financial consultant Aon Hewitt Investment Consultants (AHIC) recommended a reduction in the investment return assumption to somewhere in a range from 6.4% to 6.6%. Representatives from the Division of Bond Finance and the SBA advocated for a lower assumption primarily due to the greater risk to long-term fund viability that is associated with higher return expectations. The AHIC representative pointed to the decreased assumed equity risk premium, declining long-term return expectations over the past five years, and relatively flat capital market assumptions for all asset classes.

Overall, the Conference principals expressed concern about the downward pressure on market assets, especially for global equity which makes up over half of the fund's total assets. Several of the principals also noted that other large public pension systems have been lowering their return expectations over past few years.

After much discussion, the principals ultimately agreed to keep the inflation rate at 2.6%, while lowering the investment return expectation to 7.40%. Several principals noted that if the data trends continue, it is likely that further reductions to the investment rate assumption will occur in the future to ensure the fund's continued viability. The table below displays the nominal returns, inflation rates, and real returns used in the four most recent valuations.

2015	2016	2017	2018
7.65% Investment Return	7.60% Investment Return	7.50% Investment Return	7.40% Investment Return
2.60% Inflation	2.60% Inflation	2.60% Inflation	2.60% Inflation
4.92% Real Return	4.87% Real Return	4.78% Real Return	4.68% Real Return

Note: The real return takes into account administrative expenses, so the numbers in this table are not additive.

The 2018 Legislature fully funded the UAL at the recommended contribution rate as provided in the 2017 valuation report. This action and continued full funding of the recommended UAL rate, as committed to by the Legislature, will result in the gradual increase of the funded ratio in future years. The UAL contribution rate is calculated assuming the liability will be funded over a period of 30 years. The contribution rates should remain stable as long as contributions are made as recommended and actual experience mirrors projections. However, many factors affect these calculations and can cause the contribution rates to increase or decrease over time. For example, investment returns have been and will continue to be a relatively volatile factor included in the calculations, and if actual investment results are lower than assumed, there could be a significant impact on the UAL and future contribution rates.

The final actuarial valuation for July 1, 2018, will be released in December 2018. Those results will differ slightly from the preliminary numbers reviewed by the Conference principals.

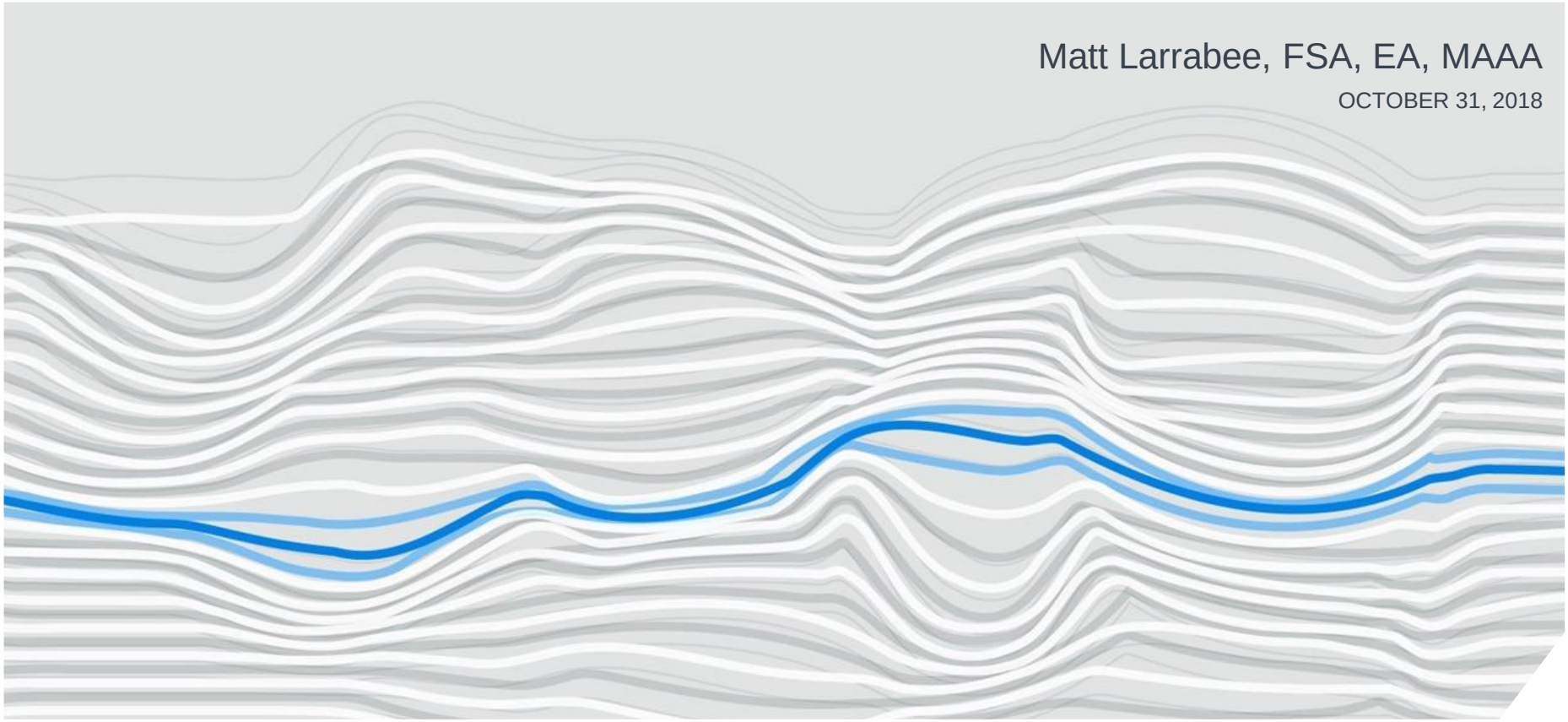
Milliman

Florida Retirement System

2018 FRS Actuarial Assumption Estimating Conference
Including Preliminary July 1, 2018 Actuarial Valuation Results

Matt Larrabee, FSA, EA, MAAA

OCTOBER 31, 2018

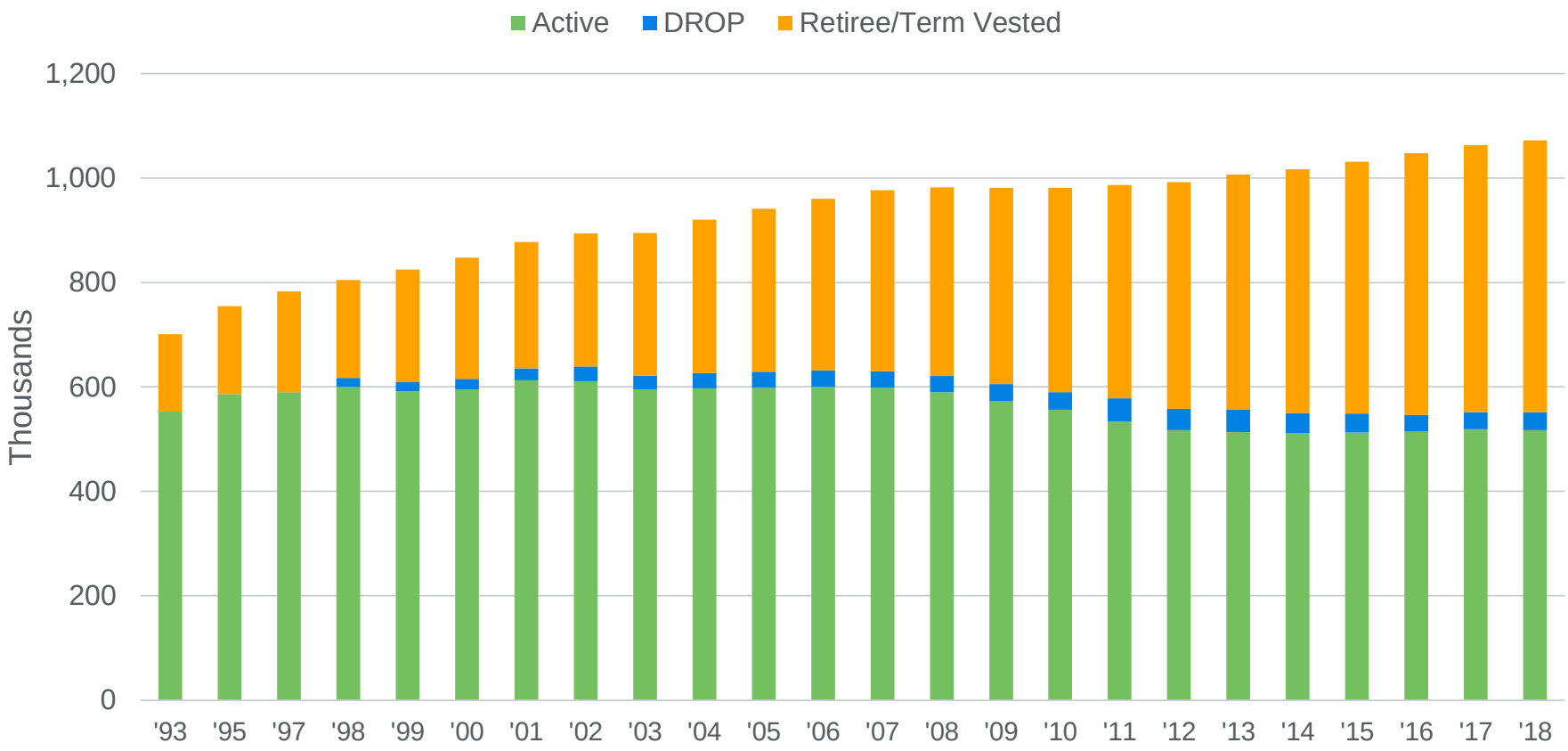


Agenda

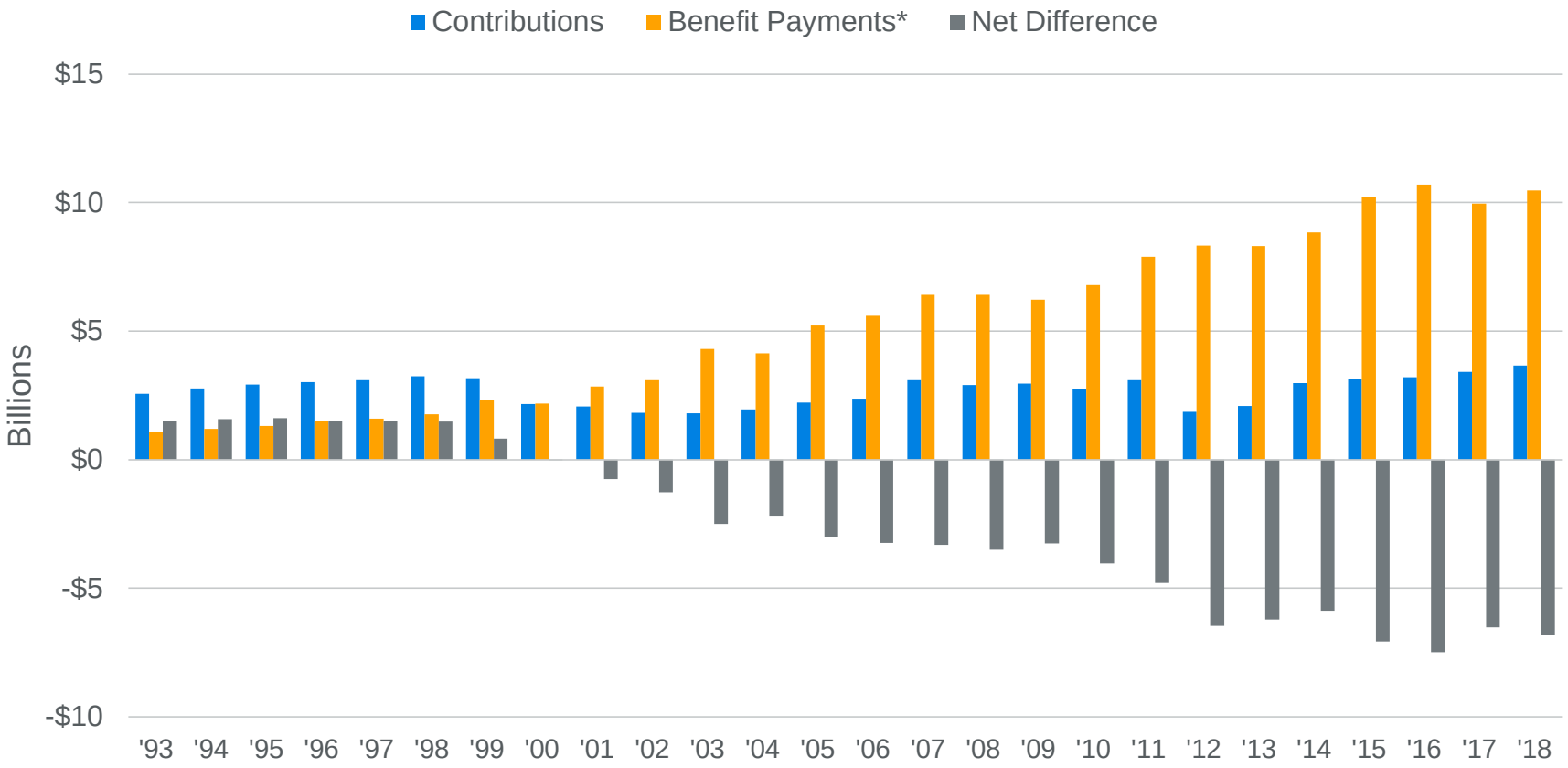
- Census demographics and assets
- Valuation process and projected benefit payments
- Actuarial methods and assumptions for system funding
- Preliminary 2018 baseline actuarial funding valuation results
- Return assumption
  - Outside professionals' guidance
  - For system funding
  - For GASB system and employer accounting
  - How system funding, GASB return assumptions interact
- Needed guidance

Census Demographics and Assets

Pension Plan Membership

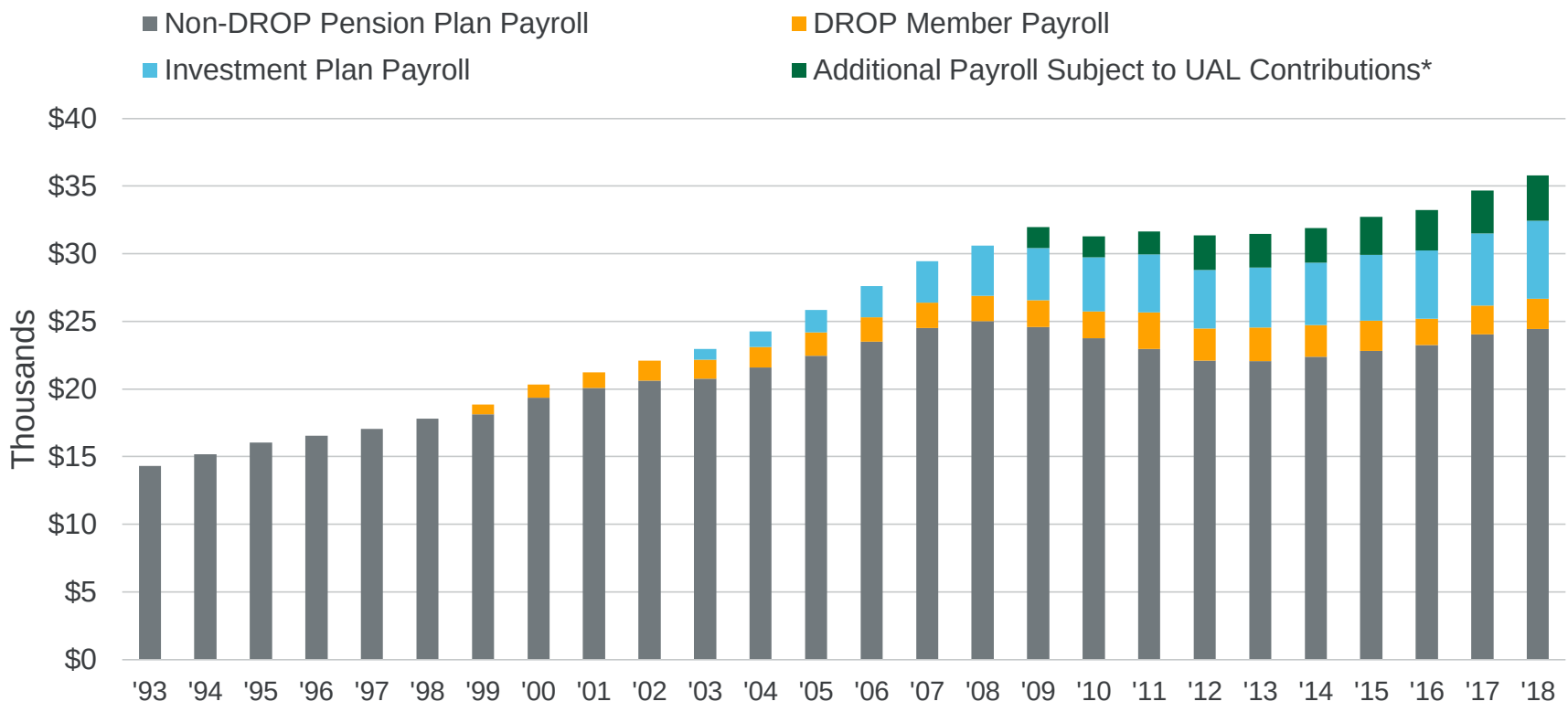


Contributions and Benefit Payments



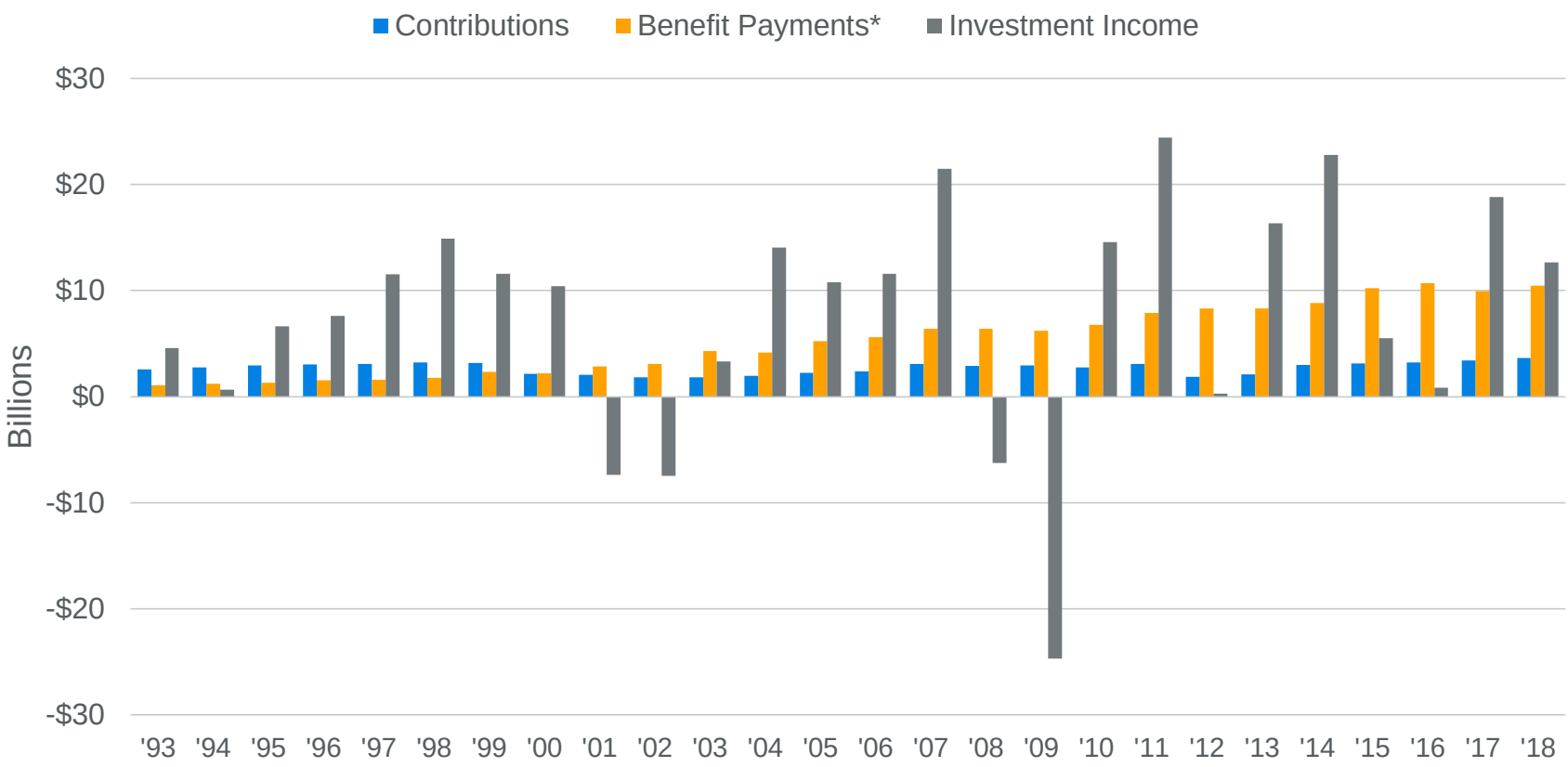
** Includes transfers to Investment Plan in 2013 and subsequent years.*

Payroll: FRS + Non-FRS UAL Contributory



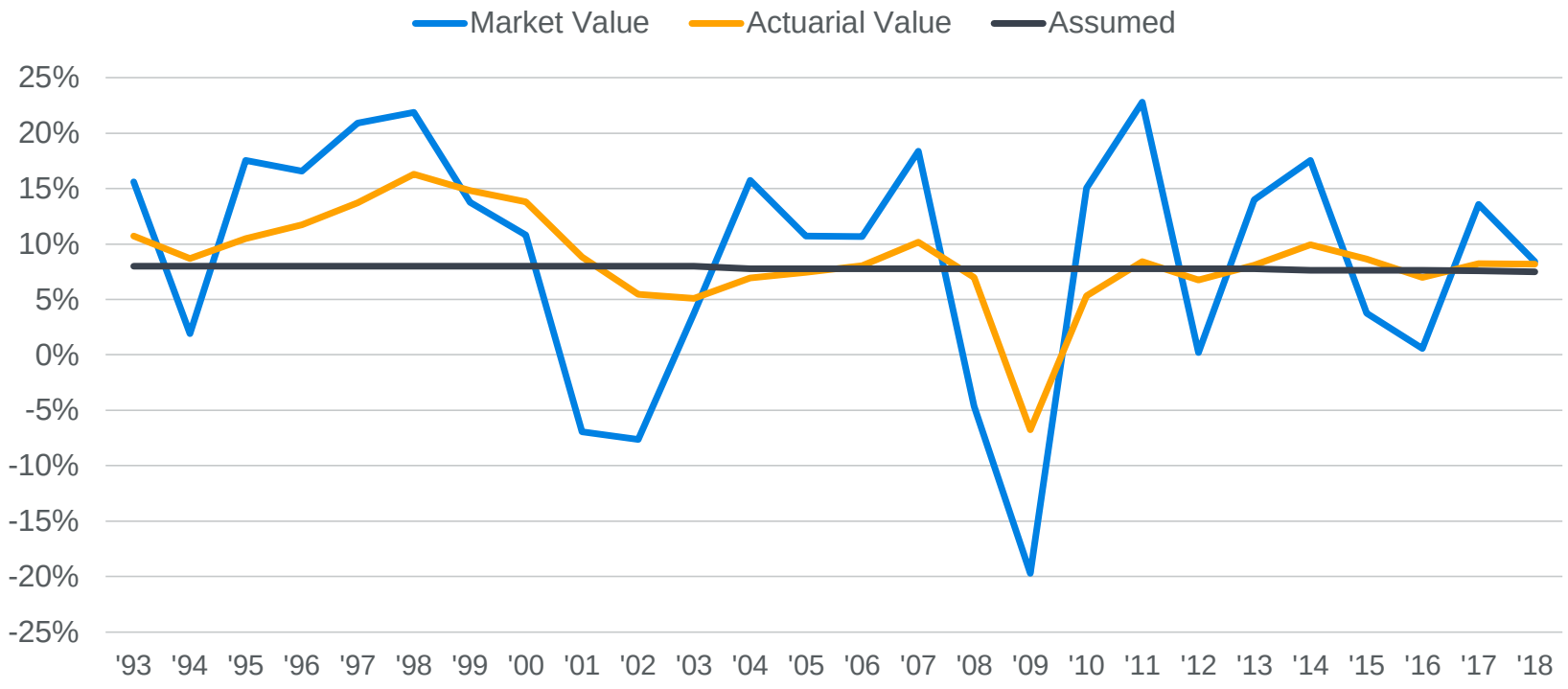
**Includes payroll for participants in certain non-FRS defined contribution plans upon which UAL Rate contributions to the FRS Pension Plan are made. This payroll component is projected to be $3.5B in the 2018-2019 plan year.*

Pension Plan Cash Flows



** Includes transfers to Investment Plan*

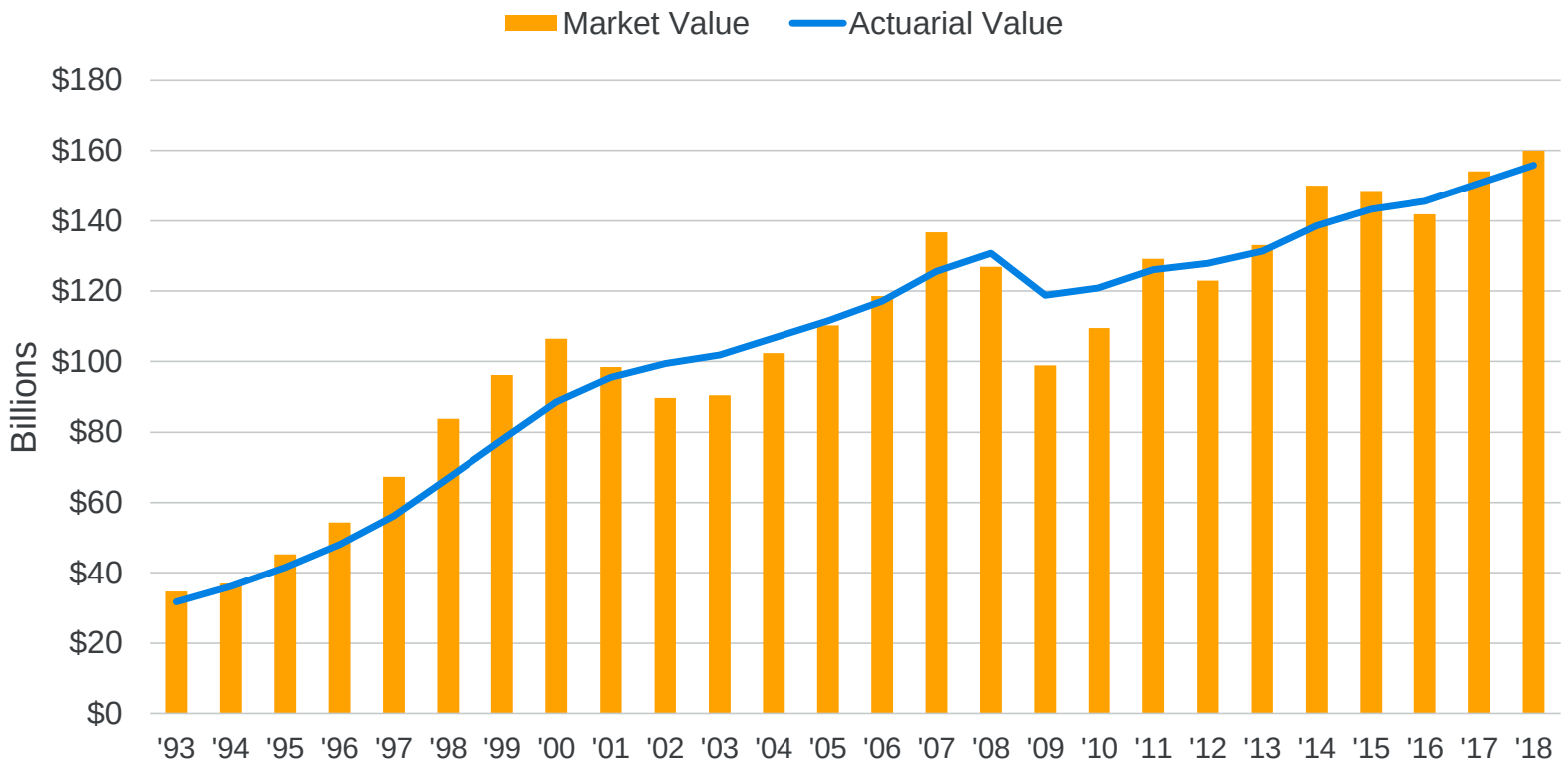
Historic Asset Returns



The 2017-18 return was +8.4% on a market value of assets (MVA) basis and +8.2% on a smoothed actuarial value of assets (AVA) basis

- AVA return is determined by market value returns over the prior five years

Market & Actuarial Value of Assets

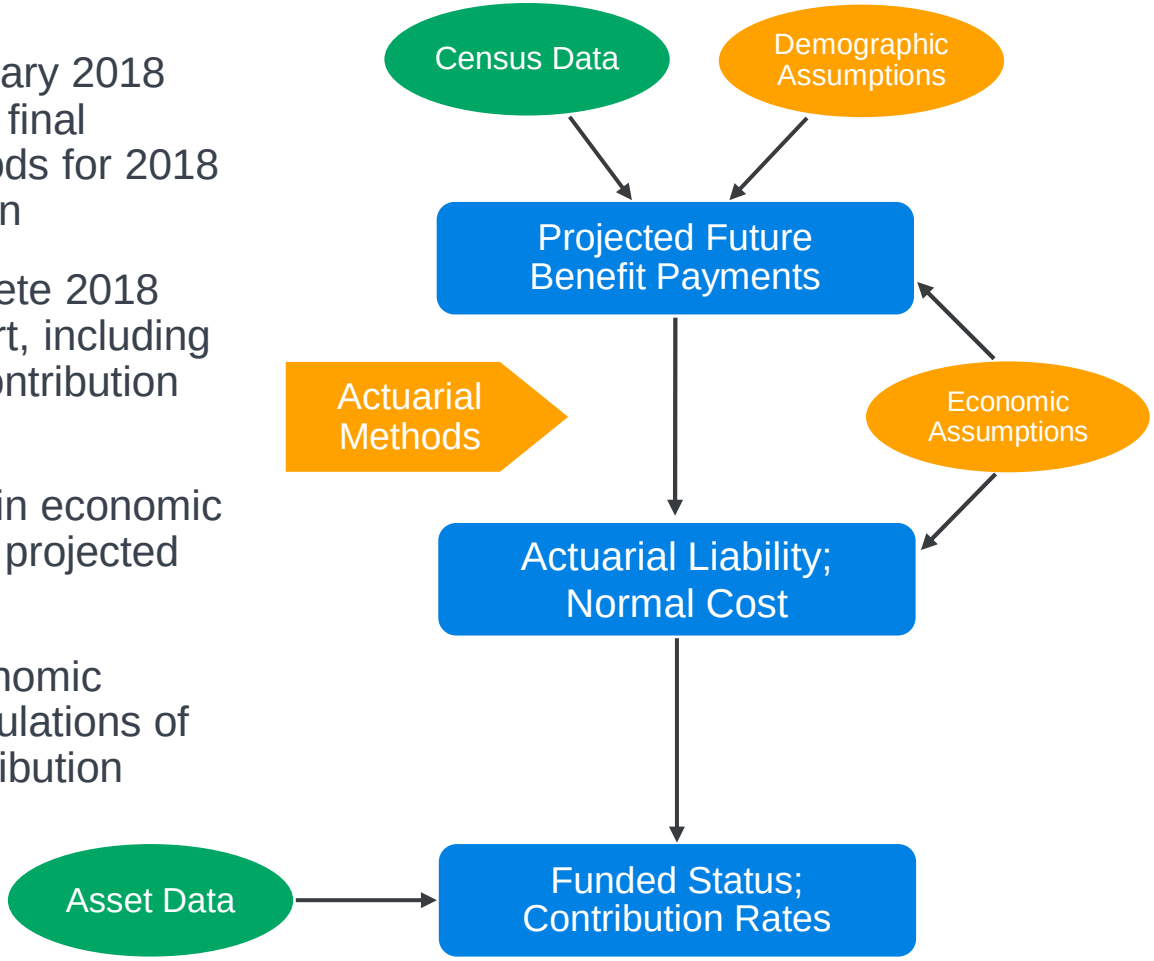


Market Value of Assets (MVA) is $4.1 billion above AVA at July 2018. That deferred investment gain will be recognized in AVA returns (and associated rate decreases) in subsequent valuations if future investment performance meets assumption.

Valuation Process and Projected Benefit Payments

Actuarial Valuation Cycle

- Today: Discuss preliminary 2018 valuation results, select final assumptions and methods for 2018 system funding valuation
- By December 1: Complete 2018 actuarial valuation report, including actuarially calculated contribution rates
- Demographic and certain economic assumptions determine projected future benefit payments
- Methods and other economic assumptions affect calculations of funded status and contribution rates



Overview of an Actuarial Valuation

Two Pension Plan valuations are conducted annually to:

- Calculate funded status (funding valuation)
- Develop actuarially calculated contribution rates (funding valuation)
- Satisfy financial reporting requirements (separate GASB valuation)

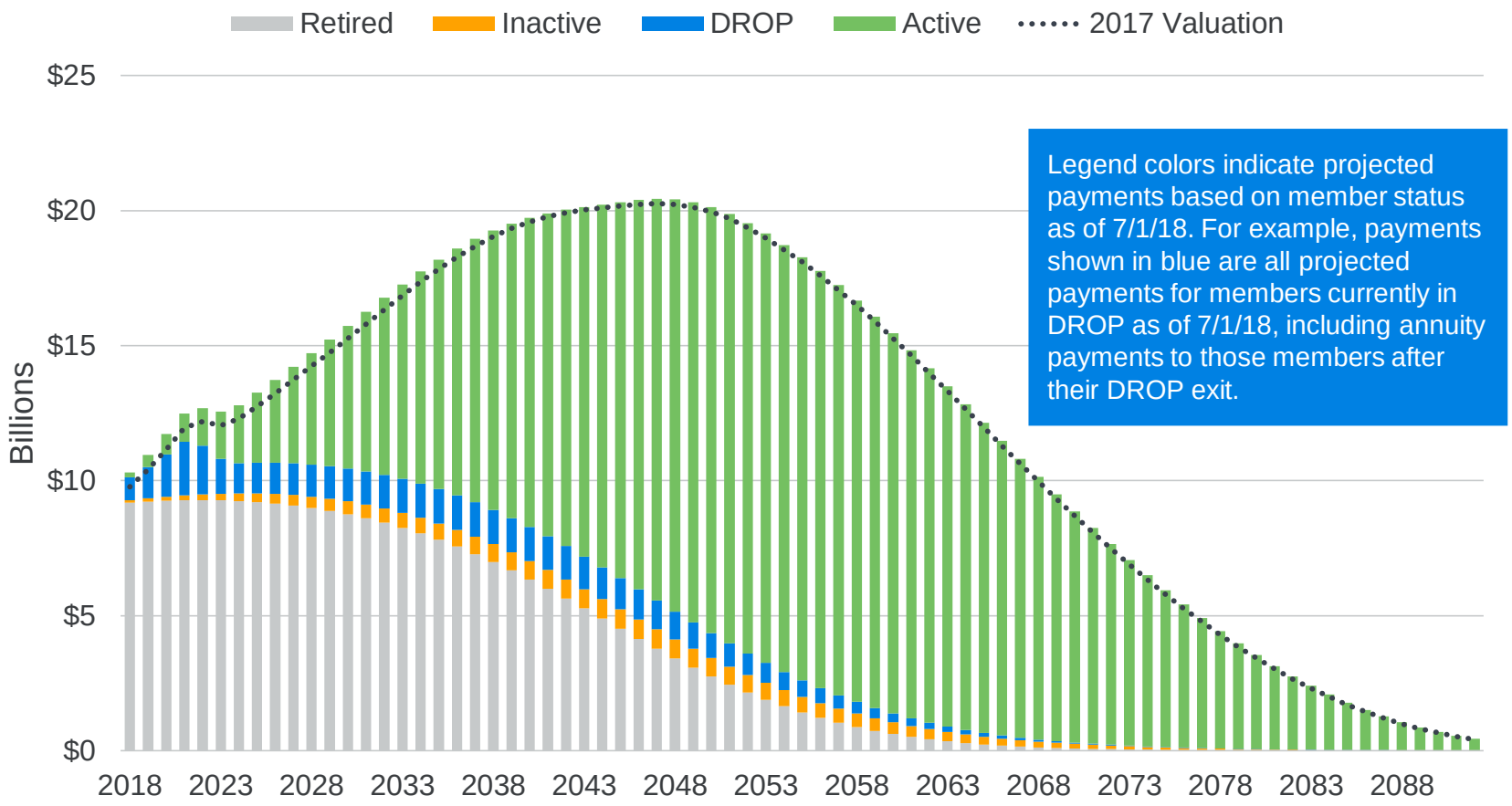
Projected Benefit Payments

Projected benefit payments are developed using:

- Census data provided by the Division of Retirement
- Demographic assumptions
  - Mortality
  - Timing of retirement / entry into DROP
  - Likelihood of termination of employment prior to unreduced benefit
  - Incidence of disability
- Annual salary increase assumption for individual members

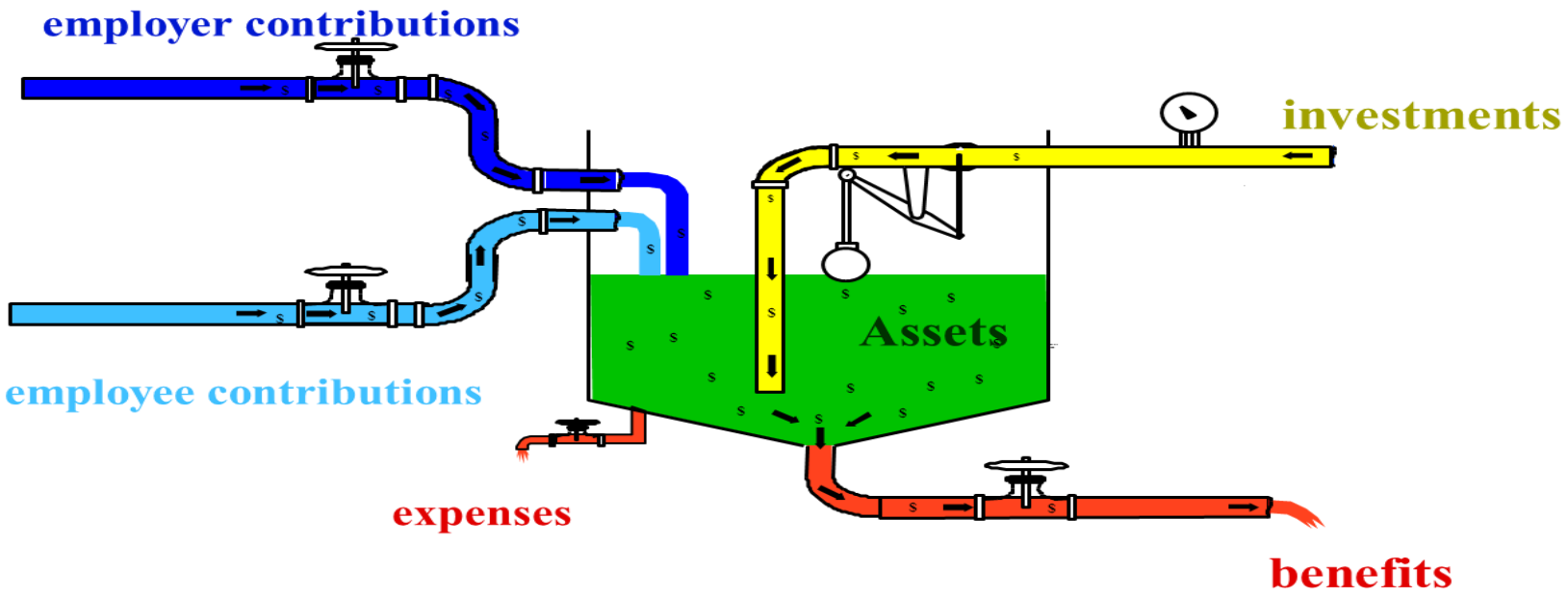
- Census data is provided annually
- Assumptions listed above are typically formally reviewed in detail every five years as part of an actuarial experience study

Projected Benefit Payments – 2018 Valuation



Actuarial Methods and Assumptions for System Funding

The Fundamental Cost Equation



- Methods & assumptions do not determine ultimate long-term System cost, only the budgetary timing of cost incurrence

Ultimately, the *Fundamental Cost Equation* always governs:

Contributions + Investments = Benefits + Expenses

Actuarial Methods for Funding Valuation

Key methods currently adopted by the Conference:

- Ultimate Entry Age Normal (Ultimate EAN) cost allocation method
  - This method sets the normal cost rate as if all members were in Tier 2, which means a lower normal cost rate when compared to the individual EAN method
  - Since the method doesn't affect projected benefits and the method decreases the normal cost rate, Ultimate EAN increases Actuarial Liability compared to the GASB-mandated method
- 30-year amortization, as a level percent of projected pay, of actuarial gains and losses that arise during any given year
  - This approach has an extended period of net negative amortization:
    - The unamortized balance increases for the first 11 to 13 years
    - The balance decreases after that, with the original unamortized balance effectively being paid off in the last 10 years of the 30-year amortization period

Preliminary 2018 Baseline Funding Actuarial Valuation Results

Calculation of Valuation Results

- The projected year-by-year benefit payments are converted into a present value using the investment return assumption
  - The present value is allocated between past (Actuarial Liability) and projected future service (Normal Cost) via the cost allocation method
- This establishes preliminary “2018 Baseline” valuation results using
  - Methods and assumptions as adopted by the 2017 FRS Actuarial Assumption Conference, based on the 2014 Experience Study
  - Demographic member census data as of July 2018
  - Actual 2017-18 investment returns

2018 Baseline shows funded status and contribution rates on current data, prior to any potential updates to assumptions and/or methods

Results Template - Actuarial Terms of Art

To summarize results, we use a template with a number of key actuarial terms

Acronym	Actuarial Term
AL	Actuarial Liability
AVA	Actuarial Value of Assets (smoothed, rather than market, value)
UAL (AVA)	Unfunded Actuarial Liability, on an AVA basis
FS	Funded Status
NCR	Normal Cost Rate (net employer-paid portion)
UALR	Unfunded Actuarial Liability (UAL) Rate
NCR + UALR	A proxy, albeit an imperfect one, for the employer composite Pension Plan-only contribution rate prior to blending with Investment Plan rates to create blended proposed statutory rates

Composite Pension Plan-Specific	2017 Final (2017 data; 2017 assumptions)	2018 Baseline (2018 data; 2017 assumptions)
AL	$ 178.6	$ 183.8
AVA	150.6	155.8
UAL (AVA)	**$ 28.0**	**$ 27.9**
FS	**84.3%**	**84.8%**
NCR	4.41%	4.50%
UALR	6.09%	6.04%
NCR + UALR	**10.50%**	**10.54%**

Results shown are liabilities and rates calculated for funding purposes; results for GASB financial reporting differ

Results shown use the 7.50% investment return, 3.25% system payroll growth, and 2.60% inflation assumptions used in the 2017 valuation

Composite Pension Plan-specific rates are shown, prior to blending with Investment Plan rates to create composite blended proposed statutory rates

(Amounts in $ billions; rates as a % of Pension Plan-only payroll prior to blending)

Market Value of Assets (MVA) is $4.1 billion above AVA at July 2018. That deferred investment gain will be recognized in AVA returns (and associated UALR decreases) in subsequent valuations if future investment performance meets or exceeds 7.50%.

Blended Proposed Statutory Rates at 7.50%

Pension Plan-only contribution rates are blended with Investment Plan contribution rates to create blended PP/IP proposed statutory rates

Weighted Average of Rates Across All Membership Classes	Final 2018-19 Rates (7.50% Assumption)			Preliminary 2019-20 Rates (7.50% Assumption)		
	NC	UAL	Total	NC	UAL	Total
PP composite employer rate	4.41%	6.09%	**10.50%**	4.50%	6.04%	**10.54%**
IP composite employer rate	4.91%	0.00%	4.91%	4.93%	0.00%	4.93%
Blended PP/IP employer rate	4.49%	5.15%	**9.64%**	4.58%	5.07%	**9.65%**
Employee contribution rate			3.00%			3.00%
Composite blended employer plus employee rate			12.64%			12.65%

Return Assumption Outside Professionals' Guidance

Note: Today's Milliman speaker is not a credentialed investment advisor

Last Year's Return Models and Assumption

- Median (50th percentile) average annual long-term future investment returns from three real return investment models presented at the 2017 Conference are summarized below:
  - "SBA Approach" model developed by Aon Hewitt Investment Consulting (AHIC) using average of global equity risk premiums from four large investment consultancies: **6.8%** median return
  - "AHIC-only" assumptions model: **6.6%** median return
    - Both models above used AHIC's 2.2% assumption for inflation at that time
  - Milliman model: **6.6%** median return
    - Used Conference's 2.6% adopted inflation assumption
- The Conference lowered the return assumption from **7.6%** to **7.5%** for the 2017 actuarial valuation for funding purposes

Updates to Return Models for This Year

- AHIC's "SBA Approach" model from its Q1 2018 asset-liability study that blended the global equity risk premiums of four large investment consultancies: **6.44%** median return
  - Reflects 4.06% real return and 2.3% inflation
- "AHIC-only" assumptions model: **6.6%** median return, reflecting AHIC Q3 2018 capital market assumptions, including 2.3% inflation, and SBA's long-term policy allocation
  - Based on Milliman's analysis of the published Q1 2018 asset liability-study materials, we believe an AHIC-only model published at that time would have indicated a median return of approximately **6.7%**
- Milliman model: **6.4%** median return
  - Uses the Conference-adopted 2.6% inflation assumption
    - The current default inflation assumption in the Milliman model is 2.3%

Milliman Investment Return Model

- Based on the current target asset allocation, model results are geometric annual average net returns based on:

Percentile	30-Year Average
65th	7.2%
60th	6.9%
55th	6.6%
50th	**6.4%**
45th	6.1%
40th	5.8%
35th	5.5%

- A series of average annual real returns by asset class, plus asset class correlations
- A 2.6% inflation assumption as adopted by the FRS Assumption Conference
- In this table, the 60th percentile means that in the Milliman model 60% of possible 30-year average returns are at or below 6.9%
- Details on the model inputs in the Appendix

In Milliman's model, long-term average annual future returns of 7.20% to 7.50% fall between the 65th and 70th percentiles

Return Assumption for System Funding

Setting the Assumed Return for Funding

- Per Florida Statutes, the Conference selects the assumption for system funding calculations
- To comply with Actuarial Standards of Practice (ASOPs), the actuary assesses the reasonableness of the assumption
  - Per the ASOPs, if, in the actuary's professional judgment, the selected assumption "*significantly conflicts* with what…would be *reasonable* for the purpose of the measurement", the actuary must disclose that conflict in his or her written report
- The Conference's selected funding assumption is not subject to "pass/fail" review by any other parties; no entity can refuse to accept the system funding valuation report

What Makes an Assumption "Reasonable"?

- Per the relevant Actuarial Standard of Practice (ASOP), an assumption is *reasonable* for the purpose of the measurement if it:
  - Takes into account current economic data, and
  - Reflects the actuary's estimate of future experience, and
  - It has no "*significant bias* (i.e., it is not significantly optimistic or pessimistic), except when provisions for adverse deviation…are included and disclosed"
- The actuary can incorporate experts' views (such as those of investment professionals) in assessing reasonableness

What is “Significant Bias” in an Assumption?

- The governing Actuarial Standard of Practice acknowledges that the meaning of “significant” varies by situation
- For return assumption selection, the relevant meaning is that “a result may be *significant* because it is of consequence”

Funding Results at Various Assumptions

FRS Pension Plan Funding Results	Blended PP/IP Employer Rate	UAL (AVA)	Funded Status
Final 2018-19 (7.50% Assumption)	9.64%	$28.0 B	84.3%
Preliminary 2019-20 (7.50% Assumption)*	9.65%	$27.9 B	84.8%
Preliminary 2019-20 (7.40% Assumption)**	10.12%	$30.1 B	83.8%
Preliminary 2019-20 (7.25% Assumption)	10.84%	$33.6 B	82.3%
Preliminary 2019-20 (7.00% Assumption)***	12.04%	$39.3 B	79.8%
Preliminary 2019-20 (6.70% Assumption)	13.51%	$46.8 B	76.9%

Based on projected 2019-20 PP/IP payroll of $37.0 billion (including payroll subject to only UAL contributions), estimated combined 2019-20 PP/IP contribution of:

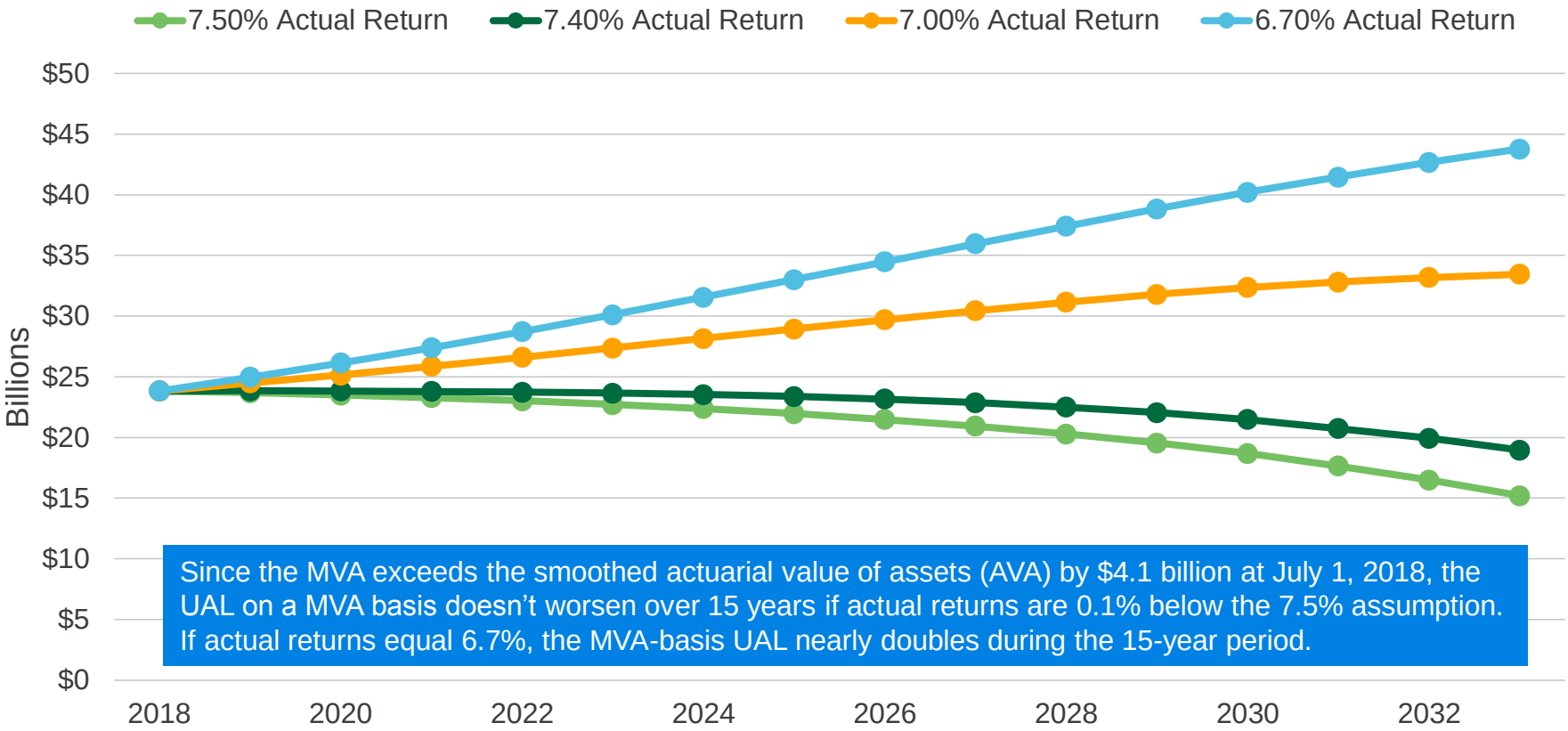
* $3.41 billion at 7.50% return assumption

** $3.57 billion at 7.40% return assumption

*** $4.26 billion at 7.00% return assumption

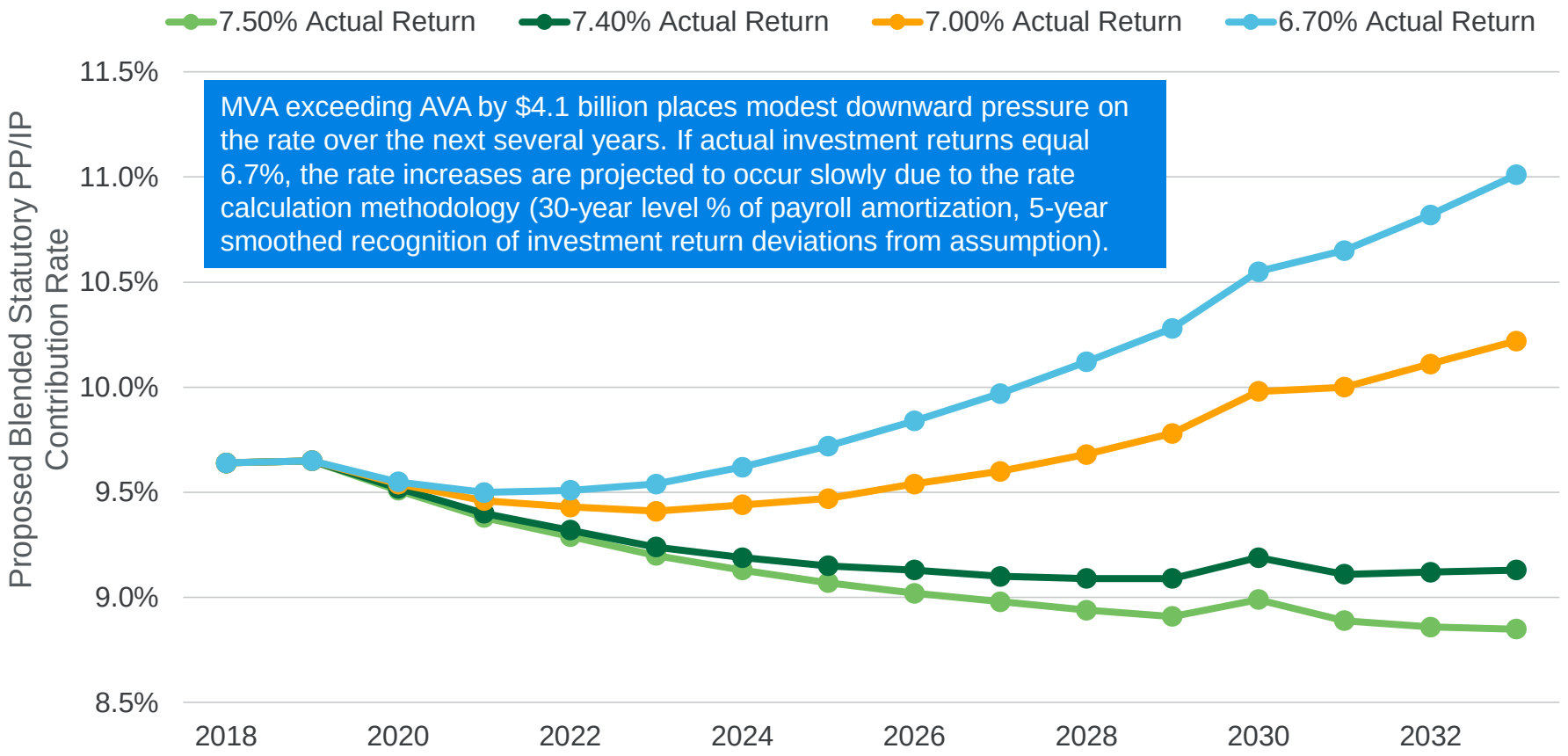
Actual Return Scenarios at 7.50% Assumption

- With no change to the 7.50% return assumption, this chart projects UAL on a market value of assets (MVA) basis over 15 years for four illustrative actual future investment return scenarios
  - The assumption selected will not affect actual investment returns

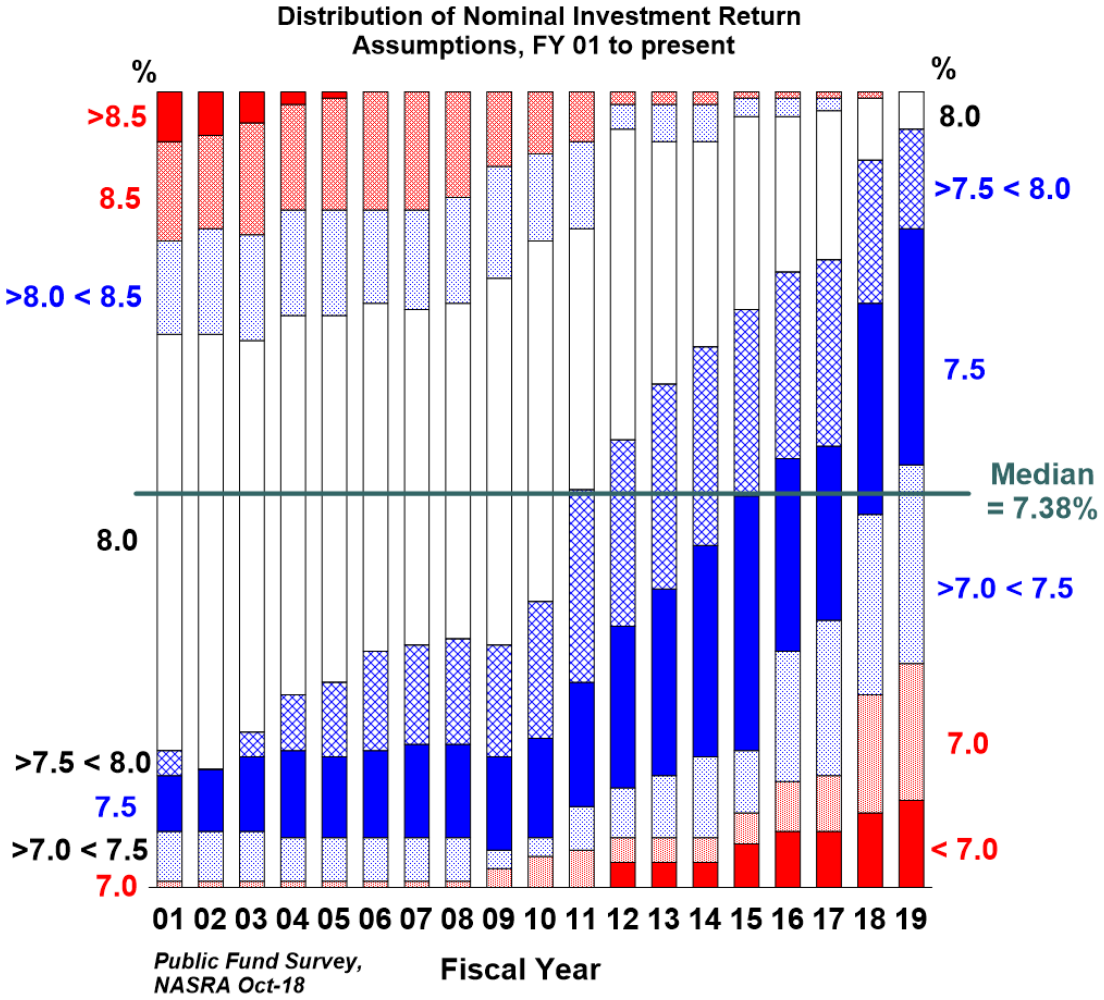


Actual Return Scenarios at 7.50% Assumption

- With no change to the 7.50% return assumption, this chart projects the proposed blended statutory PP/IP contribution rate over 15 years for four illustrative actual future investment return scenarios



What are Other Large Systems Doing?



- In response to changing market outlooks for future inflation and real return, large public systems continue to lower their return assumptions
- This chart shows current assumptions for the largest 126 public systems, as tracked by NASRA
- The current median assumption is 7.38%

What Are FRS's Jumbo Peer Systems Doing?

- CalPERS
  - December 2016 – approved reduction from 7.50% to 7.00% over a three-year period
    [7.50% → 7.375% → 7.25% → 7.00%]
- CalSTRS
  - February 2017 – approved reduction from 7.50% to 7.00% over a two-year period
    [7.50% → 7.25% → 7.00%]
- New York State Common Fund (ERS, PFRS)
  - 2015 – lowered assumption from 7.50% to 7.00%
- New York City ERS & Teachers
  - 7.00%
- Texas TRS
  - July 2018 – lowered assumption from 8.00% to 7.25%

Return Assumption for GASB Employer Accounting

Changes to GASB Reporting Requirements

- An investment return assumption is used in system and participating employer GASB accounting calculations
  - The GASB assumption interacts with the system funding assumption, including the ability for the system's funding assumption to affect GASB results, as explained in this section of the presentation
- Per applicable GASB standards, if the GASB 82 assumption doesn't conform with Actuarial Standards of Practice, the associated financial reporting is not GASB compliant
- External auditors review participating employer pension schedules
  - If an employer's auditor does not accept the GASB assumption, he or she could issue a modified audit opinion of the financial statements, which would have significant consequences for the employer

GASB's Asset Projection "Crossover" Test

- GASB standards include a long-term asset projection test
  - Contributions are modeled using the system's funding policy
  - The test also models projected benefit payments and investment earnings at the GASB assumed return level
- If the test shows sufficient assets in all years to pay benefits:
  - GASB liabilities are calculated using the GASB assumed return as the solitary discount rate
- If the test shows a "crossover" year where assets fully deplete:
  - Benefits subsequent to asset depletion are discounted using a long-duration tax-exempt municipal bond yield (3.87% as of June 30, 2018)
  - A bifurcated discount rate, when triggered by the test results, increases the Net Pension Liability (the GASB unfunded liability measure)

Likelihood and Magnitude of Crossover

If the system funding return assumption gets too far from the GASB return assumption, crossover will occur in the projection test

- What constitutes “too far” will vary from year to year based on several factors (example: GASB uses fair market asset values)
- The greater the disparity between the selected funding return assumption and the GASB return assumption, the greater the possibility of crossover
- If crossover occurs, the greater the disparity between the selected funding return assumption and the GASB return assumption, the earlier that the crossover occurs and the more significant the impact on the GASB discount rate and the Net Pension Liability calculation

Needed Guidance

Needed Guidance

- From Conference Principals for system funding calculations:
  - Identification of methods and assumptions, including investment return assumption, to use in the 2018 Pension Plan valuation calculations for system funding (i.e., proposed statutory contribution rate) purposes

Appendix

Milliman Capital Market Outlook Assumptions

For assessing the expected portfolio return under Milliman's capital market assumptions, we considered FRS investments to be allocated among the model's asset classes as shown below. This allocation is based on our understanding of the current target allocation policy, as provided to us by Aon Hewitt Investment Consulting via email on September 28, 2018.

	Policy Allocation	Annual Arithmetic Mean	**Annualized Geometric Mean**	**Annual Standard Deviation**
US Cash	1.0%	2.93%	2.92%	1.75%
US Interm Bonds	18.0%	4.39%	4.32%	4.00%
US Gvt Bonds	0.2%	4.14%	4.02%	5.15%
US Bank / Leveraged Loans	1.1%	5.31%	5.06%	7.50%
Global Equity	53.8%	7.57%	6.31%	16.95%
US REITs	1.0%	7.65%	5.96%	19.70%
Private Real Estate Property	9.5%	6.45%	5.81%	12.00%
Timber	0.5%	6.66%	5.91%	13.00%
Infrastructure	0.6%	7.50%	6.56%	14.65%
Private Equity	8.0%	11.50%	7.82%	30.00%
Commodities	0.4%	5.66%	4.05%	18.95%
Hedge Funds - MultiStrategy	2.6%	6.06%	5.71%	8.85%
Hedge Funds - Event-Driven	0.4%	6.16%	5.81%	8.90%
Hedge Funds - Equity Hedge	0.5%	6.67%	6.06%	11.70%
Strategic Investments	1.9%	5.70%	5.31%	9.35%
Hedge Funds - Distressed	0.5%	5.97%	5.56%	9.65%
US Inflation (CPI-U)*			2.60%	1.85%
Total Fund	100%	7.0%	**6.4%**	**11.9%**

*2.6% is the inflation assumption most recently adopted by the FRS Actuarial Assumption Conference. That 2.6% inflation assumption is then applied to the real return assumptions in Milliman's capital market outlook model to calculate at median (50th) percentile return.

Real return assumptions in the Milliman model are set semi-annually by a committee of credentialed investment professionals. The default inflation assumption in the Milliman model is currently 2.3%.

Setting the Investment Return Assumption

Actual future investment returns are not knowable in advance, so how should the assumption be set?

- Prudently select a best estimate
- Review return models from credentialed investment professionals
- Remain cognizant that hoping for a result does not make it happen; the assumption selected does not affect actual investment returns
- Avoid myopia – the objective is to make a prudent long-term estimate, not to get a single individual year right
- Neither ignore historical results nor be 100% beholden to them
- Since actual results will vary from assumption, review a return model's probability range and consider a margin for variance

Contribution Rate Calculations

- Pension Plan-specific contribution rates have two components:
  - Normal cost rate
    - Cost assigned to current year benefits by the allocation method
  - UAL rate
    - Rate calculated to eliminate UAL in a systematic manner over a specified time period if future experience follows assumptions
- To calculate the UAL rate, an additional assumption and an additional method are needed
  - For amortizations as a level percentage of projected payroll, the system's **general wage increase** assumption affects the rate
  - In addition, the length of the **amortization period** affects the rate

Asset Measurement Method

- Contribution rates established annually based on the reported unfunded actuarial liability (UAL)
  - UAL compares Actuarial Liability against a system asset measure
- The Actuarial Value of Assets (AVA) measure used by FRS to calculate UAL is specified by statute, and employs an “asset smoothing” technique
  - The mandated method annually recognizes 20% of investment return deviations from assumption
- The statutory calculation approach includes a “corridor” to ensure smoothed assets vary no more than 20% from fair market value

Asset Smoothing

- Five-year smoothing method recognizes heavy losses gradually following times of unfavorable asset performance
- The smoothing is symmetrical, so that any large investment gains are also not “felt” all at once, but instead serve as a cushion against potential future unfavorable asset performance
- The objective of asset smoothing is to keep long-term contribution levels appropriately linked to actual investment performance, and to have year-to-year contribution rate changes be less volatile and more predictable

Disclaimer

At your request, we have provided these draft results prior to completion of the July 1, 2018 Actuarial Valuation Report. Because these are draft results, Milliman does not make any representation or warranty regarding the contents of the presentation. Milliman advises any reader not to take any action in reliance on anything contained in this presentation. All results from this presentation are subject to revision or correction prior to the release of the final July 1, 2018 Actuarial Valuation Report, and such changes or corrections may be material.

Certification

This presentation summarizes key preliminary results of an actuarial valuation of the Florida Retirement System (“FRS” or “the System”) as of July 1, 2018. The valuation, when finalized, will develop actuarially calculated contribution rates for the Plan Year ending June 30, 2020. The results in this presentation are preliminary in nature and may not be relied upon to, for example, prepare the System’s Consolidated Annual Financial Report (CAFR). The reliance document will be the formal July 1, 2018 Actuarial Valuation Report.

In preparing this presentation, we relied, without audit, on information (some oral and some in writing) supplied by Division of Retirement (“Division”) staff. This information includes, but is not limited to, statutory provisions, employee data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

Preliminary results have been determined on the basis of actuarial assumptions and methods as most recently adopted by the 2017 FRS Actuarial Assumption Conference. At the time of their review and adoption, those assumptions, with the exception of the investment return assumption as disclosed in the July 1, 2017 Actuarial Valuation Report, were individually reasonable (taking into account the experience of the System and reasonable expectations); and offered a reasonable estimate of anticipated future experience affecting the System.

Future actuarial measurements may differ significantly from the current measurements presented in this presentation due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements. The FRS Actuarial Assumption Conference has the final decision regarding the selection of assumptions for System funding calculations.

Certification

Computations presented in this presentation are for purposes of preliminarily estimating the actuarially calculated contribution rates for funding the System. Computations prepared for other purposes may differ. The calculations in the presentation have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this presentation have been made on a basis consistent with our understanding of the plan provisions described in the appendix of our formal actuarial valuation report as of July 1, 2017. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this presentation. Accordingly, additional determinations may be needed for other purposes.

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The consultants who worked on this assignment are pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel. The presenting actuaries are independent of the plan sponsors. I am not aware of any relationship that would impair the objectivity of Milliman's work.

On the basis of the foregoing, I hereby certify that, to the best of my knowledge and belief, this presentation has been prepared in accordance with generally recognized and accepted actuarial principles and practices. I am a member of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

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Actuarial Basis

Data

We have based our calculations on demographic member census data as of July 1, 2018 as supplied by the Division of Retirement ("Division"). That data will be summarized in our formal actuarial valuation report for funding purposes as of July 1, 2018, which will be published in the 4th quarter of this year. Assets as of June 30, 2018, were based on values provided by the Division.

Methods / Policies

Actuarial Cost Method: Ultimate Entry Age Normal, using the interpretation of that method as most recently endorsed by the 2017 FRS Actuarial Assumption Conference.

UAL Amortization: Newly arising UAL each plan year is amortized as a level percentage of projected payroll over a closed 30-year period.

Actuarial Value of Assets: A smoothed asset value specified by Florida Statutes that annually recognizes 20% of deviations in investment performance from the long-term assumption systematically over time. The statutory calculation approach includes a "corridor" to ensure smoothed assets vary no more than 20% from fair market value.

Assumptions

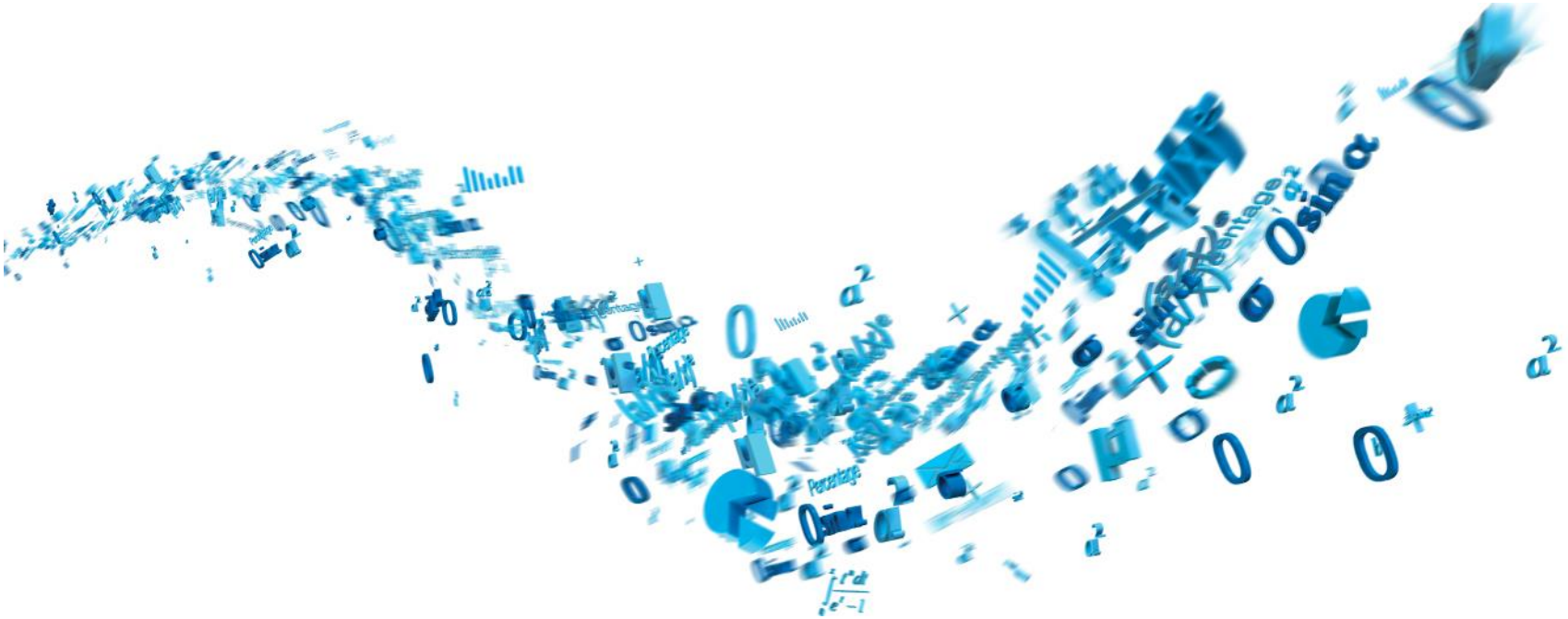
Assumptions for 2018 Baseline valuation calculations use assumptions as most recently adopted by the 2017 FRS Actuarial Assumption Conference, and as detailed in the 2014 Experience Study and as used in the July 1, 2017 Actuarial Valuation Report for funding purposes.

Provisions

Provisions valued are as summarized in the July 1, 2017 Actuarial Valuation Report for system funding purposes.

Glossary – Results Template Actuarial Terms

Acronym	Actuarial Term
AL	Actuarial Liability
AVA	Actuarial Value of Assets (smoothed, rather than market, value)
UAL (AVA)	Unfunded Actuarial Liability, on an AVA basis
FS	Funded Status
NCR	Normal Cost Rate (net employer-paid portion)
UALR	Unfunded Actuarial Liability (UAL) Rate
NCR + UALR	A proxy, albeit an imperfect one, for the employer composite Pension Plan-only contribution rate prior to blending with Investment Plan rates to create blended proposed statutory rates



Historical Review of SBA Expected Return on Pension Assets

Florida State Board of Administration
October 2018

Empower Results®

Table of Contents

Executive Summary

Executive Summary

- **Purpose of this Presentation**
  - Illustrate today's capital market expectations, historical capital market expectations, and implications to the expected return on SBA pension assets
- **AHIC Capital Market Assumptions**
  - Based on the Q3 2018 30-year AHIC-only capital market assumptions (without reflecting the SBA approach), the SBA expected return on pension assets is 6.6%
  - There has been a general trend of lower return expectations over the past several years with flat assumptions in the past year
    - Over a five year period, the decline has been approximately 90bps
    - Over the past year, AHIC's portfolio return expectations for SBA have been flat
- **SBA Approach to Assumption Development**
  - SBA uses the equity risk premiums from four consulting firms (AHIC, Callan, Wilshire, and Mercer) to remove any biases from any one firm
  - In 2016, SBA changed the methodology for determining the equity risk premium from using U.S. equities to global equities
  - Using the SBA approach, the assumed equity risk premium decreased from 3.72% in 2017 to 3.62% in 2018 resulting in an expected return assumption of 6.44% from the 2018 asset-liability study
- **Horizon Survey for Assumption Benchmarking**
  - The Horizon Survey reflects assumptions from dozens of investment advisors each year
  - Capital market assumptions in aggregate were slightly down year-over-year, according to the survey
  - AHIC assumptions tend to be similar to somewhat conservative relative to other investment advisors in the Horizon Survey

AHIC Capital Market Assumptions

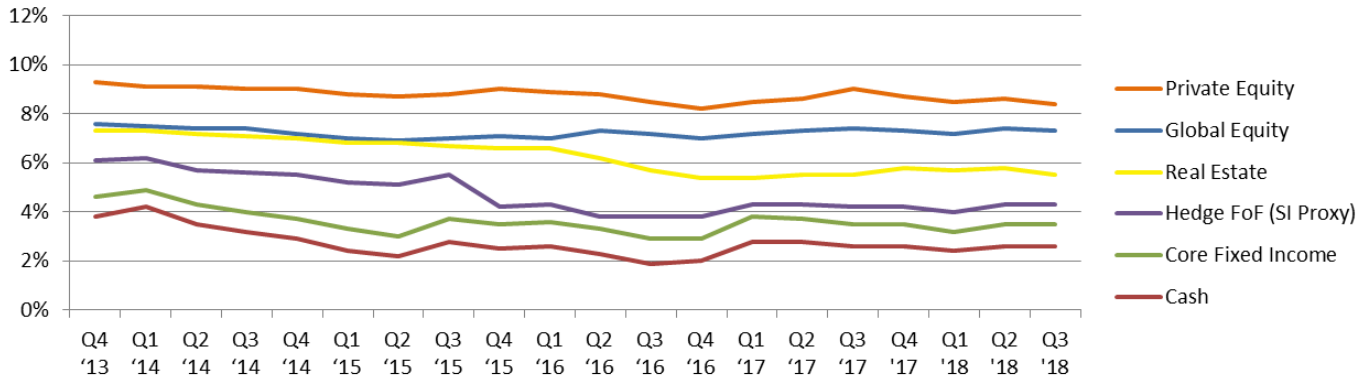
AHIC Capital Market Assumptions
Background

- Long-term (10 and 30 year forecasts) forward-looking assumptions (asset class geometric return, volatility, and correlations)
- Building Block approach, primarily based on consensus expectations and market based inputs
- Best estimates of annualized returns (50/50 better or worse)
- Market returns: no active management value added (except for certain assets classes, such as hedge funds)
- Net of investment fees
- Updated quarterly
- We show AHIC's long-term (i.e., 30-year) capital market assumptions throughout this material

AHIC Capital Market Assumptions

Declining Return Expectations Over Five Year Period

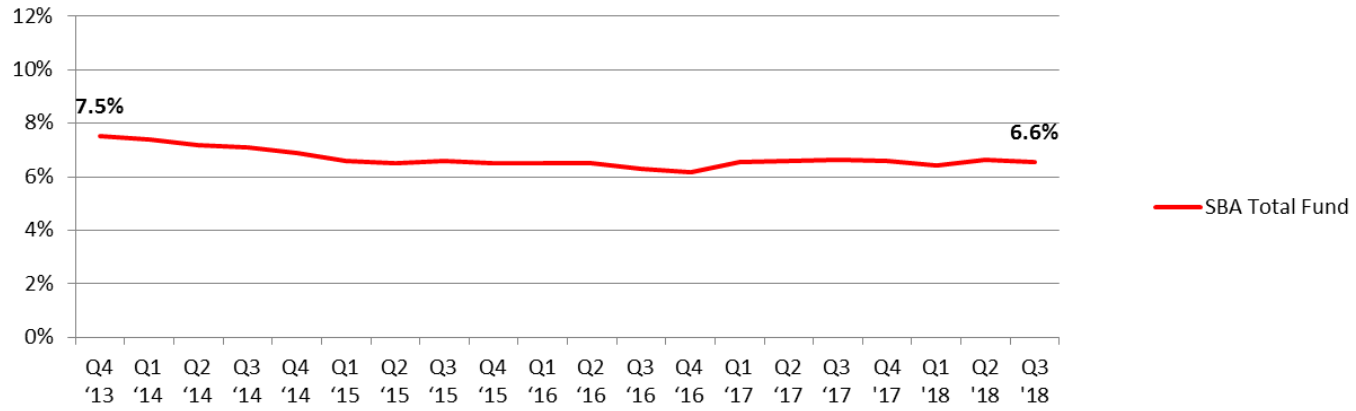
Asset Classes



Key Takeaways:

- There has been a general trend of lower return expectations over the past several years

SBA Total Fund



- As a result, SBA;s total fund return expectations steadily declined over the period, based on AHIC assumptions, with flat assumptions in the past year

AHIC Capital Market Assumptions

Declining Return Expectations Over Five Year Period

- The table below shows the expected portfolio returns using AHIC's capital market assumptions and SBA's long-term policy allocation
- Return expectations have fallen over the past five (5) years with level assumptions in the past year
- Summary of expected return on pension plan assets:

Asset Classes	Q4 '13	Q1 '14	Q2 '14	Q3 '14	Q4 '14	Q1 '15	Q2 '15	Q3 '15	Q4 '15	Q1 '16	Q2 '16	Q3 '16	Q4 '16	Q1 '17	Q2 '17	Q3 '17	Q4 '17	Q1 '18	Q2 '18	Q3 '18
Global Equity	7.6%	7.5%	7.4%	7.4%	7.2%	7.0%	6.9%	7.0%	7.1%	7.0%	7.3%	7.2%	7.0%	7.2%	7.3%	7.4%	7.3%	7.2%	7.4%	7.3%
Cash	3.8%	4.2%	3.5%	3.2%	2.9%	2.4%	2.2%	2.8%	2.5%	2.6%	2.3%	1.9%	2.0%	2.8%	2.8%	2.6%	2.6%	2.4%	2.6%	2.6%
Core Fixed Income	4.6%	4.9%	4.3%	4.0%	3.7%	3.3%	3.0%	3.7%	3.5%	3.6%	3.3%	2.9%	2.9%	3.8%	3.7%	3.5%	3.5%	3.2%	3.5%	3.5%
Hedge FoF (SI Proxy)	6.1%	6.2%	5.7%	5.6%	5.5%	5.2%	5.1%	5.5%	4.2%	4.3%	3.8%	3.8%	3.8%	4.3%	4.3%	4.2%	4.2%	4.0%	4.3%	4.3%
Real Estate	7.3%	7.3%	7.2%	7.1%	7.0%	6.8%	6.8%	6.7%	6.6%	6.6%	6.2%	5.7%	5.4%	5.4%	5.5%	5.5%	5.8%	5.7%	5.8%	5.5%
Private Equity	9.3%	9.1%	9.1%	9.0%	9.0%	8.8%	8.7%	8.8%	9.0%	8.9%	8.8%	8.5%	8.2%	8.5%	8.6%	9.0%	8.7%	8.5%	8.6%	8.4%
SBA Total Fund	**7.5%**	**7.4%**	**7.2%**	**7.1%**	**6.9%**	**6.6%**	**6.5%**	**6.6%**	**6.5%**	**6.5%**	**6.5%**	**6.3%**	**6.2%**	**6.5%**	**6.6%**	**6.6%**	**6.6%**	**6.4%**	**6.7%**	**6.6%**

AHIC CMAs have been flat over the past year

= Period used for 2018 Asset-Liability Study

AHIC Capital Market Assumptions

Declining Return Expectations Over Five Year Period

- The table below illustrates the changes in AHIC's capital market assumptions over the past 5 years, using the long-term policy target allocations shown

Asset Class	Change Since Q4 '13
Global Equity	-0.3%
Cash	-1.2%
Core Fixed Income	-1.1%
Hedge FoF (SI proxy)	-1.8%
Real Estate	-1.8%
Private Equity	-0.9%
SBA Total Fund	**-0.9%**

Asset Class	LT Policy Weights
Global Equity	53%
Cash	1%
Core Fixed Income	18%
Hedge FoF (SI proxy)	12%
Real Estate	10%
Private Equity	6%
Total	**100%**

SBA Approach to Assumption Development

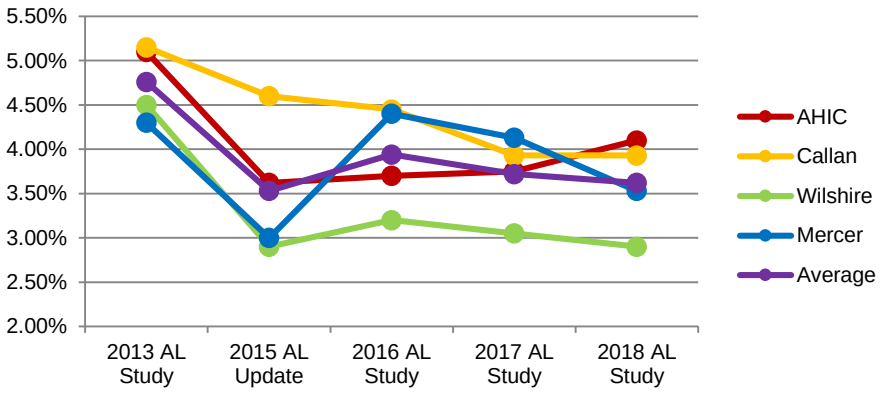
SBA Approach to Assumption Development

Development of Equity Risk Premium Assumption[1]

- SBA approach averages the equity risk premiums from four investment advisors (AHIC, Callan, Wilshire, Mercer)
  - Global equity risk premium used starting in 2016, deemed more applicable given global equity portfolio
  - Prior years were based on U.S. equity risk premiums
- Building block approach is used
  - Price inflation and fixed income returns reflect market conditions and yields
  - For all other asset classes ("risk assets") a risk premium is added to fixed income returns
- Average risk premium is used to scale AHIC's expected returns for the "Risk Assets"

Average Global Equity Risk Premium = Average (Global Equity Return – U.S. Bond Return)

Risk Premium for Equities[2]	U.S. Equities		Global Equities		
	2013 A-L Study	*2015 A-L Update*	*2016 A-L Study*	*2017 AL Study*	*2018 AL Study*
AHIC	5.10%	3.62%	3.70%	3.75%	4.10%
Callan	5.15%	4.60%	4.45%	3.93%	3.93%
Wilshire	4.50%	2.90%	3.20%	3.05%	2.90%
Mercer	4.30%	3.00%	4.40%	4.13%	3.53%
Average	**4.76%**	**3.53%**	**3.94%**	**3.72%**	**3.62%**



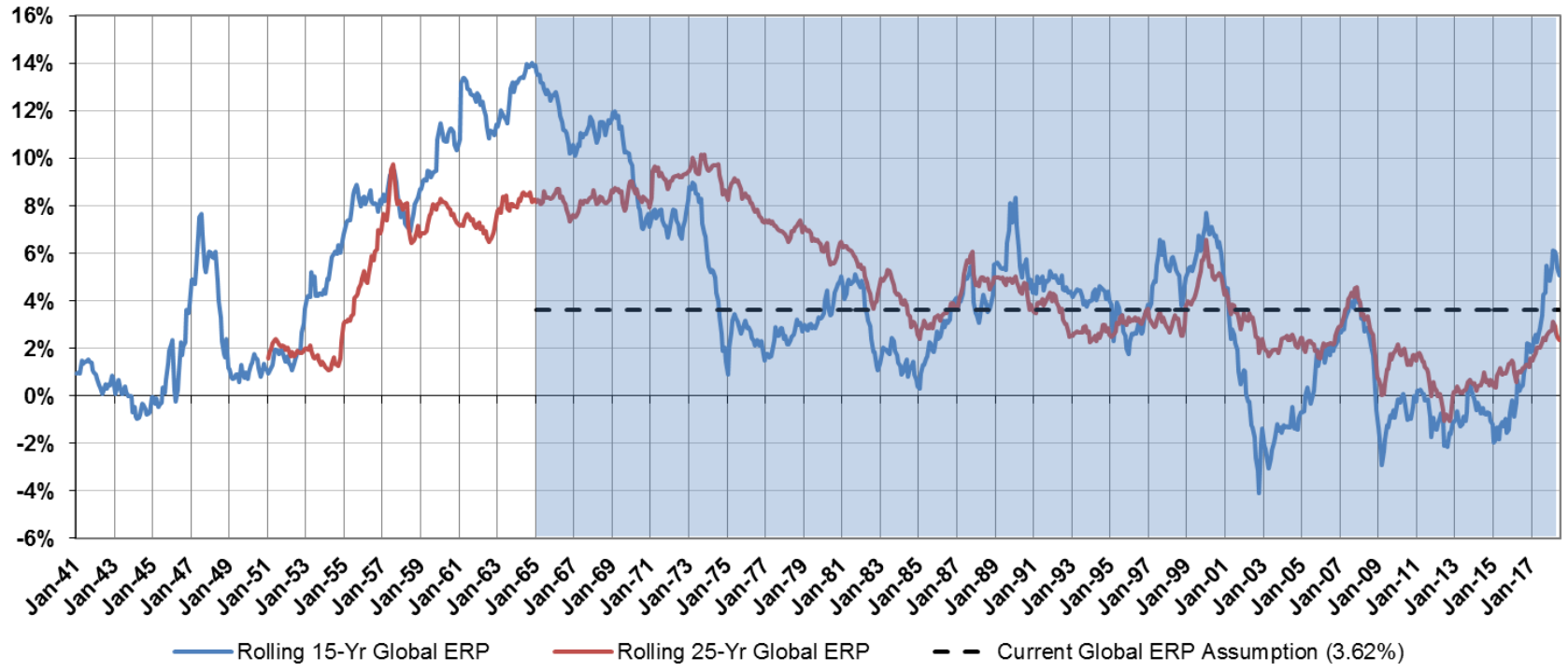
[1]Equity Risk Premium is defined as the excess return earned over bonds that compensates investors for taking on higher risk; all returns are 15-year geometric average (compounded) expected returns

[2]An asset-liability study was not completed in 2014

SBA Approach to Assumption Development

Historical and Expected Equity Risk Premium

- This graph shows the historical moving average of the global equity risk premium. The shaded section captures the experience since 1950. During this period, the average rolling 15-year global ERP has been 3.70%.

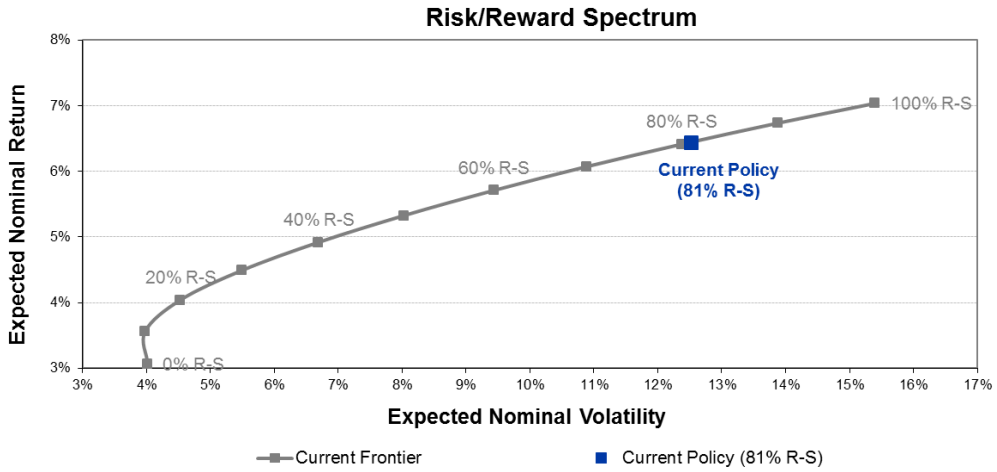


Notes:

- Global equity risk premium measured as the difference between Global Stock returns and U.S. Bonds.
- Global Stocks: January 1926 to December 1969 – 50% U.S. [CRSP 1-10 Deciles Data (cap-based)] / 50% International stock data from Global Financial Database; January 1970 to present – MSCI All-Country Index
- U.S. Bonds: January 1926 to December 1975 – Long-Term Government Bond returns from Ibbotson; January 1976 to present – Barclays Capital Aggregate Bond Index

SBA Approach to Assumption Development

Investment Analysis | Current Frontier (From 2018 A-L Study)



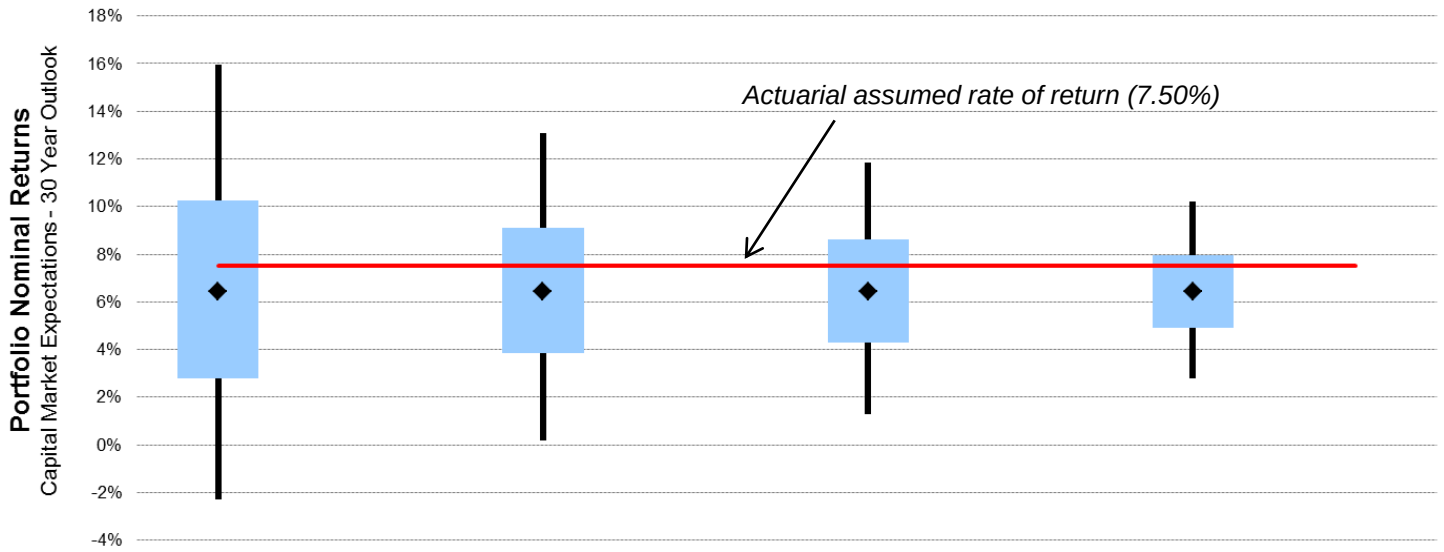
Key Takeaways:

- The current portfolio is well-diversified
  - Return-seeking assets are broadly diversified
  - Safety asset allocation should withstand stressed markets

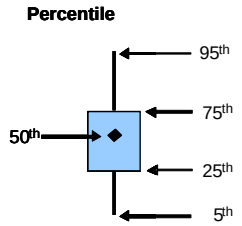
				Return-Seeking				Safety		
	Expected Nominal Return	Expected Nominal Volatility	Sharpe Ratio	Global Equity	Real Estate	Strategic	Private Equity	Cash & Short Duration Bonds	Interm. Duration Gov't Bonds	Interm. Duration Credit
Current Policy (81% R-S)	6.44%	12.52%	0.323	53%	10%	12%	6%	1%	9%	9%
Current Frontier										
0% Return-Seeking	3.06%	4.02%	0.165	0%	0%	0%	0%	0%	50%	50%
10% Return-Seeking	3.56%	3.98%	0.292	7%	1%	1%	1%	0%	45%	45%
20% Return-Seeking	4.04%	4.53%	0.362	13%	2%	3%	1%	0%	40%	40%
30% Return-Seeking	4.49%	5.49%	0.381	20%	4%	4%	2%	0%	35%	35%
40% Return-Seeking	4.92%	6.69%	0.377	26%	5%	6%	3%	0%	30%	30%
50% Return-Seeking	5.33%	8.02%	0.365	33%	6%	7%	4%	0%	25%	25%
60% Return-Seeking	5.71%	9.43%	0.351	39%	7%	9%	4%	0%	20%	20%
70% Return-Seeking	6.07%	10.89%	0.337	46%	9%	10%	5%	0%	15%	15%
80% Return-Seeking	6.42%	12.37%	0.325	52%	10%	12%	6%	0%	10%	10%
90% Return-Seeking	6.74%	13.88%	0.312	59%	11%	13%	7%	0%	5%	5%
100% Return-Seeking	7.04%	15.40%	0.301	65%	12%	15%	7%	0%	0%	0%

SBA Approach to Assumption Development

Investment Analysis | Range of Nominal Returns (From 2018 A-L Study)



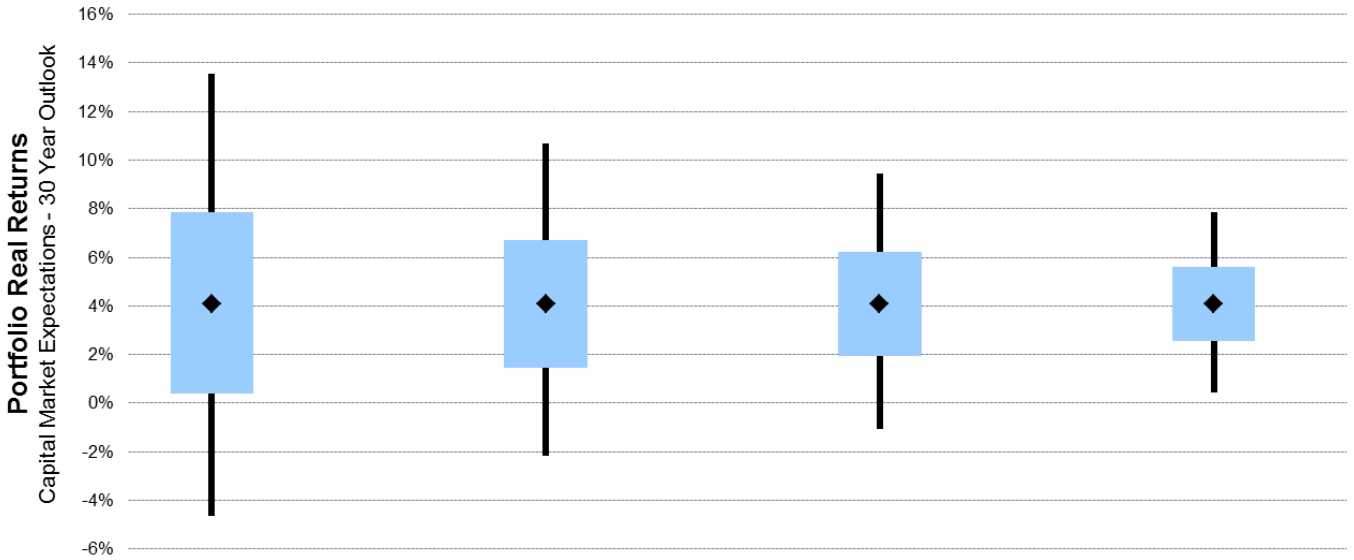
Percentile	Current Policy – 5 Year	Current Policy – 10 Year	Current Policy – 15 Year	Current Policy – 30 Year
5th	-2.30%	0.19%	1.31%	2.78%
25th	2.77%	3.83%	4.30%	4.93%
50th	6.44%	6.44%	6.44%	6.44%
75th	10.25%	9.12%	8.62%	7.98%
95th	15.96%	13.09%	11.84%	10.23%



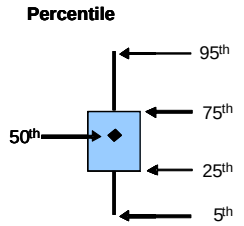
Note: Returns based on AHIC's 30 Year Capital Market Assumptions as of December 31, 2017

SBA Approach to Assumption Development

Investment Analysis | Range of Real Returns (From 2018 A-L Study)



Percentile	Current Policy – 5 Year	Current Policy – 10 Year	Current Policy – 15 Year	Current Policy – 30 Year
5th	-4.63%	-2.16%	-1.05%	0.42%
25th	0.41%	1.47%	1.94%	2.56%
50th	4.06%	4.06%	4.06%	4.06%
75th	7.85%	6.73%	6.23%	5.59%
95th	13.55%	10.68%	9.44%	7.84%



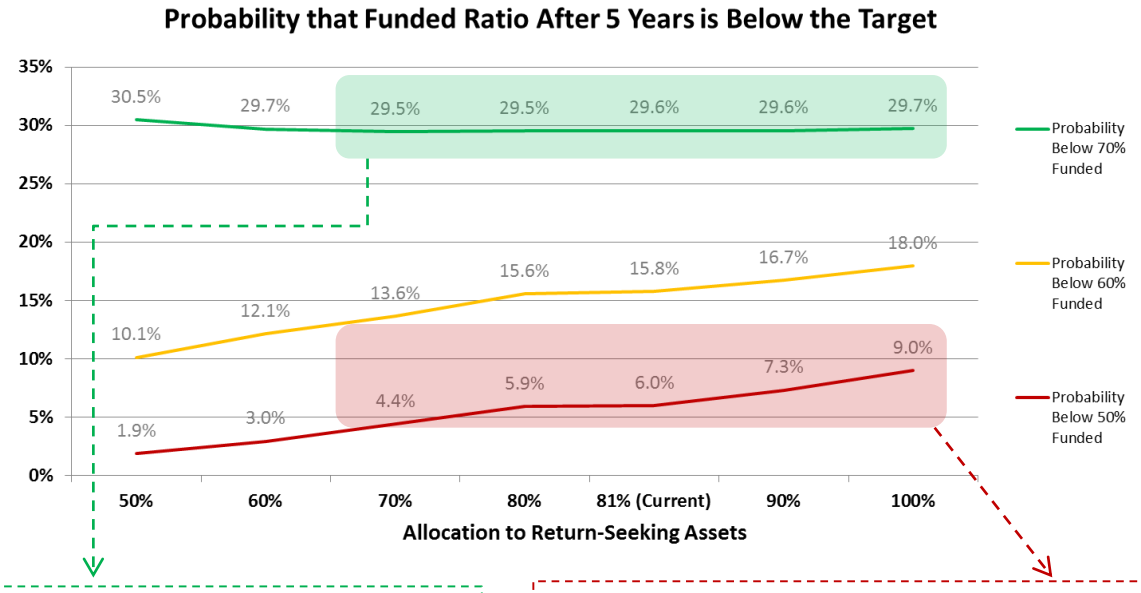
Note: Returns based on AHIC's 30 Year Capital Market Assumptions as of December 31, 2017

Short-Term Funded Ratio Shortfall Analysis

Based on Market Value of Assets (From 2018 A-L Study)

FRS' funded ratio based on the current allocation projects to the following outcomes after 5 years:

- 29.6% probability of being below **70%** funded
- 15.8% probability of being below **60%** funded
- 6.0% probability of being below **50%** funded



70% Funded Status

- Dialing up the risk to 90% return-seeking assets is expected to maintain a similar probability of falling below 70% funded
- Dialing down risk to 70% return-seeking assets is expected to reduce the probability of falling below 70% to 29.5%

50% Funded Status

- Dialing up the risk to 90% return-seeking assets is expected to increase this probability of falling below 50% funded to 7.3%
- Dialing down risk to 70% return-seeking assets is expected to decrease the probability to 4.4%

Empower Results®

Horizon Survey of Capital Market Assumptions

2018 Horizon Survey Results
AHIC vs. Other Advisors

- Since 2010, Horizon Actuarial Services, LLC has conducted a capital market assumption survey of investment firms to aid in determining reasonable assumptions for a pension plan's expected return on assets
  - While we do not seek to change our approach based on how we stack up to peers, it is a helpful double-check to make sure we are not too far off from others in the industry

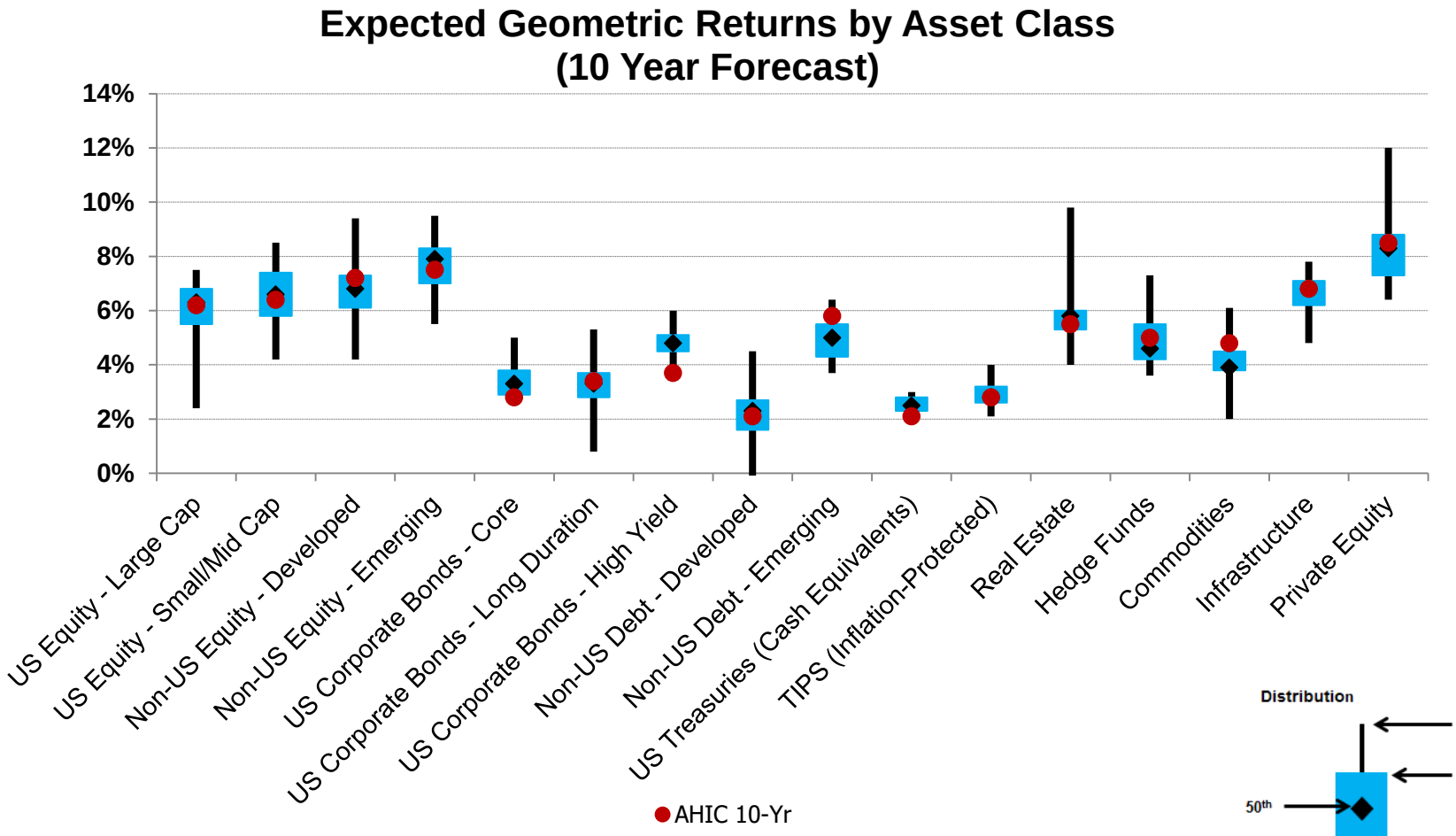
- Compared to 2017, 2018 survey results under the 10-year forecast indicate a slight decrease in return assumptions of both risky assets (equity-like) and fixed income asset classes
  - Equity return assumptions are lower by an average of 0.3%
  - Fixed income return assumptions are lower by an average of 0.1%
  - Alternative asset class return assumptions are lower by an average of 0.2%

- 2018 AHIC 10-year forecast assumptions of Equities tend to be mixed compared to the survey average, Fixed Income assets slightly lower and Alternative Assets higher than the survey average
  - As equity markets have become more expensive in the US and Emerging Markets, AHIC equity return assumptions have consequently fallen. In other developed markets, a combination of slightly higher GDP growth expectations, small increase in inflation expectations and some of the market depreciation drive our return assumptions higher.
  - AHIC fixed income assumptions reflect rising yields, narrower credit spreads and flattening of yield curves during the first quarter of 2018
  - AHIC alternative asset class assumptions are generally higher due to methodological and inflation forecast differences compared to survey participant forecasts

- In conclusion, AHIC assumptions appear somewhat more conservative than peers included in the 2018 Horizon Survey of capital market assumptions

2018 Horizon Survey Results

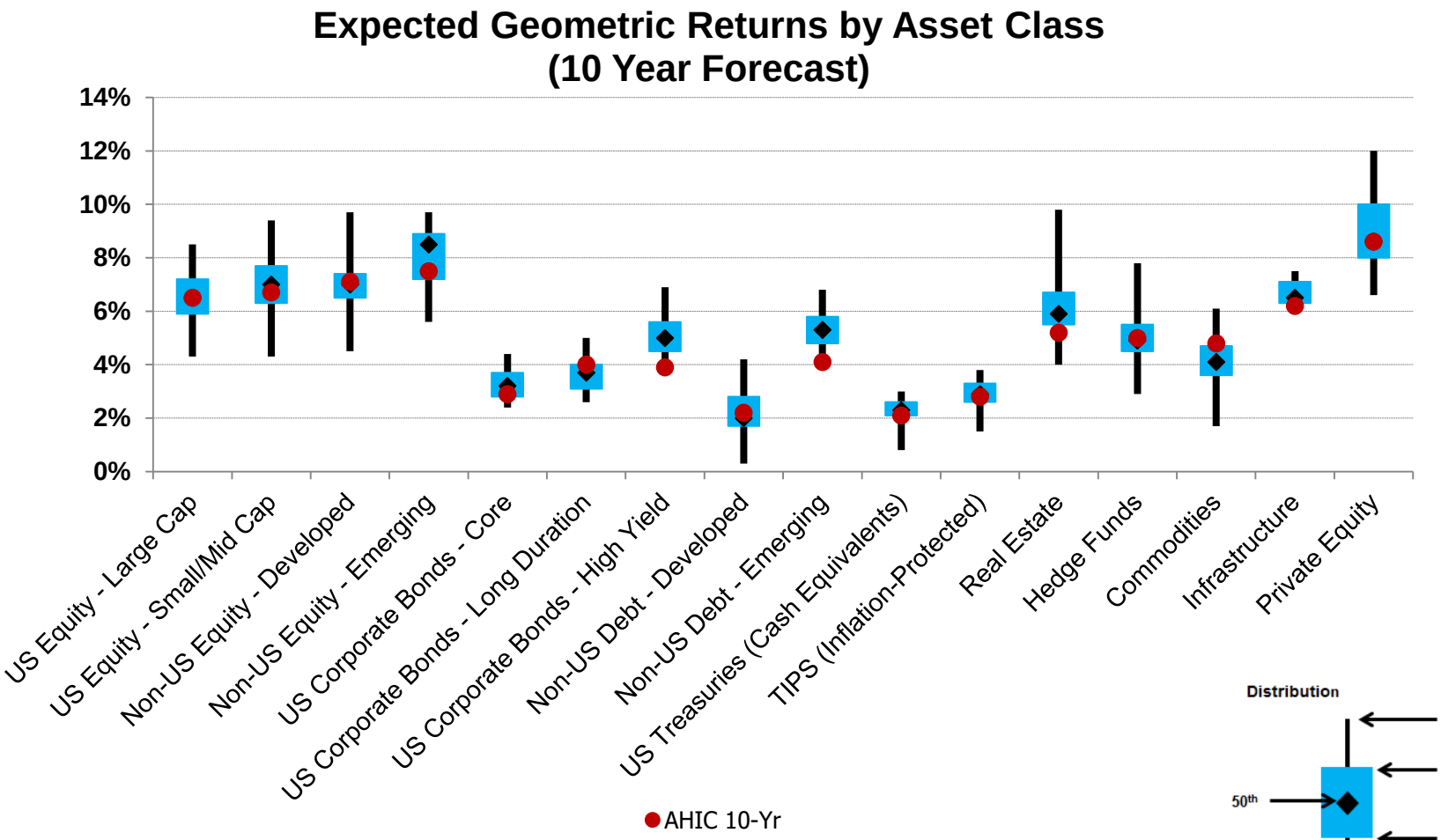
Distribution of Expected Returns from 34 Consultants



SOURCE: Horizon Actuarial survey of 2018 capital market assumptions from 34 independent investment advisors
Expected returns of the survey are annualized over 10-years (geometric).
AHIC expected returns are annualized over 10-years as of 1Q 2018

2017 Horizon Survey Results

Distribution of Expected Returns from 35 Consultants



SOURCE: Horizon Actuarial survey of 2017 capital market assumptions from 35 independent investment advisors
Expected returns of the survey are annualized over 10-years (geometric).
AHIC expected returns are annualized over 10-years as of 2Q 2017

Conclusions

Conclusions

- **AHIC Capital Market Assumptions**
  - Based on the Q3 2018 30-year AHIC-only capital market assumptions, the SBA expected return on pension assets is 6.6%

- **SBA Approach to Assumption Development**
  - Using the SBA approach, averaging the equity risk premiums from four consulting firms, the expected return on pension assets from the 2018 asset-liability study was 6.44%

- **Horizon Survey for Assumption Benchmarking**
  - AHIC assumptions tend to be similar to somewhat conservative relative to other investment advisors in the Horizon Survey

Appendix

2018 Horizon Survey
AHIC Versus Peers (10-Year)

	Horizon Survey			AHIC		
	10 Year Horizon			10 Year Forecasts		
Asset Class	**Expected Return**	**Expected Risk**		**Expected Return**	**Expected Risk**	**Difference**
US Equity - Large Cap	6.1%	16.4%		6.2%	17.0%	0.1%
US Equity - Small/Mid Cap	6.6%	20.2%		6.4%	23.0%	-0.2%
Non-US Equity - Developed	6.7%	18.7%		7.2%	20.0%	0.5%
Non-US Equity - Emerging	7.6%	24.9%		7.5%	30.0%	-0.1%
US Fixed Income - Core	3.4%	5.7%		2.8%	4.0%	-0.6%
US Fixed Income - Long Duration Corp	3.3%	10.8%		3.4%	11.0%	0.1%
US Fixed Income - High Yield	4.8%	10.2%		3.7%	12.0%	-1.1%
Non-US Fixed Income - Developed	2.2%	6.9%		2.1%	5.5%	-0.1%
Non-US Fixed Income - Emerging	5.0%	11.4%		5.8%	11.8%	0.8%
Treasuries (Cash Equivalents)	2.5%	2.7%		2.1%	1.0%	-0.4%
TIPS (Inflation-Protected)	2.9%	6.2%		2.8%	4.5%	-0.1%
Real Estate	5.9%	13.9%		5.5%	11.5%	-0.4%
Hedge Funds	5.0%	7.9%		5.0%	9.0%	0.0%
Commodities	4.0%	17.6%		4.8%	17.0%	0.8%
Infrastructure	6.6%	14.7%		6.8%	14.5%	0.2%
Private Equity	8.3%	22.2%		8.5%	24.0%	0.2%
Inflation	2.2%	1.8%		2.3%	1.0%	0.1%

Notes (Horizon Survey):

Source: Horizon Actuarial survey of 2018 capital market assumptions from 34 independent investment advisors

Expected returns are annualized (geometric).

Notes (AHIC Forecasts):

AHIC Forecasts are for Q1 2018

US Equity - Small/Mid Cap forecasts represents AHIC forecasts for US Small Cap

US Fixed Income - Long Duration forecasts represents AHIC forecasts for Long Duration Credit

Non-US Fixed Income - Developed forecasts represents AHIC forecasts for Non-US Fixed Income - Developed (50% Hedged)

Non-US Fixed Income- Emerging forecasts represents AHIC forecasts for Sovereign Local Currency

Real Estate forecasts represents AHIC forecasts for Core Private Real Estate

Hedge Funds forecasts represents AHIC forecasts for Hedge Fund-of-Funds (Buy List)

2017 Horizon Survey
AHIC Versus Peers (10-Year)

	Horizon Survey			AHIC		
	10 Year Horizon			10 Year Forecasts		
Asset Class	Expected Return	Expected Risk		Expected Return	Expected Risk	Difference
US Equity - Large Cap	6.5%	16.6%		6.5%	17.0%	0.0%
US Equity - Small/Mid Cap	6.9%	20.2%		6.7%	23.0%	-0.2%
Non-US Equity - Developed	7.0%	18.9%		7.1%	20.0%	0.1%
Non-US Equity - Emerging	8.0%	25.4%		7.5%	30.0%	-0.5%
US Fixed Income - Core	3.2%	5.5%		2.9%	4.0%	-0.3%
US Fixed Income - Long Duration Corp	3.6%	10.4%		4.0%	11.0%	0.4%
US Fixed Income - High Yield	5.1%	10.6%		3.9%	12.0%	-1.2%
Non-US Fixed Income - Developed	2.2%	7.4%		2.2%	5.5%	0.0%
Non-US Fixed Income - Emerging	5.3%	11.8%		4.1%	13.0%	-1.2%
Treasuries (Cash Equivalents)	2.3%	3.0%		2.1%	1.0%	-0.2%
TIPS (Inflation-Protected)	2.9%	6.3%		2.8%	4.5%	-0.1%
Real Estate	6.2%	14.5%		5.2%	11.5%	-1.0%
Hedge Funds	4.9%	8.0%		5.0%	9.0%	0.1%
Commodities	4.1%	17.9%		4.8%	17.0%	0.8%
Infrastructure	6.7%	14.6%		6.2%	14.5%	-0.5%
Private Equity	9.0%	22.0%		8.6%	24.0%	-0.4%
Inflation	2.2%	1.7%		2.2%	1.0%	0.0%

Notes (Horizon Survey):

Source: Horizon Actuarial survey of 2017 capital market assumptions from 35 independent investment advisors

Expected returns are annualized (geometric).

Notes (AHIC Forecasts):

AHIC Forecasts are for Q2 2017

US Equity - Small/Mid Cap forecasts represents AHIC forecasts for US Small Cap

US Fixed Income - Long Duration forecasts represents AHIC forecasts for Long Duration Credit

Non-US Fixed Income - Developed forecasts represents AHIC forecasts for Non-US Fixed Income - Developed (50% Hedged)

Non-US Fixed Income- Emerging forecasts represents AHIC forecasts for Non-US Fixed Income- Emerging Sovereign USD

Real Estate forecasts represents AHIC forecasts for Core Private Real Estate

Hedge Funds forecasts represents AHIC forecasts for Hedge Fund-of-Funds (Buy List)

Leading Methodologies & Reasons for Differences

Leading Methodologies

- Building Block
- Global Capital Asset Pricing Model (Global CAPM)
- Surveys
- Historical data (as a guide to future)
- Black-Litterman (combination of building block and CAPM)

Reasons for Differences

- Methodology
- Time Horizon
- Arithmetic vs. Geometric forecasts*
- Alpha (active management)*
- Inflation
- Investment Fees
- Asset class definition

* While some firms in Horizon survey responded with Arithmetic forecasts, the results have been converted to Geometric forecasts for comparison purposes. Additionally, the return expectations included in the Horizon survey are based on indexed returns (no “alpha”). However, AHIC return assumptions for certain asset classes include “alpha” or active management premium (e.g., Hedge Funds)

State Board of Administration

FRS Pension Plan Performance Review

Actuarial Assumptions Estimating Conference

October 31, 2018

SBA FLORIDA
STATE BOARD OF ADMINISTRATION

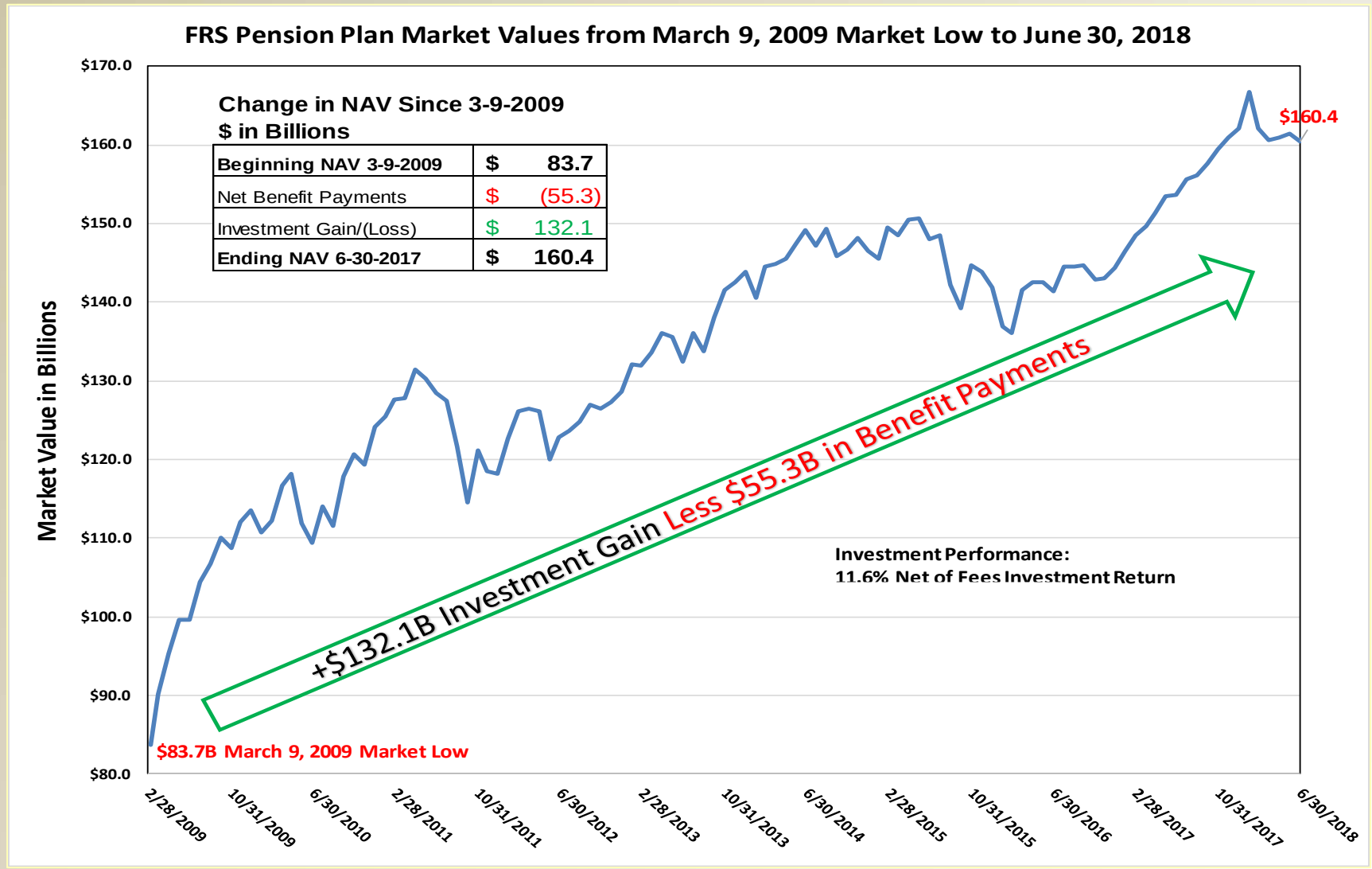
Introduction

- The Legislature, SBA Trustees, Division of Retirement, and SBA staff, have a history of supporting three critical requirements for pension fund sustainability:
  - Reasonable benefits
  - Prudent investments
  - Responsible funding policy
- The SBA is responsible for prudent investing to help fund retirement benefits.
- Approximately $2 out of every $3 in retirement benefits are funded by Pension Plan investments.

Introduction

- The “Global Financial Crisis” that began in 2007 led to marked to market asset value declines, creating an unfunded liability.
  - Funded surplus of 107.1% (+$8.2B) as of July 1, 2008 to a funding deficit of 88.5% (-$15.4B) as of July 1, 2009.
  - Funded ratio of 84.3% as of July 1, 2017.
- The Pension Plan produced an investment gain of $132.1B from the bottom of the “Global Financial Crisis” on March 9, 2009 to June 30, 2018.
  - 11.6% investment return
  - While paying out $55.3B in benefit payments

FRS Pension Plan Changes in Market Value and Performance From March 9, 2009 Market Low to June 30, 2018



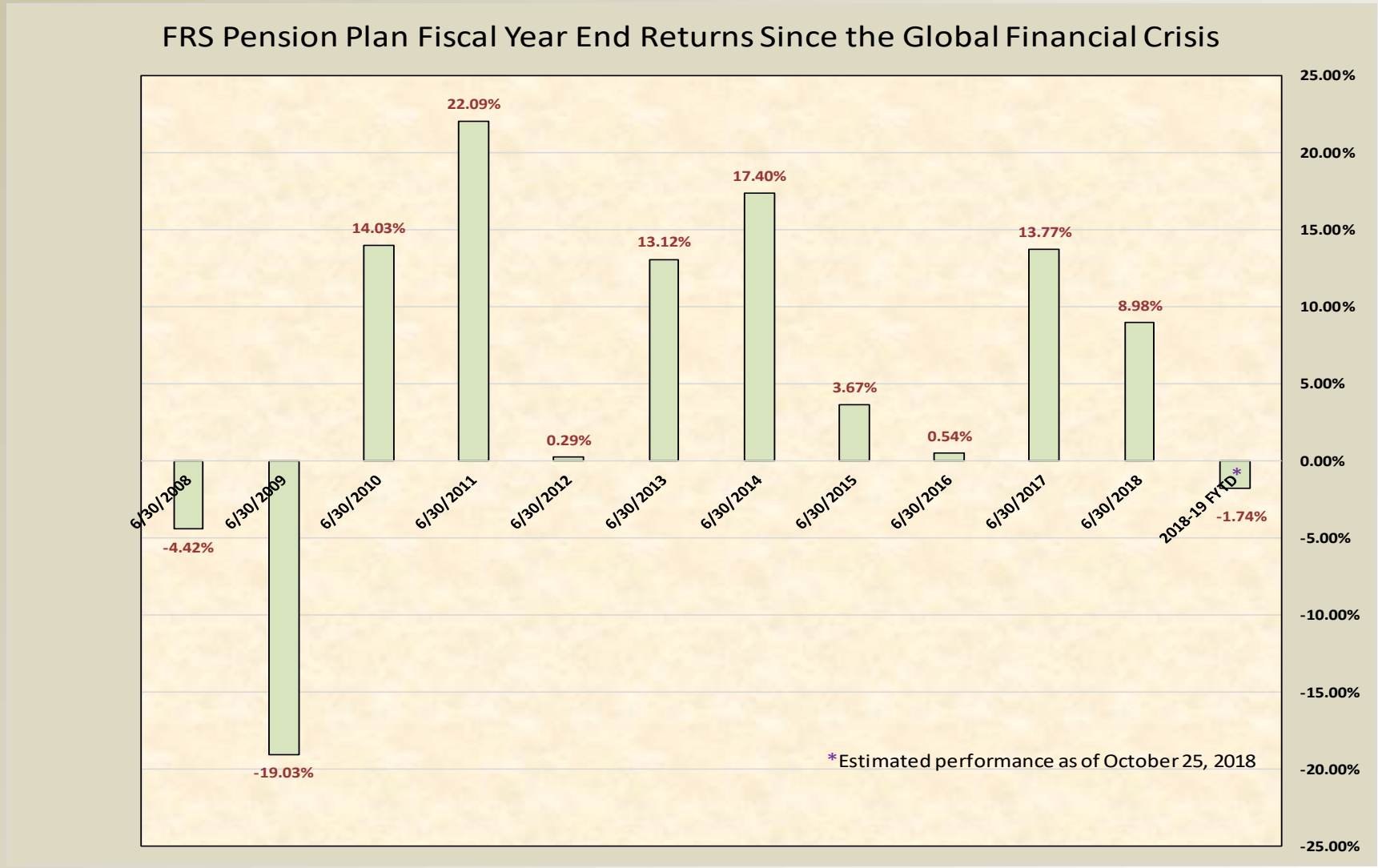
FRS Pension Plan Performance Fiscal Year 2017-18

Summary of Cash Flows		
	Second Quarter	Fiscal YTD*
Beginning Market Value	$160,530,945,101	$153,573,300,932
+/- Net Contributions/(Withdrawals)	$(1,665,820,384)	$(6,791,728,253)
Investment Earnings	$1,574,234,140	$13,657,786,179
= Ending Market Value	$160,439,358,858	$160,439,358,858
Net Change	$(91,586,243)	$6,866,057,926

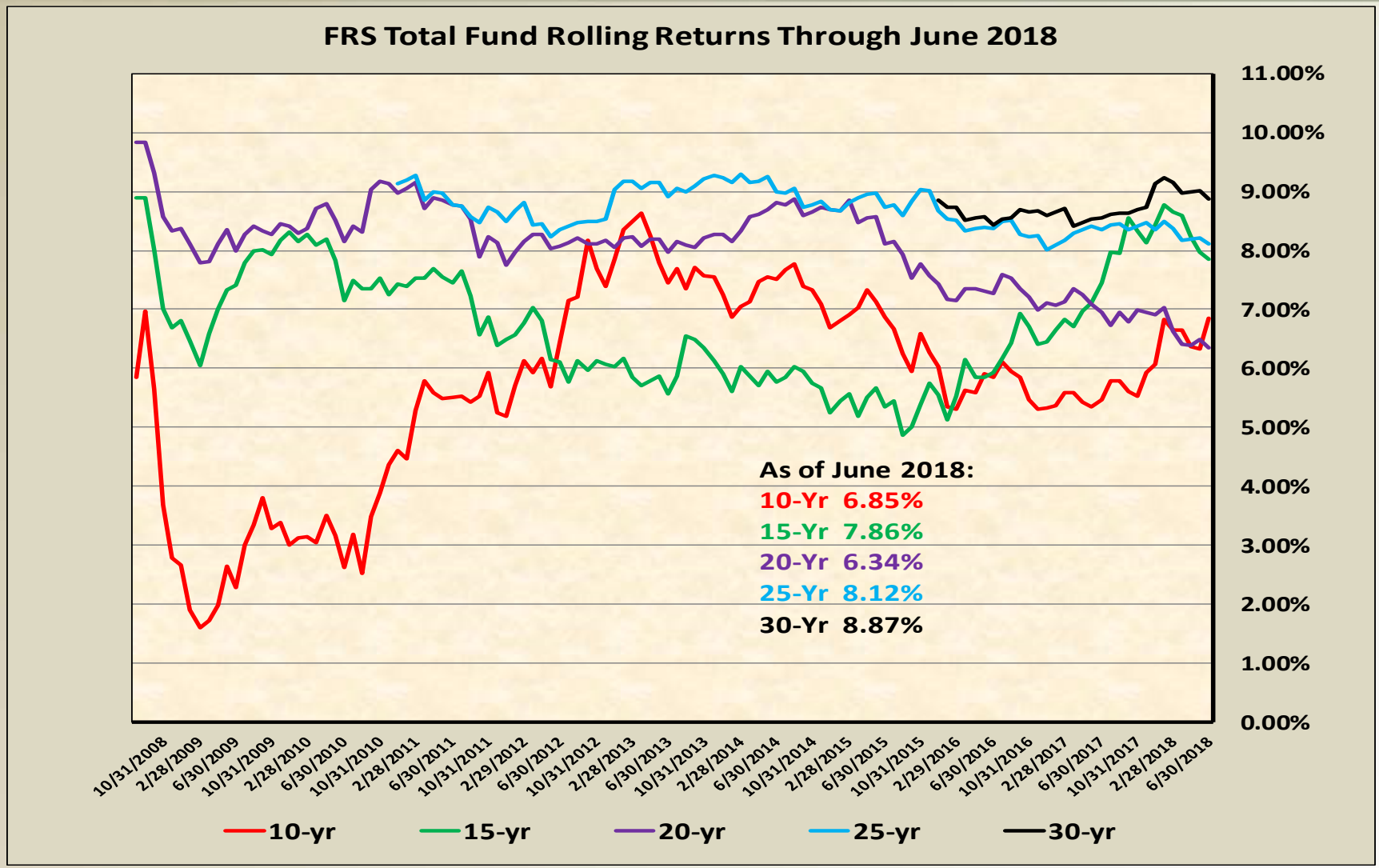
*Period July 2017 – June 2018

- 8.98% net of fees return

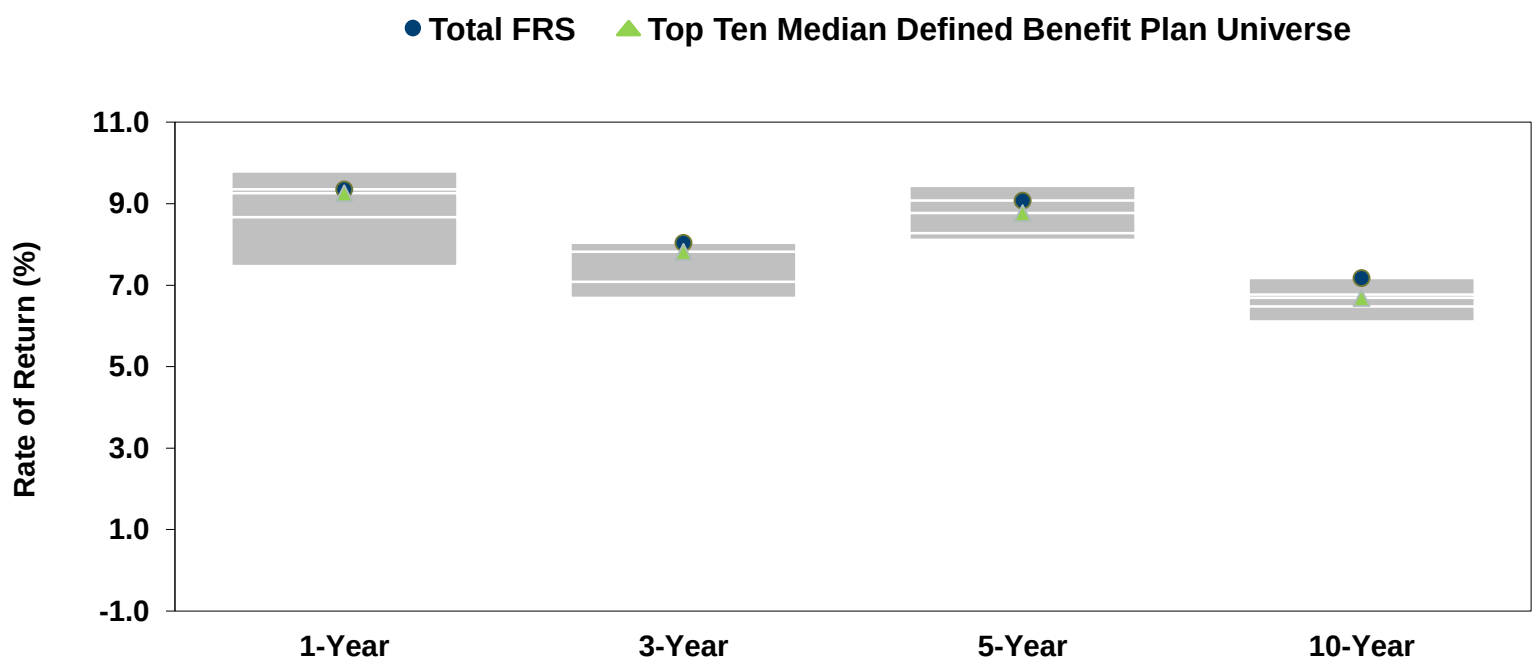
FRS Pension Plan Performance



FRS Pension Plan Long-Term Investment Results
Periods Ending 6/30/2018



Top Ten Defined Benefit Plans FRS Universe Comparison (TUCS) Periods Ending 6/30/2018



	1-Year	3-Year	5-Year	10-Year
FRS Percentile Ranking	25	25	25	5

- 1-year, 3-year, 5-year and 10-year top quartile performance among the top ten U.S. public defined benefit plans.

Note: The TUCS Top Ten Universe includes $1,527.0 billion in total assets. The median fund size was $151.2 billion and the average fund size was $152.7 billion.

Conclusions

- The Pension Plan has experienced significant growth since the depth of the “Great Financial Crisis”.
- The Pension Plan is a top performer amongst its peers.
- Expectations that future capital market returns will not be as robust.
- Increasing fund risk to reach for return is neither wise nor prudent as fiduciaries.
- Increased funding would help lower the risk of a significant funding shortfall and help close the funding deficit.

Conclusions

- Future considerations:
  - Maintain the Pension Fund's position of strength, through low cost, prudent investing and a responsible funding policy.
  - GASB reporting requirements and impact on state and local government financial statements.
  - Rating agencies (Moody's, S&P, and Fitch): Impact on state and local government bond ratings and debt costs.
  - Intergenerational transfer of pension costs to future taxpayers.

Milliman

Florida Retirement System Pension Plan

Actuarial Valuation as of July 1, 2018

Prepared by:

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Principal and Consulting Actuary

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December 3, 2018

Ms. Shirley Beauford
Interim State Retirement Director
Florida Department of Management Services, Division of Retirement

Re: **Actuarial Valuation as of July 1, 2018**

Dear Director Beauford:

We have conducted an annual actuarial valuation of the Florida Retirement System (FRS) Pension Plan as of July 1, 2018, for assessing plan funded status and determining actuarially calculated contribution rates prior to blending with FRS Investment Plan contribution rates to create proposed blended statutory contribution rates for the July 2019 - June 2020 plan year. The major findings of the valuation are contained in the following report.

Section 1 contains an Executive Summary of the results of our valuation followed by four sections containing detailed information on Assets (Section 2), Liabilities (Section 3), Contributions (Section 4), and Accounting Statements (Section 5). In the Appendices, we provide information regarding actuarial methods and assumptions, a summary of plan provisions, membership statistics, cost projections, comparisons/reconciliation, and a glossary of terms.

All costs and liabilities shown in this report have been determined on the basis of actuarial assumptions and methods set forth in Appendix A. Preliminary 2018 valuation results using the actuarial assumptions and methods used in the previous valuation as of July 1, 2017 were presented by the actuary to the 2018 FRS Actuarial Assumption Conference held on October 31, 2018. The assumptions are based on Milliman's most recent review of the System's experience, which was for the observation period from July 1, 2008 through June 30, 2013. Additional details on that review of System experience can be located in our August 11, 2014 presentation materials to the 2014 FRS Actuarial Assumption Conference and our formal 2014 Experience Study report, which was issued on September 8, 2014. The assumptions used in this valuation are unchanged from those used in the prior valuation as of July 1, 2017 except for the investment return assumption for purposes of developing actuarially calculated contribution rates, which was decreased from 7.50% to 7.40%.

With one exception, in our professional opinion we believe the assumptions and methods used in this report for purposes of developing actuarially calculated contribution rates are reasonable. The investment return assumption, which was set by the 2018 FRS Actuarial Assumption Conference, is a *prescribed assumption* as defined by Actuarial Standard of Practice No. 27 (ASOP 27). The prescribed assumption conflicts with our professional judgment regarding what would constitute a reasonable assumption for the purpose of the measurement as discussed in ASOP 27. Details and discussion regarding the return assumption are shown in our 2018 FRS Actuarial Assumption Conference presentation materials and discussed in the Executive Summary of this report.

The accounting calculations for the FRS Pension Plan's financial reporting and its June 30, 2018 CAFR in compliance with the GASB Statement No. 67 use some methods and assumptions that differ from those used in this report. The GASB financial reporting information, which is issued under separate cover, uses assumptions and methods which in our professional opinion are reasonable without any exceptions.

The results of this report are dependent upon future experience conforming to the assumptions disclosed in this report. Future actuarial measurements may differ significantly from the current measurements presented in this report due to many factors, including: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements.

Actuarial computations presented in this report are for purposes of assessing funded status and determining the actuarially calculated contribution rates for the FRS Pension Plan. The calculations in the enclosed report have been made on a basis consistent with our understanding of the FRS Pension Plan's funding requirements and goals. Determinations for purposes other than meeting those requirements referenced in this paragraph may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

In preparing our report we relied, without audit, on information (some oral and some written) supplied by the Florida Department of Management Services, Division of Retirement. This information includes, but is not limited to, statutory provisions, employee census, and financial information. In our examination of these data, we have found them to be reasonably consistent and comparable with data used for other purposes. Since the valuation results are dependent on the integrity of the data supplied, the results can be expected to differ if the underlying data is incomplete or missing. It should be noted that if any data or other information is inaccurate or incomplete, our calculations may need to be revised.

This actuarial valuation was prepared and completed by us and those under our direct supervision, and we acknowledge responsibility for the results. To the best of our knowledge, the results are complete and accurate. With the exception of the one assumption noted above, the techniques and assumptions used are reasonable. In our opinion this valuation meets the requirements and intent of Part VII, Chapter 112, Florida Statutes. Regarding the one noted exception, Section 216.136(10) of Florida Statutes indicates that the 2018 FRS Actuarial Assumption Conference holds the statutory authority to determine the investment return assumption for purposes of developing actuarially calculated contribution rates. There is no benefit provision or related expense to be provided by the plan and/or paid from the plan's assets for which liabilities or current costs have not been established or otherwise taken into account in the valuation. To the best of our knowledge, there were no known events that were not taken into account in the valuation.

Milliman's work product was prepared exclusively for the internal business use of Florida Department of Management Services, Division of Retirement, for a specific and limited purpose. It is a complex technical analysis that assumes a high level of knowledge concerning the Florida Retirement System's operations, and uses Division data, which Milliman has not audited. To the extent that Milliman's work is not subject to disclosure under applicable public record laws, Milliman's work may not be provided to third parties without Milliman's prior

written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exceptions:

(a) The Division of Retirement may provide a copy of Milliman's work, in its entirety, to the System's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the System.

(b) The Division of Retirement may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law.

No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with Actuarial Standards of Practice, the Code of Professional Conduct and Qualification Standards for Public Statements of Actuarial Opinion of the American Academy of Actuaries. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Respectfully submitted,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Daniel Wade, FSA, EA, MAAA
Principal and Consulting Actuary

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Consulting Actuary

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Table of Contents

1. Executive Summary

This report presents the results of our July 1, 2018 actuarial valuation of the defined benefit Florida Retirement System (FRS) Pension Plan. This valuation is used to determine actuarially calculated Pension Plan-specific employer contribution rates for the July 1, 2019 – June 30, 2020 plan year. The Pension Plan-specific rates developed in this valuation report are then combined with contribution rates from the defined contribution FRS Investment Plan to create blended proposed statutory employer contribution rates. The actual contribution rates paid by employers during the 2019-2020 plan year will be determined by Florida Statutes. The statutory contribution rates in effect for the current 2018-2019 plan year are identical to the blended proposed statutory rates developed in conjunction with the July 1, 2017 actuarial valuation.

On the smoothed Actuarial Value of Assets (AVA) basis used to determine actuarially calculated contribution rates and the Unfunded Actuarial Liability (UAL), Pension Plan funded status decreased from 84.3% to 83.9%. On a Market Value of Assets (MVA) basis, Pension Plan funded status calculated on the assumptions and methods in this report for system funding purposes increased from 86.3% to 86.7% due to actual plan year investment return of approximately +9.3% compared to an assumed prior year return of 7.50%.[1] The market value asset gains were partially offset by demographic experience and the decrease in the investment rate of return assumption.

Pension Plan actuarially calculated employer contribution rates, prior to blending with Investment Plan rates to create blended proposed statutory contribution rates, increased from 10.50% of pay to 11.04% of pay on a composite basis. The most significant rate increase source was the 0.10% decrease in the assumed future average annual long-term investment return. Actual retirement and DROP entry behavior of eligible members during 2017-2018 plan year compared to the long-term assumption played the next largest role in the rate increase. Other actual member demographic experience during the year, which includes the effects of actual salary increase and mortality experience compared to long-term assumption, and a 2.43% increase in the payroll on which UAL rates are calculated prior to blending with Investment Plan rates, compared to the long-term payroll growth assumption of 3.25% played lesser roles in the year-over-year increase. The increase factors noted above were partially offset by a plan year investment return on a smoothed Actuarial Value of Assets basis of +8.4%, which is above the long-term assumption used in the prior valuation.

Due to strong market value investment performance over the past plan year, the Market Value of Assets exceeds the smoothed Actuarial Value of Assets used for funded status and contribution rate calculations by $5.09 billion as of July 1, 2018. That $5.09 billion not yet recognized market investment gain will be systematically recognized as a sequence of actuarial investment gains in the UAL over the next several years if market value investment experience during that period meets or exceeds the 7.40% investment return assumption. If actual market value investment experience during that period fails to meet or exceed the 7.40% assumption used in this valuation, the not yet recognized market investment gain will serve as buffer, either mitigating or eliminating increases in actuarially calculated employer contribution rates.

For this valuation, a long-term average annual future investment return assumption of 7.40% was used, a decrease of 0.10% from the assumption used in the previous valuation. The 7.40% assumed return is a *prescribed assumption* as defined by Actuarial Standard of Practice No. 27 (ASOP 27), as it was set by the 2018 FRS Actuarial Assumption Conference. The prescribed assumption conflicts with our judgment regarding what would constitute a reasonable assumption for the purpose of the measurement as discussed in ASOP 27. It is

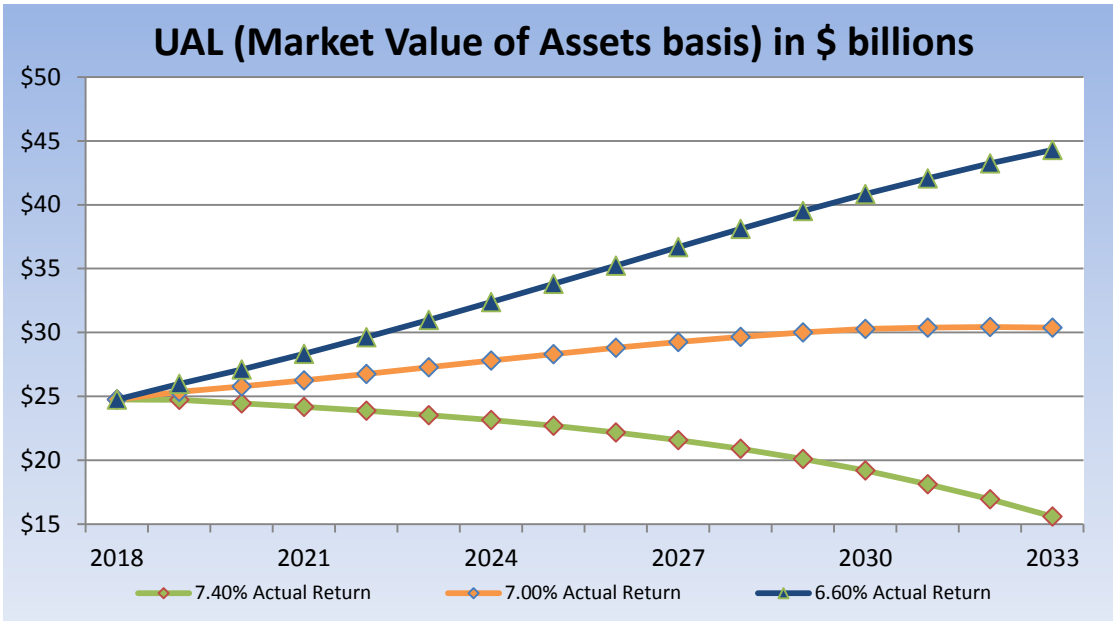
[1] *The required financial reporting information under GASB 67 also uses market value of assets, but has a cost allocation method and an investment return assumption different from those used in this valuation for funding purposes. GASB 67 information was issued under separate cover, and indicated a funded ratio of 84.3% as of June 30, 2018 using a 7.00% investment return assumption.*

materially above the 50th percentile average returns in the proprietary capital market outlook models developed by both Milliman and the Florida State Board of Administration's outside investment consultant (Aon Hewitt Investment Consulting). All models developed in 2018 by Milliman and Aon Hewitt had 50th percentile geometric average annual long-term future returns in the 6.4%-6.7% range, and all models developed in 2018 indicated a likelihood of less than 35% of actual long-term future returns meeting or exceeding 7.40%. More details are shown in our 2018 FRS Actuarial Assumption Conference presentation materials.

All else being equal, the lower the selected investment return assumption, the higher the likelihood the FRS Pension Plan will meet or exceed its assumed investment return in future years. A lower assumption would result in higher short-term actuarially calculated contribution rates for employers, but would also serve to lessen the magnitude of actuarially calculated contribution rate increases in the event that actual future investment performance fails to meet the assumption.

Actual future investment return experience for the FRS Pension Plan is not affected by the assumption used in the actuarial valuation. Applying the 7.40% assumption used in this valuation, the following graph illustrates the UAL (Unfunded Actuarial Liability) on a Market Value of Assets basis under three scenarios for steady actual future investment returns:

- 7.40%, which is the assumption selected for this valuation by the 2018 FRS Actuarial Assumption Conference
- 7.00%, which is the assumption used for GASB 67 calculations as of a June 30, 2018 Measurement Date
- 6.60%, which is near the 50th percentile assumption for a model developed by Aon Hewitt Investment Consulting in consultation with the 2018 FRS Actuarial Assumption Conference



As illustrated in the graph, if actual future investment returns match the 7.40% assumption the UAL would decrease by approximately one-third by the end of the illustrated 15-year period. Currently, there are market investment gains that are not yet recognized in the smoothed Actuarial Value of Assets as of the valuation date. When that is the case, the pattern shown over the first 15 years in the 7.40% actual return scenario is typical of the method of closed 30-year amortization periods used to calculate contribution rates in the valuation. (The UAL still remaining after 15 years is amortized over the latter 15 years of the amortization schedule if actual investment performance continues to match the assumption.) If actual returns underperform the 7.40% assumption by 0.40%, the UAL would increase by approximately $6 billion over the illustrated 15-year projection period. If actual

investment returns equal the 50th percentile return from Aon Hewitt Investment Consulting 2018 Q3 model of 6.60%, the UAL would increase by 79% over the modeled 15-year period even if actuarially calculated contributions are made and all other experience follows the assumptions used in this valuation.

We also want to point out other key items regarding this valuation:

- Consistent with the previous valuation, the contribution rate calculation methodology uses the Ultimate Entry Age Normal (Ultimate EAN) actuarial cost allocation method as selected by the FRS Actuarial Assumption Conference. Under the Ultimate EAN method, the Normal Cost Rate is calculated as the rate that would be applicable if the plan provisions of Senate Bill 2100 for members hired on or after July 1, 2011 applied to all FRS Pension Plan members for the entirety of their projected working careers. The present value of total projected benefits calculated for each member reflects the actual tier in which the member participates. As such, the methodology used for calculating contribution rates understates Normal Cost Rate but overstates Actuarial Liability and UAL Rate when compared to some alternative calculation methodologies, such as the Individual Entry Age Normal (Individual EAN) methodology that is mandated by GASB for financial reporting calculations under GASB Statements Nos. 67 & 68.

- The Ultimate EAN actuarial cost allocation method being used for liability and rate calculations, like any actuarial cost allocation method, divides the present value of total projected benefits for each active member between past service (Actuarial Liability, or AL) and future service (present value of future normal costs). The cost allocation method does not impact the calculation of the present value of total projected benefits.

The tables immediately following compare July 1, 2017 actuarial valuation results with July 1, 2018 actuarial valuation results. The difference column shows the change between the July 1, 2017 valuation results and the July 1, 2018 valuation results.

A. Assets, Liabilities, and Funded Status

A comparison of the Actuarial Liability and Actuarial Value of Assets (AVA) follows. These figures are based upon the actuarial assumptions used to determine the actuarial costs of the FRS Pension Plan (see Appendix A). Under current methodology, and as required by Florida law, the AVA cannot be less than 80% or greater than 120% of the Market Value of Assets (MVA). This corridor restriction does not come into play unless there are dramatic asset gains or losses in the prior plan year. The purpose of the corridor is to ensure that the “smoothed” value of assets does not vary from the market value by more than 20%. As of July 1, 2018, the AVA is 96.8% of the MVA.

		Valuation Results (numbers in $ billions)		
		July 1, 2017	July 1, 2018	Difference
1.	Actuarial Liability	$178.6	$186.0	$7.4
2.	Actuarial Value of Assets	$150.6	$156.1	$5.5
3.	Unfunded Actuarial Liability (1 - 2)	$28.0	$29.9	$1.9
4.	Funded Percentage (2 / 1)	84.3%	83.9%	-0.4%

In Section 5 of this report we present an additional measure of funded status based on a different liability measure, the "Accumulated Benefit Obligation" (ABO), based on both the AVA and the MVA.

B. Contributions

Actuarially calculated contribution rates by class are determined annually in the actuarial valuation. Actual contribution rates paid by employers for each class are set by statute and consist of Normal Cost and UAL Cost components. For the 2018-2019 plan year, the actuarially calculated rates determined by the July 1, 2017

valuation, and the legislated rates are equivalent. The 2019-2020 actual contribution rates will be set by the 2019 session of the Florida Legislature, with advice from this valuation and the associated 2019-2020 Blended Rate Study that will be issued subsequent to the publication of this valuation. The Unfunded Actuarial Liability (UAL) amortization payment will consist primarily of costs or savings associated with plan changes, assumption changes, differences in actual and expected experience, or changes in actuarial methodology. As of July 1, 2018 the FRS Pension Plan has a UAL of $29.9 billion on a smoothed Actuarial Value of Assets basis. The UAL Cost is calculated to eliminate the UAL over a pre-determined amortization period if future experience follows assumptions.

The comparative FRS Pension Plan-specific employer contribution rates for the Regular and Special Risk membership classes resulting from this valuation and the prior valuation are as follows. See Section 4 for more details on rate development and valuation results for all membership classes.

	July 1, 2017 Valuation (2018-2019 Rates)		July 1, 2018 Valuation (2019-2020 Rates)		Difference	
	Regular	Special Risk	Regular	Special Risk	Regular	Special Risk
Normal Cost Rate	2.91%	11.95%	3.09%	12.36%	0.18%	0.41%
UAL Contribution Rate [1]	4.19%	12.44%	4.30%	13.17%	0.11%	0.73%
Employer Contribution Rate Prior to Blending with FRS IP Payroll	7.10%	24.39%	7.39%	25.53%	0.29%	1.14%

[1] The 0.11% increase in UAL Contribution Rate for the Regular class represents a 0.33% increase in rates due to a decrease in the investment rate of return assumption, and a 0.22% decrease in rates due to other experience. The 0.73% increase in UAL Cost for the Special Risk class represents a 0.60% increase in rates due to a decrease in the investment rate of return assumption, and a 0.13% increase in rates due to other experience, including the effect of year-over-year salary increases.

C. Membership

The total membership (active, terminated vested, retired, and DROP) of the FRS Pension Plan increased by 8,899 members from 1,063,477 as of July 1, 2017 to 1,072,376 as of July 1, 2018, an increase of 0.8%. The total annualized projected payroll of non-DROP active Pension Plan members increased by 1.6%, from $24.0 billion for the 2017-2018 plan year to $24.4 billion for the 2018-2019 plan year, a $0.4 billion increase in payroll. Note that the payroll on which UAL Cost rates are determined is higher, and includes the payroll of DROP and members in Optional Retirement Plans subject to the UAL contribution.

A summary of Pension Plan membership change by status follows:

	Valuation Results: Counts		
	July 1, 2017	July 1, 2018	% Change
Active Members	518,622	516,825	-0.3%
Terminated Vested Members	108,612	108,831	0.2%
Retired Members	402,791	412,126	2.3%
DROP Members	33,452	34,594	3.4%
Total Members	1,063,477	1,072,376	0.8%

D. Experience

Changes to assets and liabilities between July 1, 2017 and July 1, 2018 are described in this section.

1. Assets:

Changes in the smoothed Actuarial Value of Assets (AVA) during the plan year were due to:

▪ Contributions received	$3.667	
▪ Payment of benefits and administrative expenses	(10.468)	
▪ Assumed plan year investment returns	11.039	
▪ Investment plan year gain/(loss) experience	1.273	
Total plan year Actuarial Value of Assets increase	$5.511	Billion

The actual plan investment return on the AVA was 8.36% compared to the prior valuation's assumed return of 7.50%. On a market-value basis, the assets earned 9.26%. On a year-by-year basis, asset returns were as follows:

	Rates of Return*		
	2015/2016	2016/2017	2017/2018
Market Value	0.54%	13.57%	9.26%
Actuarial Value	6.99%	8.21%	8.36%

* *Assumes net cash flow occurs mid-year.*

2. Actuarial Liability (AL):

Changes in the Actuarial Liability during the plan year were due to:

▪ Expected increase, due to combined effects of Normal Cost plus interest-related growth in Actuarial Liability less benefit payments during plan year	$4.447	
▪ Change in plan provisions	0.000	
▪ Changes in assumptions	2.198	
Liability Plan Year (Gain) / Loss Experience		
▪ Active member salary increases different than assumption	(0.319)	
▪ New active members	0.457	
▪ Retirement and DROP entry behavior	0.793	
▪ Inactive mortality	(0.160)	
▪ Other demographic sources not noted above[1]	(0.045)	
▪ Liability plan year (gain) / loss experience	0.726	
Total plan year Actuarial Liability increase	$7.371	Billion

[1] *Reflects the combined effects of all other liability (gain)/loss sources for actuarial experience compared to assumptions used in the July 1, 2017 actuarial valuation. These include actual experience for pre-retirement turnover, second election transfers to the Investment Plan, active member death and disability, and all other actual experience not otherwise noted in the table above compared to assumed on the demographic assumptions used to calculate July 1, 2017 actuarial valuation results.*

3. Unfunded Actuarial Liability (UAL):

The net change in the UAL of the FRS Pension Plan was an increase of $1.860 billion, from $27.986 billion to $29.846 billion. The net increase is attributable to the following:

Change due to:

▪ Expected increase, based on the net combined effect of plan contributions received, interest, and assumed investment and demographic experience	$0.209	
▪ Change in plan provisions	0.000	
▪ Changes in assumptions	2.198	
▪ Investment plan year (gain)/loss experience	(1.273)	
▪ Liability plan year (gain)/loss experience	0.726	
Total plan year increase/(decrease) in UAL	$1.860	Billion

See table on the following page for total gains/losses by class.

2017-2018 Plan Year (Gain)/Loss Experience[1]

($ in Thousands)

	Regular	Special Risk	Special Risk Administrative	-- Elected Officers' Class -- Judicial	Leg-Atty-Cab	Local	Senior Management	Grand Total
Investment plan year (gain)/loss experience	**($976,561)**	**($260,371)**	**($646)**	**($7,894)**	**($515)**	**($2,682)**	**($24,464)**	**($1,273,133)**
Liability plan year (gain) / loss experience by source								
Assumption changes	1,573,982	535,863	943	16,120	1,316	7,116	63,021	2,198,361
Plan Changes	0	0	0	0	0	0	0	0
Active member salary increases different than assumption	(432,806)	95,763	(208)	17,819	724	4,153	(4,337)	(318,892)
New active Pension Plan members [2]	335,811	106,921	942	938	8	717	11,429	456,766
Retirement and Drop Entry Behavior	530,242	247,733	388	2,644	(348)	714	11,110	792,483
Inactive Mortality	(16,684)	(154,816)	(442)	7,799	945	(796)	3,728	(160,266)
Other demographic sources not noted above [3]	(138,710)	48,696	1,025	(5,922)	840	(674)	50,148	(44,597)
Liability plan year (gain) / loss experience	**$1,851,835**	**$880,160**	**$2,648**	**$39,398**	**$3,485**	**$11,230**	**$135,099**	**$2,923,855**

[1] *For purposes of this exhibit, liabilities and assets associated with members in DROP are allocated to their respective membership classes. This differs from their representation in Section 4, where UAL bases are tracked separately for the DROP.*

[2] *Includes transfers and re-hires.*

[3] *Reflects the combined effects of all other liability (gain)/loss sources for actuarial demographic experience compared to assumptions used in the July 1, 2017 valuation. This includes the effects of second election transfers to the Investment Plan and changes to census data reporting.*

4. Actuarially Calculated FRS Pension Plan-specific Contribution Rates prior to blending with the FRS Investment Plan:

On a level-rate-of-pay basis, the FRS Pension Plan-specific employer contribution rates for each membership class changed as follows:

		Regular	Special Risk	Special Risk Administrative	-- Elected Officers' Class -- Judicial	Leg-Atty-Cab	Local	Senior Management
A. 1.	July 1, 2017 Employer Normal Cost Rate	2.91%	11.95%	3.05%	12.10%	6.58%	8.32%	4.27%
2.	UAL Contribution Rate	4.19%	12.44%	39.25%	29.83%	58.61%	52.90%	23.76%
3.	Total July 1, 2017 Actuarially Calculated Employer Contribution Rate (1.+2.)	7.10%	24.39%	42.30%	41.93%	65.19%	61.22%	28.03%
B. 1.	July 1, 2018 Employer Normal Cost Rate	3.09%	12.36%	3.26%	12.46%	6.61%	8.63%	4.47%
2.	UAL Contribution Rate (See Table 4-11)	4.30%	13.17%	40.04%	31.59%	58.20%	53.62%	25.75%
3.	Total July 1, 2018 Actuarially Calculated Employer Contribution Rate (1.+2.)	7.39%	25.53%	43.30%	44.05%	64.81%	62.25%	30.22%
C.	Change in Total Actuarially Calculated Employer Contribution Rate (B.3.-A.3.)	0.29%	1.14%	1.00%	2.12%	-0.38%	1.03%	2.19%

E. Graphs

Chart A: Assets / Liabilities

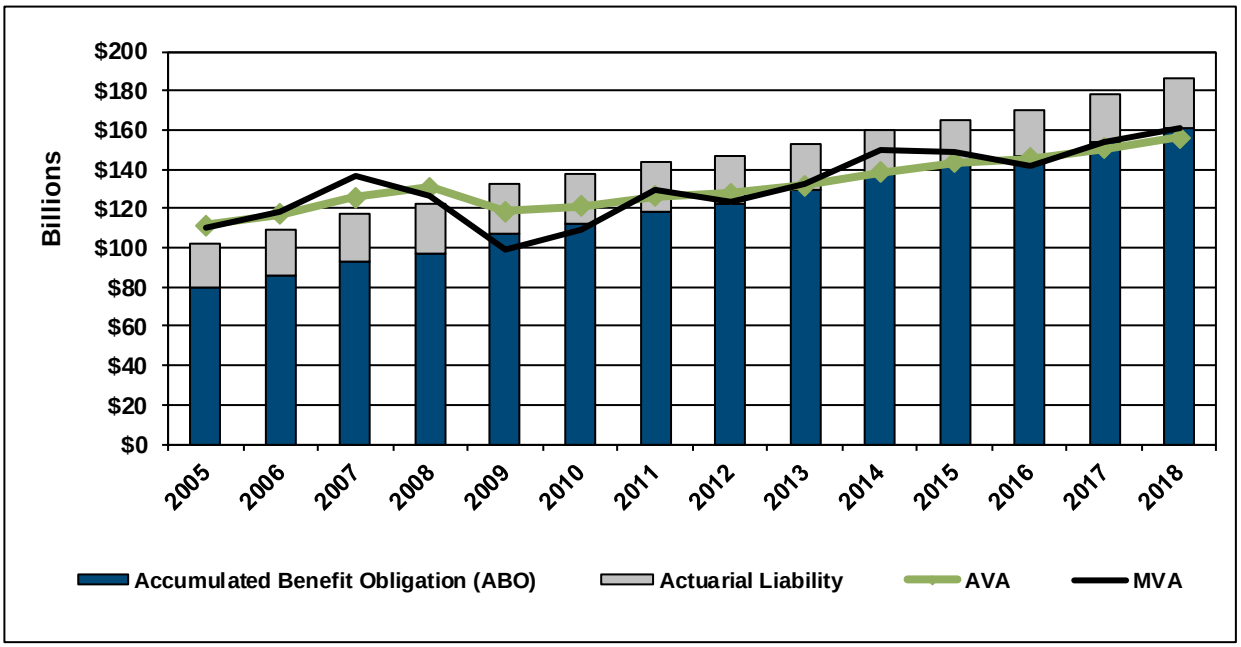


Chart B: Cash Flows

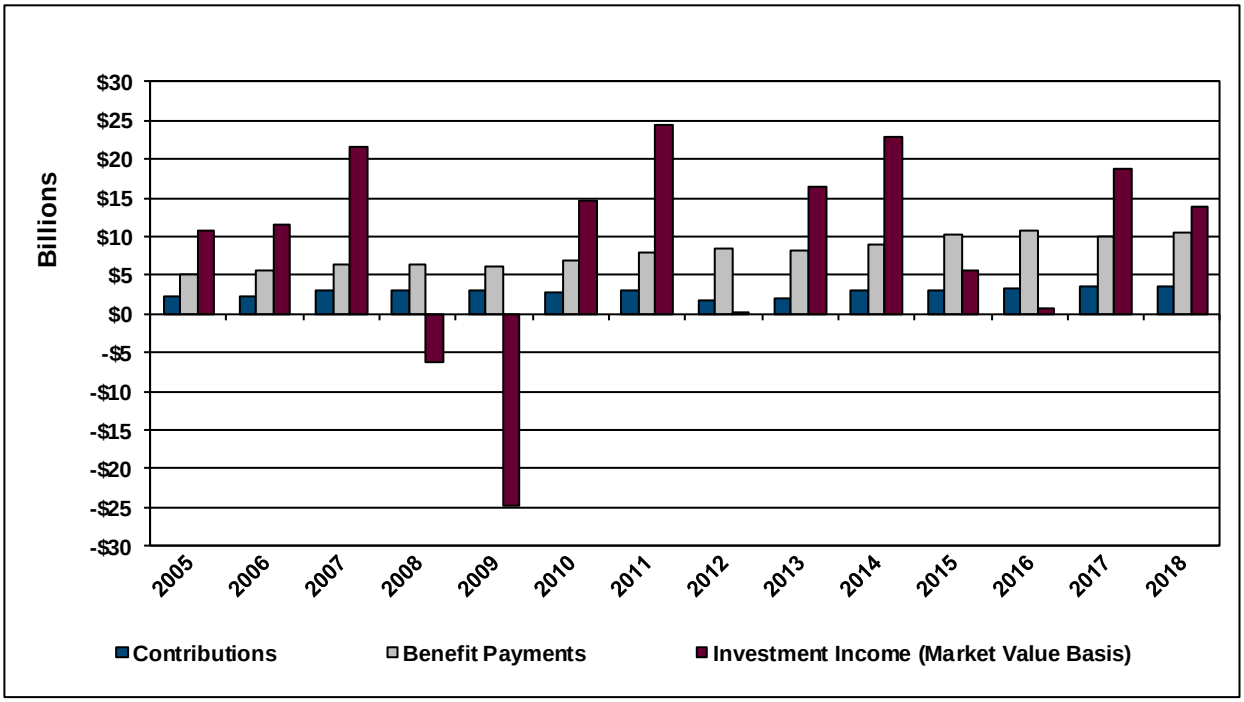


Chart C: Actuarially Calculated Pension Plan Contribution Rates[1] (as % of Payroll)

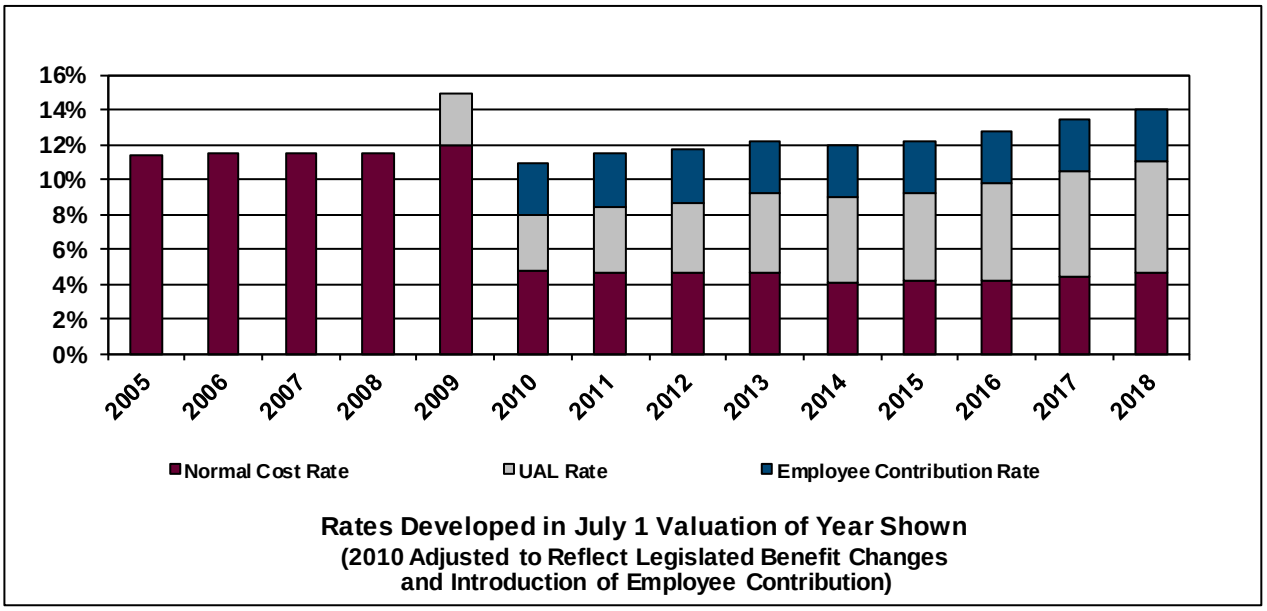
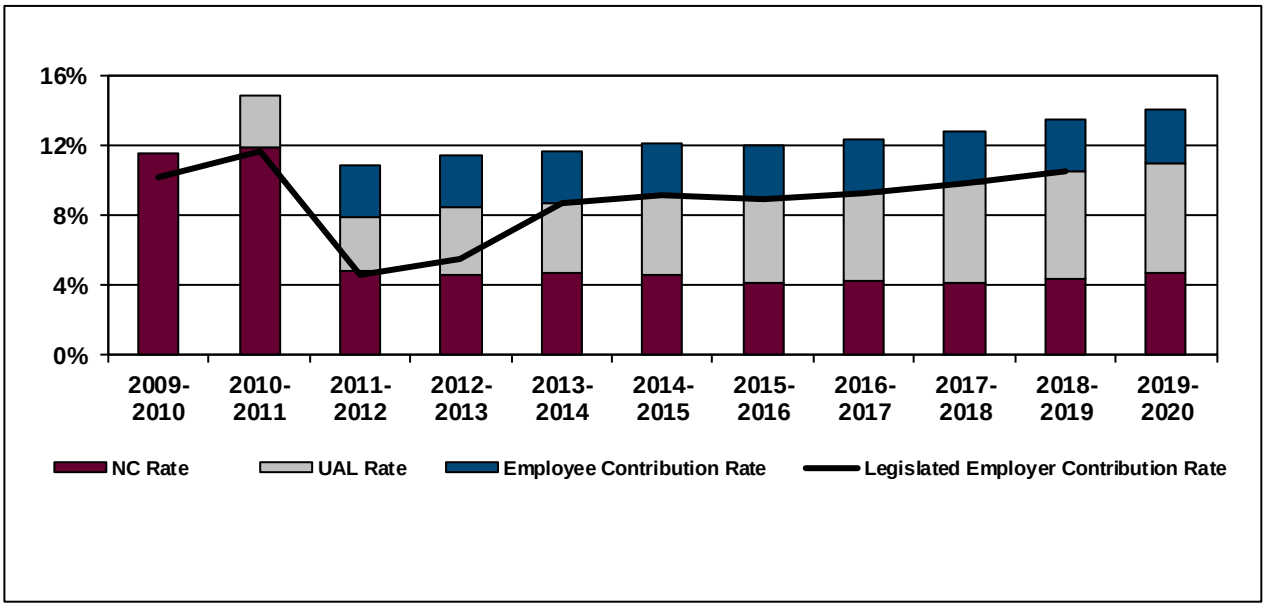


Chart D: Actuarially Calculated vs. Legislated Employer Contribution Rates[1] (as % of Payroll)



[1] *Charts C and D show the Pension Plan components of proposed contribution rates prior to blending with Investment Plan contribution rates to create proposed statutory contribution rates. Historically, the Florida Legislature has enacted contribution rates which are charged uniformly on combined Investment Plan and Pension Plan payroll. Charts C and D reflect the Pension Plan component of proposed blended statutory rates, consistent with Table 4-12.*

F. Summary Comments

We caution that the results herein are applicable only for the next plan year. More than anything, actual future investment results will impact long-term future contribution rates. The investment return assumption selected affects the timing and pattern of contributions but does not affect the long-term cost of the plan, which is governed by the Fundamental Cost Equation [Benefit Payments + Expenses = Contributions + Actual Investment Returns].

- The most recent experience study covered the period from July 1, 2008 to June 30, 2013. Experience studies are performed every five years and compare actual plan experience to the assumptions used in the annual valuations. With the exceptions noted below, this valuation reflects the method and assumptions changes proposed by the 2014 Experience Study and first adopted by the 2014 FRS Actuarial Assumption Conference for use in the July 1, 2014 valuation.
- Subsequent FRS Assumption Conferences may, at the discretion of the Conference Principals, consider changes to items such as the investment return assumption, the cost allocation method, or modifications to other assumptions and methods. For this valuation, the 2018 FRS Assumption Conference decreased the investment return assumption to better anticipate expected future experience.

Future proposed blended statutory rates for the System will be impacted by choice elections for the defined contribution FRS Investment Plan (IP), which is available as an alternative to the defined benefit FRS Pension Plan for members. The existence of the IP affects the FRS Pension Plan contribution rates insomuch as active members can elect to participate in either the FRS Pension Plan or the IP. Thus, member plan election decisions can affect the demographic composition of the FRS Pension Plan. Current IP membership is between 19% and 20% of total active membership on a headcount basis.

We mention these caveats because the actuarial valuation process merely measures the impact of these factors on FRS Pension Plan costs and liabilities after they have occurred. Unanticipated benefit or salary changes, changes in member behavior (e.g., withdrawal rates, rates of retirement, etc.), or variations in actual investment return could necessitate changes in the actuarially calculated contribution rates.

Finally, we caution the readers of this report not to overemphasize the results of any single valuation as long-term trends are more important.

G. DROP Contribution Rate

The DROP (Deferred Retirement Option Program) started in 1998, with a study completed prior to the DROP's implementation showing an anticipated material cost increase due to its introduction. Since its introduction and consistent with legislative directive, employers have been charged a uniform DROP contribution rate on all DROP payroll without regard to a participant's membership class. In addition, the asset allocation developed in Table 2-5 is performed so that the DROP's funded percentage is set equal to the composite funded percentage of the FRS Pension Plan.

The DROP contribution rate has two components: Normal Cost and UAL Cost. The Normal Cost is set to the composite FRS Pension Plan average employer-paid Normal Cost Rate of 4.68%. The calculation of the UAL Cost for the DROP is consistent with the calculation of the UAL Cost component of the other membership classes. Essentially, the DROP is allocated a share of plan assets such that the DROP's funded percentage is equal to the composite FRS Pension Plan's funded percentage. This asset allocation to DROP results in a UAL Cost for DROP payroll of 8.25%. The total DROP contribution rate (Normal Cost plus UAL Cost) in this valuation is 12.92%, compared to a DROP contribution rate of 12.37% in the prior valuation.

2. Assets

In many respects, an actuarial valuation can be considered similar to an inventory process. The inventory is taken annually as of the actuarial valuation date, which for this valuation is July 1, 2018. On that date the assets available for the payment of current and future benefits are appraised. These assets are compared with the inventory of Actuarial Liability. This inventory process leads to a method of calculating what contributions by members and/or their employers are needed to systematically eliminate any shortfall if future experience follows assumptions. Prior to publication of this report, preliminary results based on assumptions and methods used in the previous valuation were discussed with the 2018 FRS Actuarial Assumption Conference.

This section of the report deals with the asset determination. In the next section, the Actuarial Liability will be discussed. Section 4 will deal with the process for determining actuarially calculated contribution rates in order to systematically eliminate any shortfall between the assets and Actuarial Liability.

Two measures of FRS Pension Plan assets are presented in the valuation:

1. The Market Value of Assets (MVA) provides the most accurate fair market "snapshot date" assessment of plan resources at a given date, and will be used on the balance sheet statements of position for the FRS Pension Plan and its participating employers for GASB financial reporting purposes.[1] It tends to be the more volatile of the two asset measures and is not used for determining the actuarially calculated contribution rates.

2. The Actuarial Value of Assets (AVA) is a second measure of FRS Pension Plan asset holdings. It is related to the Market Value of Assets, but uses a smoothing technique applied to mitigate year-to-year market fluctuations by recognizing actual single year investment returns different from the long-term assumption systematically over a multi-year period. The AVA is the basis for determining actuarially calculated contribution rates, and the smoothing technique is used to stabilize year-to-year contribution rate changes.

The actuarial smoothed asset valuation measure, implemented in 1989, reflects a five-year averaging methodology, as required by Section 121.031(3)(a) of Florida Statutes. Under this method, the expected actuarial value of assets is determined by crediting the rate of investment return assumed in the prior valuation (7.50%) to the prior year's AVA. Then, 20% of the difference between the actual market value and the expected actuarial value of assets is immediately recognized in the AVA. The AVA is also restricted by a 20% corridor around the MVA, so that the AVA cannot be greater than 120% or less than 80% of the MVA. Table 2-3 presents the details of this calculation. As of July 1, 2018 the AVA is 96.8% of the MVA.

Six tables are presented in this section, summarizing the financial resources of the FRS Pension Plan on July 1, 2018. Table 2-1 shows the reconciliation of valuation assets from June 30, 2017 to June 30, 2018. The assets are presented by category in Table 2-2. Table 2-3 provides a detailed development of the July 1, 2018 Actuarial Value of Assets. In Table 2-4, the AVA is initially allocated to each membership class, based on estimated cash flows. The table also shows the allocation of assets to/from the various classes from/to the DROP. Table 2-5 shows the derivation of the allocation of assets to/from the DROP in order that the DROP's funded percentage is equal to the funded percentage of the FRS Pension Plan as a whole. Finally, Table 2-6 presents rates of return for the 2017-2018 plan year and the two prior plan years.

[1] *The financial reporting information under GASB 67 requirements is issued under separate cover and uses an investment return assumption and a cost allocation method different from that used in this valuation report, which is for the purpose of developing actuarially determined contribution rates.*

The Market Value of Assets as of July 1, 2018 was based on information furnished to us by the Division of Retirement, Florida Department of Management Services. The values have been accepted for use in this report without audit but have been reviewed for consistency and reasonableness, when compared to prior reports.

Table 2-1
Florida Retirement System
Reconciliation of Market Value of Assets Used for Valuation
DB Plan Trust

Market Value of Assets for Actuarial Valuation as of June 30, 2017	**$154,053,262,968**
Restatement of beginning net position [1]	(10,152,810)
Contributions by Source:	
Pension Contributions - Employer	2,849,919,659
Pension Contributions - Employees	740,723,687
Transfers from IP - Second Elections	70,597,178
Purchase of Time by Employees	5,646,724
Investment Income	
Interest Income	767,603,995
Dividend Income	1,863,240,710
Real Estate Income	464,194,571
Securities Lending income	71,625,252
Other	2,390,246,445
Less Investment Activity Expense	(601,775,463)
Less Securities Lending Expense	(29,042,640)
Other Income	2,264,872
Net Realized and Unrealized Appreciation	9,026,875,604
Pension Payments [2]	(9,831,837,726)
Contribution Refunds	(19,324,969)
Disbursements to IP - Second Elections	(597,009,913)
Administrative Expenses	(20,177,535)
Market Value of Assets for Actuarial Valuation as of June 30, 2018	**$161,196,880,609**

[1] *Restatement of beginning net position at July 1, 2017 due to implementation of GASB 75, Accounting and Financial Reporting for Postemployment Benefits Other than Pensions.*

[2] *Includes Accrued DROP Liability of $247,610,920 representing single sum DROP benefits of members who retired from DROP on or before June 30, 2018.*

Table 2-2
Florida Retirement System Pension Plan
Summary of Market Value of Assets for Actuarial Valuation [1]
(by Asset Category; $ in Thousands)

	Market Value as of July 1,	
ASSETS	**2017**	**2018**
Cash and cash equivalents	$130,731	$114,331
State Treasury Investment Pool	60,429	63,346
Total cash and cash equivalents	$191,161	$177,677
Investments:		
Certificates of Deposit	$800,169	$200,077
U.S. Government and Federally Guaranteed Obligations	10,910,710	12,308,170
Federal Agencies	8,418,178	9,641,446
Commercial Paper	4,050,193	4,182,322
Other Investments	17,211	546
Repurchase Agreements	750,000	800,000
International Bonds and Notes	1,952,266	2,197,600
Bonds and Notes	6,859,418	7,005,685
Real Estate Contracts	10,984,655	11,406,346
International Equity Commingled	7,911,256	8,569,818
Short Term Investment Funds	16,867	35,981
Domestic Equity / Domestic Equity Commingled	45,250,543	47,062,304
Alternative Investment	24,004,242	26,432,707
International Equity	34,509,635	33,319,165
Total Investments	$156,435,345	$163,162,166
Receivables:		
Contributions receivable	189,586	226,542
Pending Investment Sales	1,221,252	2,877,500
Forward Contracts receivable	4,510,179	3,799,472
Other Receivables	855,430	1,949,157
Total receivables	$6,776,447	$8,852,671
Security Lending Collateral	$1,289,852	$2,631,692
Prepaid items; Furniture & Equipment net Accumulated Depreciation	8,145	5,510
Restatement of beginning net position	(10,153)	N/A
Total Assets	$164,690,796	$174,829,717
LIABILITIES		
Accrued DROP liability [2]	216,703	247,611
Obligations under Security Lending Agreements	1,328,234	2,659,233
Pending Investment Purchases	3,701,087	5,000,810
Forward Contracts payable	4,494,948	3,793,383
Other Liabilities and Payables	906,714	1,930,471
Total Liabilities	$10,647,686	$13,631,508
DEFERRED INFLOWS AND OUTFLOWS OF RESOURCES		
Deferred outflows related to other postemployment benefits	0	519
Deferred inflows related to other post employment benefits	0	(1,847)
Net Deferred Inflows and Outflows of Resources	$0	($1,328)
FIDUCIARY NET POSITION		
Held in trust for pension benefits	**$154,043,110** [3]	**$161,196,881**

[1] *Amounts shown in exhibit are rounded to the nearest thousand. As such, sums may differ from amounts displayed due to rounding.*
[2] *Per our understanding, the accrued DROP liability represents lump sum DROP exit payments made early in the subsequent plan year for members exiting the DROP on or shortly before the asset measurement date.*
[3] *Reflects restatement of beginning net position at July 1, 2017 due to implementation of GASB 75, Accounting and Financial Reporting for Postemployment Benefits Other than Pensions.*

Table 2-3
Florida Retirement System Pension Plan
Development of 2018 Actuarial Value of Assets

1. FRS Market Value of Assets on June 30, 2017 for Actuarial Valuation	$154,053,262,968 [1]
2. Actuarial Value of Assets on July 1, 2017	$150,593,242,293
3. 2017/2018 Net Cash Flow (Contributions less Benefits and Expenses)	($6,801,462,895)
4. Preliminary Actuarial Value of Assets, July 1, 2018, if Items 2 and 3 earned an assumed rate of 7.50%	$154,831,217,711
5. Market Value of Assets, June 30, 2018 for Actuarial Valuation	$161,196,880,609
6. Net Assets (Actuarial Value Basis) Available for Benefits Prior to Application of 80%/20% Corridor 4 + ((5 - 4) x 20%)	$156,104,350,291
7. 120% of Market Value [120% (5)]	$193,436,256,731
8. 80% of Market Value [80% (5)]	$128,957,504,487
9. Actuarial Value of Assets on July 1, 2018 Lesser of (6) and (7), but not less than (8)	**$156,104,350,291**
10. Ratio of July 1, 2018 Actuarial Value of Assets to Market Value on June 30, 2018 for Actuarial Valuation	**96.84%**

[1] *As reported in July 1, 2017 Actuarial Valuation of the Florida Retirement System Pension Plan, before restatement of beginning net position.*

Table 2-4
Florida Retirement System Pension Plan
Development of Actuarial Value of Assets by Membership Class
($ in Thousands)

	Regular	Special Risk	Special Risk Administrative	-- Elected Officers' Class -- Judicial	Leg-Atty-Cab	Local	Senior Management	DROP	Total System
1. Allocated Actuarial Value of Assets by Class, July 1, 2017	$105,758,356	$27,647,401	$71,993	$849,745	$57,104	$300,040	$2,627,407	$13,281,196	$150,593,242
2. Total Contribution for the Plan Year	2,129,941	1,015,792	1,226	46,277	3,886	23,058	136,537	310,170	3,666,887
3. Benefit Payments and other Disbursements	(7,509,567)	(1,878,413)	(6,880)	(84,420)	(8,144)	(47,832)	(248,515)	(684,579)	(10,468,350)
4. Allocated Investment Earnings on AVA Basis	8,621,625	2,276,611	5,786	69,485	4,599	24,062	215,098	1,095,305	12,312,571
5. Unadjusted Actuarial Value of Assets (1) + (2) + (3) + (4)	109,000,355	29,061,391	72,125	881,087	57,445	299,328	2,730,527	14,002,092	156,104,350
6. Net Reallocation (see Table 2-5)	3,728	1,278	1	71	4	15	189	(5,286)	0
7. Allocated Actuarial Value of Assets by Class, July 1, 2018: (5) + (6)	$109,004,083	$29,062,669	$72,126	$881,158	$57,449	$299,343	$2,730,716	$13,996,806	$156,104,350

Table 2-5
Florida Retirement System Pension Plan
Reallocation of Actuarial Value of Assets to/from DROP by Membership Class
($ in Thousands)

	Regular	Special Risk	Special Risk Administrative	Judicial	-- Elected Officers' Class -- Leg-Atty-Cab	Local	Senior Management	DROP	Total System
1. Actuarial Accrued Liability, July 1, 2018								$16,672,788	$185,950,079
2. Unadjusted Actuarial Value of Assets, July 1, 2018 prior to reallocation								14,002,092	156,104,350
3. Unfunded Actuarial Liability (UAL): (1) - (2)								$2,670,696	$29,845,729
4. Aggregate Funded Percentage: (2) / (1)								83.98%	83.95%
5. DROP Assets Required to Meet Aggregate Funded Percentage: (1) x (4) [Total System] - (2)								($5,286)	
6. Proportion of DROP Liability by Class	0.7053	0.2417	0.0001	0.0135	0.0007	0.0029	0.0358	N/A	1.0000
7. Assets to be Reallocated	$3,728	$1,278	$1	$71	$4	$15	$189	($5,286)	$0

Table 2-6
Florida Retirement System Pension Plan
Rates of Return on Investments
(Assumes net cash flow occurs mid-year)

	Rates of Return		
Asset Bases	2015/2016	2016/2017	2017/2018
Market Value	0.54%	13.57%	9.26%
Actuarial Value	6.99%	8.21%	8.36%

3. Liabilities

In the previous section, an actuarial valuation was compared to an inventory process, and an analysis was given of the inventory of assets of the FRS Pension Plan as of the valuation date, July 1, 2018. In this section, the discussion will focus on the future benefit commitments of the FRS Pension Plan, which will be referred to as its Actuarial Liability. In Section 5 other liability measures are presented based on accounting principles of the Financial Accounting Standards Board (FASB). Calculations required by the Governmental Accounting Standards Board (GASB) are developed and issued as part of a separate report. It is important to note that the accounting liabilities shown in Section 5 of this report and in the separate GASB report are for informational disclosure and comparison purposes, while the Actuarial Liability calculated in this section is used for determining the FRS Pension Plan actuarially calculated contribution rates prior to blending with FRS Investment Plan contribution rates to create blended proposed statutory rates.

A fundamental principle in financing a retirement program is that the projected cost of retirement benefits should be accrued during the period in which service is performed, rather than during the post-retirement period of benefit distribution. There are several methods that can be used in making such an allocation.

Consistent with the previous valuation's methodology and with preliminary 2018 valuation results discussed in October with the 2018 FRS Actuarial Assumption Conference, the Pension Plan's Normal Cost and Actuarial Liability are calculated using the Ultimate Entry Age Normal (Ultimate EAN) actuarial cost allocation method. The actuarial cost method used does not affect the calculation of overall projected Pension Plan benefits (Present Value of Benefits), but it does affect the allocation of those benefits over a member's projected working career between past (Actuarial Liability), current year (Normal Cost) and all future year projected service (Present Value of Future Normal Costs). The Present Value of Benefits is equal to the sum of the Actuarial Liability and the Present Value of Future Normal Costs.

For a system such as the FRS Pension Plan with two membership tiers, Ultimate EAN calculates the Normal Cost allocation for individual members as if each member participates in the tier available to new hires for his or her full working career. For members in Tier I, this means the Normal Cost under the Ultimate EAN method will be based on the benefit and retirement eligibility provisions of Tier II. Because Tier II results in lower expected benefit payments than under Tier I, the calculated Normal Cost Rate is lower than it would be if the plan provisions specific to the member's actual tier were used by the actuarial cost allocation method.

The actuarial cost allocation method does not affect the calculation of the Present Value of Benefits, which is based on the plan provisions specific to each member's enrollment date. The Actuarial Liability is the Present Value of Benefits minus the Present Value of Future Normal Costs. Thus, the Ultimate EAN method used in this valuation leads to a lower Normal Cost Rate and a higher Actuarial Liability for Tier I members than would be calculated under a method that based the Normal Costs of Tier I members on the Tier I benefit plan provisions.

The difference between the Actuarial Liability and the Actuarial Value of Assets accumulated as of the actuarial valuation date is referred to as the Unfunded Actuarial Liability (UAL). (If the difference is negative, the excess of the funds accumulated over the liabilities may be referred to as the surplus.) The UAL Contribution Rate is calculated in a manner such that the UAL will fully amortize in accordance with the schedules in Section 4 of this report if actual future experience follows the assumptions used in the valuation and contributions are made each year at levels equal to actuarially calculated contribution rates.

Please note that GASB Statements Nos. 67 & 68 do not permit the use of the Ultimate EAN cost allocation method for accounting calculations. The Ultimate EAN method and the GASB 67 & 68 mandated variation of Entry Age Normal (Individual EAN) will produce different Actuarial Liability and Normal Cost Rate results. Determining which EAN methodology (Ultimate or Individual) generates higher current contribution rates depends

on the period used to amortize the UAL. For the FRS Pension Plan, the amortization periods used in this report's contribution rate calculation methodology will lead to the Ultimate EAN methodology having lower current calculated contribution rates than the Individual EAN methodology. As the number of Tier I active participants decreases, the Individual EAN Normal Cost Rate would trend downward toward the Tier II Normal Cost Rate. When all Tier I active participants have left the workforce, the Normal Cost Rates of the two variations will converge.

The UAL will grow with interest and Normal Cost while contributions will reduce it.

Benefit improvements, actuarial gains and losses (variations in investment results and demographic changes from assumption), and changes in actuarial assumptions and methods will also have an effect on the Actuarial Liability and on the UAL.

After the amount of the UAL has been determined, as part of the rate calculation methodology used in the previous valuation and in preliminary 2018 valuation results discussed with the 2018 FRS Actuarial Assumption Conference, the actuarially calculated contribution rates include a component for the amortization of the UAL. A schedule of contributions is established to amortize the UAL. In Section 4 of the report, we discuss the contribution schedules in detail.

Table 3-1 contains a breakdown of the Actuarial Liabilities and Unfunded Actuarial Liabilities in the FRS Pension Plan for the 2017 valuation and the 2018 valuation. In Table 3-2, the 2018 liabilities are shown for each membership class.

Legislation enacted in 2001 "walls off," for 25 years, the actuarial gains arising from former FRS Pension Plan participants electing to participate in the FRS Investment Plan. The "walled off" amount is called the contingent liability. The Actuarial Liabilities generally do not include the contingent liability. However, surplus, if any, used for contribution rate reductions is net of the contingent liability. Table 3-3 shows the contingent liability and the number of current active participants, by class, who elected to transfer from the FRS Pension Plan to the FRS Investment Plan during the original 2002-2003 election periods available to FRS Pension Plan members who were active when the Investment Plan first became available for participation.

Table 3-1
Florida Retirement System Pension Plan
Actuarial Liabilities
($ in Thousands)

	July 1, 2017 Valuation	July 1, 2018 Valuation
1. Actuarial Liabilities for:		
(a) Active Members	$56,093,533	$57,218,503
(b) Retired, Disabled and Beneficiary Members	101,665,423	106,808,859
(c) Terminated Vested Members	5,071,085	5,249,929
(d) DROP	15,749,075	16,672,788
2. Total Actuarial Liability	$178,579,116	$185,950,079
3. Actuarial Value of Assets	$150,593,242	$156,104,350
4. Unfunded Actuarial Liability / (Surplus)	$27,985,874	$29,845,729
5. Investment Plan Contingent Liability [1]	$229,415	$233,816
6. Surplus Available for Rate Reduction	$0	$0

[1] See Table 3-3.

Table 3-2
Florida Retirement System Pension Plan
Actuarial Liabilities by Membership Class
July 1, 2018
($ in Thousands)

	Regular	Special Risk	Special Risk Administrative	-- Elected Officers' Class -- Judicial	Leg-Atty-Cab	Local	Senior Management	DROP	Total System
1. Present Value of Benefits for:									
a. Active Members	$50,617,610	$21,301,413	$16,878	$578,966	$29,557	$195,839	$2,000,969	$0	$74,741,232
b. Retired, Disabled and Beneficiary Members	80,249,802	21,974,954	74,190	932,162	89,356	507,265	2,981,130	16,672,788	123,481,647
c. Terminated Vested Members	4,400,256	635,593	1,422	15,591	8,738	17,499	170,830	0	5,249,929
d. Total Present Value of Benefits (a)+(b)+(c)	135,267,668	43,911,960	92,490	1,526,719	127,651	720,603	5,152,929	16,672,788	203,472,808
2. Present Value of Future Normal Cost (Actives):	$10,276,241	$6,773,027	$1,712	$124,400	$3,990	$31,094	$312,265	$0	$17,522,729
3. Actuarial Liabilities for:									
a. Active Members (1a) - (2)	$40,341,369	$14,528,386	$15,166	$454,566	$25,567	$164,745	$1,688,704	$0	$57,218,503
b. Retired, Disabled and Beneficiary Members (1b)	80,249,802	21,974,954	74,190	932,162	89,356	507,265	2,981,130	16,672,788	123,481,647
c. Terminated Vested Members (1c)	4,400,256	635,593	1,422	15,591	8,738	17,499	170,830	0	5,249,929
d. Total Actuarial Liability (a)+(b)+(c)	$124,991,427	$37,138,933	$90,778	$1,402,319	$123,661	$689,509	$4,840,664	$16,672,788	$185,950,079
4. Actuarial Value of Assets	$109,004,083	$29,062,669	$72,126	$881,158	$57,449	$299,343	$2,730,716	$13,996,806	$156,104,350
5. Unfunded Actuarial Liability / (Surplus)	$15,987,344	$8,076,264	$18,652	$521,161	$66,212	$390,166	$2,109,948	$2,675,982 [1]	$29,845,729
6. Present Value of Future Pay	$173,885,775	$45,387,374	$25,756	$815,531	$42,560	$275,704	$4,236,083	$0	$224,668,783

[1] *This is a bookkeeping item. DROP liabilities include the total present value of benefits to all members currently in DROP. When a member leaves DROP, their liability is transferred to the class of membership from which they retired.*

Table 3-3
Florida Retirement System Investment Plan
Contingent Actuarial Liabilities
July 1, 2018
($ in Thousands)

	Regular	Special Risk	Special Risk Administrative	-- Elected Officers' Class -- Judicial	Leg-Atty-Cab	Local	Senior Management	DROP	Total System
As of July 1, 2017									
Contingent Liability	$211,435	$8,960	($34)	($758)	$116	$73	$9,623	NA	$229,415
Participant Counts	5,221	147	1	4	2	5	128	NA	5,508
As of July 1, 2018									
Contingent Liability[1 & 2]	$215,321	$8,846	($37)	($815)	$62	$94	$10,345	NA	$233,816
Participant Counts	4,946	135	1	4	1	6	128	NA	5,221

[1] *The contingent liability is not included in the actuarial liabilities of FRS and is removed from the surplus.*

[2] *The contingent liability as of July 1, 2018 is calculated as the July 1, 2003 contingent liability increased by 15 years of interest, adjusted for the proportion of original transfers remaining in the Investment Plan.*

4. Contributions

Differences between the Actuarial Liabilities and the assets can be made up through (1) future contributions in excess of the Normal Costs to amortize the shortfall and/or (2) actual future investment returns in excess of assumed returns. An actuarial valuation sets out a schedule of future contributions that will fully amortize the Unfunded Actuarial Liability (UAL) in a systematic manner if future experience follows the assumptions. By contrast, in prior years when the FRS Pension Plan had an actuarial surplus, legislated contribution rates were generally below the Normal Cost Rate. In this section we develop and present the FRS Pension Plan-specific contribution rates proposed to be effective for the Plan Year beginning July 1, 2019 based on the July 1, 2018 membership data. Under separate cover, the FRS Pension Plan-specific contribution rates calculated in this valuation are blended with contribution rates for the FRS Investment Plan to develop proposed blended statutory contribution rates for the Plan Year beginning July 1, 2019.

First, we present a description of the actuarial method used to determine the actuarially calculated FRS Pension Plan-specific contribution rates for the 2019-2020 plan year. This is followed by a series of tables presenting the details of our calculations.

A. Funding Methods

The actuarial cost method used to determine the pattern of future contributions is called the Ultimate Entry Age Normal (Ultimate EAN) actuarial cost allocation method. Under this method (as is the case for most actuarial cost allocation methods), the contribution rates calculated have two components:

- Normal Cost Rate
- UAL Contribution Rate, which amortizes the UAL if future experience follows assumptions.

These components are described in more detail below.

1. Normal Cost Rate

Under the Ultimate EAN method, the Normal Cost Rate is that level percentage of pay which would fully fund a member's benefit at retirement, if paid from the year of entry (i.e., "entry age") to the year of retirement if future experience were to exactly match the actuarial assumptions. For a system such as the FRS Pension Plan with two membership tiers, Ultimate EAN determines the Normal Cost allocation for individual members as if each member participates in the tier available to new hires for his or her full working career. For members in Tier I, this means the Normal Cost Rate under the Ultimate EAN method will be based on the benefit and retirement eligibility provisions of Tier II. Because Tier II results in lower expected benefits than under Tier I, the calculated Normal Cost Rate is lower than it would be if the plan provisions specific to the member's actual tier were used. This lower Normal Cost Rate leads to a higher Actuarial Liability, all else equal, as is discussed below.

We have determined the Normal Cost Rates for the FRS Pension Plan separately by membership class and type of benefit (e.g., retirement, disability). These are summarized in Table 4-1.

2. UAL (Unfunded Actuarial Liability) Contribution Rate

The Actuarial Liability is the difference between the Present Value of Projected Benefits (PVB) and the Present Value of Future Normal Costs (PVFNC). Because the Ultimate EAN cost allocation method produces lower Normal Costs than would be determined if each individual's tier-specific benefit and retirement eligibility provisions were used, the Actuarial Liability is higher under Ultimate EAN than it would be if the cost allocation method used tier-specific plan provisions applicable to each member.

The term "fully funded" is often applied to a system where contributions at the Normal Cost Rate are projected to be completely adequate to fully fund the projected future benefits of all existing members if future experience follows assumptions. Currently, most systems are not fully funded. This can be because contributions for the estimated value of benefits earned in a year have not been fully made, benefit improvements for past service are granted but then are funded gradually over future years, or actual experience has not been as favorable as assumed. Under these circumstances, a UAL exists. For the FRS Pension Plan, there has been a UAL for every valuation since the July 1, 2009 valuation. Prior to that time, the Actuarial Value of Assets exceeded the Actuarial Liability for the valuations from 1998 through 2008 and no UAL existed in those valuations.

Tables 4-2 through 4-10 show how the FRS Pension Plan-specific UAL contribution rates are derived. The FRS Pension Plan-specific contribution rates calculated in this valuation are blended with contribution rates for the FRS Investment Plan to develop proposed blended statutory contribution rates for the Plan Year beginning July 1, 2019. Table 4-2 shows the calculations on a composite basis, while Tables 4-3 through 4-10 show the calculations for each individual membership class and sub-class and for the DROP.

As part of the funding policy selected by the Florida Legislature, the actuarially calculated contribution rate is based on a “layered” approach that includes closed 30-year charge and credit bases for the amortization of the UAL. Starting in the 1998 actuarial valuation, the Legislature required all UAL bases in existence at that time to be considered fully amortized, since the Plan was in a surplus position. Since then, new amortization bases were created whenever there were changes in plan provisions or changes in assumptions pursuant to an experience study or other action by the FRS Assumptions Conference to modify actuarial assumptions or methods. Since a UAL currently exists, all experience gains and losses are also subject to amortization. In this valuation, we show the amortization base of each plan/assumption change since 1998 and amortization bases for experience gains/losses starting in 2009. The plan changes include those attributable to House Bill 479 in 2009 (enacted, effective July 1, 2010), Senate Bill 2100 in 2011, and Senate Bill 7012 in 2016.

For a given base of UAL amortization, annual amortization payments in non-inflation-adjusted dollars are calculated as increasing by 3.25% per year (“level percent of projected payroll amortization”), consistent with the valuation’s long-term annual payroll growth assumption as adopted by the FRS Actuarial Assumptions Conference. If future experience follows the actuarial assumptions, this should result in amortization payments that align with the assumed growth in overall compensation. Please note that with the current closed amortization periods of 30 years, amortization payments will not be large enough to cover interest on the UAL for several years, which means that as a dollar amount the UAL for each amortization base is expected to grow for a period of time subsequent to its establishment. Under current assumptions, the expected UAL for a newly established amortization base will grow until the amortization period is down to 18 years remaining. After that time, the amortization payments will be large enough that the amortization payments will cover both interest and principal, and the UAL as a dollar amount will be projected to decrease in each subsequent year. After approximately 20 years, the unamortized balance for the base will be approximately at the same level (in non-inflation-adjusted dollars) as the initial amount of the base.

The benefit changes effective in 2011 legislated by Senate Bill 2100 reduced the Normal Cost, PVFNC, and the PVB for current and future active members. All members initially enrolled before July 1, 2011 (Tier I) will continue to earn benefits at levels greater than those annually earned by members initially enrolled on or after July 1, 2011 (Tier II). While the base benefits are higher for Tier I members than Tier II members, the projected benefit levels for Tier I members are decreased from what they would have been absent Senate Bill 2100, due to the determination of the annual COLA percentage being based on the ratio of pre-July 2011 service to total service.

As noted on the prior page, the Actuarial Liability is defined as PVB less PVFNC. For some membership classes the decrease in the PVFNC from Senate Bill 2100 was larger than the decrease in the PVB, resulting in an increase in an Actuarial Liability. For the remaining membership classes, the decrease in the PVFNC from Senate

Bill 2100 was smaller than the decrease in the PVB, resulting in a decrease in the Actuarial Liability. The variation is due to the different demographics, benefit multipliers and unique interrelation of the modified benefit provisions of each membership class. The PVB will be lower in future valuations than it would have been had Senate Bill 2100 not been adopted.

B. FRS Pension Plan-Specific Employer Contribution Rates

Table 4-11 presents the actuarially calculated 2019-2020 employer contribution rates for the FRS Pension Plan prior to blending with FRS Investment Plan contribution rates to create 2019-2020 blended proposed statutory rates.

The reader should note that the payroll base for UAL Cost contributions is larger than the payroll base for Normal Cost contributions. Florida Statute requires the employers of certain defined contribution program participants to make UAL Cost contributions based on their payroll. The payroll base for UAL Cost contributions includes approximately $3.4 billion of payroll for employees who are not currently participating in the FRS Pension Plan or the FRS Investment Plan. Thus, the total contribution rate shown is an arithmetic sum, but the actual contribution percentages will be determined on a blended rate basis so that employers pay the same contribution rate for FRS Pension Plan members and FRS Investment Plan members.

Table 4-12 compares the legislated FRS Pension Plan-specific employer contribution rates to those calculated in the actuarial valuations for the prior plan years. The legislated rates for the 2013-2014 through 2018-2019 plan years were the same as the actuarially calculated rates in the 2012 through 2017 actuarial valuations, respectively.

Table 4-1
Florida Retirement System Pension Plan
Normal Cost Rates by Decrement
July 1, 2018

	Regular	Special Risk	Special Risk Administrative	----- Elected Officers' Class ----- Judicial	Leg-Atty-Cab	Local	Senior Management	DROP	Total
1. Vested Benefits and Early Retirement	1.29%	1.92%	1.71%	1.60%	3.72%	2.85%	1.31%	NA	1.40%
2. Regular Retirement	3.89%	11.96%	3.64%	12.70%	4.89%	7.77%	5.15%	NA	5.29%
3. Non-Duty Death	0.21%	0.35%	0.15%	0.74%	0.33%	0.47%	0.25%	NA	0.23%
4. Line of Duty Death	0.02%	0.41%	0.01%	0.03%	0.02%	0.03%	0.02%	NA	0.08%
5. Non-Duty Disability	0.12%	0.15%	0.09%	0.31%	0.15%	0.17%	0.14%	NA	0.12%
6. Line of Duty Disability	0.01%	0.30%	0.01%	0.02%	0.01%	0.02%	0.01%	NA	0.06%
7. Refund of Employee Contributions	0.55%	0.27%	0.65%	0.06%	0.49%	0.32%	0.59%	NA	0.50%
8. Total Normal Cost Rate	6.09%	15.36%	6.26%	15.46%	9.61%	11.63%	7.47%	NA	7.68%
9. Expected Employee Contributions	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	NA	-3.00%
10. Employer Normal Cost Rate	3.09%	12.36%	3.26%	12.46%	6.61%	8.63%	4.47%	4.68% [1]	4.68%

[1] *DROP Normal Cost Rate is set equivalent to the Pension Plan composite Normal Cost rate.*

Table 4-2
Florida Retirement System Pension Plan
Unfunded Actuarial Liability (UAL) Bases
July 1, 2018
Composite Plan
($ in Thousands)

(a)	(b)	(c)	(d)	(e)	(f) = (d) / (e)	(g)	(h)	(i)	(j) = (h) / (i)
Date Established	**Description**	**Remaining Payments as of Valuation Date**	**Balance as of Valuation Date**	**Amortization Factor[1]**	**Amortization Payment for FY 2018-2019**	**Remaining Payments one year after Valuation Date**	**Balance One Year After Valuation Date**	**Amortization Factor[1]**	**Amortization Payment for FY 2019-2020**
June 30, 1999	Assumption Change from 1998 Experience Study	12	($360,232)	9.3611	($38,482)	11	($347,009)	8.7839	($39,505)
June 30, 2000	Special Risk 65% In-Line-Of-Duty Disability (2000)	13	(2,379)	9.9555	(239)	12	(2,308)	9.4094	(245)
June 30, 2000	Special Risk-Regular 12% Pre-2000 Retired Benefit Increase (2000)	13	303,102	9.9555	30,446	12	293,980	9.4094	31,243
June 30, 2004	Assumption Change from 2003 Experience Study	17	(3,467,710)	12.1072	(286,417)	16	(3,427,496)	11.6789	(293,477)
June 30, 2009	Assumption Change from 2008 Experience Study	22	6,970,237	14.3517	485,672	21	6,982,713	14.0562	496,769
June 30, 2009	2008-2009 Experience (Gains) / Losses	22	21,873,552	14.3517	1,524,106	21	21,912,703	14.0562	1,558,930
June 30, 2009	Unrecognized (Gains)/Losses while in Surplus	22	(6,398,207)	14.3517	(445,814)	21	(6,409,659)	14.0562	(456,001)
June 30, 2009	2009-2010 Plan Changes (HB 479)	22	(1,322,719)	14.3517	(92,164)	21	(1,325,086)	14.0562	(94,270)
June 30, 2010	2009-2010 Experience (Gains) / Losses	23	1,186,849	14.7488	80,471	22	1,191,281	14.4780	82,282
June 30, 2010	2010-2011 Plan Changes (SB 2100)	23	(1,300,024)	14.7488	(88,144)	22	(1,304,879)	14.4780	(90,128)
June 30, 2011	2010-2011 Experience (Gains) / Losses	24	2,890,558	15.1302	191,045	23	2,906,471	14.8835	195,281
June 30, 2012	2011-2012 Experience (Gains) / Losses	25	(116,148)	15.4965	(7,495)	24	(116,975)	15.2734	(7,659)
June 30, 2013	2012-2013 Experience (Gains) / Losses	26	2,922,156	15.8484	184,382	25	2,947,313	15.6481	188,349
June 30, 2014	Assumption/Method Change from 2013 Experience Study	27	2,093,543	16.1863	129,341	26	2,114,425	16.0084	132,082
June 30, 2014	2013-2014 Experience (Gains) / Losses	27	(2,839,349)	16.1863	(175,417)	26	(2,867,669)	16.0084	(179,135)
June 30, 2015	2014-2015 Experience (Gains) / Losses	28	579,431	16.5108	35,094	27	585,939	16.3548	35,827
June 30, 2016	Special Risk 100% In-Line-Of-Duty Death (2016)	29	44,017	16.8226	2,617	28	44,563	16.6877	2,670
June 30, 2016	2016 Assumption Changes	29	1,166,392	16.8226	69,335	28	1,180,850	16.6877	70,762
June 30, 2016	2015-2016 Experience (Gains) / Losses	29	1,284,503	16.8226	76,356	28	1,300,426	16.6877	77,927
June 30, 2017	Special Risk 100% In-Line-Of-Duty Death (2017)	30	91,373	17.1220	5,337	29	92,604	17.0079	5,445
June 30, 2017	2017 Assumption Changes	30	2,282,847	17.1220	133,328	29	2,313,605	17.0079	136,032
June 30, 2017	2016-2017 Experience (Gains) / Losses	30	503,746	17.1220	29,421	29	510,533	17.0079	30,018
June 30, 2018	2018 Assumption Changes		2,198,361			30	2,361,040	17.3156	136,353
June 30, 2018	2017-2018 Experience (Gains) / Losses		(738,171) [2]			30	(792,795)	17.3156	(45,785)
		UAL as of Valuation Date	**$29,845,729**		$1,842,777		$30,144,569	Total:	$1,973,765

Projected FY 2019-2020 UAL Payroll Excluding FRS Investment Plan Payroll: $31,015,233

FY 2019-2020 UAL Contribution Rate Prior to Blending with FRS Investment Plan Payroll: 6.36%

[1] The 2018-2019 amortization factors are based on the assumptions used in the July 1, 2017 actuarial valuation, which determined actuarially calculated contribution rates for 2018-2019.
The 2019-2020 amortization factors are based on the assumptions used in this July 1, 2018 actuarial valuation, which determines actuarially calculated contribution rates for 2019-2020.

[2] The experience (gains)/losses developed on this table and the subsequent tables in this section are derived using a methodology which assumes 2017-2018 UAL contributions precisely equaled the scheduled UAL amortization payments.
Actual System contributions differ somewhat from the amortization schedules in this section, and there is no clear delineation in actual contributions received between Normal Cost and UAL contributions.
The UAL (gain)/loss shown in the Executive Summary is derived using a methodology which incorporates actual 2017-2018 contributions.

Table 4-3
Florida Retirement System Pension Plan
Unfunded Actuarial Liability (UAL) Bases
July 1, 2018
Regular Class
($ in Thousands)

(a)	(b)	(c)	(d)	(e)	(f) = (d) / (e)	(g)	(h)	(i)	(j) = (h) / (i)
Date Established	**Description**	**Remaining Payments as of Valuation Date**	**Balance as of Valuation Date**	**Amortization Factor**	**Amortization Payment for FY 2018-2019**	**Remaining Payments one year after Valuation Date**	**Balance One Year After Valuation Date**	**Amortization Factor**	**Amortization Payment for FY 2019-2020**
June 30, 1999	Assumption Change from 1998 Experience Study	12	($274,423)	9.3611	($29,315)	11	($264,350)	8.7839	($30,095)
June 30, 2004	Assumption Change from 2003 Experience Study	17	(3,063,543)	12.1072	(253,035)	16	(3,028,015)	11.6789	(259,272)
June 30, 2009	Assumption Change from 2008 Experience Study	22	5,669,891	14.3517	395,067	21	5,680,039	14.0562	404,094
June 30, 2009	2008-2009 Experience (Gains) / Losses	22	34,831,013	14.3517	2,426,956	21	34,893,357	14.0562	2,482,409
June 30, 2009	Unrecognized (Gains)/Losses while in Surplus	22	(27,321,771)	14.3517	(1,903,727)	21	(27,370,674)	14.0562	(1,947,225)
June 30, 2009	2009-2010 Plan Changes (HB 479)	22	(1,039,873)	14.3517	(72,456)	21	(1,041,735)	14.0562	(74,112)
June 30, 2010	2009-2010 Experience (Gains) / Losses	23	1,323,040	14.7488	89,705	22	1,327,981	14.4780	91,724
June 30, 2010	2010-2011 Plan Changes (SB 2100)	23	(1,679,554)	14.7488	(113,877)	22	(1,685,826)	14.4780	(116,440)
June 30, 2011	2010-2011 Experience (Gains) / Losses	24	1,429,854	15.1302	94,503	23	1,437,726	14.8835	96,598
June 30, 2012	2011-2012 Experience (Gains) / Losses	25	515,328	15.4965	33,254	24	519,000	15.2734	33,981
June 30, 2013	2012-2013 Experience (Gains) / Losses	26	1,775,079	15.8484	112,004	25	1,790,360	15.6481	114,414
June 30, 2014	Assumption/Method Change from 2013 Experience Study	27	612,969	16.1863	37,870	26	619,083	16.0084	38,672
June 30, 2014	2013-2014 Experience (Gains) / Losses	27	(1,286,323)	16.1863	(79,470)	26	(1,299,153)	16.0084	(81,154)
June 30, 2015	2014-2015 Experience (Gains) / Losses	28	766,018	16.5108	46,395	27	774,623	16.3548	47,364
June 30, 2016	2016 Assumption Changes	29	790,502	16.8226	46,991	28	800,301	16.6877	47,957
June 30, 2016	2015-2016 Experience (Gains) / Losses	29	1,321,458	16.8226	78,553	28	1,337,838	16.6877	80,169
June 30, 2017	2017 Assumption Changes	30	1,531,609	17.1220	89,453	29	1,552,245	17.0079	91,266
June 30, 2017	2016-2017 Experience (Gains) / Losses	30	(315,177)	17.1220	(18,408)	29	(319,424)	17.0079	(18,781)
June 30, 2018	2018 Assumption Changes		1,458,557			30	1,566,490	17.3156	90,467
June 30, 2018	2017-2018 Experience (Gains) / Losses		(1,057,310)			30	(1,135,551)	17.3156	(65,580)
		UAL as of Valuation Date	**$15,987,344**		$980,462		$16,154,316	Total:	$1,026,457

Projected FY 2019-2020 UAL Payroll Excluding FRS Investment Plan Payroll: $23,850,651

FY 2019-2020 UAL Contribution Rate Prior to Blending with FRS Investment Plan Payroll: 4.30%

Table 4-4
Florida Retirement System Pension Plan
Unfunded Actuarial Liability (UAL) Bases
July 1, 2018
Special Risk Class
($ in Thousands)

(a)	(b)	(c)	(d)	(e)	(f) = (d) / (e)	(g)	(h)	(i)	(j) = (h) / (i)
Date Established	**Description**	**Remaining Payments as of Valuation Date**	**Balance as of Valuation Date**	**Amortization Factor**	**Amortization Payment for FY 2018-2019**	**Remaining Payments one year after Valuation Date**	**Balance One Year After Valuation Date**	**Amortization Factor**	**Amortization Payment for FY 2019-2020**
June 30, 1999	Assumption Change from 1998 Experience Study	12	($83,083)	9.3611	($8,875)	11	($80,034)	8.7839	($9,111)
June 30, 2000	Special Risk 65% In-Line-Of-Duty Disability (2000)	13	(2,427)	9.9555	(244)	12	(2,354)	9.4094	(250)
June 30, 2000	Special Risk-Regular 12% Pre-2000 Retired Benefit Increase (2000)	13	303,102	9.9555	30,446	12	293,980	9.4094	31,243
June 30, 2004	Assumption Change from 2003 Experience Study	17	(625,854)	12.1072	(51,693)	16	(618,596)	11.6789	(52,967)
June 30, 2009	Assumption Change from 2008 Experience Study	22	556,904	14.3517	38,804	21	557,901	14.0562	39,691
June 30, 2009	2008-2009 Experience (Gains) / Losses	22	7,673,999	14.3517	534,709	21	7,687,735	14.0562	546,927
June 30, 2009	Unrecognized (Gains)/Losses while in Surplus	22	(2,546,440)	14.3517	(177,431)	21	(2,550,998)	14.0562	(181,485)
June 30, 2009	2009-2010 Plan Changes (HB 479)	22	(194,222)	14.3517	(13,533)	21	(194,569)	14.0562	(13,842)
June 30, 2010	2009-2010 Experience (Gains) / Losses	23	(420,342)	14.7488	(28,500)	22	(421,911)	14.4780	(29,141)
June 30, 2010	2010-2011 Plan Changes (SB 2100)	23	469,700	14.7488	31,847	22	471,454	14.4780	32,563
June 30, 2011	2010-2011 Experience (Gains) / Losses	24	266,470	15.1302	17,612	23	267,937	14.8835	18,002
June 30, 2012	2011-2012 Experience (Gains) / Losses	25	(574,656)	15.4965	(37,083)	24	(578,750)	15.2734	(37,893)
June 30, 2013	2012-2013 Experience (Gains) / Losses	26	508,058	15.8484	32,057	25	512,432	15.6481	32,747
June 30, 2014	Assumption/Method Change from 2013 Experience Study	27	1,381,733	16.1863	85,364	26	1,395,515	16.0084	87,174
June 30, 2014	2013-2014 Experience (Gains) / Losses	27	(900,944)	16.1863	(55,661)	26	(909,931)	16.0084	(56,841)
June 30, 2015	2014-2015 Experience (Gains) / Losses	28	(17,676)	16.5108	(1,071)	27	(17,874)	16.3548	(1,093)
June 30, 2016	Special Risk 100% In-Line-Of-Duty Death (2016)	29	44,017	16.8226	2,617	28	44,563	16.6877	2,670
June 30, 2016	2016 Assumption Changes	29	251,602	16.8226	14,956	28	254,721	16.6877	15,264
June 30, 2016	2015-2016 Experience (Gains) / Losses	29	220,187	16.8226	13,089	28	222,916	16.6877	13,358
June 30, 2017	Special Risk 100% In-Line-Of-Duty Death (2017)	30	91,373	17.1220	5,337	29	92,604	17.0079	5,445
June 30, 2017	2017 Assumption Changes	30	497,930	17.1220	29,081	29	504,639	17.0079	29,671
June 30, 2017	2016-2017 Experience (Gains) / Losses	30	496,807	17.1220	29,016	29	503,500	17.0079	29,604
June 30, 2018	2018 Assumption Changes		491,043			30	527,380	17.3156	30,457
June 30, 2018	2017-2018 Experience (Gains) / Losses		188,983			30	202,967	17.3156	11,722
		UAL as of Valuation Date	**$8,076,264**		$490,844		$8,165,226	Total:	$543,914

Projected FY 2019-2020 UAL Payroll Excluding FRS Investment Plan Payroll: $4,128,510

FY 2019-2020 UAL Contribution Rate Prior to Blending with FRS Investment Plan Payroll: 13.17%

Table 4-5
Florida Retirement System Pension Plan
Unfunded Actuarial Liability (UAL) Bases
July 1, 2018
Special Risk Administrative Support Class
($ in Thousands)

(a)	(b)	(c)	(d)	(e)	(f) = (d) / (e)	(g)	(h)	(i)	(j) = (h) / (i)
Date Established	**Description**	**Remaining Payments as of Valuation Date**	**Balance as of Valuation Date**	**Amortization Factor**	**Amortization Payment for FY 2018-2019**	**Remaining Payments one year after Valuation Date**	**Balance One Year After Valuation Date**	**Amortization Factor**	**Amortization Payment for FY 2019-2020**
June 30, 1999	Assumption Change from 1998 Experience Study	12	($298)	9.3611	($32)	11	($287)	8.7839	($33)
June 30, 2000	Special Risk 65% In-Line-Of-Duty Disability (2000)	13	48	9.9555	5	12	46	9.4094	5
June 30, 2004	Assumption Change from 2003 Experience Study	17	10,448	12.1072	863	16	10,327	11.6789	884
June 30, 2009	Assumption Change from 2008 Experience Study	22	1,340	14.3517	93	21	1,342	14.0562	95
June 30, 2009	2008-2009 Experience (Gains) / Losses	22	20,138	14.3517	1,403	21	20,174	14.0562	1,435
June 30, 2009	Unrecognized (Gains)/Losses while in Surplus	22	(22,349)	14.3517	(1,557)	21	(22,389)	14.0562	(1,593)
June 30, 2009	2009-2010 Plan Changes (HB 479)	22	0	14.3517	0	21	0	14.0562	0
June 30, 2010	2009-2010 Experience (Gains) / Losses	23	1,210	14.7488	82	22	1,214	14.4780	84
June 30, 2010	2010-2011 Plan Changes (SB 2100)	23	(552)	14.7488	(37)	22	(554)	14.4780	(38)
June 30, 2011	2010-2011 Experience (Gains) / Losses	24	2,913	15.1302	193	23	2,929	14.8835	197
June 30, 2012	2011-2012 Experience (Gains) / Losses	25	605	15.4965	39	24	609	15.2734	40
June 30, 2013	2012-2013 Experience (Gains) / Losses	26	2,892	15.8484	182	25	2,917	15.6481	186
June 30, 2014	Assumption/Method Change from 2013 Experience Study	27	(5,968)	16.1863	(369)	26	(6,027)	16.0084	(377)
June 30, 2014	2013-2014 Experience (Gains) / Losses	27	6,761	16.1863	418	26	6,829	16.0084	427
June 30, 2015	2014-2015 Experience (Gains) / Losses	28	(5,931)	16.5108	(359)	27	(5,998)	16.3548	(367)
June 30, 2016	2016 Assumption Changes	29	496	16.8226	30	28	502	16.6877	30
June 30, 2016	2015-2016 Experience (Gains) / Losses	29	1,977	16.8226	118	28	2,002	16.6877	120
June 30, 2017	2017 Assumption Changes	30	959	17.1220	56	29	972	17.0079	57
June 30, 2017	2016-2017 Experience (Gains) / Losses	30	2,415	17.1220	141	29	2,447	17.0079	144
June 30, 2018	2018 Assumption Changes		919			30	987	17.3156	57
June 30, 2018	2017-2018 Experience (Gains) / Losses		629			30	676	17.3156	39
	UAL as of Valuation Date		**$18,652**		$1,268		$18,718	Total:	$1,394

Projected FY 2019-2020 UAL Payroll Excluding FRS Investment Plan Payroll: $3,480

FY 2019-2020 UAL Contribution Rate Prior to Blending with FRS Investment Plan Payroll: 40.04%

Table 4-6
Florida Retirement System Pension Plan
Unfunded Actuarial Liability (UAL) Bases
July 1, 2018
Elected Officers' Class: Judicial Subclass
($ in Thousands)

(a)	(b)	(c)	(d)	(e)	(f) = (d) / (e)	(g)	(h)	(i)	(j) = (h) / (i)
Date Established	**Description**	**Remaining Payments as of Valuation Date**	**Balance as of Valuation Date**	**Amortization Factor**	**Amortization Payment for FY 2018-2019**	**Remaining Payments one year after Valuation Date**	**Balance One Year After Valuation Date**	**Amortization Factor**	**Amortization Payment for FY 2019-2020**
June 30, 1999	Assumption Change from 1998 Experience Study	12	$39	9.3611	$4	11	$37	8.7839	$4
June 30, 2004	Assumption Change from 2003 Experience Study	17	27,608	12.1072	2,280	16	27,288	11.6789	2,337
June 30, 2009	Assumption Change from 2008 Experience Study	22	20,469	14.3517	1,426	21	20,505	14.0562	1,459
June 30, 2009	2008-2009 Experience (Gains) / Losses	22	517,808	14.3517	36,080	21	518,735	14.0562	36,904
June 30, 2009	Unrecognized (Gains)/Losses while in Surplus	22	(280,892)	14.3517	(19,572)	21	(281,394)	14.0562	(20,019)
June 30, 2009	2009-2010 Plan Changes (HB 479)	22	(25,869)	14.3517	(1,802)	21	(25,915)	14.0562	(1,844)
June 30, 2010	2009-2010 Experience (Gains) / Losses	23	(22,573)	14.7488	(1,530)	22	(22,657)	14.4780	(1,565)
June 30, 2010	2010-2011 Plan Changes (SB 2100)	23	3,245	14.7488	220	22	3,257	14.4780	225
June 30, 2011	2010-2011 Experience (Gains) / Losses	24	86,126	15.1302	5,692	23	86,601	14.8835	5,819
June 30, 2012	2011-2012 Experience (Gains) / Losses	25	6,759	15.4965	436	24	6,807	15.2734	446
June 30, 2013	2012-2013 Experience (Gains) / Losses	26	109,901	15.8484	6,935	25	110,847	15.6481	7,084
June 30, 2014	Assumption/Method Change from 2013 Experience Study	27	25,094	16.1863	1,550	26	25,344	16.0084	1,583
June 30, 2014	2013-2014 Experience (Gains) / Losses	27	(55,489)	16.1863	(3,428)	26	(56,042)	16.0084	(3,501)
June 30, 2015	2014-2015 Experience (Gains) / Losses	28	5,539	16.5108	335	27	5,601	16.3548	342
June 30, 2016	2016 Assumption Changes	29	7,359	16.8226	437	28	7,450	16.6877	446
June 30, 2016	2015-2016 Experience (Gains) / Losses	29	36,009	16.8226	2,140	28	36,455	16.6877	2,185
June 30, 2017	2017 Assumption Changes	30	14,193	17.1220	829	29	14,384	17.0079	846
June 30, 2017	2016-2017 Experience (Gains) / Losses	30	(2,605)	17.1220	(152)	29	(2,640)	17.0079	(155)
June 30, 2018	2018 Assumption Changes		14,069			30	15,110	17.3156	873
June 30, 2018	2017-2018 Experience (Gains) / Losses		34,371			30	36,914	17.3156	2,132
	UAL as of Valuation Date		**$521,161**		$31,881		$526,687	Total:	$35,600

Projected FY 2019-2020 UAL Payroll Excluding FRS Investment Plan Payroll: $112,680

FY 2019-2020 UAL Contribution Rate Prior to Blending with FRS Investment Plan Payroll: 31.59%

Table 4-7
Florida Retirement System Pension Plan
Unfunded Actuarial Liability (UAL) Bases
July 1, 2018
Elected Officers' Class: Legislature/Attorney/Cabinet Subclass
($ in Thousands)

(a)	(b)	(c)	(d)	(e)	(f) = (d) / (e)	(g)	(h)	(i)	(j) = (h) / (i)
Date Established	**Description**	**Remaining Payments as of Valuation Date**	**Balance as of Valuation Date**	**Amortization Factor**	**Amortization Payment for FY 2018-2019**	**Remaining Payments one year after Valuation Date**	**Balance One Year After Valuation Date**	**Amortization Factor**	**Amortization Payment for FY 2019-2020**
June 30, 1999	Assumption Change from 1998 Experience Study	12	$2	9.3611	$0	11	$2	8.7839	$0
June 30, 2004	Assumption Change from 2003 Experience Study	17	2,079	12.1072	172	16	2,055	11.6789	176
June 30, 2009	Assumption Change from 2008 Experience Study	22	2,054	14.3517	143	21	2,058	14.0562	146
June 30, 2009	2008-2009 Experience (Gains) / Losses	22	62,919	14.3517	4,384	21	63,031	14.0562	4,484
June 30, 2009	Unrecognized (Gains)/Losses while in Surplus	22	(35,983)	14.3517	(2,507)	21	(36,047)	14.0562	(2,565)
June 30, 2009	2009-2010 Plan Changes (HB 479)	22	(817)	14.3517	(57)	21	(818)	14.0562	(58)
June 30, 2010	2009-2010 Experience (Gains) / Losses	23	2,939	14.7488	199	22	2,950	14.4780	204
June 30, 2010	2010-2011 Plan Changes (SB 2100)	23	133	14.7488	9	22	134	14.4780	9
June 30, 2011	2010-2011 Experience (Gains) / Losses	24	8,681	15.1302	574	23	8,729	14.8835	587
June 30, 2012	2011-2012 Experience (Gains) / Losses	25	(4,076)	15.4965	(263)	24	(4,105)	15.2734	(269)
June 30, 2013	2012-2013 Experience (Gains) / Losses	26	19,508	15.8484	1,231	25	19,676	15.6481	1,257
June 30, 2014	Assumption/Method Change from 2013 Experience Study	27	(3,011)	16.1863	(186)	26	(3,041)	16.0084	(190)
June 30, 2014	2013-2014 Experience (Gains) / Losses	27	(928)	16.1863	(57)	26	(937)	16.0084	(59)
June 30, 2015	2014-2015 Experience (Gains) / Losses	28	(7,358)	16.5108	(446)	27	(7,440)	16.3548	(455)
June 30, 2016	2016 Assumption Changes	29	620	16.8226	37	28	627	16.6877	38
June 30, 2016	2015-2016 Experience (Gains) / Losses	29	10,438	16.8226	620	28	10,567	16.6877	633
June 30, 2017	2017 Assumption Changes	30	1,249	17.1220	73	29	1,266	17.0079	74
June 30, 2017	2016-2017 Experience (Gains) / Losses	30	4,003	17.1220	234	29	4,057	17.0079	239
June 30, 2018	2018 Assumption Changes		1,214			30	1,304	17.3156	75
June 30, 2018	2017-2018 Experience (Gains) / Losses		2,545			30	2,733	17.3156	158
	UAL as of Valuation Date		**$66,212**		$4,160		$66,800	Total:	$4,486

Projected FY 2019-2020 UAL Payroll Excluding FRS Investment Plan Payroll: $7,707

FY 2019-2020 UAL Contribution Rate Prior to Blending with FRS Investment Plan Payroll: 58.20%

Table 4-8
Florida Retirement System Pension Plan
Unfunded Actuarial Liability (UAL) Bases
July 1, 2018
Elected Officers' Class: Local Subclass
($ in Thousands)

(a)	(b)	(c)	(d)	(e)	(f) = (d) / (e)	(g)	(h)	(i)	(j) = (h) / (i)
Date Established	**Description**	**Remaining Payments as of Valuation Date**	**Balance as of Valuation Date**	**Amortization Factor**	**Amortization Payment for FY 2018-2019**	**Remaining Payments one year after Valuation Date**	**Balance One Year After Valuation Date**	**Amortization Factor**	**Amortization Payment for FY 2019-2020**
June 30, 1999	Assumption Change from 1998 Experience Study	12	$5	9.3611	$0	11	$4	8.7839	$0
June 30, 2004	Assumption Change from 2003 Experience Study	17	34,945	12.1072	2,886	16	34,540	11.6789	2,957
June 30, 2009	Assumption Change from 2008 Experience Study	22	11,943	14.3517	832	21	11,965	14.0562	851
June 30, 2009	2008-2009 Experience (Gains) / Losses	22	245,149	14.3517	17,081	21	245,587	14.0562	17,472
June 30, 2009	Unrecognized (Gains)/Losses while in Surplus	22	(60,698)	14.3517	(4,229)	21	(60,806)	14.0562	(4,326)
June 30, 2009	2009-2010 Plan Changes (HB 479)	22	(7,410)	14.3517	(516)	21	(7,423)	14.0562	(528)
June 30, 2010	2009-2010 Experience (Gains) / Losses	23	2,151	14.7488	146	22	2,159	14.4780	149
June 30, 2010	2010-2011 Plan Changes (SB 2100)	23	307	14.7488	21	22	308	14.4780	21
June 30, 2011	2010-2011 Experience (Gains) / Losses	24	14,344	15.1302	948	23	14,423	14.8835	969
June 30, 2012	2011-2012 Experience (Gains) / Losses	25	(5,858)	15.4965	(378)	24	(5,900)	15.2734	(386)
June 30, 2013	2012-2013 Experience (Gains) / Losses	26	112,660	15.8484	7,109	25	113,630	15.6481	7,262
June 30, 2014	Assumption/Method Change from 2013 Experience Study	27	(23,939)	16.1863	(1,479)	26	(24,178)	16.0084	(1,510)
June 30, 2014	2013-2014 Experience (Gains) / Losses	27	(10,636)	16.1863	(657)	26	(10,742)	16.0084	(671)
June 30, 2015	2014-2015 Experience (Gains) / Losses	28	(10,579)	16.5108	(641)	27	(10,698)	16.3548	(654)
June 30, 2016	2016 Assumption Changes	29	3,306	16.8226	197	28	3,347	16.6877	201
June 30, 2016	2015-2016 Experience (Gains) / Losses	29	21,804	16.8226	1,296	28	22,074	16.6877	1,323
June 30, 2017	2017 Assumption Changes	30	6,897	17.1220	403	29	6,990	17.0079	411
June 30, 2017	2016-2017 Experience (Gains) / Losses	30	39,028	17.1220	2,279	29	39,554	17.0079	2,326
June 30, 2018	2018 Assumption Changes		6,616			30	7,106	17.3156	410
June 30, 2018	2017-2018 Experience (Gains) / Losses		10,131			30	10,881	17.3156	628
	UAL as of Valuation Date		**$390,166**		$25,298		$392,821	Total:	$26,905

Projected FY 2019-2020 UAL Payroll Excluding FRS Investment Plan Payroll: $50,181

FY 2019-2020 UAL Contribution Rate Prior to Blending with FRS Investment Plan Payroll: 53.62%

Table 4-9
Florida Retirement System Pension Plan
Unfunded Actuarial Liability (UAL) Bases
July 1, 2018
Senior Management Service Class
($ in Thousands)

(a)	(b)	(c)	(d)	(e)	(f) = (d) / (e)	(g)	(h)	(i)	(j) = (h) / (i)
Date Established	**Description**	**Remaining Payments as of Valuation Date**	**Balance as of Valuation Date**	**Amortization Factor**	**Amortization Payment for FY 2018-2019**	**Remaining Payments one year after Valuation Date**	**Balance One Year After Valuation Date**	**Amortization Factor**	**Amortization Payment for FY 2019-2020**
June 30, 1999	Assumption Change from 1998 Experience Study	12	($2,473)	9.3611	($264)	11	($2,382)	8.7839	($271)
June 30, 2004	Assumption Change from 2003 Experience Study	17	214,649	12.1072	17,729	16	212,160	11.6789	18,166
June 30, 2009	Assumption Change from 2008 Experience Study	22	65,846	14.3517	4,588	21	65,963	14.0562	4,693
June 30, 2009	2008-2009 Experience (Gains) / Losses	22	1,282,437	14.3517	89,358	21	1,284,732	14.0562	91,399
June 30, 2009	Unrecognized (Gains)/Losses while in Surplus	22	(291,087)	14.3517	(20,282)	21	(291,608)	14.0562	(20,746)
June 30, 2009	2009-2010 Plan Changes (HB 479)	22	(54,528)	14.3517	(3,799)	21	(54,625)	14.0562	(3,886)
June 30, 2010	2009-2010 Experience (Gains) / Losses	23	35,614	14.7488	2,415	22	35,747	14.4780	2,469
June 30, 2010	2010-2011 Plan Changes (SB 2100)	23	(93,304)	14.7488	(6,326)	22	(93,652)	14.4780	(6,469)
June 30, 2011	2010-2011 Experience (Gains) / Losses	24	134,711	15.1302	8,903	23	135,453	14.8835	9,101
June 30, 2012	2011-2012 Experience (Gains) / Losses	25	69,216	15.4965	4,467	24	69,709	15.2734	4,564
June 30, 2013	2012-2013 Experience (Gains) / Losses	26	388,866	15.8484	24,537	25	392,213	15.6481	25,065
June 30, 2014	Assumption/Method Change from 2013 Experience Study	27	(152,679)	16.1863	(9,433)	26	(154,202)	16.0084	(9,633)
June 30, 2014	2013-2014 Experience (Gains) / Losses	27	61,605	16.1863	3,806	26	62,219	16.0084	3,887
June 30, 2015	2014-2015 Experience (Gains) / Losses	28	52,652	16.5108	3,189	27	53,244	16.3548	3,256
June 30, 2016	2016 Assumption Changes	29	31,247	16.8226	1,857	28	31,635	16.6877	1,896
June 30, 2016	2015-2016 Experience (Gains) / Losses	29	98,101	16.8226	5,831	28	99,317	16.6877	5,951
June 30, 2017	2017 Assumption Changes	30	58,686	17.1220	3,428	29	59,477	17.0079	3,497
June 30, 2017	2016-2017 Experience (Gains) / Losses	30	79,594	17.1220	4,649	29	80,667	17.0079	4,743
June 30, 2018	2018 Assumption Changes		57,040			30	61,261	17.3156	3,538
June 30, 2018	2017-2018 Experience (Gains) / Losses		73,755			30	79,213	17.3156	4,575
	UAL as of Valuation Date		**$2,109,948**		$134,651		$2,126,540	Total:	$145,794

Projected FY 2019-2020 UAL Payroll Excluding FRS Investment Plan Payroll: $566,224

FY 2019-2020 UAL Contribution Rate Prior to Blending with FRS Investment Plan Payroll: 25.75%

Table 4-10
Florida Retirement System Pension Plan
Unfunded Actuarial Liability (UAL) Bases
July 1, 2018
DROP
($ in Thousands)

(a)	(b)	(c)	(d)	(e)	(f) = (d) / (e)	(g)	(h)	(i)	(j) = (h) / (i)
Date Established	**Description**	**Remaining Payments as of Valuation Date**	**Balance as of Valuation Date**	**Amortization Factor**	**Amortization Payment for FY 2018-2019**	**Remaining Payments one year after Valuation Date**	**Balance One Year After Valuation Date**	**Amortization Factor**	**Amortization Payment for FY 2019-2020**
June 30, 2004	Assumption Change from 2003 Experience Study	17	($68,042)	12.1072	($5,620)	16	($67,253)	11.6789	($5,758)
June 30, 2009	Assumption Change from 2008 Experience Study	22	641,791	14.3517	44,719	21	642,939	14.0562	45,740
June 30, 2009	2008-2009 Experience (Gains) / Losses	22	(22,759,911)	14.3517	(1,585,866)	21	(22,800,649)	14.0562	(1,622,101)
June 30, 2009	Unrecognized (Gains)/Losses while in Surplus	22	24,161,012	14.3517	1,683,492	21	24,204,258	14.0562	1,721,958
June 30, 2010	2009-2010 Experience (Gains) / Losses	23	264,810	14.7488	17,955	22	265,799	14.4780	18,359
June 30, 2011	2010-2011 Experience (Gains) / Losses	24	947,458	15.1302	62,620	23	952,674	14.8835	64,009
June 30, 2012	2011-2012 Experience (Gains) / Losses	25	(123,465)	15.4965	(7,967)	24	(124,345)	15.2734	(8,141)
June 30, 2013	2012-2013 Experience (Gains) / Losses	26	5,192	15.8484	328	25	5,237	15.6481	335
June 30, 2014	Assumption/Method Change from 2013 Experience Study	27	259,344	16.1863	16,022	26	261,931	16.0084	16,362
June 30, 2014	2013-2014 Experience (Gains) / Losses	27	(653,395)	16.1863	(40,367)	26	(659,912)	16.0084	(41,223)
June 30, 2015	2014-2015 Experience (Gains) / Losses	28	(203,235)	16.5108	(12,309)	27	(205,518)	16.3548	(12,566)
June 30, 2016	2016 Assumption Changes	29	81,260	16.8226	4,830	28	82,267	16.6877	4,930
June 30, 2016	2015-2016 Experience (Gains) / Losses	29	(425,470)	16.8226	(25,292)	28	(430,744)	16.6877	(25,812)
June 30, 2017	2017 Assumption Changes	30	171,323	17.1220	10,006	29	173,631	17.0079	10,209
June 30, 2017	2016-2017 Experience (Gains) / Losses	30	199,681	17.1220	11,662	29	202,372	17.0079	11,899
June 30, 2018	2018 Assumption Changes		168,903			30	181,402	17.3156	10,476
June 30, 2018	2017-2018 Experience (Gains) / Losses		8,725			30	9,371	17.3156	541
	UAL as of Valuation Date		**$2,675,982**		$174,213		$2,693,461	Total:	$189,215

Projected FY 2019-2020 UAL Payroll Excluding FRS Investment Plan Payroll: $2,295,800

FY 2019-2020 UAL Contribution Rate Prior to Blending with FRS Investment Plan Payroll: 8.24%

Table 4-11
Florida Retirement System Pension Plan
Actuarially Calculated Employer Contribution Rates
Prior to Blending with FRS Investment Plan
July 1, 2018 Valuation for Fiscal Year Beginning July 1, 2019

No surplus available for rate reduction

	Regular	Special Risk	Special Risk Administrative	-- Elected Officers' Class -- Judicial	Leg-Atty-Cab	Local	Senior Management	Composite (excluding DROP)	DROP [1]	Composite (including DROP)
1. Employer Normal Cost Rate	3.09%	12.36%	3.26%	12.46%	6.61%	8.63%	4.47%	4.68%	4.68%	4.68%
2. UAL Contribution Rate [2]	4.30%	13.17%	40.04%	31.59%	58.20%	53.62%	25.75%	6.21%	8.24%	6.36%
3. Total Employer Contribution Rate [(1) + (2)]	7.39%	25.53%	43.30%	44.05%	64.81%	62.25%	30.22%	10.89%	12.92%	11.04%
4. UAL Cost Paid from Surplus	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
5. Rate Reduction from Surplus	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
6. Total Adjusted Employer Contribution Rate for FRS Trust Fund [(3) + (4) + (5)]	7.39%	25.53%	43.30%	44.05%	64.81%	62.25%	30.22%	10.89%	12.92%	11.04%

[1] *DROP rates are special charges to cover the assumed cost of DROP participants; they are not Normal Cost or UAL in the traditional sense. See Section G of Executive Summary for discussion of the DROP contribution rate.*

[2] *Prior to blending with FRS Investment Plan Payroll.*

Table 4-12
Florida Retirement System Pension Plan
Actuarially Calculated vs. Legislated Defined Benefit Plan Contribution Rates (Before Blending) [1 & 2 & 3]

Plan Year 2017-2018 and Plan Year 2018-2019 rates were set equal to the actuarially calculated rates

Plan Year 2019-2020 rates will be set by the Legislature during the 2019 Legislative Session

	Membership Class	Plan Year 2017-2018 Actuarially Calculated	Plan Year 2017-2018 Legislated	Plan Year 2018-2019 Actuarially Calculated	Plan Year 2018-2019 Legislated	Plan Year 2019-2020 Actuarially Calculated	Plan Year 2019-2020 Legislated
1.	Regular	6.68%	6.68%	7.10%	7.10%	7.39%	TBD
2.	Special Risk	22.99%	22.99%	24.39%	24.39%	25.53%	TBD
3.	Special Risk Administrative	45.90%	45.90%	42.30%	42.30%	43.30%	TBD
4.	Elected Officers' Class - Judicial	40.48%	40.48%	41.93%	41.93%	44.05%	TBD
5.	Elected Officers' Class - Leg-Atty-Cab	62.14%	62.14%	65.19%	65.19%	64.81%	TBD
6.	Elected Officers' Class - Local	57.62%	57.62%	61.22%	61.22%	62.25%	TBD
7.	Senior Management Service	26.21%	26.21%	28.03%	28.03%	30.22%	TBD
8.	Composite without DROP	9.69%	9.69%	10.35%	10.35%	10.89%	TBD
9.	DROP	11.60%	11.60%	12.37%	12.37%	12.92%	TBD
10.	Composite with DROP	9.82%	9.82%	10.50%	10.50%	11.04%	TBD

[1] *The above rates (applied to DB plan payroll) are combined with the Investment Plan contribution rates (applied to IP payroll) to derive the uniform blended rates employers contribute.*

[2] *Contribution rates shown above do not include the 3% required employee contribution rate.*

[3] *The Plan Year 2017-2018 rates shown in this table differ from those developed in the July 1, 2016 actuarial valuation due to the modification of Special Risk in-line-of-duty death benefit provisions by the Florida Legislature subsequent to the publication of the valuation report.*

5. Accounting Statement

The liabilities presented in this report differ by section regarding whether future anticipated salary increases or service credits are included in the calculation. Actuarial Liabilities in Sections 3 and 4 are determined for plan funding purposes and include a provision for the projected effects of future salary increases and future service expected to be performed by current FRS Pension Plan members.

Statement No. 67 of the Governmental Accounting Standards Board (GASB) is the current standard for pension plan accounting disclosure by governmental pension systems. GASB 67 information for the FRS Pension Plan as of July 1, 2018 was provided under separate cover in November 2018.[1] GASB 67 liability calculations also include a provision for the projected effects of future salary increases and future service performed by current FRS Pension Plan members, but use a different actuarial cost allocation method to be in compliance with GASB standards.

Accounting Standards Codification (ASC) 960 – Plan Accounting – Defined Benefit Pension Plans, formerly titled Statement No. 35 of the Financial Accounting Standards Board (FASB), specifies a different methodology for disclosure of certain information regarding pension plan funded status. Accounting liabilities calculated under ASC 960 do not include the effects of either projected future salary increases or projected future service performed.

The ASC 960 disclosures are intended to provide a "snap shot" view of how the Plan's assets compare to its liabilities if contributions stopped and accrued benefit claims had to be satisfied. The Accumulated Benefit Obligation (ABO) is determined based on each member's accrued benefit, that is, the benefit based on employee service performed and compensation earned up to the valuation date. We assume that the plan is ongoing and that members continue to terminate employment, retire, and otherwise act in accordance with the actuarial assumptions. Liabilities are discounted at the assumed valuation interest rate of 7.40% per annum.

Table 5-1 presents the ABO for the FRS Pension Plan determined as of July 1, 2018. All of the calculations presented in that table are based on the actuarial assumptions used in the valuation, as described in Appendix A, except salaries are not projected to increase and no future benefit service is credited for service performed after the valuation date. Values of the ABO are shown by type of member and by class. The active members' values are also divided between the employee-financed (accumulated member contributions) and employer-financed portions, with the employer-financed portions shown separately for vested benefits and non-vested benefits. For purposes of calculating the ABO post-Senate Bill 2100, we estimated the COLA percentage for each member as 3% multiplied by service through June 30, 2011, divided by projected total service at the time of retirement.

Table 5-2 presents the total ABO for the FRS Pension Plan for the current and two prior valuations. The trend of the Pension Plan's ASC 960 funded status, as measured by the ABO over a period of time, is one indication of the progress being made in accumulating sufficient assets to pay benefits when due. Past and future results are affected by changes in actuarial assumptions, benefit provisions, and accounting policies.

Table 5-3 reconciles the ABO determined as of the prior valuation, July 1, 2017, to the ABO as of July 1, 2018. This reconciliation indicates the impact of the assumption changes and plan changes, if any.

[1] *The valuation report in prior years included Table 5-4 which showed the Net Pension Obligation under GASB Statement No. 27. That exhibit has been discontinued since GASB Statement No. 27 is not applicable after plan year 2013-2014. Please refer to the separate GASB 67 report for financial reporting information.*

Table 5-1
Florida Retirement System Pension Plan
Accumulated Benefit Obligation - ASC 960
July 1, 2018
($ in Thousands)

	Regular	Special Risk	Special Risk Administrative	-- Elected Officers' Class -- Judicial	Leg-Atty-Cab	Local	Senior Management	DROP	Total
A. Accumulated Benefit Obligation									
1. Active Members									
a. Accumulated Member Contributions	$2,975,689	$579,968	$628	$17,627	$1,140	$7,171	$84,614	$0	$3,666,837
b. Employer-Financed Vested Benefits	17,990,093	6,249,675	7,789	264,534	14,395	97,255	819,971	0	25,443,712
c. Employer-Financed Non-Vested Benefits	2,056,436	752,573	864	20,254	1,168	8,480	120,555	0	2,960,330
d. Total	$23,022,218	$7,582,216	$9,281	$302,415	$16,703	$112,906	$1,025,140	$0	$32,070,879
2. Annuitants	$80,249,802	$21,974,954	$74,190	$932,162	$89,356	$507,265	$2,981,130	$16,672,788	$123,481,647
3. Other Inactive Members	$4,400,256	$635,593	$1,422	$15,591	$8,738	$17,499	$170,830	$0	$5,249,929
4. Total Accumulated Benefit Obligation	$107,672,276	$30,192,763	$84,893	$1,250,168	$114,797	$637,670	$4,177,100	$16,672,788	$160,802,455
B. Assets Available for Benefits									
1. Market	$112,560,081	$30,010,769	$74,479	$909,904	$59,323	$309,108	$2,819,799	$14,453,418	$161,196,881
2. Actuarial Basis	$109,004,083	$29,062,669	$72,126	$881,158	$57,449	$299,343	$2,730,716	$13,996,806	$156,104,350
C. Unfunded / (Surplus) Total Accumulated Benefit Obligation, Assets at:									
1. Market	($4,887,805)	$181,994	$10,414	$340,264	$55,474	$328,562	$1,357,301	$2,219,370	($394,426)
2. Actuarial Basis	($1,331,807)	$1,130,094	$12,767	$369,010	$57,348	$338,327	$1,446,384	$2,675,982	$4,698,105
D. Percent of Accumulated Obligation Funded, Assets at:									
1. Market	104.54%	99.40%	87.73%	72.78%	51.68%	48.47%	67.51%	86.69%	100.25%
2. Actuarial Basis	101.24%	96.26%	84.96%	70.48%	50.04%	46.94%	65.37%	83.95%	97.08%

Table 5-2
Florida Retirement System Pension Plan
Analysis of Funding Progress - ASC 960
($ in Thousands)

	July 1, 2016 Valuation Basis	July 1, 2017 Valuation Basis	July 1, 2018 Valuation Basis
A. Accumulated Benefit Obligation			
1. Active Members			
a. Accumulated Member Contributions	$2,775,994	$3,237,901	$3,666,837
b. Employer-Financed Vested Benefits	26,754,501	27,040,073	25,443,712
c. Employer-Financed Non-Vested Benefits	1,064,426	1,090,274	2,960,330
d. Total	$30,594,921	$31,368,248	$32,070,879
2. Annuitants	$96,445,460	$101,665,423	$106,808,859
3. Other Inactive Members	$4,914,799	$5,071,085	$5,249,929
4. DROP	$14,569,858	$15,749,075	$16,672,788
5. Total Accumulated Benefit Obligation	$146,525,038	$153,853,831	$160,802,455
B. Assets Available for Benefits			
1. Market	$141,780,921	$154,053,263	$161,196,881
2. Actuarial Basis	$145,451,612	$150,593,242	$156,104,350
C. Unfunded/(Surplus) Total Accumulated Benefit Obligation, Assets at:			
1. Market	$4,744,117	($199,432)	($394,426)
2. Actuarial Basis	$1,073,426	$3,260,589	$4,698,105
D. Percent of Accumulated Benefit Obligation Funded, Assets at:			
1. Market	96.76%	100.13%	100.25%
2. Actuarial Basis	99.27%	97.88%	97.08%
E. Annual Salaries[1]	$25,204,393	$26,171,584	$26,669,323
F. Unfunded/(Surplus) Accumulated Benefit Obligation as a Percent of Salary, Assets at:			
1. Market	18.82%	-0.76%	-1.48%
2. Actuarial Basis	4.26%	12.46%	17.62%

[1] *Includes Drop Salaries*

Table 5-3
Florida Retirement System Pension Plan
Statement of Changes in Accumulated Benefit Obligation
($ in Thousands)

	ASC 960 Basis
Accumulated Benefit Obligation at July 1, 2017	$153,853,831
Increase (Decrease) During Year Attributable to:	
Increase for Interest Due to Decrease in Discount Period	$11,156,171
Benefits Paid - PY 2018	($10,397,753)
Benefits Accrued, & Other Gains/Losses	$4,359,081
Plan Provision / Assumption Changes	$1,831,125
Net Increase (Decrease)	$6,948,624
Accumulated Benefit Obligation at July 1, 2018	$160,802,455

Appendix A: Actuarial Methods, Procedures, and Assumptions

The actuarial assumptions are intended to estimate the future experience of FRS Pension Plan members, employers and investments. Any variations in future actual experience from these assumptions will result in corresponding changes in actuarially calculated contribution rates.

Assumption Tables

A complete listing of all the assumptions, methods, and procedures that are used in the 2018 actuarial valuation of the FRS Pension Plan are summarized on the following pages. These assumptions, methods, and procedures were approved by the 2018 FRS Actuarial Assumption Conference and are based on the 2014 Experience Study. For this valuation, the one assumption update approved by the 2018 FRS Actuarial Assumption Conference was a decrease in the investment return assumption from 7.50% to 7.40%.

Data

Except where noted, the analysis in this valuation was based on data as of June 30, 2018, as provided by the Division of Retirement, Florida Department of Management Services. The data used in this valuation consists of financial information and records of age, service and income of active members, annuitants, and other inactive members entitled to future benefits. The Division of Retirement, Florida Department of Management Services is solely responsible for the validity, accuracy and comprehensiveness of this information; the results of our analysis can be expected to differ and may need to be revised if the underlying data supplied is incomplete or inaccurate.

Methods and Procedures

Actuarial cost method: The total cost of the FRS Pension Plan, over time, will be equal to the benefits paid and expenses less actual investment earnings and is not affected directly by the actuarial cost method. The actuarial cost method is simply a tool to allocate costs to past, current, or future years and thus primarily affects the timing of cost recognition.

The FRS Pension Plan uses Entry Age Normal (EAN), which is the most commonly used general cost method approach for state pension systems. Conceptually, EAN sets the normal cost rate level as a percent of payroll over a member's full projected working career. There are different categories of EAN, including Individual EAN, which is by far the most commonly used EAN category, and Ultimate EAN, which is the category of EAN used by the FRS Pension Plan. Even each category of EAN contains different interpretations of how to calculate the key metrics. GASB Statements Nos. 67 & 68 mandate the use of a particular interpretation of Individual EAN for financial reporting purposes. GASB 67 & 68 information is provided under separate cover.

Sponsors have autonomy to choose any cost method and identify any variation of that cost method for purposes of setting system funding policy. Ultimate EAN, which is used by the FRS, sets normal cost as if each member was initially enrolled on or after July 1, 2011 (Tier II). As such, normal cost is lower for Ultimate EAN than for Individual EAN, which sets normal cost in a manner that is representative of the tier in which the member actually participates. Cost methods do allocate benefits between past and projected future service, but do not affect the level of projected benefits; benefits are based on the actual tier of membership under either Ultimate EAN or Individual EAN. Compared to the Individual EAN method, the Ultimate EAN method allocates fewer projected benefits to future service (via lower normal cost) and hence produces a higher actuarial accrued liability for past service as a counterbalance.

The interpretation of Ultimate EAN used in this 2018 valuation sets normal cost rates as if each member in the Pension Plan was in Tier II as noted above. The projected future service period used for calculating the present value of future normal costs is based on Tier I retirement timing assumptions for members in Tier I. This is the same method used in the prior valuation.

UAL amortization method: The Unfunded Actuarial Liability (UAL) is amortized as a level percentage of projected payroll on which UAL Rates are charged in an effort to maintain level contribution rates as a percentage of payroll during the specified amortization period if future experience follows assumptions.

New UAL arises each year and is calculated in each new actuarial valuation. The newly arising UAL can be either positive or negative, and can be due either to experience varying from assumptions or to changes in actuarial liability from modifications to assumptions, plan provisions, or actuarial methods. Each year's newly arising UAL is currently amortized over a closed 30-year period as a level percent of the projected payroll on which UAL rates are charged.

Amortization periods longer than 20 years can incur significant negative amortization, wherein the calculated UAL increases for an extended period of time prior to final payoff even if all contributions are made and all assumptions are met. This was discussed and illustrated in Milliman's August 11, 2014 presentation materials to the FRS Actuarial Assumptions Conference.

Asset valuation method: This method recognizes actual investment performance different from the long-term assumption systematically. The expected Actuarial Value of Assets (AVA) is determined by crediting the rate of investment return assumed in the prior valuation to the prior year's AVA. Then, 20% of the difference between the actual Market Value of Assets (MVA) and the expected AVA is immediately recognized in the AVA. To ensure that the AVA remains reasonably close to the MVA, the asset method includes a corridor whereby the AVA must remain within 80% to 120% of MVA.

Economic Assumptions

Assumption	
Inflation	2.60%
Real wage growth	0.65%
Payroll growth	3.25% (sum of two items above)
Investment Return	7.40%

Demographic Assumptions

Mortality

Healthy Inactive Mortality (Post-Employment)

- Female Non-Disabled: RP2000 Generational, 100% Annuitant White Collar, Scale BB
- Male Non-Disabled (other than Special Risk): RP2000 Generational, 50% Annuitant White Collar / 50% Annuitant Blue Collar, Scale BB
- Male Non-Disabled (Special Risk): RP2000 Generational, 10% Annuitant White Collar / 90% Annuitant Blue Collar, Scale BB

Healthy Active Mortality (During Employment)

- Female Non-Disabled: RP2000 Generational, 100% Combined Healthy White Collar, Scale BB
- Male Non-Disabled (other than Special Risk): RP2000 Generational, 50% Combined Healthy White Collar / 50% Combined Healthy Blue Collar, Scale BB
- Male Non-Disabled (Special Risk): RP2000 Generational, 10% Combined Healthy White Collar / 90% Combined Healthy Blue Collar, Scale BB
- For Special Risk members, 25% of future active member deaths are assumed to be in the line of duty
- For all other members, 2% of future active member deaths are assumed to be in the line of duty

Disabled Mortality

- Female Disabled (other than Special Risk): RP2000, 100% Disabled Female set forward two years, no projection scale
- Female Disabled (Special Risk): 60% RP2000 Disabled Female set forward two years / 40% Annuitant White Collar with no setback, no projection scale
- Male Disabled (other than Special Risk): RP2000, 100% Disabled Male setback four years, no projection scale
- Male Disabled (Special Risk): 60% RP2000 Disabled Male setback four years / 40% Annuitant White Collar with no setback, no projection scale

Retirement for Vested Terminated Members (Tier I and Tier II)

All current vested terminated members are assumed to begin receiving benefits on the normal retirement benefit age for the appropriate class and tier. All future members who terminate employment with a vested benefit are also assumed to commence benefit at the normal retirement benefit age.

Optional Form of Payment

All future retirees are assumed to elect the straight life (Option 1) form of benefit. For current retirees and members in DROP, the actual elected form is used.

Retirement Assumptions (Tier I)

DROP Entry at first retirement eligibility

	Regular		Special Risk and Special Risk Admin		All Other	
Age	Female	Male	Female	Male	Female	Male
45	0.0%	0.0%	20.0%	23.0%	0.0%	0.0%
46	0.0%	0.0%	20.0%	23.0%	0.0%	0.0%
47	0.0%	0.0%	20.0%	23.0%	0.0%	0.0%
48	27.0%	23.0%	20.0%	30.0%	30.0%	30.0%
49	27.0%	23.0%	20.0%	30.0%	32.5%	32.5%
50	27.0%	23.0%	20.0%	30.0%	35.0%	35.0%
51	27.0%	23.0%	20.0%	40.0%	37.5%	37.5%
52	27.0%	23.0%	30.0%	50.0%	40.0%	40.0%
53	27.0%	23.0%	20.0%	50.0%	42.5%	42.5%
54	27.0%	23.0%	20.0%	50.0%	45.0%	45.0%
55	33.0%	30.0%	31.0%	29.0%	47.5%	47.5%
56	33.0%	30.0%	20.0%	5.0%	50.0%	50.0%
57	48.0%	55.0%	5.0%	5.0%	52.5%	52.5%
58	48.0%	55.0%	5.0%	5.0%	55.0%	55.0%
59	55.0%	55.0%	5.0%	5.0%	57.5%	57.5%
60	55.0%	55.0%	5.0%	5.0%	60.0%	60.0%
61	55.0%	55.0%	5.0%	5.0%	62.5%	62.5%
62	45.5%	41.0%	5.0%	5.0%	50.0%	50.0%
63	5.0%	5.0%	5.0%	5.0%	15.0%	15.0%
64	5.0%	5.0%	5.0%	5.0%	15.0%	15.0%
65	5.0%	5.0%	5.0%	5.0%	15.0%	15.0%
66	5.0%	5.0%	5.0%	5.0%	15.0%	15.0%
67	5.0%	5.0%	5.0%	5.0%	15.0%	15.0%
68	5.0%	5.0%	5.0%	5.0%	15.0%	15.0%
69	5.0%	5.0%	5.0%	5.0%	15.0%	15.0%
70-79	5.0%	5.0%	0.0%	0.0%	15.0%	15.0%
80	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Immediate Retirement at first retirement eligibility

	Regular		Special Risk and Special Risk Admin		Elected Officers' (All Subclasses)		Senior Management Service Class	
Age	Female	Male	Female	Male	Female	Male	Female	Male
45	0.0%	0.0%	4.0%	4.0%	0.0%	0.0%	0.0%	0.0%
46	0.0%	0.0%	4.0%	4.0%	0.0%	0.0%	0.0%	0.0%
47	0.0%	0.0%	4.0%	7.0%	0.0%	0.0%	0.0%	0.0%
48	4.0%	4.0%	4.0%	7.0%	10.0%	10.0%	5.0%	5.0%
49	4.0%	4.0%	4.0%	7.0%	10.0%	10.0%	5.0%	5.0%
50	4.0%	4.0%	7.0%	7.0%	10.0%	10.0%	5.0%	5.0%
51	4.0%	4.0%	7.0%	7.0%	10.0%	10.0%	5.0%	5.0%
52	4.0%	4.0%	7.0%	7.0%	10.0%	10.0%	5.0%	5.0%
53	4.0%	4.0%	7.0%	7.0%	10.0%	10.0%	5.0%	5.0%
54	5.0%	4.0%	7.0%	7.0%	10.0%	10.0%	5.0%	5.0%
55	5.0%	5.0%	7.0%	6.0%	10.0%	10.0%	5.0%	5.0%
56	7.0%	5.0%	6.0%	6.0%	10.0%	10.0%	5.0%	5.0%
57	7.0%	5.0%	6.0%	6.0%	10.0%	10.0%	5.0%	5.0%
58	7.0%	5.0%	6.0%	6.0%	10.0%	10.0%	10.0%	10.0%
59	7.0%	5.0%	6.0%	6.0%	10.0%	10.0%	10.0%	10.0%
60	7.0%	5.0%	6.0%	6.0%	10.0%	10.0%	10.0%	10.0%
61	9.0%	8.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
62	9.0%	11.0%	15.0%	15.0%	10.0%	10.0%	10.0%	10.0%
63	9.0%	10.0%	20.0%	20.0%	10.0%	10.0%	5.0%	5.0%
64	9.0%	10.0%	25.0%	25.0%	10.0%	10.0%	5.0%	5.0%
65	15.0%	10.0%	30.0%	30.0%	10.0%	10.0%	5.0%	5.0%
66	10.0%	10.0%	35.0%	35.0%	10.0%	10.0%	5.0%	5.0%
67	10.0%	10.0%	35.0%	35.0%	10.0%	10.0%	5.0%	5.0%
68	10.0%	10.0%	35.0%	35.0%	10.0%	10.0%	5.0%	5.0%
69	10.0%	10.0%	35.0%	35.0%	10.0%	10.0%	5.0%	5.0%
70-79	10.0%	10.0%	100.0%	100.0%	10.0%	10.0%	5.0%	5.0%
80	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Retirement Assumptions (Tier I) (continued)

Combined DROP/Immediate Retirement at first retirement eligibility

	Regular		Special Risk and Special Risk Admin		Elected Officers' (All Subclasses)		Senior Management Service Class	
Age	Female	Male	Female	Male	Female	Male	Female	Male
45	0.0%	0.0%	24.0%	27.0%	0.0%	0.0%	0.0%	0.0%
46	0.0%	0.0%	24.0%	27.0%	0.0%	0.0%	0.0%	0.0%
47	0.0%	0.0%	24.0%	30.0%	0.0%	0.0%	0.0%	0.0%
48	31.0%	27.0%	24.0%	37.0%	40.0%	40.0%	35.0%	35.0%
49	31.0%	27.0%	24.0%	37.0%	42.5%	42.5%	37.5%	37.5%
50	31.0%	27.0%	27.0%	37.0%	45.0%	45.0%	40.0%	40.0%
51	31.0%	27.0%	27.0%	47.0%	47.5%	47.5%	42.5%	42.5%
52	31.0%	27.0%	37.0%	57.0%	50.0%	50.0%	45.0%	45.0%
53	31.0%	27.0%	27.0%	57.0%	52.5%	52.5%	47.5%	47.5%
54	32.0%	27.0%	27.0%	57.0%	55.0%	55.0%	50.0%	50.0%
55	38.0%	35.0%	38.0%	35.0%	57.5%	57.5%	52.5%	52.5%
56	40.0%	35.0%	26.0%	11.0%	60.0%	60.0%	55.0%	55.0%
57	55.0%	60.0%	11.0%	11.0%	62.5%	62.5%	57.5%	57.5%
58	55.0%	60.0%	11.0%	11.0%	65.0%	65.0%	65.0%	65.0%
59	62.0%	60.0%	11.0%	11.0%	67.5%	67.5%	67.5%	67.5%
60	62.0%	60.0%	11.0%	11.0%	70.0%	70.0%	70.0%	70.0%
61	64.0%	63.0%	15.0%	15.0%	72.5%	72.5%	72.5%	72.5%
62	54.5%	52.0%	20.0%	20.0%	60.0%	60.0%	60.0%	60.0%
63	14.0%	15.0%	25.0%	25.0%	25.0%	25.0%	20.0%	20.0%
64	14.0%	15.0%	30.0%	30.0%	25.0%	25.0%	20.0%	20.0%
65	20.0%	15.0%	35.0%	35.0%	25.0%	25.0%	20.0%	20.0%
66	15.0%	15.0%	40.0%	40.0%	25.0%	25.0%	20.0%	20.0%
67	15.0%	15.0%	40.0%	40.0%	25.0%	25.0%	20.0%	20.0%
68	15.0%	15.0%	40.0%	40.0%	25.0%	25.0%	20.0%	20.0%
69	15.0%	15.0%	40.0%	40.0%	25.0%	25.0%	20.0%	20.0%
70-79	15.0%	15.0%	100.0%	100.0%	25.0%	25.0%	20.0%	20.0%
80	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Deferred Retirement subsequent to first retirement eligibility

	Regular		Special Risk and Special Risk Admin		All Other	
Age	Female	Male	Female	Male	Female	Male
45	0.0%	0.0%	3.0%	3.0%	0.0%	0.0%
46	0.0%	0.0%	3.0%	3.0%	0.0%	0.0%
47	0.0%	0.0%	3.0%	3.0%	0.0%	0.0%
48	2.0%	2.0%	4.0%	4.0%	5.0%	5.0%
49	2.0%	2.0%	4.0%	4.0%	5.0%	5.0%
50	2.0%	2.0%	4.0%	4.0%	5.0%	5.0%
51	2.0%	2.0%	4.0%	4.0%	5.0%	5.0%
52	2.0%	2.0%	5.0%	5.0%	5.0%	5.0%
53	2.0%	2.0%	5.0%	5.0%	5.0%	5.0%
54	2.0%	2.0%	5.0%	5.0%	5.0%	5.0%
55	2.0%	2.0%	5.0%	5.0%	5.0%	5.0%
56	2.0%	2.0%	5.0%	5.0%	5.0%	5.0%
57	2.0%	2.0%	5.0%	5.0%	5.0%	5.0%
58	3.5%	2.0%	5.0%	5.0%	5.0%	5.0%
59	5.0%	2.0%	5.0%	5.0%	5.0%	5.0%
60	5.0%	5.0%	7.0%	7.0%	5.0%	5.0%
61	5.0%	5.0%	9.0%	9.0%	5.0%	5.0%
62	12.0%	11.0%	20.0%	20.0%	15.0%	15.0%
63	8.0%	8.0%	20.0%	20.0%	11.0%	11.0%
64	8.0%	8.0%	20.0%	20.0%	11.0%	11.0%
65	15.0%	13.0%	20.0%	20.0%	15.0%	15.0%
66	15.0%	13.0%	25.0%	25.0%	15.0%	15.0%
67	15.0%	13.0%	25.0%	25.0%	15.0%	15.0%
68	15.0%	13.0%	25.0%	25.0%	15.0%	15.0%
69	15.0%	13.0%	25.0%	25.0%	15.0%	15.0%
70-79	15.0%	13.0%	100.0%	100.0%	15.0%	15.0%
80	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Retirement Assumptions (Tier II)

DROP Entry at first retirement eligibility

	Regular		Special Risk and Special Risk Admin		All Other	
Age	Female	Male	Female	Male	Female	Male
45	0.0%	0.0%	20.0%	23.0%	0.0%	0.0%
46	0.0%	0.0%	20.0%	23.0%	0.0%	0.0%
47	0.0%	0.0%	20.0%	23.0%	0.0%	0.0%
48	27.0%	23.0%	20.0%	30.0%	30.0%	30.0%
49	27.0%	23.0%	20.0%	30.0%	32.5%	32.5%
50	27.0%	23.0%	20.0%	30.0%	35.0%	35.0%
51	27.0%	23.0%	20.0%	40.0%	37.5%	37.5%
52	27.0%	23.0%	30.0%	50.0%	40.0%	40.0%
53	27.0%	23.0%	20.0%	50.0%	42.5%	42.5%
54	27.0%	23.0%	20.0%	50.0%	45.0%	45.0%
55	33.0%	30.0%	20.0%	50.0%	47.5%	47.5%
56	33.0%	30.0%	20.0%	50.0%	50.0%	50.0%
57	48.0%	55.0%	20.0%	50.0%	52.5%	52.5%
58	48.0%	55.0%	20.0%	50.0%	55.0%	55.0%
59	55.0%	55.0%	20.0%	50.0%	57.5%	57.5%
60	55.0%	55.0%	31.0%	29.0%	60.0%	60.0%
61	55.0%	55.0%	20.0%	5.0%	62.5%	62.5%
62	55.0%	55.0%	5.0%	5.0%	62.5%	62.5%
63	55.0%	55.0%	5.0%	5.0%	62.5%	62.5%
64	55.0%	55.0%	5.0%	5.0%	62.5%	62.5%
65	45.5%	41.0%	5.0%	5.0%	50.0%	50.0%
66	5.0%	5.0%	5.0%	5.0%	15.0%	15.0%
67	5.0%	5.0%	5.0%	5.0%	15.0%	15.0%
68	5.0%	5.0%	5.0%	5.0%	15.0%	15.0%
69	5.0%	5.0%	5.0%	5.0%	15.0%	15.0%
70-79	5.0%	5.0%	0.0%	0.0%	15.0%	15.0%
80	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Immediate Retirement at first retirement eligibility

	Regular		Special Risk and Special Risk Admin		Elected Officers' (All Subclasses)		Senior Management Service Class	
Age	Female	Male	Female	Male	Female	Male	Female	Male
45	0.0%	0.0%	4.0%	4.0%	0.0%	0.0%	0.0%	0.0%
46	0.0%	0.0%	4.0%	4.0%	0.0%	0.0%	0.0%	0.0%
47	0.0%	0.0%	4.0%	7.0%	0.0%	0.0%	0.0%	0.0%
48	4.0%	4.0%	4.0%	7.0%	10.0%	10.0%	5.0%	5.0%
49	4.0%	4.0%	4.0%	7.0%	10.0%	10.0%	5.0%	5.0%
50	4.0%	4.0%	7.0%	7.0%	10.0%	10.0%	5.0%	5.0%
51	4.0%	4.0%	7.0%	7.0%	10.0%	10.0%	5.0%	5.0%
52	4.0%	4.0%	7.0%	7.0%	10.0%	10.0%	5.0%	5.0%
53	4.0%	4.0%	7.0%	7.0%	10.0%	10.0%	5.0%	5.0%
54	5.0%	4.0%	7.0%	7.0%	10.0%	10.0%	5.0%	5.0%
55	5.0%	5.0%	7.0%	6.0%	10.0%	10.0%	5.0%	5.0%
56	7.0%	5.0%	6.0%	6.0%	10.0%	10.0%	5.0%	5.0%
57	7.0%	5.0%	6.0%	6.0%	10.0%	10.0%	5.0%	5.0%
58	7.0%	5.0%	6.0%	6.0%	10.0%	10.0%	10.0%	10.0%
59	7.0%	5.0%	6.0%	6.0%	10.0%	10.0%	10.0%	10.0%
60	7.0%	5.0%	6.0%	6.0%	10.0%	10.0%	10.0%	10.0%
61	9.0%	8.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
62	9.0%	8.0%	15.0%	15.0%	10.0%	10.0%	10.0%	10.0%
63	9.0%	8.0%	20.0%	20.0%	10.0%	10.0%	10.0%	10.0%
64	9.0%	8.0%	25.0%	25.0%	10.0%	10.0%	10.0%	10.0%
65	15.0%	11.0%	30.0%	30.0%	10.0%	10.0%	10.0%	10.0%
66	10.0%	10.0%	35.0%	35.0%	10.0%	10.0%	5.0%	5.0%
67	10.0%	10.0%	35.0%	35.0%	10.0%	10.0%	5.0%	5.0%
68	10.0%	10.0%	35.0%	35.0%	10.0%	10.0%	5.0%	5.0%
69	10.0%	10.0%	35.0%	35.0%	10.0%	10.0%	5.0%	5.0%
70-79	10.0%	10.0%	100.0%	100.0%	10.0%	10.0%	5.0%	5.0%
80	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Retirement Assumptions (Tier II) (continued)

Combined DROP/Immediate Retirement at first retirement eligibility

	Regular		Special Risk and Special Risk Admin		Elected Officers' (All Subclasses)		Senior Management Service Class	
Age	Female	Male	Female	Male	Female	Male	Female	Male
45	0.0%	0.0%	24.0%	27.0%	0.0%	0.0%	0.0%	0.0%
46	0.0%	0.0%	24.0%	27.0%	0.0%	0.0%	0.0%	0.0%
47	0.0%	0.0%	24.0%	30.0%	0.0%	0.0%	0.0%	0.0%
48	31.0%	27.0%	24.0%	37.0%	40.0%	40.0%	35.0%	35.0%
49	31.0%	27.0%	24.0%	37.0%	42.5%	42.5%	37.5%	37.5%
50	31.0%	27.0%	27.0%	37.0%	45.0%	45.0%	40.0%	40.0%
51	31.0%	27.0%	27.0%	47.0%	47.5%	47.5%	42.5%	42.5%
52	31.0%	27.0%	37.0%	57.0%	50.0%	50.0%	45.0%	45.0%
53	31.0%	27.0%	27.0%	57.0%	52.5%	52.5%	47.5%	47.5%
54	32.0%	27.0%	27.0%	57.0%	55.0%	55.0%	50.0%	50.0%
55	38.0%	35.0%	27.0%	56.0%	57.5%	57.5%	52.5%	52.5%
56	40.0%	35.0%	26.0%	56.0%	60.0%	60.0%	55.0%	55.0%
57	55.0%	60.0%	26.0%	56.0%	62.5%	62.5%	57.5%	57.5%
58	55.0%	60.0%	26.0%	56.0%	65.0%	65.0%	65.0%	65.0%
59	62.0%	60.0%	26.0%	56.0%	67.5%	67.5%	67.5%	67.5%
60	62.0%	60.0%	37.0%	35.0%	70.0%	70.0%	70.0%	70.0%
61	64.0%	63.0%	30.0%	15.0%	72.5%	72.5%	72.5%	72.5%
62	64.0%	63.0%	20.0%	20.0%	72.5%	72.5%	72.5%	72.5%
63	64.0%	63.0%	25.0%	25.0%	72.5%	72.5%	72.5%	72.5%
64	64.0%	63.0%	30.0%	30.0%	72.5%	72.5%	72.5%	72.5%
65	60.5%	52.0%	35.0%	35.0%	60.0%	60.0%	60.0%	60.0%
66	15.0%	15.0%	40.0%	40.0%	25.0%	25.0%	20.0%	20.0%
67	15.0%	15.0%	40.0%	40.0%	25.0%	25.0%	20.0%	20.0%
68	15.0%	15.0%	40.0%	40.0%	25.0%	25.0%	20.0%	20.0%
69	15.0%	15.0%	40.0%	40.0%	25.0%	25.0%	20.0%	20.0%
70-79	15.0%	15.0%	100.0%	100.0%	25.0%	25.0%	20.0%	20.0%
80	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Deferred Retirement subsequent to first retirement eligibility

	Regular		Special Risk and Special Risk Admin		All Other	
Age	Female	Male	Female	Male	Female	Male
45	0.0%	0.0%	3.0%	3.0%	0.0%	0.0%
46	0.0%	0.0%	3.0%	3.0%	0.0%	0.0%
47	0.0%	0.0%	3.0%	3.0%	0.0%	0.0%
48	2.0%	2.0%	4.0%	4.0%	5.0%	5.0%
49	2.0%	2.0%	4.0%	4.0%	5.0%	5.0%
50	2.0%	2.0%	4.0%	4.0%	5.0%	5.0%
51	2.0%	2.0%	4.0%	4.0%	5.0%	5.0%
52	2.0%	2.0%	5.0%	5.0%	5.0%	5.0%
53	2.0%	2.0%	5.0%	5.0%	5.0%	5.0%
54	2.0%	2.0%	5.0%	5.0%	5.0%	5.0%
55	2.0%	2.0%	5.0%	5.0%	5.0%	5.0%
56	2.0%	2.0%	5.0%	5.0%	5.0%	5.0%
57	2.0%	2.0%	5.0%	5.0%	5.0%	5.0%
58	3.5%	2.0%	5.0%	5.0%	5.0%	5.0%
59	5.0%	2.0%	5.0%	5.0%	5.0%	5.0%
60	5.0%	5.0%	7.0%	7.0%	5.0%	5.0%
61	5.0%	5.0%	9.0%	9.0%	5.0%	5.0%
62	5.0%	5.0%	20.0%	20.0%	5.0%	5.0%
63	5.0%	5.0%	20.0%	20.0%	5.0%	5.0%
64	5.0%	5.0%	20.0%	20.0%	5.0%	5.0%
65	12.0%	11.0%	20.0%	20.0%	15.0%	15.0%
66	8.0%	8.0%	25.0%	25.0%	11.0%	11.0%
67	8.0%	8.0%	25.0%	25.0%	11.0%	11.0%
68	15.0%	13.0%	25.0%	25.0%	15.0%	15.0%
69	15.0%	13.0%	25.0%	25.0%	15.0%	15.0%
70-79	15.0%	13.0%	100.0%	100.0%	15.0%	15.0%
80	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Line-of-Duty Disability Annual Rates

Age	SR Male	SR Female	Other Male	Other Female
20	0.010%	0.000%	0.000%	0.000%
21	0.010%	0.000%	0.000%	0.000%
22	0.010%	0.000%	0.000%	0.000%
23	0.010%	0.000%	0.000%	0.000%
24	0.010%	0.000%	0.000%	0.000%
25	0.010%	0.004%	0.001%	0.001%
26	0.010%	0.004%	0.001%	0.001%
27	0.010%	0.004%	0.001%	0.001%
28	0.010%	0.004%	0.001%	0.001%
29	0.010%	0.004%	0.001%	0.001%
30	0.010%	0.004%	0.001%	0.001%
31	0.010%	0.004%	0.001%	0.001%
32	0.010%	0.004%	0.001%	0.001%
33	0.010%	0.004%	0.001%	0.001%
34	0.010%	0.004%	0.001%	0.001%
35	0.010%	0.004%	0.001%	0.001%
36	0.010%	0.004%	0.001%	0.001%
37	0.010%	0.040%	0.001%	0.001%
38	0.020%	0.040%	0.001%	0.001%
39	0.020%	0.040%	0.001%	0.001%
40	0.020%	0.040%	0.001%	0.001%
41	0.020%	0.060%	0.004%	0.001%
42	0.020%	0.060%	0.004%	0.001%
43	0.020%	0.060%	0.004%	0.001%
44	0.040%	0.040%	0.004%	0.001%
45	0.060%	0.040%	0.004%	0.001%
46	0.080%	0.040%	0.004%	0.001%
47	0.100%	0.040%	0.004%	0.001%
48	0.120%	0.040%	0.004%	0.001%
49	0.140%	0.040%	0.004%	0.001%
50	0.140%	0.050%	0.006%	0.006%
51	0.100%	0.060%	0.006%	0.006%
52	0.100%	0.070%	0.006%	0.006%
53	0.100%	0.080%	0.006%	0.006%
54	0.100%	0.080%	0.006%	0.006%
55	0.100%	0.080%	0.006%	0.006%
56	0.100%	0.080%	0.006%	0.006%
57	0.100%	0.080%	0.006%	0.006%
58	0.100%	0.150%	0.006%	0.006%
59	0.100%	0.150%	0.010%	0.015%
60	0.140%	0.150%	0.010%	0.013%
61	0.180%	0.150%	0.010%	0.010%
62	0.220%	0.150%	0.010%	0.010%
63	0.260%	0.150%	0.010%	0.010%
64	0.300%	0.150%	0.010%	0.010%
65	0.260%	0.150%	0.010%	0.010%
66	0.240%	0.100%	0.010%	0.010%
67	0.200%	0.100%	0.010%	0.010%
68	0.100%	0.100%	0.010%	0.010%
69	0.100%	0.100%	0.010%	0.010%
70-79	0.100%	0.100%	0.010%	0.010%
80	0.100%	0.100%	0.001%	0.001%

Non-Duty Disability Annual Rates

Age	SR Male	SR Female	Other Male	Other Female
20	0.020%	0.000%	0.000%	0.000%
21	0.020%	0.000%	0.010%	0.010%
22	0.020%	0.000%	0.010%	0.010%
23	0.020%	0.000%	0.010%	0.010%
24	0.020%	0.000%	0.010%	0.010%
25	0.020%	0.020%	0.010%	0.010%
26	0.020%	0.020%	0.010%	0.010%
27	0.020%	0.020%	0.010%	0.010%
28	0.030%	0.020%	0.010%	0.010%
29	0.030%	0.020%	0.010%	0.010%
30	0.030%	0.020%	0.010%	0.010%
31	0.030%	0.020%	0.010%	0.010%
32	0.030%	0.020%	0.010%	0.010%
33	0.030%	0.030%	0.010%	0.010%
34	0.030%	0.030%	0.020%	0.010%
35	0.030%	0.030%	0.020%	0.010%
36	0.030%	0.030%	0.020%	0.020%
37	0.030%	0.030%	0.020%	0.020%
38	0.030%	0.030%	0.020%	0.020%
39	0.030%	0.030%	0.020%	0.020%
40	0.030%	0.030%	0.020%	0.020%
41	0.030%	0.030%	0.040%	0.040%
42	0.030%	0.060%	0.040%	0.040%
43	0.030%	0.060%	0.040%	0.040%
44	0.030%	0.060%	0.080%	0.040%
45	0.030%	0.060%	0.080%	0.060%
46	0.030%	0.060%	0.080%	0.060%
47	0.080%	0.060%	0.080%	0.100%
48	0.080%	0.110%	0.080%	0.100%
49	0.080%	0.110%	0.120%	0.100%
50	0.080%	0.110%	0.160%	0.100%
51	0.080%	0.110%	0.200%	0.140%
52	0.080%	0.110%	0.200%	0.140%
53	0.050%	0.110%	0.200%	0.140%
54	0.050%	0.110%	0.200%	0.140%
55	0.050%	0.110%	0.250%	0.160%
56	0.050%	0.110%	0.250%	0.180%
57	0.050%	0.110%	0.250%	0.200%
58	0.050%	0.110%	0.300%	0.220%
59	0.050%	0.110%	0.300%	0.240%
60	0.050%	0.110%	0.300%	0.260%
61	0.050%	0.110%	0.200%	0.200%
62	0.050%	0.110%	0.150%	0.140%
63	0.050%	0.110%	0.100%	0.080%
64	0.050%	0.110%	0.100%	0.080%
65	0.050%	0.110%	0.100%	0.080%
66	0.050%	0.110%	0.040%	0.080%
67	0.050%	0.110%	0.040%	0.040%
68	0.050%	0.110%	0.040%	0.040%
69	0.050%	0.110%	0.040%	0.040%
70-79	0.050%	0.110%	0.040%	0.040%
80	0.050%	0.110%	0.040%	0.040%

Withdrawal – Other Terminations of Employment Annual Rates

Regular – Male										
Combined Years of Service	Attained Age 20	25	30	35	40	45	50	55	60	65
0	32.8%	27.2%	25.8%	25.8%	24.4%	24.4%	23.4%	27.4%	27.4%	27.4%
1	25.4%	18.5%	15.4%	14.3%	12.6%	12.5%	12.2%	12.2%	12.2%	12.2%
2	22.7%	17.2%	14.0%	12.8%	12.0%	11.6%	10.7%	10.7%	10.7%	10.7%
3	18.4%	14.6%	13.2%	12.6%	10.7%	10.3%	9.4%	9.3%	9.3%	9.3%
4	15.8%	12.7%	11.8%	10.9%	9.0%	8.8%	7.9%	7.8%	7.8%	7.8%
5	11.7%	9.7%	8.8%	8.5%	7.4%	6.8%	6.0%	6.8%	6.8%	6.8%
6	11.1%	8.5%	7.8%	7.5%	6.7%	6.5%	5.5%	5.4%	5.4%	5.4%
7	11.1%	8.4%	7.1%	6.8%	6.2%	6.0%	5.3%	5.2%	5.1%	5.1%
8	11.0%	7.7%	6.4%	6.2%	5.8%	5.1%	4.6%	4.4%	4.3%	4.3%
9	10.0%	6.3%	5.5%	5.3%	5.3%	5.1%	4.6%	4.3%	4.2%	4.2%
10+	9.8%	6.2%	4.7%	4.2%	3.0%	2.7%	3.0%	4.5%	5.3%	3.7%

Regular – Female										
Combined Years of Service	Attained Age 20	25	30	35	40	45	50	55	60	65
0	30.3%	26.6%	25.4%	25.4%	24.4%	24.4%	23.2%	23.2%	23.2%	23.2%
1	25.8%	19.8%	16.9%	15.9%	14.0%	13.9%	13.4%	13.4%	13.4%	13.4%
2	22.1%	17.1%	14.5%	13.5%	12.1%	11.9%	11.0%	11.0%	11.0%	11.0%
3	17.4%	13.0%	11.6%	11.2%	10.0%	9.8%	8.8%	8.7%	8.7%	8.7%
4	15.4%	12.9%	11.3%	10.9%	9.1%	8.8%	8.4%	8.3%	8.3%	8.3%
5	13.5%	10.7%	9.4%	9.0%	7.0%	6.7%	6.2%	6.1%	6.1%	6.1%
6	11.4%	9.7%	8.7%	8.0%	6.5%	6.5%	5.9%	5.8%	5.8%	5.8%
7	11.3%	9.2%	8.1%	7.8%	6.3%	6.1%	5.5%	5.4%	5.4%	5.4%
8	10.5%	7.8%	7.1%	6.8%	6.1%	5.8%	5.5%	5.4%	5.4%	5.4%
9	10.2%	7.1%	6.5%	6.2%	5.0%	4.7%	4.6%	4.5%	4.5%	4.5%
10+	11.6%	5.3%	5.4%	4.6%	3.3%	3.0%	3.0%	3.0%	3.0%	3.0%

Withdrawal (continued)

Elected Officers' Class: Local – Male										
Combined Years of Service	Attained Age 20	25	30	35	40	45	50	55	60	65
0	8.2%	8.2%	8.2%	8.2%	8.2%	8.2%	8.2%	8.2%	8.2%	8.2%
1	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%
2	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
3	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
4	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
5	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%
6	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%
7	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
8	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%	13.6%	13.4%	13.3%	11.5%
9	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.6%	4.4%	4.3%	2.5%
10+	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.6%	5.3%	5.2%	3.5%

Elected Officers' Class: Local – Female										
Combined Years of Service	Attained Age 20	25	30	35	40	45	50	55	60	65
0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
2	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
3	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
4	18.1%	18.1%	18.1%	18.1%	18.1%	18.1%	18.1%	18.1%	18.1%	18.1%
5	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%
6	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
7	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
8	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	11.9%	11.7%	11.6%	10.2%
9	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.1%	2.8%	2.7%	1.0%
10+	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.1%	3.9%	3.8%	2.4%

Withdrawal (continued)

Elected Officers' Class: Leg-Atty-Cab – Male										
Combined Years of Service	Attained Age 20	25	30	35	40	45	50	55	60	65
0	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
1	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%
2	11.7%	11.7%	11.7%	11.7%	11.7%	11.7%	11.7%	11.7%	11.7%	11.7%
3	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%
4	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
5	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
6	10.6%	10.6%	10.6%	10.6%	10.6%	10.6%	10.6%	10.6%	10.6%	10.6%
7	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%
8	20.2%	20.2%	20.2%	20.2%	20.2%	20.8%	20.0%	18.7%	18.4%	16.7%
9	6.6%	6.6%	6.6%	6.6%	6.6%	7.2%	6.4%	5.2%	4.9%	3.1%
10+	6.7%	6.7%	6.7%	6.7%	6.7%	7.1%	6.6%	5.7%	5.5%	4.2%

Elected Officers' Class: Leg-Atty-Cab – Female										
Combined Years of Service	Attained Age 20	25	30	35	40	45	50	55	60	65
0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	9.1%	9.1%	9.1%	9.1%	9.1%	9.1%	9.1%	9.1%	9.1%	9.1%
2	15.9%	15.9%	15.9%	15.9%	15.9%	15.9%	15.9%	15.9%	15.9%	15.9%
3	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
4	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%
5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%
7	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	17.8%	17.8%	17.8%	17.8%	17.8%	18.4%	17.6%	16.3%	16.0%	14.3%
9	3.5%	3.5%	3.5%	3.5%	3.5%	4.1%	3.3%	2.1%	1.8%	0.0%
10+	10.8%	10.8%	10.8%	10.8%	10.8%	11.4%	10.6%	9.4%	9.1%	7.3%

Withdrawal (continued)

Elected Officers' Class: Judicial – Male										
Combined Years of Service	Attained Age 20	25	30	35	40	45	50	55	60	65
0	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
1	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
2	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
3	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
4	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
5	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
6	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
7	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
8	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
9	1.3%	1.3%	1.3%	1.2%	1.2%	1.2%	1.1%	0.8%	0.7%	0.5%
10+	2.0%	2.0%	2.0%	1.9%	1.9%	1.9%	1.7%	1.3%	1.1%	0.7%

Elected Officers' Class: Judicial – Female										
Combined Years of Service	Attained Age 20	25	30	35	40	45	50	55	60	65
0	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
1	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
2	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
3	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
4	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%
5	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
6	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
7	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
8	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
9	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.4%	1.1%	1.0%	0.8%
10+	2.9%	2.9%	2.9%	2.7%	2.7%	2.7%	2.4%	2.0%	1.8%	1.4%

Withdrawal (continued)

Senior Management – Male										
Combined Years of Service	Attained Age 20	25	30	35	40	45	50	55	60	65
0	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%
1	21.0%	17.5%	15.5%	14.6%	14.1%	14.1%	14.1%	14.1%	14.1%	14.1%
2	21.0%	17.5%	15.5%	14.6%	14.1%	14.1%	14.1%	14.1%	14.1%	14.1%
3	19.5%	18.5%	17.7%	17.1%	16.7%	16.4%	16.2%	16.0%	16.0%	16.0%
4	15.5%	14.9%	14.5%	13.6%	12.9%	12.6%	12.4%	12.3%	12.2%	12.2%
5	10.9%	10.5%	10.0%	9.7%	9.3%	8.6%	8.2%	8.1%	8.0%	8.0%
6	10.6%	10.3%	9.8%	9.3%	9.0%	8.7%	8.4%	8.3%	8.1%	8.1%
7	10.5%	10.2%	9.7%	9.2%	8.8%	8.5%	8.3%	8.1%	8.0%	8.0%
8	9.6%	9.5%	9.1%	8.8%	8.5%	8.3%	8.1%	8.0%	7.9%	7.8%
9	6.6%	6.6%	6.3%	6.1%	5.9%	5.7%	5.6%	5.4%	5.3%	5.3%
10+	4.8%	4.8%	4.1%	3.6%	3.2%	2.9%	3.0%	3.1%	3.5%	2.6%

Senior Management – Female										
Combined Years of Service	Attained Age 20	25	30	35	40	45	50	55	60	65
0	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%
1	15.5%	13.0%	11.8%	11.1%	10.8%	10.8%	10.8%	10.8%	10.8%	10.8%
2	18.3%	16.0%	14.7%	13.8%	13.4%	13.2%	13.2%	13.2%	13.2%	13.2%
3	17.1%	16.2%	15.5%	15.0%	14.6%	14.3%	14.1%	14.0%	14.0%	14.0%
4	12.1%	11.3%	10.5%	9.9%	9.4%	9.0%	8.7%	8.6%	8.5%	8.5%
5	12.1%	11.3%	10.5%	9.9%	9.4%	9.0%	8.7%	8.6%	8.5%	8.5%
6	10.9%	10.6%	10.1%	9.7%	9.4%	9.1%	8.8%	8.7%	8.5%	8.5%
7	10.3%	10.1%	9.6%	9.2%	8.8%	8.6%	8.4%	8.2%	8.1%	8.1%
8	7.7%	7.6%	7.1%	6.8%	6.5%	6.2%	6.0%	5.9%	5.8%	5.7%
9	7.4%	7.4%	6.9%	6.5%	6.1%	5.8%	5.5%	5.3%	5.1%	5.1%
10+	4.8%	4.8%	3.9%	3.2%	2.7%	2.4%	2.1%	1.9%	1.9%	1.9%

Withdrawal (continued)

Special Risk – Male										
Combined Years of Service	Attained Age 20	25	30	35	40	45	50	55	60	65
0	21.4%	20.6%	20.6%	20.6%	20.6%	20.6%	20.6%	20.6%	20.6%	20.6%
1	10.3%	9.8%	9.5%	8.8%	8.0%	7.3%	6.5%	5.8%	5.3%	5.3%
2	8.6%	8.1%	7.7%	7.4%	6.8%	6.0%	5.3%	4.7%	4.7%	4.7%
3	8.4%	7.9%	7.5%	7.2%	6.7%	6.0%	5.3%	4.7%	4.7%	4.7%
4	7.5%	7.0%	6.7%	6.5%	6.0%	5.5%	5.0%	4.6%	4.6%	4.6%
5	5.3%	5.3%	5.3%	5.3%	4.8%	4.3%	3.8%	3.3%	3.3%	3.3%
6	5.2%	5.2%	5.2%	5.1%	4.6%	4.1%	3.6%	3.2%	3.2%	3.2%
7	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%
8	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%
9	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%
10+	2.3%	2.3%	2.1%	2.0%	1.9%	1.8%	1.8%	1.8%	1.8%	1.8%

Special Risk – Female										
Combined Years of Service	Attained Age 20	25	30	35	40	45	50	55	60	65
0	21.3%	21.3%	21.3%	21.3%	21.3%	21.3%	21.3%	21.3%	21.3%	21.3%
1	15.5%	14.2%	13.2%	12.2%	11.2%	10.2%	9.2%	8.4%	8.4%	8.4%
2	12.3%	11.6%	10.6%	9.6%	8.6%	7.6%	6.6%	5.8%	5.8%	5.8%
3	10.3%	9.8%	9.3%	8.8%	8.3%	7.6%	6.6%	5.6%	5.6%	5.6%
4	9.7%	9.2%	8.7%	8.4%	7.6%	7.0%	6.4%	5.4%	5.4%	5.4%
5	6.1%	6.1%	6.1%	6.1%	6.1%	6.1%	6.1%	5.3%	5.3%	5.3%
6	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.1%	5.1%	5.1%
7	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
8	4.2%	4.2%	4.2%	4.2%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%
9	4.2%	4.2%	4.2%	4.1%	4.1%	4.1%	4.0%	4.0%	4.0%	4.0%
10+	1.9%	1.9%	1.7%	1.5%	2.5%	2.5%	1.6%	4.0%	4.0%	4.0%

Withdrawal (continued)

Special Risk Administrative – Male										
Combined Years of Service	Attained Age 20	25	30	35	40	45	50	55	60	65
0	14.6%	13.9%	13.9%	13.9%	13.9%	13.9%	13.9%	13.9%	13.9%	13.9%
1	11.3%	10.8%	10.3%	9.9%	9.7%	9.5%	9.4%	9.4%	9.4%	9.4%
2	10.4%	9.7%	9.3%	8.9%	8.7%	8.5%	8.4%	8.4%	8.4%	8.4%
3	9.7%	9.1%	8.7%	8.3%	7.9%	7.8%	7.7%	7.6%	7.6%	7.6%
4	8.8%	8.3%	8.0%	7.8%	7.6%	7.4%	7.4%	7.4%	7.4%	7.4%
5	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
6	4.4%	4.4%	4.4%	4.2%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%
7	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%
8	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%
9	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%
10+	3.9%	3.9%	3.6%	3.4%	3.2%	3.3%	3.6%	7.5%	7.5%	7.5%

Special Risk Administrative – Female										
Combined Years of Service	Attained Age 20	25	30	35	40	45	50	55	60	65
0	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%
1	19.4%	18.0%	17.1%	16.5%	16.1%	15.9%	15.7%	15.7%	15.7%	15.7%
2	17.5%	16.9%	16.5%	16.2%	15.9%	15.8%	15.7%	15.7%	15.7%	15.7%
3	20.3%	19.8%	19.3%	19.0%	18.7%	18.6%	18.4%	18.4%	18.4%	18.4%
4	20.8%	20.2%	19.8%	19.4%	19.0%	18.8%	18.7%	18.7%	18.7%	18.7%
5	18.8%	18.8%	18.8%	18.8%	18.8%	18.8%	18.8%	18.8%	18.8%	18.8%
6	18.7%	18.7%	18.7%	18.7%	18.7%	18.7%	18.7%	18.7%	18.7%	18.7%
7	17.9%	17.9%	17.9%	17.9%	17.9%	17.9%	17.9%	17.9%	17.9%	17.9%
8	17.8%	17.8%	17.7%	17.7%	17.7%	17.6%	17.6%	17.6%	17.6%	17.6%
9	17.8%	17.8%	17.8%	17.8%	17.7%	17.7%	17.6%	17.6%	17.6%	17.6%
10+	18.4%	18.4%	18.1%	17.8%	17.6%	17.7%	18.0%	21.0%	21.0%	21.0%

Individual Member Salary Increase Assumptions

(Based on 2.60% inflation assumption)

							-- Elected Officers' Class --							
	Regular		Special Risk		Special Risk Admin		Local		Leg-Atty-Cab		Judicial		Senior Management	
Combined Years of Service	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
0	7.80%	7.60%	7.60%	7.80%	4.60%	7.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%		
1	5.50%	5.70%	5.90%	6.50%	4.60%	7.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	6.60%	7.10%
2	5.00%	5.30%	5.60%	6.10%	4.60%	7.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	6.20%	6.40%
3	5.00%	5.10%	5.60%	6.00%	4.60%	7.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	6.20%	6.10%
4	4.90%	5.00%	5.60%	6.00%	4.60%	6.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	5.30%	5.40%
5	4.80%	4.90%	5.60%	6.00%	4.60%	6.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	5.30%	5.00%
6	4.80%	4.80%	5.60%	5.90%	4.60%	6.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	5.30%	5.00%
7	4.70%	4.80%	5.50%	5.70%	4.60%	6.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.80%	4.70%
8	4.60%	4.70%	5.50%	5.70%	4.60%	6.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.80%	4.70%
9	4.60%	4.70%	5.50%	5.70%	4.60%	6.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.80%	4.70%
10	4.60%	4.50%	5.50%	5.60%	4.60%	6.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.80%	4.70%
11	4.50%	4.50%	5.30%	5.60%	4.60%	6.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.80%	4.70%
12	4.40%	4.50%	5.30%	5.40%	4.60%	6.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.80%	4.70%
13	4.40%	4.50%	5.20%	5.40%	4.60%	6.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.80%	4.70%
14	4.40%	4.50%	5.20%	5.30%	4.60%	6.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.80%	4.30%
15	4.40%	4.40%	5.20%	5.30%	4.60%	6.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.80%	4.30%
16	4.40%	4.40%	5.00%	5.30%	4.60%	6.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.80%	4.30%
17	4.40%	4.40%	5.00%	5.30%	4.60%	6.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.30%	4.30%
18	4.30%	4.30%	5.00%	5.30%	4.60%	6.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.30%	4.30%
19	4.30%	4.30%	5.00%	5.20%	4.60%	6.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.30%	4.30%
20	4.30%	4.30%	5.00%	5.20%	4.60%	6.00%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.30%	4.30%
21	4.20%	4.30%	5.00%	5.10%	4.60%	5.30%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.30%	4.30%
22	4.20%	4.30%	5.00%	5.00%	4.60%	5.30%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.30%	4.30%
23	4.10%	4.20%	5.00%	5.00%	4.60%	5.30%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.30%	4.30%
24	4.10%	4.10%	5.10%	5.40%	4.60%	5.30%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.30%	4.30%
25	4.00%	4.00%	5.10%	5.40%	4.60%	5.30%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.30%	4.00%
26	3.90%	4.00%	5.10%	5.40%	4.60%	5.30%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.30%	4.00%
27	3.80%	4.00%	5.10%	5.40%	4.60%	5.30%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.30%	4.00%
28	3.70%	3.90%	5.10%	5.40%	4.60%	5.30%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	4.30%	4.00%
29	4.00%	4.40%	5.10%	5.40%	4.60%	5.30%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	5.20%	4.70%
30+	4.00%	4.40%	5.10%	5.40%	4.60%	5.30%	4.10%	4.10%	5.20%	4.70%	4.10%	4.10%	5.20%	4.70%

Unused Annual Leave Available at Retirement

Membership Class	Hours
Regular	230
Special Risk	290
Senior Management Service	290
Others Not Listed Above	230

Eligible Survivors

It is assumed that 80% of deceased active members will have survivors eligible for lifetime benefits upon their deaths. Males are assumed to be three years older than their female spouses.

Commencement of Survivor Benefits

It is assumed that survivors of deceased active members will defer commencement of benefits until the following:

Membership Class / Tier	Member Age
Special Risk / Tier 1	45
Special Risk / Tier 2	50
Other classes/ Tier 1 and 2	55

Military Service and Out-of-State Service Credits

Active members are assumed to have purchased the following additional years of service credit.

Type of Service Credit	Special Risk Class		All other classes	
	Men	Women	Men	Women
Military Service Credit [1]	0.2818	0	0.1853	0
Out-of-State Service Credit [2]	0	0	0.0910	0.0910

[1] *Pre-1987 hires only; service is eligible for the COLA.*
[2] *Service for pre-July 1, 2011 enrollees is eligible for the COLA; assumption applies to both tiers.*

No extra service credit was assumed for TRS and IFAS participants.

Changes to the Actuarial Assumptions

The 2014 Experience Study was the most recent experience study review and informs most assumptions used in this valuation. For this valuation, the 2018 FRS Actuarial Assumption Conference adopted a new assumption for investment return.

Appendix B: Summary of Plan Provisions

All actuarial calculations are based upon our understanding of Florida Statutes regarding the benefit and eligibility provisions of the retirement systems. These provisions are briefly summarized below for reference purposes, along with corresponding references to the Statutes. This summary encompasses the major provisions; it does not attempt to cover all of the detailed provisions.

Florida Retirement System (FRS)

The benefit, eligibility, and contribution provisions of the FRS are set forth in Chapter 121 of the Florida Statutes. Provisions relating to other State-administered retirement systems are set forth in other sections of the Florida Statutes, under Chapters 112, 122, and 238.

Effective Date

The effective date of the FRS was December 1, 1970. The FRS was created with closure and consolidation of the Teachers' Retirement System, the State and County Officers and Employees' Retirement System, and the Highway Patrol Pension Fund. In 1972, the Judicial Retirement System was also consolidated with the FRS. The FRS was created to provide a defined benefit retirement, disability, and survivor program for participating public employees. Social Security coverage is also required for all members.

Beginning in 2002, the FRS became one system with two primary programs, the existing defined benefit FRS Pension Plan and a defined contribution plan alternative known as the FRS Investment Plan (IP). The earliest that any member could participate in the IP was July 1, 2002.

As of July 1, 2007, the Institute for Food and Agricultural Sciences Supplemental Retirement Program was consolidated under the FRS as a closed group.

(Section 121.011(2))

Membership

Membership is a condition of employment for all new state, county, or other participating agency employees filling regularly established positions and employed on or after December 1, 1970, or who elected to transfer from an existing system. Employees may be full-time or part-time and can be elected, appointed, or employed in state government, county government, a state university, or a community college. A city or special district may join the FRS at its option.

Effective July 1, 1978, a member in an existing retirement system who is re-employed after termination of employment may remain in that system, provided his or her member contributions have not been withdrawn.

Members of the FRS Pension Plan when the FRS Investment Plan was created were provided an educational period about their plan choice options prior to a 90-day election period to elect between the FRS Pension Plan and the FRS Investment Plan (IP). Members newly hired after the IP became effective are provided eight months after their month of hire to file an election between the two primary programs. Members who do not make an election default into the FRS Investment Plan except for Special Risk Class members who default into the FRS Pension Plan.

After the initial active or default election to participate in the FRS Pension Plan or the FRS Investment Plan, the employee has one opportunity, at the employee's discretion before termination or retirement, to choose to move from the FRS Pension Plan to the FRS Pension Plan or vice versa.

(Sections 121.051, 121.4501)

Classification

There are five separate classes of members: Regular Class, Special Risk Class, Special Risk Administrative Support Class, Elected Officers' Class, and Senior Management Service Class. In addition, the Deferred Retirement Option Program (DROP) is available to FRS Pension Plan members who meet the requirements for normal retirement under the FRS Pension Plan.

Regular Class – members who are not classified as members of the Special Risk Class, Special Risk Administrative Support Class, Elected Officers' Class, or Senior Management Service Class.

Special Risk Class – members employed as law enforcement officers, emergency medical technicians, paramedics, firefighters, firefighter trainers, fire prevention inspectors, correctional officers, correctional probation officers, certain professional health care positions within the Department of Children and Family Services and the Department of Corrections, or certain forensic positions within a law enforcement agency, or a medical examiner's office who meet the criteria set forth in the Florida Retirement System law and administrative rules.

Special Risk Administrative Support Class – former Special Risk Class members employed as law enforcement officers, firefighters, correctional officers, or emergency medical technicians who have been moved or been re-assigned to non-Special Risk administrative support positions within a Florida Retirement System Special Risk employing agency.

Elected Officers' Class – members include the Governor, Lieutenant Governor, cabinet officers, legislators, Supreme Court justices, district court of appeals judges, circuit judges, county court judges, state attorneys, public defenders, and elected county officers. Also included are city and special district officers if the employer chose to place their elected officials in this class. All such elected officers may withdraw from the Florida Retirement System, elect membership in the Senior Management Service Class or, if state officers, elect membership in the Senior Management Service Optional Annuity Program.

Senior Management Service Class – members who hold positions in the Senior Management Service of the State of Florida; community college presidents; appointed school board superintendents; county and city managers; selected managerial staff of the Legislature; the Auditor General and managerial staff; the Executive Director of the Ethics Commission; the State University System Executive Service and university presidents; selected managerial staff of the State Board of Administration; judges of compensation claims; selected managerial staff with the Judicial Branch; Chief Deputy Court Administrator; capital collateral regional counsels and assistant capital collateral regional counsels; assistant state attorneys; assistant public defenders; assistant statewide prosecutors or assistant attorneys general; and non-elective managerial positions designated for SMSC membership by local government agencies. Members in this class have either chosen not to participate or are not eligible to participate in the elective Senior Management Service Optional Annuity Program for state senior managers or to withdraw from the FRS if employed by non-state employers. This class became effective February 1, 1987, and members of an existing retirement system and members of the Special Risk or Special Risk Administrative Support Classes who were employed prior to February 1, 1987, could elect to remain in such system or class.

Deferred Retirement Option Program (DROP) – allows members of the FRS Pension Plan in any of the above five classes to elect to retire when they reach normal retirement and have their FRS benefits accumulate in the FRS Trust Fund, earning interest, while the member continues to work for an FRS employer. DROP membership is for a specific and limited period.

(Sections 121.021(12), 121.0515, 121.052, 121.055, 121.091 (13))

Contributions

From January 1, 1975, for the state and for school boards, and from October 1, 1975, for other agencies, through June 30, 2011, the total cost of the System was paid by the participating employers.

Beginning July 1, 2011, all FRS Pension Plan and FRS Investment Plan members, except those FRS Pension Plan members participating in DROP, are required to pay member contributions equal to 3% of compensation. TRS members already pay required employee contributions. Member contributions do not accrue interest except for TRS members.

(Section 121.071 (2))

The employer contribution rates enacted for the July 1, 2018 – June 30, 2019 plan year are as follows:

		Special	Special Risk	Elected Officers Class			Senior	
	Regular	Risk	Administrative	Judicial	Leg-Atty-Cab	Local	Management	DROP
Defined Benefit Plan								
- Normal Cost Rate	2.91%	11.95%	3.05%	12.10%	6.58%	8.32%	4.27%	4.41%
- UAL Rate	4.19	12.44	39.25	29.83	58.61	52.90	23.76	7.96
- Total DB Rate	7.10%	24.39%	42.30%	41.93%	65.19%	61.22	28.03	12.37
Investment Plan								
- Employer Rate	3.60%	13.48%	5.43%	11.05%	6.94%	8.95%	4.98%	n/a
- UAL Rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/a
- Total IP Rate	3.60%	13.48%	5.43%	11.05%	6.94%	8.95%	4.98%	n/a
Blended Uniform Contribution Rates								
- Normal Cost Rate	3.04%	12.18%	3.64%	12.00%	6.65%	8.50%	4.45%	4.41%
- UAL Rate	3.50	10.60	29.62	27.05	48.38	38.48	17.89	7.96
- Total Rate	6.54%	22.78%	33.26%	39.05%	55.03	46.98%	22.34%	12.37%

The above rates exclude the 0.06% administrative charge for Investment Plan administration and education (except DROP), and the 1.66% for the financing of the Florida Retiree Health Insurance Subsidy program.

(Sections 121.71, 121.74)

Compensation

"Compensation" means the monthly salary paid a member by his or her employer for work performed arising from that employment.

(a) Compensation shall include:

1. Overtime payments paid from a salary fund.
2. Accumulated annual leave payments.
3. Payments in addition to the employee's base rate of pay if all the following apply:
   a. The payments are paid according to a formal written policy that applies to all eligible employees equally;
   b. The policy provides that payments shall commence no later than the 11th year of employment;
   c. The payments are paid for as long as the employee continues his or her employment; and
   d. The payments are paid at least annually.

4. Amounts withheld for tax sheltered annuities or deferred compensation programs, or any other type of salary reduction plan authorized under the Internal Revenue Code.
5. Payments made in lieu of a permanent increase in the base rate of pay, whether made annually or in 12 or 26 equal payments within a 12-month period, when the member's base pay is at the maximum of his or her pay range. When a portion of a member's annual increase raises his or her pay range and the excess is paid as a lump sum payment, such lump sum payment shall be compensation for retirement purposes.

(b) Compensation for a member participating in the FRS Pension Plan or the FRS Investment Plan may not include:

1. Fees paid professional persons for special or particular services or salary payments made from a faculty practice plan authorized by the Board of Governors of the State University System for eligible clinical faculty at a college in a state university that has a faculty practice plan; or
2. Any bonuses or other payments prohibited from inclusion in the member's average final compensation.

(c) For all purposes under this chapter, the member's compensation or gross compensation contributed as employee-elective salary reductions or deferrals to any salary reduction, deferred compensation, or tax-sheltered annuity program authorized under the Internal Revenue Code shall be deemed to be the compensation or gross compensation which the member would receive if he or she were not participating in such program and shall be treated as compensation for retirement purposes under this chapter. Any public funds otherwise paid by an employer into an employee's salary reduction, deferred compensation, or tax-sheltered annuity program on or after July 1, 1990 (the date as of which all employers were notified in writing by the division to cease making contributions to the System Trust Fund based on such amounts), shall be considered a fringe benefit and shall not be treated as compensation for retirement purposes under this chapter. However, if an employer was notified in writing by the division to cease making such contributions as of a different date, that employer shall be subject to the requirements of said written notice.

(d) For any person who first becomes a member on or after July 1, 1996, compensation for any plan year shall not include any amounts in excess of the Section 401(a)(17), Internal Revenue Code limitation (as amended by the Omnibus Budget Reconciliation Act of 1993), which limitation of $150,000 effective July 1, 1996, shall be adjusted as required by federal law for qualified government plans and shall be further adjusted for changes in the cost of living in the manner provided by Section 401(a)(17)(B), Internal Revenue Code. For any person who first became a member prior to July 1, 1996, compensation for all plan years beginning on or after July 1, 1990, shall not include any amounts in excess of the compensation limitation (originally $200,000) established by Section 401(a)(17), Internal Revenue Code prior to the Omnibus Budget Reconciliation Act of 1993, which limitation shall be adjusted for changes in the cost of living since 1989, in the manner provided by Section 401(a)(17) of the Internal Revenue Code of 1991. This limitation, which has been part of the Florida Retirement System since plan years beginning on or after July 1, 1990, shall be adjusted as required by federal law for qualified government plans.

"Annual compensation" means the total compensation paid a member during a year. A "year" is 12 continuous months.

(Section 121.021(22) and (23))

FRS Pension Plan

Normal Retirement Benefit

Eligibility – Members initially enrolled before July 1, 2011 (Tier I)

- Regular Class
  1. 30 years of creditable service at any age.
  2. Age 62 and 6 or more years of creditable service.

  (Section 121.021(29)(a)(1))
- Special Risk Class
  1. 25 years of special risk service at any age; or
  2. Age 55 and 6 or more years of special risk service; or
  3. Age 52 and 25 years of creditable service, including special risk service and up to a maximum of four years of active duty wartime military service credit.
  4. 30 years of any creditable service, at any age, or age 62 and 6 or more years of creditable service when the member has service in any other membership class in addition to Special Risk Class (same requirement as the Regular Class).

  (Section 121.021(29)(b)(1))
- Special Risk Administrative Support Class

  (with six or more years of Special Risk Class service, the same requirements as apply to the Special Risk Class, otherwise same as apply to the Regular Class)

  (Sections 121.0515(8) and 121.021(29)(b)(1))
- Elected Officers' Class

  (same requirements as apply to Regular Class)

  (Section 121.021(29)(a)(1))
- Senior Management Service Class

  (same requirements as apply to Regular Class)

  (Section 121.021(29)(a)(1))

Eligibility – Members initially enrolled on and after July 1, 2011 (Tier II)

- Regular Class
  1. 33 years of creditable service at any age.
  2. Age 65 and 8 or more years of creditable service.

  (Section 121.021(29)(a)(2))
- Special Risk Class
  1. 30 years of special risk service at any age; or
  2. Age 60 and 8 or more years of special risk service; or
  3. 33 years of any creditable service, at any age, or age 65 and 8 or more years of creditable service (same requirement as the Regular Class).

  (Section 121.021(29)(b)(2))

- Special Risk Administrative Support Class

  (with eight or more years of Special Risk Class service, the same requirements as apply to the Special Risk Class, otherwise same as apply to the Regular Class)

  (Sections 121.0515(8) and 121.021(29)(b)(2))

- Elected Officers' Class

(same requirements as apply to Regular Class)

(Section 121.021(29)(a)(2))

- Senior Management Service Class

(same requirements as apply to Regular Class)

(Section 121.021(29)(a)(2))

Normal Form

Straight life benefit (Option 1), payable on the last state working day of each month, with a guarantee that benefits paid will at least equal member contributions.

(Section 121.091(1))

Optional Forms

10-year certain and life benefit (Option 2), 100% joint and contingent benefit (Option 3), or 66-2/3% joint and survivor benefit (Option 4). If the joint annuitant is the member's non-disabled child, payment ceases upon attainment of the joint annuitant's 25th birthday under the 100% and 66- 2/3% joint and survivor benefit.

(Section 121.091(6))

Dual Retirement

In the event a member accumulates retirement benefits to commence at different normal retirement ages by virtue of having performed duties for an employer which would entitle him or her to benefits as both a Special Risk Class member and a member of another class, the amount of the benefits payable shall be computed separately with respect to each such age, and the sum of such computed amounts shall be paid. Note that this does not apply to a Special Risk Administrative Support Class member with at least 6 years of Special Risk Class Membership (8 years for members enrolled on or after July 1, 2011) when the Special Risk and Special Risk Administrative Support Classes are the only memberships held because such a member is treated as a Special Risk Class member.

(Section 121.091(2))

Regular Benefit Amount

The monthly FRS Pension Plan allowance is the product of:

1. Average final compensation
   a. For members initially enrolled before July 1, 2011, the average of the highest five plan years of creditable service;
   b. For members initially enrolled on or after July 1, 2011, the average of the highest eight plan years of creditable service;
2. Creditable service during the applicable period; and
3. The appropriate benefit percentage for periods of service.

All benefits are limited to 100% of average final compensation.

(Sections 121.021(17), (24) and (25), 121.091(1))

The appropriate benefit percentages are as follows:

- For Members initially enrolled before July 1, 2011, for Creditable Service as a Regular Class member Subsequent to November 30, 1970:

Retirement at:	Percentage
Age 62 with 6 years of creditable service, or 30 years of creditable service	1.60%
Age 63 with 6 years of creditable service, or 31 years of creditable service	1.63%
Age 64 with 6 years of creditable service, or 32 years of creditable service	1.65%
Age 65 with 6 years of creditable service, or 33 years of creditable service	1.68%

- For Members initially enrolled on or after July 1, 2011, for Creditable Service as a Regular Class member Subsequent to November 30, 1970:

Retirement at:	Percentage
Age 65 with 8 years of creditable service, or 33 years of creditable service	1.60%
Age 66 with 8 years of creditable service, or 34 years of creditable service	1.63%
Age 67 with 8 years of creditable service, or 35 years of creditable service	1.65%
Age 68 with 8 years of creditable service, or 36 years of creditable service	1.68%

(Section 121.091(1))

Service as a Special Risk Class member:

Retirement on or After July 1, 2001 with Service Performed During:	Percentage
December 1, 1970 to September 30, 1974	2.00%
October 1, 1974 and thereafter	3.00%

(Section 121.091(1))

- For Members initially enrolled before July 1, 2011, for Creditable Service as a Special Risk Administrative Support Class member Subsequent to November 30, 1970:

Retirement at:	Percentage
Age 55 with 6 years of creditable special risk service, or age 52 with 25 years of creditable service, which may include up to four years of active duty wartime military service, or 25 years of creditable special risk service	1.60%
Age 56 with 6 years of creditable special risk service, or age 53 with 26 years of creditable service, which may include up to four years of active duty wartime military service, or 26 years of creditable special risk service	1.63%
Age 57 with 6 years of creditable special risk service, or age 54 with 27 years of creditable service, which may include up to four years of active duty wartime military service, or 27 years of creditable special risk service	1.65%
Age 58 with 6 years of creditable special risk service, or age 55 with 28 years of creditable service, which may include up to four years of active duty wartime military service, or 28 years of creditable special risk service	1.68%

- For Members initially enrolled on or after July 1, 2011, for Creditable Service as a Special Risk Administrative Support Class member Subsequent to November 30, 1970:

Retirement at:	Percentage
Age 60 with 8 years of creditable special risk service, or age 57 with 30 years of creditable service, which may include up to four years of active duty wartime military service, or 30 years of creditable special risk service	1.60%
Age 61 with 8 years of creditable special risk service, or age 58 with 31 years of creditable service, which may include up to four years of active duty wartime military service, or 31 years of creditable special risk service	1.63%
Age 62 with 8 years of creditable special risk service, or age 59 with 32 years of creditable service, which may include up to four years of active duty wartime military service, or 32 years of creditable special risk service	1.65%
Age 63 with 8 years of creditable special risk service, or age 60 with 33 years of creditable service, which may include up to four years of active duty wartime military service, or 33 years of creditable special risk service	1.68%

(Section 121.0515(8) and 121.091(1))

- For Service as an Elected Officers' Class member:
  3% for each year of creditable service in such class, except 3-1/3% for service in the judicial class. Military service credit is at the rate for Regular Class members.

  (Sections 121.052(5)(a) and (d), 121.091(1))
- For Service as a Senior Management Service Class member:
  2% for each year of creditable service in such class, after January 31, 1987.

  (Section 121.055(4)(d))

Early Retirement

Eligibility

For members initially enrolled before July 1, 2011, six years of creditable service for all classes of membership.

For members initially enrolled on or after July 1, 2011, eight years of creditable service for all classes of membership.

(Section 121.021(30))

Benefit Amount

The normal retirement benefit accrued to the date of early retirement, reduced by 5/12% for each month that the early retirement date precedes the normal retirement date based upon age. The normal retirement date is as follows:

1. Special Risk Class members:
   a. Initially enrolled before July 1, 2011: Age 55
   b. Initially enrolled on or after July 1, 2011: Age 60
2. Members in all other Classes
   a. Initially enrolled before July 1, 2011: Age 62
   b. Initially enrolled on or after July 1, 2011: Age 65

(Sections 121.021(30), 121.091(3))

Non-Duty Disability Retirement

Eligibility

Members are eligible if totally and permanently disabled after completing at least eight years of creditable service (or after six years if disability retirement is ordered for a judge by the Supreme Court).

Benefit Amount

Same as for normal retirement, but based on average final compensation and creditable service to the date of disability retirement.

Minimum Benefit Amount

25% of average final compensation.

If the Supreme Court orders disability retirement for a judge, the minimum is two-thirds of compensation at disability. This benefit for a defined benefit plan member is not paid from the FRS Trust Fund. This benefit for

an Investment Plan member is paid from the FRS Trust Fund after the member's IP account balance is transferred to the FRS Trust Fund.

(Section 121.091(4))

Line-of-Duty Disability

Eligibility

Members are eligible if totally and permanently disabled during the actual performance of duty. There is no service credit requirement.

Benefit Amount

Same as for normal retirement, but based on average final compensation and creditable service to the date of disability retirement.

Minimum Benefit Amount

42% of average final compensation, except for the Special Risk and the Special Risk Administrative Support classes whose members are entitled to 65% of average final compensation.

If the Supreme Court orders disability retirement for a judge, the minimum is two-thirds of compensation at disability. This benefit for a defined benefit plan member is not paid from the FRS Trust Fund.

(Section 121.091(4))

Post-Retirement Death Benefits

Based on the optional form elected.

Non-Duty Pre-Retirement Death Benefits

Eligibility

Employment is terminated by death after vested for all classes of membership.

Benefit Amount

The normal or early retirement benefit amount for which the member would have been eligible had the member retired on his or her date of death and elected the 100% joint and survivor (Option 3) form of payment in favor of his or her beneficiary who is the surviving spouse or other eligible dependent. The monthly benefit is normally payable to the member's beneficiary for the beneficiary's lifetime. If the beneficiary is the member's non-disabled child, payment ceases upon attainment of the beneficiary's 25th birthday.

If the member is more than 10 years away from normal retirement age, the reduction is 5% for each year the member would be younger than the normal retirement age at retirement. There are exceptions if within 10 years of normal retirement:

1. For members initially enrolled before July 1, 2011, who were within 10 years of normal retirement eligibility, the reduction for early retirement is applied from the earlier of age 62 (age 55 for Special Risk Class and Special Risk Administrative Support Class members) or the date on which the member would have completed 30 years of creditable service, had he or she continued employment.
2. For members initially enrolled on or after July 1, 2011, who were within 10 years of normal retirement eligibility, the reduction for early retirement is applied from the earlier of age 65 (age 60 for Special Risk

Class and Special Risk Administrative Support Class members) or the date on which the member would have completed 33 years of creditable service, had he or she continued employment. The value of this benefit may not be less than the member's accumulated contributions, if any.

(Sections 121.091(3) and (7))

Line-of-Duty Pre-Retirement Death Benefits

Eligibility

Member died during the actual performance of duty. There is no service credit requirement.

Benefit Amount

The surviving spouse will receive one-half of the member's monthly compensation at death. If the spouse dies, or if there is no surviving spouse, the monthly benefits continue until the youngest child is 18.

Effective July 1, 2016, an additional benefit equal to one-half the member's monthly compensation at death is payable to the surviving dependent(s) of Special Risk Class members killed in the line of duty on or after July 1, 2013. For such Special Risk Class members, surviving child payments may be extended to age 25 if the child is unmarried and enrolled as a full-time student.

A surviving spouse may elect to receive a non-duty death benefit in lieu of the duty death benefit.

(Section 121.091(7))

Vesting

Eligibility

For members initially enrolled before July 1, 2011, six years of creditable service for all classes of membership. For members initially enrolled on or after July 1, 2011, eight years of creditable service for all membership classes.

Benefit Amount

The normal or early retirement benefit amount based on average final compensation and creditable service to the date of termination.

(Sections 121.021(45), 121.091(5))

DROP – Deferred Retirement Option Program

Eligibility

Except as allowed by statute, notably for K-12 instructional personnel[1], members have a limited eligibility window during which they can elect to enter the DROP. A member initially becomes eligible to enter DROP in the same month he or she first becomes eligible to file for unreduced immediate retirement benefits. Eligibility windows differ by tier and membership class, and are initially reached via satisfying either service-only criteria or age-plus-service criteria.

[1] *Instructional personnel in grades K-12 may defer DROP participation to any age.*

For most members achieving DROP entry eligibility via service-only criteria, the window to enter DROP lasts more than 12 months, with the window's length varying by individual. (The window must be at least 12 months in length.) The window for members satisfying service-only eligibility criteria is shown in the table below.

DROP Entry Eligibility Window for Members Satisfying Service-Only Criteria			
Membership Class	**Tier**	**Window Opens**	**Window Closes**
Special Risk	Tier I	25 Years of Service	53rd Birthday*
Special Risk	Tier II	30 Years of Service	56th Birthday*
All Other Classes	Tier I	30 Years of Service	58th Birthday*
All Other Classes	Tier II	33 Years of Service	61st Birthday*

**Or 12 months after the window opens, if later than the date listed above for the member*

Members who do not reach unreduced retirement eligibility through service-only eligibility criteria become eligible to enter DROP upon satisfaction of age-plus-service criteria. For those members, the eligibility window to enter DROP lasts for 12 months.

DROP Entry Eligibility Window for Members Satisfying Age-Plus-Service Criteria			
Membership Class	**Tier**	**Window Opens**	**Window Closes**
Special Risk	Tier I	Age 55 and 6 Years of Service	After 12 months
Special Risk	Tier II	Age 60 and 8 Years of Service	After 12 months
All Other Classes	Tier I	Age 62 and 6 Years of Service	After 12 months
All Other Classes	Tier II	Age 65 and 8 Years of Service	After 12 months

The maximum length of DROP participation is five years. As such, members who satisfy service-only criteria and enter DROP prior to age 60 are required to exit DROP and terminate FRS-covered employment prior to becoming eligible for Medicare benefits at age 65.

Benefit Amount

Effective July 1, 1998, eligible members can retire without terminating their employment during DROP participation. Monthly retirement benefits will be invested in the FRS Trust Fund, earning tax-deferred interest while the member continues to work for a maximum of 60 months. The interest credit for those entering the DROP prior to July 1, 2011, is 6.5% annually. For those entering the DROP after that date, it is 1.3% annually. Upon completion of the maximum five-year period, DROP participation ends and participants must terminate employment with all FRS employers. At that time, the participant will receive payment of the accumulated DROP benefits, and begin receiving his FRS monthly retirement benefit (in the same amount as determined at retirement, plus annual cost-of-living increases).

Effective July 1, 2003, participants employed in eligible instructional positions with a district school board, the Florida School for the Deaf and Blind, or a developmental research school can extend their participation beyond their initial 60-month period, for up to an additional 36 months. The employer must approve the request for DROP extension as well as the period of extension granted to an eligible DROP participant, if any, within the 36-month limit.

Disabled While in DROP

Participants that became disabled while participating in DROP will continue to accumulate the same monthly benefit in the FRS Trust Fund until termination. Since the normal retirement benefit commenced upon DROP participation, a disability benefit will not be issued.

Death While in DROP

The designated beneficiary of a participant who dies while participating in DROP will receive all accumulated DROP benefits, and a continuing monthly benefit, if the participant had elected Option 2, 3, or 4. Survivors of DROP participants are not eligible for FRS line-of-duty death benefits.

(Section 121.091 (13))

Return of Employee Contributions

A member who terminates employment but is not eligible to retire, receive a vested retirement allowance, or receive a disability pension will be entitled to a refund of any employee contributions. The beneficiary of a member who passes away before satisfying the requirement for a pre-retirement death benefit will be entitled to a refund of any employee contributions made by the member. No interest is credited on employee contribution accounts.

A vested terminated participant may elect to receive a return of employee contributions in lieu of a retirement benefit.

(Sections 121.071(2)(b), 121.091(7)(a), Sections 121.091(5)(a) and (c))

Cost-of-Living Adjustment

Senate Bill 2100 (2011) eliminated post-retirement benefit increases on benefits earned on and after July 1, 2011. FRS Pension Plan benefits earned before July 1, 2011 will receive post-retirement benefit increases of 3% per year. Tier II members (those initially enrolled on and after July 1, 2011) will receive no post-retirement benefit increases. Tier I members (those initially enrolled before July 1, 2011) will receive post-retirement benefit increases equal to 3% per year multiplied by a fraction, the numerator of which is service through June 30, 2011 and the denominator of which is total service at retirement. Cost-of-Living Adjustments take effect annually on July 1. A pro-rated rate may apply in the initial year of applicability.

(Section 121.101)

Additional Benefit Amount

In addition, members may receive an additional retirement allowance under the pre-1971 existing systems. The benefit is a percentage of average final compensation times the creditable service in that system up to November 30, 1970. The system percentages are:

State and County Officers and Employees' Retirement System:

2.00% for creditable service rendered under Division A prior to Social Security coverage; and 1.50% for creditable service rendered under Division B subsequent to Social Security coverage.

Teachers Retirement System:

Plan E: 2.00%

(Sections 121.091(1)(c), 122.28, 238.07(7)(a))

Minimum Benefit

Eligibility

The month following attainment of age 65 by a pensioner or, in the case of a beneficiary receiving the survivor's portion of a member's benefit, the 65th anniversary of the deceased member's birth. The member must have earned at least 10 years of creditable service and retired under normal retirement.

Benefit Amount

An eligible benefit recipient will receive a benefit adjustment to bring the benefit to the calculated minimum benefit. Effective July 1, 2018, the minimum monthly benefit is $32.28 multiplied by years of creditable service prior to application of the reduction factor for electing an optional form of payment. For retirements on or after July 1, 1987, creditable service for the minimum benefit calculation does not include any service earned on or after that date.

(Section 112.362)

FRS Investment Plan (IP)

The FRS Investment Plan (IP) is a defined contribution plan offered to eligible members as an alternative to the FRS Pension Plan. The plan is qualified under sec. 401(a) of the Internal Revenue Code.

Benefits

Under the IP, benefits accrue in individual member accounts funded by employer and employee contributions made on or after July 1, 2011, and earnings thereon. Benefits are provided through employee-directed investments offered by approved investment providers. Vested benefits are payable upon termination or death as a lump-sum distribution, direct rollover distribution, or periodic distribution. In addition to normal benefits and death benefits, the plan also provides disability coverage as described below.

(Sections 121.4501, 121.591)

Contributions

The employer contributions deposited in each participant's IP account are based upon allocation rates established by law for each membership class. This statutorily prescribed percentage of the participant's gross compensation for the reporting month is deducted from the total amount paid by the employer on behalf of all members in the same class of membership based on the uniform contribution rate established by law. Current IP allocation rates are set forth in the following charts. The allocation rates shown in the first chart below do not include the 0.06% charge for FRS Investment Plan administration and education, the separate employer contribution assessed to fund the IP disability program, or the contribution of 1.66% for the financing of the Florida Retiree Health Insurance Subsidy program.

(Sections 121.71, 121.72)

Effective July 1, 2012, the employer allocations to the IP accounts are based on contribution rates as follows:

Classification	2018-2019 Plan Year Rates
Regular	3.30%
Special Risk	11.00%
Special Risk Administrative Support	4.95%
Elected Officers'	
- Judicial	10.23%
- Leg/Atty/Cab	6.38%
- Local	8.34%
Senior Management Service	4.67%

The employer contribution rates to fund the disability benefit under the IP are as follows:

Classification	2018-2019 Plan Year Rates
Regular	0.25%
Special Risk	1.33%
Special Risk Administrative Support	0.45%
Elected Officers'	
- Judicial	0.73%
- Leg/Atty/Cab	0.41%
- Local	0.41%
Senior Management Service	0.26%

(Section 121.73)

Effective July 1, 2017 the employer contribution rates to fund the line of duty death benefit under the IP are as follows:

Classification	2018-2019 Plan Year Rates
Regular	0.05%
Special Risk	1.15%
Special Risk Administrative Support	0.03%
Elected Officers'	
- Judicial	0.09%
- Leg/Atty/Cab	0.15%
- Local	0.20%
Senior Management Service	0.05%

(Section 121.735)

Non-Duty Disability Retirement

Eligibility

Investment Plan participants who have completed at least eight years of creditable service (or six years of creditable service if disability retirement is ordered for a judge by the Supreme Court) are eligible for regular disability benefits if they become totally and permanently disabled due to injury or illness suffered while actively employed in an FRS-covered position. Upon approval for disability retirement, the IP participant may choose either to retain his/her IP account balance or to surrender his/her account balance to the FRS Pension Plan and receive guaranteed lifetime monthly disability benefits, assuming the member remains disabled.

Benefit Amount

If the disabled IP participant chooses to retain his/her account balance, he/she may elect to receive the normal benefit payable under the IP. If he/she elects to surrender the account balance and receive lifetime monthly disability benefits, the amount of each monthly payment is calculated in the same manner as provided for regular disability retirement under the FRS Pension Plan and is subject to the same threshold benefit amounts.

(Sections 121.091(4), 121.591(1) and (2))

Line-of-Duty Disability

Eligibility

IP participants are eligible for in-line-of-duty disability benefits if they become totally and permanently disabled due to injury or illness suffered during the actual performance of duty while actively employed in an FRS-covered position. There is no service credit requirement for in-line-of-duty disability benefits. Upon approval for disability retirement, the IP member may choose either to retain his/her IP account balance or to surrender his/her account balance to the FRS Pension Plan and receive guaranteed lifetime monthly disability benefits, assuming the member remains disabled.

Benefit Amount

If the disabled IP participant elects to retain his/her account balance, he/she may elect to receive the normal benefit payable under the IP. If he/she elects to surrender the account balance and receive lifetime monthly disability benefits, the amount of each monthly payment is calculated in the same manner as provided for line-of-duty disability retirement under the FRS Pension Plan, and is subject to the same threshold benefit amounts.

(Sections 121.091(4), 121.591(1) and (2))

Line-of-Duty Death

Eligibility

IP participants are eligible for in-line-of-duty death benefits if they die during the actual performance of duty while actively employed in an FRS-covered position. There is no service credit requirement for in-line-of-duty death benefits. The beneficiary of the IP member may choose either to retain the member's IP account balance or to surrender his/her account balance to the FRS Pension Plan and receive guaranteed monthly death benefits, payable for the life of the surviving spouse or, if the spouse dies or there is no spouse, until the 18th birthday of the member's youngest surviving child. Such payments may be extended until the 25th birthday of the youngest child of a Special Risk Class member if the child is unmarried and enrolled as a full-time student.

Benefit Amount

If the beneficiary of the IP participant elects to retain his/her account balance, he/she may elect to receive the normal benefit payable under the IP. If he/she elects to surrender the account balance and receive the annuity from the FRS Pension Plan, the amount of each monthly payment is calculated in the same manner as provided for line-of-duty death benefits under the FRS Pension Plan, and is subject to the same threshold benefit amounts.

(Sections 121.091(7), 121.591(1), (3) and (4))

Teachers' Retirement System (TRS)

The benefit and contribution provisions of the Statutes for this closed system are set forth in Chapter 238 of the Florida Statutes. Certain provisions are from other sections of the Florida Statutes.

Effective Date

The effective date of the Retirement System was July 1, 1939.

(Section 238.02)

Membership

All employees who were teachers in public schools, employees of professional non-profit teachers associations, county superintendents, Department of Education employees and the staff of the Teachers' Retirement System, and who were employed prior to December 1, 1970, are members of the Teachers' Retirement System. The benefit and contribution provisions of the Statutes are set forth in Chapter 238 of the Florida Statutes. Certain provisions are drawn from other sections of the Florida Statutes. TRS retirees are included with the Regular Membership Class in the valuation.

State and County Officers and Employees' Retirement System (SCOERS)

The benefit and contribution provisions of the Statutes are set forth in Chapter 122 of the Florida Statutes. Certain provisions are drawn from other sections of the Florida Statutes. This is a closed system that no longer includes any members in the high hazard or legislative categories. Effective with the July 1, 2013 valuation, there are no longer any actively employed members of this system. SCOERS retirees are included with the Regular Membership Class in the valuation.

Effective Date

The effective date of the Retirement System was July 1, 1955.

(Section 122.01(2))

Membership

All full-time employees of the state and its counties not covered by another system who were employed prior to December 1, 1970.

Institute of Food and Agricultural Sciences Supplemental Retirement Program (IFAS)

The benefit and contribution provisions of the Statutes are set forth in Chapter 121 of the Florida Statutes. Certain provisions are drawn from other sections of the Florida Statutes. This is a closed system. IFAS retirees are included with the Regular Membership Class in the valuation.

Effective Date

The effective date of the Supplemental Retirement Program was July 1, 1985.

(Section 121.40)

Membership

Employees hired on or before July 1, 1983 who:

a. hold both state and federal appointments while employed at the Institute,

b. are not entitled to any benefit from a state-supported retirement system or Social Security based on service as an employee of the Institute, and

c. are participants in the Federal Civil Service Retirement System.

Appendix C: Membership Data

This valuation is based upon the membership of the Pension Plan as of July 1, 2018.

The membership of the FRS Pension Plan includes employees of the State of Florida and participating political subdivisions. The membership is divided into several categories by membership class and subclass.

Tables C-1 through C-5 present distributions of annuitants (including beneficiaries of deceased members), and potential annuitants (terminated vested members). The tables show the numbers of persons receiving benefits and the total annual benefits.

Table C-6 summarizes the DROP membership and provides total annual benefits.

Table C-7 presents a summary by category of active membership, payroll, and accumulated employee contributions.

Tables C-8 through C-17 contain summaries of the active members in each category of membership. Values shown in the tables are the numbers of members and their average annual salaries. Table C-17 is the grand total of active members included in this valuation.

Table C-1
Florida Retirement System Pension Plan
Annuitants at July 1, 2018
Regular and Early Retirement by Age

Age	Number of Persons	Annual Benefits (in Thousands)
Under 50	2,631	$35,206
50 to 54	5,006	150,530
55 to 59	19,076	507,317
60 to 64	51,109	1,221,709
65 to 69	94,605	2,164,876
70 to 74	92,680	2,118,800
75 to 79	60,293	1,304,763
80 & Up	72,568	1,554,381
Total	397,968	$9,057,582

Table C-2
Florida Retirement System Pension Plan
Annuitants at July 1, 2018
Disability Retirement by Age

Age	Number of Persons	Annual Benefits (in Thousands)
Under 50	651	$11,655
50 to 54	1,105	20,190
55 to 59	2,243	37,261
60 to 64	3,073	49,381
65 to 69	2,912	47,333
70 to 74	2,168	35,599
75 to 79	1,254	20,182
80 & Up	752	10,688
Total	14,158	$232,289

Table C-3
Florida Retirement System Pension Plan
Potential Annuitants at July 1, 2018
Vested Terminated Members by Age for the Regular, Senior Management Service, and Elected Officers' Classes

Age	Number of Persons	Annual Benefits (in Thousands)[1]
Under 30	284	$648
30 to 34	3,046	12,331
35 to 39	8,050	41,035
40 to 44	11,248	63,897
45 to 49	16,082	98,991
50 to 54	20,089	127,624
55 to 59	19,948	139,951
60 & Up	24,364	133,244
Total	103,111	$617,721

[1] *Deferred to Age 62*

Table C-4
Florida Retirement System Pension Plan
Potential Annuitants at July 1, 2018
Vested Terminated Members by Age for the Special Risk & Special Risk Administrative Support Classes

Age	Number of Persons	Annual Benefits (in Thousands)[2]
Under 30	58	$486
30 to 34	401	4,067
35 to 39	736	8,505
40 to 44	977	11,376
45 to 49	1,600	21,393
50 to 54	1,164	16,105
55 to 59	452	6,296
60 & Up	332	3,868
Total	5,720	$72,096

[2] *Deferred to Age 55*

Table C-5
Florida Retirement System Pension Plan
Annuitants and Potential Annuitants at July 1, 2018
All Types of Retirement by System

System	Annuitants	Potential Annuitants	Total
		Number of Persons	
Regular	367,742	101,593	469,335
Senior Management Service	4,689	1,184	5,873
Special Risk	36,990	5,706	42,696
Special Risk Administrative	166	14	180
EOC: Judicial	917	40	957
EOC: Legislative/Attorneys/Cabinet	217	86	303
EOC: Local	1,405	208	1,613
Total	412,126	108,831	520,957
		Annual Benefits (in Thousands)	
Regular	$7,256,544	$590,209	$7,846,753
Senior Management Service	239,811	22,621	262,432
Special Risk	1,642,184	71,965	1,714,149
Special Risk Administrative	6,684	131	6,815
EOC: Judicial	87,640	1,887	89,527
EOC: Legislative/Attorneys/Cabinet	8,438	990	9,428
EOC: Local	48,570	2,014	50,584
Total	$9,289,871	$689,817	$9,979,688

Table C-6
Florida Retirement System Pension Plan
Annuitants at July 1, 2018
DROP Members

Age	Number of Persons	Annual Benefits (in Thousands)
Under 50	394	$26,927
50 to 54	2,468	132,798
55 to 59	8,092	303,912
60 to 64	15,582	373,553
65 to 69	7,846	161,511
70 to 74	190	3,669
75 to 79	16	229
80 & Up	6	97
Total	34,594	$1,002,696

Table C-7
Florida Retirement System Pension Plan
Summary of Active Members at July 1, 2018

System	Number of Persons	Annual Salary (in Thousands)[1]	Accumulated Employee Contributions (in Thousands)
Regular	447,547	$19,316,021	$2,972,278
Senior Management Service	5,726	522,086	84,614
Special Risk	61,879	3,870,396	579,968
Special Risk Administrative	71	3,283	627
EOC: Judicial	691	106,495	17,627
EOC: Legislative/Attorneys/Cabinet	115	6,761	1,140
EOC: Local	772	43,481	7,171
Teachers' Retirement System (TRS)	10	1,190	3,412
Institute of Food and Agricultural Sciences (IFAS)	14	1,588	0
Total	516,825	$23,871,301	$3,666,837

[1] The salary shown in Tables C-7 through C-17 represents the salaries of the FRS DB plan members on July 1, 2018. The payroll on which normal costs are determined ($24,442,950,000) equals the salaries for these DB plan members (excluding TRS and IFAS), adjusted to the middle of the plan year. The payroll on which UAL costs are charged additionally includes the payroll of certain other groups, and is described in Section 4 of the report.

Table C-8
Florida Retirement System Pension Plan
Member Counts and Average Salaries at July 1, 2018
Regular Class

Count

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20	1,090											1,090
20 to 24	13,735	166	1									13,902
25 to 29	29,518	5,275	91									34,884
30 to 34	22,869	14,615	4,825	130								42,439
35 to 39	17,547	11,237	15,816	4,543	85							49,228
40 to 44	14,610	9,023	12,558	12,595	3,521	71						52,378
45 to 49	14,342	9,244	12,151	12,660	11,946	3,638	141					64,122
50 to 54	12,400	8,446	11,671	11,627	10,731	10,252	2,960	71				68,158
55 to 59	9,826	7,217	11,245	12,043	10,836	10,100	4,480	631	4			66,382
60 to 64	4,781	4,710	7,322	7,503	6,287	5,710	1,724	669	116	7		38,829
65 & Up	2,555	2,465	3,856	2,958	1,751	1,149	653	366	239	127	16	16,135
Total Count	143,273	72,398	79,536	64,059	45,157	30,920	9,958	1,737	359	134	16	447,547

Average Salary ($)

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20	10,133											10,133
20 to 24	22,768	22,919	17,144									22,769
25 to 29	32,530	38,574	40,096									33,463
30 to 34	33,710	43,067	44,280	47,191								38,175
35 to 39	33,181	42,721	48,742	50,451	51,021							41,983
40 to 44	32,732	41,543	47,696	54,111	55,965	56,982						44,573
45 to 49	32,611	40,292	45,399	51,588	59,483	61,704	63,198					46,612
50 to 54	32,336	39,032	43,242	48,352	54,910	64,124	62,897	64,333				47,461
55 to 59	31,624	38,279	42,734	46,242	51,161	60,009	66,724	64,199	61,356			47,070
60 to 64	29,376	37,987	42,535	46,056	50,063	58,343	63,446	66,972	61,268	51,987		45,994
65 & Up	20,548	31,905	39,399	44,775	46,935	55,305	63,042	84,501	82,375	80,325	135,423	41,239
Avg. Annual Salary	31,323	40,437	45,104	49,439	54,311	61,083	64,727	69,550	75,321	78,845	135,423	43,160

Table C-9
Florida Retirement System Pension Plan
Member Counts and Average Salaries at July 1, 2018
Special Risk Class

Count

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20	33											33
20 to 24	4,224	20	1									4,245
25 to 29	7,915	1,724	35									9,674
30 to 34	4,572	3,384	2,079	30								10,065
35 to 39	2,073	1,992	3,766	1,383	15							9,229
40 to 44	1,063	1,103	2,514	2,868	1,023	11						8,582
45 to 49	862	848	1,858	2,472	2,909	673	9					9,631
50 to 54	584	609	1,064	1,392	1,785	916	146					6,496
55 to 59	285	379	562	469	431	289	112	14				2,541
60 to 64	84	179	246	245	162	100	49	17	3			1,085
65 & Up	7	40	84	66	51	20	18	8	4			298
Total Count	21,702	10,278	12,209	8,925	6,376	2,009	334	39	7			61,879

Average Salary ($)

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20	27,773											27,773
20 to 24	37,855	47,045	61,598									37,904
25 to 29	43,924	52,839	57,622									45,563
30 to 34	45,844	57,922	68,850	67,243								54,720
35 to 39	45,319	58,108	74,636	77,355	83,142							64,905
40 to 44	44,513	56,492	73,792	80,985	82,564	81,300						71,401
45 to 49	46,267	57,004	72,480	82,278	86,974	90,571	92,972					76,947
50 to 54	48,603	61,728	70,528	79,582	84,385	86,697	85,157					76,089
55 to 59	45,360	62,702	70,091	74,037	77,575	77,849	75,875	92,591				69,474
60 to 64	42,922	57,544	63,428	74,554	70,007	75,745	85,022	93,198	106,445			67,060
65 & Up	33,448	50,157	70,552	66,636	73,584	77,877	80,967	110,717	103,664			69,238
Avg. Annual Salary	43,515	57,220	72,278	79,868	84,359	86,059	82,009	96,574	104,856			62,548

Table C-10
Florida Retirement System Pension Plan
Member Counts and Average Salaries at July 1, 2018
Special Risk Administrative Support Class

Count

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20												
20 to 24												
25 to 29	1	2										3
30 to 34		5	2									7
35 to 39		2	3	4								9
40 to 44			4	6	3							13
45 to 49		1	1	3	15	1						21
50 to 54		1	2		1	4	1					9
55 to 59			2	2	1	2						7
60 to 64						1						1
65 & Up						1						1
Total Count	1	11	14	15	20	9	1					71

Average Salary ($)

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20												
20 to 24												
25 to 29	33,135	42,924										39,661
30 to 34		40,237	40,877									40,419
35 to 39		36,169	37,830	42,131								39,372
40 to 44			41,386	45,713	62,399							48,232
45 to 49		35,615	41,959	40,585	50,028	53,208						47,760
50 to 54		38,618	45,090		34,489	59,390	47,996					49,871
55 to 59			39,948	49,622	60,708	62,867						52,226
60 to 64						38,730						38,730
65 & Up						43,296						43,296
Avg. Annual Salary	33,135	39,418	40,916	44,253	51,641	55,392	47,996					46,235

Table C-11
Florida Retirement System Pension Plan
Member Counts and Average Salaries at July 1, 2018
Elected Officers' Class: Judicial Subclass

Count

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20												
20 to 24												
25 to 29												
30 to 34	1	1										2
35 to 39	8	8	3									19
40 to 44	16	15	13	8								52
45 to 49	19	18	21	26	22	1						107
50 to 54	15	24	26	29	29	20						143
55 to 59	14	21	29	33	28	29	12					166
60 to 64	3	20	28	26	28	27	9	5				146
65 & Up		8	21	14	5	7	1					56
Total Count	76	115	141	136	112	84	22	5				691

Average Salary ($)

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20												
20 to 24												
25 to 29												
30 to 34	148,371	105,296										126,834
35 to 39	128,321	154,874	140,749									141,463
40 to 44	148,156	152,205	152,750	153,194								151,247
45 to 49	156,824	156,396	152,985	152,804	154,417	148,371						154,448
50 to 54	146,307	153,124	155,494	154,988	155,555	154,471						153,899
55 to 59	155,298	156,623	155,050	155,039	155,543	153,750	153,518					155,013
60 to 64	159,924	155,312	156,149	155,808	155,111	153,889	156,073	155,303				155,401
65 & Up		155,953	155,436	157,036	157,036	155,865	148,371					155,980
Avg. Annual Salary	149,653	154,438	154,583	154,845	155,284	154,079	154,329	155,303				154,118

Table C-12
Florida Retirement System Pension Plan
Member Counts and Average Salaries at July 1, 2018
Elected Officers' Class: Legislators/Attorney/Cabinet Subclass

Count

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20												
20 to 24	1											1
25 to 29	2											2
30 to 34	3	1										4
35 to 39	3	6	2									11
40 to 44	6	4	5	2								17
45 to 49	4	4	3	3	2							16
50 to 54	6	2	4	3		4						19
55 to 59	2	4	2	5	2	1	1					17
60 to 64	3	5	2	2	2	2	1					17
65 & Up		2	4	4							1	11
Total Count	30	28	22	19	6	7	2				1	115

Average Salary ($)

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20												
20 to 24	58,428											58,428
25 to 29	29,697											29,697
30 to 34	30,335	29,697										30,176
35 to 39	29,697	29,697	29,697									29,697
40 to 44	34,308	29,697	104,049	29,697								53,193
45 to 49	29,697	29,697	106,750	120,366	97,699							69,645
50 to 54	29,771	29,697	29,697	75,032		156,519						63,578
55 to 59	29,697	29,697	29,697	31,994	97,699	165,701	165,701					54,373
60 to 64	29,697	56,898	29,697	165,701	97,699	160,563	165,701					85,094
65 & Up		29,697	29,697	63,698							165,701	54,425
Avg. Annual Salary	31,656	34,554	57,102	73,250	97,699	158,986	165,701				165,701	58,795

Table C-13
Florida Retirement System Pension Plan
Member Counts and Average Salaries at July 1, 2018
Elected Officers' Class: Local Subclass

Count

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20												
20 to 24	1											1
25 to 29	1											1
30 to 34	7	3	1									11
35 to 39	17	8	5	4	1							35
40 to 44	18	20	11	8	2							59
45 to 49	27	31	11	9	12	7						97
50 to 54	21	28	15	12	13	18	9	1				117
55 to 59	34	24	15	16	16	18	14	2				139
60 to 64	21	22	22	29	13	11	4	4	1			127
65 & Up	24	52	42	27	20	14	2	3	1			185
Total Count	171	188	122	105	77	68	29	10	2			772

Average Salary ($)

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20												
20 to 24	8,500											8,500
25 to 29	11,484											11,484
30 to 34	53,942	24,355	29,487									43,650
35 to 39	25,014	59,459	38,922	86,699	107,646							44,285
40 to 44	32,442	45,423	72,126	51,306	74,638							48,229
45 to 49	32,346	59,962	92,317	43,632	82,025	100,961						60,117
50 to 54	39,206	42,818	63,995	75,316	91,854	105,507	111,872	148,571				69,526
55 to 59	38,855	49,292	74,684	67,342	72,590	84,941	90,468	101,090				63,748
60 to 64	38,171	45,295	50,534	62,271	50,180	93,649	136,578	113,203	98,529			59,022
65 & Up	27,474	47,723	42,324	43,734	59,381	50,641	55,521	50,602	3,600			44,662
Avg. Annual Salary	34,418	48,808	57,398	58,265	70,607	86,381	101,060	95,537	51,065			56,322

Table C-14
Florida Retirement System Pension Plan
Member Counts and Average Salaries at July 1, 2018
Senior Management Service Class

Count

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20												
20 to 24	7											7
25 to 29	451	5										456
30 to 34	420	245	22	2								689
35 to 39	153	194	159	43	1							550
40 to 44	72	79	144	220	68	4						587
45 to 49	61	83	121	199	261	96	4					825
50 to 54	57	58	122	133	224	331	84	1				1,010
55 to 59	56	76	97	106	159	260	111	17				882
60 to 64	23	49	82	82	97	113	33	13	4			496
65 & Up	6	26	43	53	35	21	14	14	10	2		224
Total Count	1,306	815	790	838	845	825	246	45	14	2		5,726

Average Salary ($)

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20												
20 to 24	42,967											42,967
25 to 29	43,912	64,531										44,138
30 to 34	48,269	60,372	71,048	68,776								53,359
35 to 39	52,477	68,329	78,382	86,246	69,349							68,228
40 to 44	84,794	83,696	82,310	90,654	92,812	106,466						87,310
45 to 49	90,199	93,197	96,306	100,642	106,800	100,716	101,221					100,445
50 to 54	98,037	102,343	102,397	103,229	103,379	110,843	110,733	56,669				105,891
55 to 59	114,096	102,329	106,847	105,114	108,043	115,957	120,410	85,438				110,905
60 to 64	123,769	118,730	109,996	111,433	114,055	124,885	128,195	125,858	177,934			118,095
65 & Up	93,312	139,586	124,959	122,944	121,630	149,427	135,216	171,478	188,271	128,670		133,514
Avg. Annual Salary	57,732	80,830	94,659	100,648	106,404	114,161	118,681	123,244	185,318	128,670		91,178

Table C-15
Florida Retirement System Pension Plan
Member Counts and Average Salaries at July 1, 2018
TRS – Teachers' Retirement System

Count

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20												
20 to 24												
25 to 29												
30 to 34												
35 to 39												
40 to 44												
45 to 49												
50 to 54												
55 to 59												
60 to 64												
65 & Up	1									3	6	10
Total Count	1									3	6	10

Average Salary ($)

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20												
20 to 24												
25 to 29												
30 to 34												
35 to 39												
40 to 44												
45 to 49												
50 to 54												
55 to 59												
60 to 64												
65 & Up	12,807									92,994	149,728	119,016
Avg. Annual Salary	12,807									92,994	149,728	119,016

Table C-16
Florida Retirement System Pension Plan
Member Counts and Average Salaries at July 1, 2018
IFAS – Institute of Food and Agricultural Sciences

Count

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20												
20 to 24												
25 to 29												
30 to 34												
35 to 39												
40 to 44												
45 to 49												
50 to 54												
55 to 59												
60 to 64							3					3
65 & Up							10	1				11
Total Count							13	1				14

Average Salary ($)

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20												
20 to 24												
25 to 29												
30 to 34												
35 to 39												
40 to 44												
45 to 49												
50 to 54												
55 to 59												
60 to 64							107,067					107,067
65 & Up							118,426	83,021				115,207
Avg. Annual Salary							115,804	83,021				113,463

Table C-17
Florida Retirement System Pension Plan
Member Counts and Average Salaries at July 1, 2018
Grand Totals of All Active Participants

Count

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20	1,123											1,123
20 to 24	17,968	186	2									18,156
25 to 29	37,888	7,006	126									45,020
30 to 34	27,872	18,254	6,929	162								53,217
35 to 39	19,801	13,447	19,754	5,977	102							59,081
40 to 44	15,785	10,244	15,249	15,707	4,617	86						61,688
45 to 49	15,315	10,229	14,166	15,372	15,167	4,416	154					74,819
50 to 54	13,083	9,168	12,904	13,196	12,783	11,545	3,200	73				75,952
55 to 59	10,217	7,721	11,952	12,674	11,473	10,699	4,730	664	4			70,134
60 to 64	4,915	4,985	7,702	7,887	6,589	5,964	1,823	708	124	7		40,704
65 & Up	2,593	2,593	4,050	3,122	1,862	1,212	698	392	254	132	23	16,931
Total Count	166,560	83,833	92,834	74,097	52,593	33,922	10,605	1,837	382	139	23	516,825

Average Salary ($)

	Years of Service											
Age	**Under 5**	**5 to 10**	**10 to 15**	**15 to 20**	**20 to 25**	**25 to 30**	**30 to 35**	**35 to 40**	**40 to 45**	**45 to 50**	**50 & Up**	**All Years**
Under 20	10,651											10,651
20 to 24	26,324	25,513	39,371									26,317
25 to 29	35,045	42,104	44,965									36,171
30 to 34	35,928	46,052	51,734	51,171								41,505
35 to 39	34,632	45,439	53,925	56,953	56,480							45,838
40 to 44	33,880	43,642	52,449	59,572	62,414	62,394						48,809
45 to 49	33,762	42,366	49,594	57,336	65,721	67,031	65,926					51,288
50 to 54	33,489	41,248	46,297	52,464	60,139	67,506	65,301	65,382				50,925
55 to 59	32,652	40,460	44,851	48,068	53,235	62,157	68,511	65,453	61,356			48,975
60 to 64	30,167	40,005	44,353	48,073	51,956	60,424	65,944	69,567	66,425	51,987		47,888
65 & Up	20,812	33,964	41,576	47,083	49,498	57,825	65,846	87,879	86,570	81,345	140,471	43,472
Avg. Annual Salary	33,175	43,060	49,284	53,895	59,034	64,153	66,888	71,821	79,766	79,867	140,471	46,188

Appendix D: Projections

Table D-1 presents a projection of total costs of the employers covered by the FRS Pension Plan (exclusive of the Investment Plan) during the five-year period following the actuarial valuation date, July 1, 2018. The contributions shown beginning with plan year 2019-2020 are based on the assumption that the contribution levels calculated in this report are extended throughout the projection period. The contributions shown for plan year 2018-2019 are based on the legislated rates (before blending) on page B-3 of this report.

Table D-2 reflects, for each membership class and DROP, the outstanding UAL balance of all amortization bases combined as of July 1, 2018. The table develops the associated duration of the amortization of the combined amortization bases.

Beginning in the July 1, 1998 actuarial valuation with the emergence of the surplus, all UAL bases in existence as that time were considered to be fully amortized. While the Plan was in surplus, the UAL amortization payment or credit was made from the surplus for certain post-1998 benefit increases and the 1998 and 2003 experience studies prior to any use of the surplus for contribution rate reductions or any other FRS uses. Now that the plan is no longer in surplus, the UAL payment is made by employers as part of the contribution rate.

Table D-3 estimates the UAL payment / (available surplus) for the next three plan years based on Florida law. The estimates are projections of the July 1, 2018 valuation results, and assume experience occurs as stated in the July 1, 2018 valuation.

All three tables reflect that no surplus is available for rate reduction. The amortization methodology recognizes the time value of money.

Table D-1
Florida Retirement System Pension Plan
Projection of Retirement Costs (Excluding Member Contributions)
July 1, 2018
Based on Contribution Rates Before Blending

($ in Millions)

		2018 -2019	2019 -2020	2020 -2021	2021 -2022	2022 -2023
A.	Employer Normal Cost [1]	$1,189	$1,289	$1,331	$1,374	$1,419
B.	UAL Payment / (Surplus Utilization) [2]	$1,837	$1,973 [2]	$2,037 [2]	$2,103 [2]	$2,171 [2]
C.	Total	$3,026	$3,262	$3,368	$3,477	$3,590

[1] *Includes DROP contributions on behalf of DROP members.*

[2] *UAL Payment increase is based on assumed increasing payroll, but does not reflect the recognition and funding of deferred investment gains/losses.*

Table D-2
Florida Retirement System Pension Plan
Funding of UAL by Duration of Amortization
July 1, 2018
($ in thousands)

	Regular	Special Risk	Special Risk Administrative	-- Elected Officers' Class -- Judicial	Leg-Atty-Cab	Local	Senior Management	DROP
Valuation Date Outstanding UAL Balance	$15,987,344	$8,076,264	$18,652	$521,161	$66,212	$390,166	$2,109,948	$2,675,982
UAL Contribution Rate (see Table 4-11)	4.30%	13.17%	40.04%	31.59%	58.20%	53.62%	25.75%	8.24%
Projected UAL Payroll PY 2019 - 2020*	$23,850,651	$4,128,510	$3,480	$112,680	$7,707	$50,181	$566,224	$2,295,800
Annual Payment for PY 2019 - 2020	$1,026,457	$543,914	$1,394	$35,600	$4,486	$26,905	$145,794	$189,215
Amortization Period Calculated Assuming								
Level Dollar	NA **	NA **	36	NA **	NA **	NA **	NA **	55
Level Percent of Payroll	24	22	19	22	22	21	21	20

** The UAL payroll shown here includes salaries for defined contribution program members who pay only the UAL contribution rate, but excludes FRS Investment Plan Payroll.*

*** Current annual payment / (savings) will never accumulate to the UAL if the earned interest rate is 7.40%.*

Table D-3
Florida Retirement System Pension Plan
Projected Annual Payments of UAL Amortization Bases[1]
July 1, 2018

Projected PY 2019-2020 and Forward Based on 07/01/2018 Valuation Results and 07/01/2018 Assets

		2019 - 2020	2020 - 2021	2021 - 2022
1	Estimated Surplus Available Rate Stabilization Mechanism [2]	$0.0	$0.0	$0.0
2	(Increase)/Decrease in Available Surplus from prior year	$0.0	$0.0	$0.0
	UAL Bases			
3	12% Increase in Special Risk benefits (in pay status before 07/01/2000) [3]	$31.2	$32.3	$33.3
4	Special Risk Minimum In-Line-of-Duty Disability Increased to 65% [4]	($0.2)	($0.3)	($0.3)
5	1993 - 1998 Experience Study Assumption Changes [5]	($39.5)	($40.8)	($42.1)
6	1998 - 2003 Experience Study Assumption Changes [5]	($293.5)	($303.0)	($312.9)
7	2003 - 2008 Experience Study Assumption Changes	$496.8	$512.9	$529.6
8	2009 Experience (Gain)/Loss	$1,558.9	$1,609.6	$1,661.9
9	Unrecognized (Gains)/Losses while in Surplus	($456.0)	($470.8)	($486.1)
10	2009 Plan Change (House Bill 479)	($94.3)	($97.3)	($100.5)
11	2010 Experience (Gain)/Loss	$82.3	$85.0	$87.7
12	2010 Plan Change (Senate Bill 2100)	($90.1)	($93.1)	($96.1)
13	2011 Experience (Gain)/Loss	$195.3	$201.6	$208.2
14	2012 Experience (Gain)/Loss	($7.7)	($7.9)	($8.2)
15	2013 Experience (Gain)/Loss	$188.3	$194.5	$200.8
16	2008 - 2013 Experience Study Assumption/Method Changes	$132.1	$136.4	$140.8
17	2014 Experience (Gain)/Loss	($179.1)	($185.0)	($191.0)
18	2015 Experience (Gain)/Loss	$35.8	$37.0	$38.2
19	Special Risk 100% In-Line-Of-Duty Death (2016)	$2.7	$2.8	$2.8
20	2016 Assumption Changes	$70.8	$73.1	$75.4
21	2016 Experience (Gain)/Loss	$77.9	$80.5	$83.1
22	Special Risk 100% In-Line-Of-Duty Death (2017)	$5.4	$5.6	$5.8
23	2017 Assumption Changes	$136.0	$140.5	$145.0
23	2016-2017 Experience (Gains) / Losses	$30.0	$31.0	$32.0
24	2018 Assumption Changes	$136.4	$140.8	$145.4
25	2018 Experience (Gain)/Loss	($45.8)	($47.3)	($48.8)
	Subtotal [(3) through (24)]	**$1,973.7**	**$2,038.1**	**$2,104.0**
26	Across the Board Rate Reduction of 0% [6]	$0.0	$0.0	$0.0
	Total [Subtotal + (25)]	**$1,973.7**	**$2,038.1**	**$2,104.0**
27	UAL payment / (Surplus Available) [(1) + Total] =	$1,973.7	$2,038.1	$2,104.0

1 Numbers exclude contributions to the Investment Plan.
2 Projected surplus based on 07/01/2018 valuation results. Using amortization method that reflects interest.
3 In the absence of a surplus there is an additional cost to the Special Risk Class of 0.76% attributable to the 12% increase in pre-2000 retired benefits.
4 In the absence of a surplus there is an additional cost to the Special Risk Administrative Class of 0.14% and an additional cost to the Special Risk Class of -0.01% attributable to the Increase in Minimum ILOD Disability Benefit.
5 In the absence of a surplus there is an additional charge or credit to each class. See Tables 4-2 through 4-10 for details.
6 No surplus available for rate reduction.

Appendix E: Comparisons/Reconciliation

This Appendix contains certain comparative information required by the state. The table below compares actual investment return, aggregate payroll growth, and individual salary increases with the actuarial assumptions.

The next table reconciles the flow of participants from the 2017 actuarial valuation to the 2018 actuarial valuation, while the last table cross-references the required sections of 112.64 with this report.

Table E-1
Florida Retirement System Pension Plan
One-Year Comparisons

1. Annual Rate of Investment Return on Actuarial Value of Assets

Period Ending	Actual	Assumed
June 30, 2016	6.99%	7.65%
June 30, 2017	8.21%	7.60%
June 30, 2018	8.36%	7.50%

2. Annual Rate of Payroll Growth

Period Ending	Actual [1]	Assumed [1]
June 30, 2016	1.10%	3.25%
June 30, 2017	4.10%	3.25%
June 30, 2018	2.43%	3.25%

3. Individual Rates of Salary Increases for Regular Class Members and Special Risk Class Members

Year Ended June 30	Rate of Increase During Year		
	Regular	Special Risk	Assumed [2]
2016	4.7%	5.5%	4.59%
2017	5.8%	8.6%	4.59%
2018	4.6%	8.0%	4.59%

[1] *The payroll base compared is used for UAL cost calculations and includes payroll for DROP members and certain defined contribution plan participants for whom only UAL contributions are due, but excludes FRS Investment Plan Payroll.*

[2] *Individual rates of salary increase vary by age and service. Single Assumed rate shown above reflects the population and assumptions adopted with each experience study. The most recent experience study was for the period July 1, 2008 through June 30, 2013.*

Table E-2
Florida Retirement System Pension Plan
Data Reconciliation

	Active Participants	Disabled Participants	Retired Participants and Beneficiaries	DROP	Terminated Vested Participants	Total
Number reported as of July 1, 2017	518,622	14,211	388,580	33,452	108,612	1,063,477
New Entrants[1]	59,542	0	0	0	0	59,542
Exits from Active Status[2] or DROP	(52,052)	317	15,536	(8,168)	8,820	(35,547)
DROP Entry	(9,287)	0	0	9,287	0	0
Cessation of benefit payments	NA	(653)	(12,359)	0	0	(13,012)
Other reported status changes, including changes from Terminated Vested status	0	283	6,211	23	(8,601)	(2,084)
Number reported as of July 1, 2018	516,825	14,158	397,968	34,594	108,831	1,072,376

[1] *Includes rehires*
[2] *Includes retirement, vested termination, IP transfer, non-vested termination and death*

Table E-3
Florida Retirement System Pension Plan
Cross Reference to Section 112.64 Reporting Requirements

Code Ref			Page/Section
	1	**General Information:**	
1.003 (3g)		Includes certification by the enrolled actuary (signed and dated)?	Cover Letter
1.003 (11)		Do procedures follow commonly accepted procedures and determinations?	Cover Letter
1.003 (4g)		Disclosure of events not taken into account by actuary?	Cover Letter
1.003 (4g)		Disclosure of trends not assumed to continue (by actuary)?	Executive Summary
	2	**Assumptions:**	**Page/Section**
1.003 (3e)		Description and explanation of all actuarial assumptions?	Appendix A
1.003 (3f)		Is there a comparison of actual to expected salary increases over the preceding 3-year period?	E-1
1.003 (3f)		Is there a comparison of actual to expected investment returns over the preceding 3-year period?	E-1
1.003 (6)		Do assumptions factor in actual experience?	Appendix A
1.003 (6)		Is impact of inflation considered?	A-3
1.003 (6)		Any consistent experience gains or losses to suggest assumption changes?	No
1.003 (7)		Listing of changed assumptions?	A-18
	3	**Plan Provisions & Funding Method:**	**Section**
1.003 (4c)		Contain a summary of plan provisions?	Appendix B
1.003 (4d)		Contain a detailed summary of funding method?	Appendix A
1.003 (5)		Does funding method provide a contribution sufficient to meet the NC and amortize the UAL?	Section 4
	4	**Assets & Method:**	**Exhibit**
1.003 (3a)		Is the MVA breakdown included (by cash, bonds, stocks, and other)?	2-2
1.003 (3a)		Is the "statement value" breakdown included?	No
1.003 (3a)		Is the derivation of AVA included?	2-3
1.003 (8)		Are administrative expenses being paid on a current basis?	2-1
		Asset reconciliation, including:	**Exhibit**
1.003 (4j)		- contributions by source	2-1
1.003 (4j)		- interest and dividends	2-1
1.003 (4j)		- realized gains / (losses)	2-1
1.003 (4j)		- unrealized appreciation	2-1
1.003 (4j)		- pension payments	2-1
1.003 (4j)		- contribution refunds	2-1
1.003 (4j)		- expenses	2-1
1.003 (4j)		- other receipts (identified)	2-1 (transfer)
1.003 (4j)		- other disbursements (identified)	2-1 (IP)

Code Ref			Page/Section
	5	**UAL & Amortization Schedule:**	**Exhibit**
1.003 (3b)		Include a plan to amortize any UAL?	4-2 & D-3
		Does amortization schedule of UAL exist (as of the valuation date) …	**Page**
1.003 (3c)		- on an annual basis for the next 3-years?	Exhibit D-3
1.003 (3c)		- for the final year?	No
1.003 (3c)		Is a statement as to how method was derived included?	A-2
1.003 (3d)		Is a description of actions taken to reduce the UAL included?	Section 4 Exec Summary
		Reconciliation of UAL (must include items below):	**Exhibit**
1.003 (4h)		- UAL for prior valuation (w/ start date)	Page 6
1.003 (4h)		- Normal Cost, contributions, & accrued interest	Page 6
1.003 (4h)		- Impact of changes (assumption, funding method, amendments, gain/loss)	4-2—4-10
1.003 (4h)		- UAL for current valuation	4-2—4-10
	6	**Results:**	**Exhibit**
1.003 (4a)		Valuation Date clearly indicated?	Page 1
1.003 (4e)		Are results separated by employee group?	3-2 and Sections 4 & 5
1.003 (4f)		Is there disclosure of any benefit and expense provided by and/or paid from plan assets for which no liabilities or current costs have been established?	Cover Letter
1.003 (4i)		Projection of emerging liabilities/cash flow needs for next 10-15 years (optional)	No
1.003 (4l)		Summary of principal results (for current and prior valuation) including:	
		- participant data (counts, total pay, total annual benefits by group)	Appendix C
		- assets (market and actuarial)	2-2, 2-3
		- PVB (split: active by decrement, tv, ret & ben, dis, and total)	3-2
		- PV of future benefit payments	3-2
		- AL and UAL, i.e., including amount, date, amortization period	3-2, 4-2
		- PVVB (by group), non-vested PVAB, Total PVAB	5-1, 5-2
1.003 (4l)		Reconciliation of PVAB, including:	
		- PVAB at beginning of year	5-3
		- changes due to amendment and/or assumptions	5-3
		- change due to decrease in discount period and benefits accrued	5-3
		- Benefits paid	5-3
		- Other changes	5-3
		- Net increase (decrease)	5-3
		- PVAB at end of year	5-3
1.003 (4l)		Pension Cost	
		- Normal cost (shown for each benefit and amount for admin expense)	4-1
		- Payment to amortize UAL	4-2—4-10
		- Expected plan sponsor contribution (i.e. total of above pieces with interest, also as % of pay)	4-11
		- Amount to be contributed by members (total and % of pay)	Pages B-3—B-4
1.003 (4l)		Past Contributions	
		- Required plan sponsor & member contribution	4-12
		- Actual contributions made by: plan sponsor, members, other	4-12
1.003 (4k)		Active member accumulated contributions with interest	5-2
1.003 (4l)		Net actuarial gain / loss	4-2—4-10

Code Ref			Page/Section
1.003 (4l)		Other (PVFS & PVFC at attained age and at entry age, PVFC from other sources, PVF Expected BP)	3-2
	7	**Data:**	**Exhibit**
1.003 (4i)		Are membership demographics and financial statistics included?	Appendix C
1.003 (4i)		Age/service table for actives included?	C-7—C-17
1.003 (4i)		Data reconciliation?	E-2
	8	**Contribution Rate:**	**Page**
1.003 (4a)		Applicable beginning and ending dates for recommended contribution indicated?	4
1.003 (4b)		Are ER and EE contribution rates adequate to meet benefits?	4
1.003 (4b)		Are contribution rate changes necessary to achieve or preserve funding?	Yes, Executive Summary and Exhibit 4-11
1.003 (7)		Is the impact of assumption or cost method changes indicated?	7, Exhibit 3-1
1.003 (9)		Were costs to be paid at a later date adjusted for interest and/or salary?	Yes 3—4
1.003 (10)		Is the effective date of recommended changes no later than the next fiscal year?	Yes 3—4

Appendix F: Glossary

The following definitions are largely excerpts from a list adopted in 1981 by the major actuarial organizations in the United States. In some cases the definitions have been modified for specific applicability to the FRS.

Accrued Benefit

The amount of an individual's benefit (whether or not vested) as of a specific date, determined in accordance with the terms of a pension plan and based on compensation and service to that date.

Accumulated Benefit Obligation (ABO)

The actuarial present value of benefits attributed by the pension benefit formula to employee service rendered before a specified date and based on employee service and compensation prior to that date.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disability, and retirement; changes in compensation, rates of investment earnings, and asset appreciation or depreciation; procedures used to determine the Actuarial Value of Assets; and other relevant items.

Actuarial Cost Method

A procedure for determining the Actuarial Present Value of pension plan benefits and expenses and for developing an actuarially equivalent allocation of such value to time periods, usually in the form of a Normal Cost and an Actuarial Liability.

Actuarially Equivalent

Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.

Actuarial Gain/Loss

A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions during the period between two Actuarial Valuation Dates, as determined in accordance with a particular Actuarial Cost Method.

Actuarial Liability (AL)

That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of pension plan benefits and expenses which is not provided for by future Normal Costs.

Actuarial Present Value of Pension Plan Benefits

Total projected benefits include all benefits estimated to be payable to plan members as a result of their service through the valuation date and their expected future service. The actuarial present value of total projected benefits as of the valuation date is the present value of the cost to finance benefits payable in the future, discounted to reflect the expected effects of the time value (present value) of money and the probabilities of payment.

Actuarial Valuation

The determination, as of a valuation date, of the Normal Cost, Actuarial Liability, Actuarial Value of Assets, and related Actuarial Present Values for a pension plan.

Actuarial Value of Assets (AVA)

The value of cash, investments, and other property belonging to a pension plan, as used by the actuary for the purpose of an Actuarial Valuation.

Amortization

Paying an interest-bearing liability by gradual reduction through a series of installments, as opposed to one lump-sum payment.

Amortization Payment

That portion of the pension plan contribution which is designed to pay interest on and to amortize the Unfunded Actuarial Liability.

Level Percent of Pay:	Produces a level series of payments when expressed as a percent of payroll. Cash payment increases in line with payroll growth assumption.
Level Dollar:	Produces a decreasing pattern of payments when expressed as a percent of payroll. Cash payment remains level.

Annual Pension Cost (APC)

Under GASB, when the Net Pension Obligation is positive, the APC is equal to the Annual Required Contribution plus the Interest on the beginning Net Pension Obligation minus the amortization of the Net Pension Obligation. When the Net Pension Obligation is negative, the APC is equal to the Annual Required Contribution minus the Interest on the beginning Net Pension Obligation plus the amortization of the Net Pension Obligation.

Annual Required Contribution (ARC)

Under GASB, this amount is equal to the Normal Cost plus the Amortization Payment. GASB does not require contributions to be equal to the ARC; however it requires the calculation and reporting of the ARC.

Entry Age Normal Actuarial Cost Method (EAN)

A method under which the Actuarial Present Value of the Projected Benefits of each individual included in an Actuarial Valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit ages. The portion of this Actuarial Present Value allocated to a valuation year is called the Normal Cost. The portion of this Actuarial Present Value not provided for at a valuation date by the Actuarial Present Value of future Normal Costs is called the Actuarial Liability.

Funded Ratio

Ratio of the assets of a pension plan to its liabilities.

Government Accounting Standards Board (GASB)

This Board sets standards of state and local accounting and financial reporting.

Interest Rate

The rate used to discount projected benefit payments to determine the present value in a valuation.

Market Value of Assets (MVA)

The price for which an asset could be sold at a particular date. May also be referred to as the Fair Value of Assets.

Normal Cost (NC)

That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method.

Net Pension Obligation (NPO)

Under GASB, the cumulative difference between Annual Pension Cost and the employer's contributions to the plan, including the pension liability or asset at transition, if any.

Present Value (PV)/ Actuarial Present Value (APV)

The value of an amount or series of amounts of cash flows payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions, including selected interest rate.

Projected Benefits

Those pension plan benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and anticipated future compensation and service credits.

Unfunded Actuarial Liability

The excess of the Actuarial Liability over the Actuarial Value of Assets. When the Actuarial Value of Assets exceeds Actuarial Liabilities a surplus exists.

Valuation Date

The date as of which the liabilities are determined.

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December 4, 2018

Via E-Mail

Ms. Shirley Beauford
Interim State Retirement Director
Florida Department of Management Services, Division of Retirement

Re: **Blended Proposed Statutory Rates for the 2019-2020 Plan Year Reflecting a Uniform UAL Rate for All Membership Classes and DROP**

Dear Director Beauford:

As requested, we have calculated the uniform or "blended" proposed statutory employer rates for the 2019-2020 plan year based on the statutory contributions for the FRS Investment Plan and the actuarially calculated 2019-2020 rates for the defined benefit FRS Pension Plan, as specified in the FRS 2018 Actuarial Valuation Report. The blended rates reflect a uniform Unfunded Actuarial Liability (UAL) Contribution Rate for all payroll bases on which the Blended UAL Contribution Rate is assessed.

Analysis

We determined the uniform blended 2019-2020 employer rate for each membership class and subclass of the Florida Retirement System by projecting contributions for both the FRS Pension Plan and the FRS Investment Plan. We did this by dividing the projected combined amount that would be contributed for both the FRS Pension Plan and the FRS Investment Plan by the total projected combined payroll for both plans. The uniform blended rate calculation assumes plan year 2019-2020 contributions for the FRS Pension Plan will be made at the actuarially calculated rate levels. The actuarially calculated rate levels are based on the July 1, 2018 actuarial valuation of the FRS Pension Plan, as presented in Table 4-11 of the FRS 2018 Actuarial Valuation Report. The FRS Investment Plan rates are the sum of the rates in Sections 121.72, 121.73, and 121.735 of Florida Statutes and assume those rates continue in effect during plan year 2019-2020. The employer contribution rates shown in the attached table are net of the 3% of payroll employee contribution rate.

The payroll for some employee groups is subject to only the UAL Cost component of the FRS Pension Plan's contribution rate (e.g. participants in SUSORP, SMSOAP, and SCCORP, and reemployed retirees not eligible for renewed membership in a state-sponsored retirement program). The payroll for those employee groups is included in the calculation of the Blended UAL Contribution Rate, but is excluded from the calculation of the Blended Normal Cost Contribution Rate.

Based on the data provided to us for this study, as of July 1, 2018 FRS Investment Plan payroll comprised between 17% and 18% of total payroll. On a headcount basis, FRS Investment Plan members constitute between 19% and 20% of active FRS membership.

Results

Table I shows the results of our study based on actual levels of participation in the FRS Pension Plan and the FRS Investment Plan as of July 1, 2018, projected to plan year 2019-2020 using the long-term payroll growth assumption of 3.25%. Please note, Senate Bill 7022 enacted by the 2017 Florida legislature changed the default plan for initial enrollments on and after January 1, 2018 from the FRS Pension Plan to the FRS Investment Plan for all membership classes other than Special Risk. The enactment may change future rates of payroll growth as new entrants who would have defaulted into the FRS Pension Plan under prior statute will now default into the FRS Investment Plan in the absence of an active election. Due to the effective date of the enactment and the election window afforded to newly enrolled members, any potential long-term changes in future enrollment patterns are not known at the time of publication of this study. Further, any potential resulting shift in plan membership for post-2017 enrollees would not be anticipated to materially affect the calculated blended rates for the 2019-2020 plan year, which are the focus of this study.

Section A of the table includes the Normal Cost Rates developed in the July 1, 2018 funding actuarial valuation of the FRS Pension Plan. Section A does not include the UAL Cost. UAL Cost Rates are applied to a larger total payroll than the Normal Cost Rates and are developed in a later section. Section A, line 3 shows the total employer Normal Cost of the FRS Pension Plan as the product of Normal Cost Rates and projected Normal Cost payroll.

Similarly, Section B calculates the total employer cost of the FRS Investment Plan as the product of applicable employer contribution rates in effect since July 1, 2017 and the projected FRS Investment Plan payroll. FRS Investment Plan payroll is projected as described above.

Section C of the table shows the sum of the FRS Pension Plan employer Normal Cost and FRS Investment Plan employer cost as dollars and as a percentage of total projected combined payroll (FRS Pension Plan projected Normal Cost payroll plus FRS Investment Plan projected payroll).

Section D of the table shows the UAL Cost as of July 1, 2018 of the FRS Pension Plan, as shown in Table 4-11 of the FRS 2018 Actuarial Valuation Report.

Section E shows the projected payroll of the FRS Investment Plan. There is no UAL Cost attributable to the FRS Investment Plan.

Section F calculates the “Blended” UAL Cost as dollars and as a percentage of total payroll (FRS Pension Plan projected UAL payroll plus FRS Investment Plan projected payroll).

Section G shows the Total “Blended” Contribution Rates as the sum of the “Blended” Normal Cost Contribution Rates from Line (C3) and the “Blended” UAL Contribution Rates from Line (F3). The employers of employee groups subject to only the UAL Contribution Rate would contribute the “Blended” UAL Contribution Rates shown in Line (G2) of the table on applicable payroll. The Total “Blended” Contribution Rates shown in Line (G3) of the table will be applied to all other payroll subject to employer contributions.

The contribution rates shown in Table I exclude the 0.06% contribution rate for FRS Investment Plan administration and education (applied to all classes except DROP) and the 1.66% contribution rate for the Florida Retiree Health Insurance Subsidy (HIS) program, which apply across the board to the FRS Pension Plan and the FRS Investment Plan.

The calculations are based on census and payroll data provided to us by the Florida Department of Management Services, Division of Retirement for the July 1, 2018 actuarial valuation. We have not audited or verified this data and other information. If the underlying data or information is inaccurate or incomplete, the results of our analysis may likewise be inaccurate or incomplete. These calculations are based on the Ultimate Entry Age actuarial cost allocation method, as described in the FRS 2018 Actuarial Valuation Report for use in developing 2019-2020 actuarially calculated contribution rates for the FRS Pension Plan.

We performed a limited review of the data used directly in our analysis for reasonableness and consistency and have not found material defects in the data. If there are material defects in the data, it is possible that they would be uncovered by a detailed, systematic review and comparison of the data to search for data values that are questionable or for relationships that are materially inconsistent. Such a review was beyond the scope of our assignment.

Except where otherwise noted in this letter, this analysis is based on the FRS Pension Plan provisions, actuarial methods and actuarial assumptions as summarized in the FRS 2018 Actuarial Valuation Report as published on December 3, 2018. Further, the data used in these calculations were based on FRS Pension Plan data as summarized in the FRS 2018 Actuarial Valuation Report and FRS Investment Plan census data as of July 1, 2018 as provided to us by the Florida Department of Management Services, Division of Retirement. The results of our study depend on future experience conforming to those actuarial assumptions discussed earlier in this letter. Future actuarial measurements may differ significantly from the current measurements presented in this analysis due to many factors, including: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period) and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements.

Milliman's work product was prepared exclusively for the internal business use of Florida Department of Management Services, Division of Retirement. It is a complex technical analysis that assumes a high level of knowledge concerning the Florida Retirement System's operations, and uses Division data, which Milliman has not audited. To the extent that Milliman's work is not subject to disclosure under applicable public record laws, Milliman's worked may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exceptions:

(a) The Florida Department of Management Services, Division of Retirement may provide a copy of Milliman's work, in its entirety, to the System's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the System.

(b) The Florida Department of Management Services, Division of Retirement may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law.

No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

We are consulting actuaries for Milliman, Inc. We are also members of the American Academy of Actuaries, and meet their Qualification Standards to render the actuarial opinion contained herein.

Please call if you would like to further discuss this project.

Respectfully submitted,

Matt Larrabee, FSA, EA, MAAA
Principal and Consulting Actuary

Daniel Wade, FSA, EA, MAAA
Principal and Consulting Actuary

Kathryn Hunter, FSA, EA, MAAA
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Enclosures

FLORIDA RETIREMENT SYSTEM
FISCAL IMPACT ANALYSIS

Blended Proposed Statutory Normal Cost Plus UAL Rates for 2019-2020 Plan Year
Please see the attached letter for details regarding data, assumptions, methodology, and plan provisions used
(Dollars in Thousands)

	Regular	Special Risk	Special Risk Administrative	------Elected Officers' Class---- Judicial	Leg-Atty-Cab	Local	Senior Management	Composite (excluding DROP)	DROP	Composite (including DROP)
Blended Proposed Statutory Normal Cost Contribution Rates										
A. Defined Benefit FRS Pension Plan Normal Cost										
1. Employer Cost										
a. Normal Cost Rate [1]	3.09%	12.36%	3.26%	12.46%	6.61%	8.63%	4.47%	4.68%	4.68%	4.68%
b. Rate Reduction Techniques	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
c. Total Adjusted Contribution Rate [2]										
-PYE 2020	3.09%	12.36%	3.26%	12.46%	6.61%	8.63%	4.47%	4.68%	4.68%	4.68%
2. Projected Payroll	$20,408,366	$4,108,361	$3,480	$112,211	$7,150	$45,814	$551,964	$25,237,346	$2,295,800	$27,533,146
3. Total Employer Normal Cost [(1c) x (2)]										
-PYE 2020	$630,619	$507,793	$113	$13,981	$473	$3,954	$24,673	$1,181,606	$107,443	$1,289,049
B. Defined Contribution FRS Investment Plan (IP) Employer Cost										
1. Employer Rates effective July 1, 2017										
(Sec 121.72, Sec 121.73 and Sec 121.735)	3.60%	13.48%	5.43%	11.05%	6.94%	8.95%	4.98%	4.93%	0.00%	4.93%
2. Projected Payroll	$4,960,465	$753,373	$708	$14,552	$1,707	$19,950	$197,449	$5,948,204	$0	$5,948,204
3. Total Employer Cost [(1) x (2)]										
-PYE 2020	$178,577	$101,555	$38	$1,608	$118	$1,786	$9,833	$293,515	$0	$293,515
C. Total System Normal Cost (FRS Pension Plan + FRS Investment Plan)										
1. Total Normal Cost Contribution [(A3) + (B3)]	$809,196	$609,348	$151	$15,589	$591	$5,740	$34,506	$1,475,121	$107,443	$1,582,564
2. Total System Projected Payroll [(A2) + (B2)]	$25,368,831	$4,861,734	$4,188	$126,763	$8,857	$65,764	$749,413	$31,185,550	$2,295,800	$33,481,350
3. "Blended" Normal Cost Contribution Rate										
As a Percentage of Total Payroll [(C1) / (C2)] [2]	3.19%	12.53%	3.61%	12.30%	6.67%	8.73%	4.60%	4.73%	4.68%	4.73%

[1] As reported in the July 1, 2018 actuarial valuation report - Table 4-11

[2] Rates shown do not include the Health Insurance Subsidy contribution rate or FRS Investment Plan education and administration assessment.

FLORIDA RETIREMENT SYSTEM
FISCAL IMPACT ANALYSIS

Blended Proposed Statutory Normal Cost Plus UAL Rates for 2019-2020 Plan Year
Please see the attached letter for details regarding data, assumptions, methodology, and plan provisions used
(Dollars in Thousands)

	Regular	Special Risk	Special Risk Administrative	------Elected Officers' Class---- Judicial	Leg-Atty-Cab	Local	Senior Management	Composite (excluding DROP)	DROP	Composite (including DROP)
Blended Proposed Statutory UAL Contribution Rates										
D. Defined Benefit FRS Pension Plan UAL Contribution										
1. Employer UAL Contribution Rate [1 & 2]	4.30%	13.17%	40.04%	31.59%	58.20%	53.62%	25.75%	6.21%	8.24%	6.36%
2. Projected Payroll	$23,850,651	$4,128,510	$3,480	$112,680	$7,707	$50,181	$566,224	$28,719,433	$2,295,800	$31,015,233
3. Total Employer UAL Contribution [(1) x (2)] -PYE 2020	$1,025,578	$543,725	$1,393	$35,596	$4,485	$26,907	$145,803	$1,783,487	$189,174	$1,972,661
E. Defined Contribution FRS Investment Plan Projected Payroll	$4,960,465	$753,373	$708	$14,552	$1,707	$19,950	$197,449	$5,948,204	$0	$5,948,204
F. Total System UAL Contribution (FRS Pension Plan + FRS Investment Plan)										
1. Total UAL Contribution [(D3)]	$1,025,578	$543,725	$1,393	$35,596	$4,485	$26,907	$145,803	$1,783,487	$189,174	$1,972,661
2. Total System Projected Payroll [(D2) + (E)]	$28,811,116	$4,881,883	$4,188	$127,232	$9,414	$70,131	$763,673	$34,667,637	$2,295,800	$36,963,437
3. "Blended" UAL Contribution Rate As a Percentage of Total Payroll [(F1) / (F2)] [2]	3.56%	11.14%	33.26%	27.98%	47.64%	38.37%	19.09%	5.14%	8.24%	5.34%
Blended Proposed Statutory Uniform Contribution Rates [3]										
G: Total Employer Contribution Rate (FRS Pension Plan + FRS Investment Plan)										
1. "Blended" Normal Cost Contribution Rate [(C3)]	3.19%	12.53%	3.61%	12.30%	6.67%	8.73%	4.60%	4.73%	4.68%	4.73%
2. "Blended" UAL Contribution Rates [(F3)]	3.56%	11.14%	33.26%	27.98%	47.64%	38.37%	19.09%	5.14%	8.24%	5.34%
3. Total Blended Contribution Rate [2] -PYE 2020 [(G1) + (G2)]	6.75%	23.67%	36.87%	40.28%	54.31%	47.10%	23.69%	9.87%	12.92%	10.07%

[1] As reported in the July 1, 2018 actuarial valuation report - Table 4-11

[2] Rates shown do not include the Health Insurance Subsidy contribution rate or FRS Investment Plan education and administration assessment.

[3] Employers of employee groups subject to only the UAL contribution rate will pay the rates shown in line (G2).