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Indiana Public Retirement System

Teachers' Retirement Fund
Pre-1996 Account

Actuarial Valuation as of
June 30, 2018

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The experience and dedication you deserve

November 1, 2018

Board of Trustees
Indiana Public Retirement System
1 North Capitol, Suite 001
Indianapolis, IN 46204

Dear Members of the Board:

At your request, we performed an actuarial valuation of the Teachers' Retirement Fund Pre-1996 Account (TRF Pre-'96) as of June 30, 2018, for the purpose of estimating the actuarial required contribution for the plan year ending June 30, 2020. The major findings of the valuation are contained in this report, which reflects the benefit and funding provisions in place on June 30, 2018. There was a change in the actuarial assumption from the prior year for the Cost-of-Living-Adjustment (COLA) to reflect future expectations after the passage of Senate Enrolled Act No. 373. Additionally, effective January 1, 2018, the Defined Contribution (DC) account was separated from the defined benefit portion of the TRF Pre-'96 trust. This has been reflected as a plan change and recognized immediately for both funding and GASB.

This is the first actuarial valuation report prepared by Cavanaugh Macdonald Consulting, LLC (CMC). As part of our transition work, we replicated the June 30, 2017 actuarial valuation. Results were well within acceptable limits, but as is typical in a takeover situation, there were some differences in the key valuation results. Based on our experience, these differences are neither unusual nor significant. In our replication, we matched the actuarial liability within 0.8% and the normal cost within 2.3%.

In preparing our report, we relied, without audit, on information (some oral and some in writing) supplied by Indiana Public Retirement System (INPRS) staff. This information includes, but is not limited to, statutory provisions, member data and financial information. We did review the data to ensure that it was reasonably consistent and comparable with data from prior years. 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.

We certify that all costs and liabilities for TRF Pre-'96 have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the plan and reasonable expectations); and which, in combination, offer the best estimate of anticipated experience affecting the plan. Nevertheless, the emerging costs will vary from those presented in this report to the extent actual experience differs from that projected by the actuarial assumptions.

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While the assumptions were generally developed by the prior actuary, we believe they are reasonable. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in Appendix C. Specifically, we presented the existing assumptions with adjustments to the COLA assumption for the 2018 valuations to the Board on February 23, 2018, and the Board subsequently adopted their use. These assumptions are applicable to both the funding and Governmental Accounting Standards Board (GASB) Statement Number 67 valuation calculations, unless otherwise noted.

Future actuarial measurements may differ significantly from the current measurements presented in this report 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.

Actuarial computations presented in this report are for purposes of determining the funding rates for the Plan. The calculations in the enclosed report have been made on a basis consistent with our understanding of the Plan's funding requirements and goals as adopted by the Board. It should be noted that these calculations were prepared before the Board adopted a revised funding policy at the October 26, 2018 Board meeting. However, since the results presented in this report are shown on both the old and new funding policy basis, there is no need for any revised presentation of the funding requirements. Additionally, we have included actuarial computations for use in preparing certain reporting and disclosure requirements under Governmental Accounting Standards Board Statements Number 67 and Number 68. Determinations for purposes other than meeting these funding and disclosure requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

The Comprehensive Annual Financial Report (CAFR) for INPRS contains several exhibits that disclose the actuarial position of the System. This report provides data and tables for use in the following sections of the CAFR:

Financial Section:
- Note 1 - Tables of Plan Membership
- Note 7 - Net Pension Liability and Actuarial Information - Defined Benefit Plans
- Schedule of Changes in Net Pension Liability and Plan Fiduciary Net Position
- Schedule of Contributions
- Schedule of Notes to Required Supplementary Information

Actuarial Section:
- Summary of INPRS Funded Status (Included in the Executive Summary)
- Historical Summary of Actuarial Valuation Results by Retirement Plan
- Summary of Actuarial Assumptions, Methods and Plan Provisions
- Analysis of Financial Experience (Included in the Unfunded Actuarial Accrued Liability Reconciliation)
- Solvency Test
- Schedule of Active Member Valuation Data
- Schedule of Retirants and Beneficiaries

Statistical Section:
- Membership Data Summary
- Ratio of Active Members to Annuitants
- Schedule of Benefit Recipients by Type of Benefit Option
- Schedule of Average Benefit Payments

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

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. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

The calculations were completed in compliance with applicable law and the calculations for GASB disclosure, in our opinion, meet the requirements of GASB 67 and GASB 68. We are available to answer any questions on the material contained in the report, or to provide explanations or further details as may be appropriate.

We respectfully submit the following report and look forward to discussing it with you.

Sincerely,

Brent A. Banister

Patrice Beckham

Brent A. Banister Ph.D., FSA, EA, MAAA, FCA
Chief Actuary

Patrice A. Beckham, FSA, EA, FCA, MAAA
Principal and Consulting Actuary

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This report presents the results of the June 30, 2018 actuarial valuation of the Teachers' Retirement Fund Pre-1996 Account (TRF Pre-'96). The primary purposes of performing this actuarial valuation are to:

- Determine the level of contributions for the plan year ending June 30, 2020 that will be sufficient to meet the funding policy set out by the Board to comply with Indiana statutes.
- Disclose asset and liability measurements as well as the current funded status of the plan on the valuation date.
- Compare actual and expected experience under the plan during the plan year ending June 30, 2018.
- Analyze and report on trends in plan contributions, assets and liabilities over the past several years.

VALUATION RESULTS

There are three significant changes from the prior year reflected in this report. This is the first actuarial valuation report prepared by Cavanaugh Macdonald Consulting, LLC (CMC). Second, during this past year, the Defined Contribution portion of the Plan was transferred to a separate trust, removing it from any prospective consideration in this valuation. Finally, legislation was passed to change how post-retirement benefit increases are funded.

As part of our transition work, we replicated the June 30, 2017 actuarial valuation. For the most direct comparison of replication results, we compared measurements as of the date the census data was collected (June 30, 2016). Note that while these measures were used in the roll forward to obtain June 30, 2017 valuation results, these specific measures are not shown in any valuation report. Results were well within acceptable limits, but as is typical in a takeover situation, there were some differences in the key valuation results. Based on our experience, these differences are neither unusual nor significant. A summary of the key actuarial measurements in the replication results is shown in the following table:

	June 30, 2017 Valuation Results		
	CMC	Nyhart	CMC/Nyhart
Present Value of Future Benefits	$15,674,813,146	$15,810,101,261	99.1%
Actuarial Accrued Liability	15,409,975,891	15,538,724,735	99.2%
Normal Cost	48,589,636	49,740,714	97.7%

It should be noted that while the key liability numbers were a very close match, some items reported in the valuation, such as the Unfunded Actuarial Accrued Liability (UAAL), are derived from calculations of these fundamental measures and may vary proportionately more than the underlying liability measures.

As had been anticipated from past legislation, the Defined Contribution (DC) assets were moved from the TRF Pre-'96 trust fund to a separate trust. These funds will now remain separate from the Defined Benefit (DB) assets and benefit obligations being valued in this report. In the future, when a member retires and annuitizes some or all that member's DC balance, the annuitization will take place directly with an insurance company, and no additional retirement liability will be assumed by the DB plan. As a result of this change, comparisons between the results of the 2018 and 2017 valuations will be affected.

Further changes occurred as a result of Senate Enrolled Act No. 373, which created a mechanism to fund future post-retirement benefit increases. Under the law, the Board may designate a portion of proceeds from lottery revenues into TRF Pre-'96 or into the other affected funds. Most of the other funds affected have the option of directing an employer surcharge in the COLA fund, so it is anticipated that nearly all of the lottery proceeds will be available to the TRF Pre-1996 account. The Legislature will then have the option to provide for benefit increases, either permanently or as a one-time additional check, as part of the biennial budget process that will be paid from the accumulated assets of the subaccount. As a consequence of this legislative change, the Board adopted a new assumption for future Cost-of-Living Adjustments (COLAs), effective with this valuation. This new assumption is based on an anticipated 0.4% permanent COLA being granted each January 1 from 2022 to 2033, followed by a 0.5% COLA from 2034 to 2038, and then 0.6% in 2039 and beyond. The prior assumption was that a 1.0% COLA would be granted each year. Further, the development of the actuarially determined contribution rate has been modified. A separate rate is developed for the "base" (non-COLA) benefit and an amount to allocate from lottery proceeds is determined for the future COLA benefits. Further details are shown in the report.

The actuarial valuation results provide a "snapshot" view of the plan's financial condition on June 30, 2018. The plan's UAAL changed from $11.8 billion last year to $10.9 billion this year and the funded ratio decreased from 30% to 26%. The most substantial factor in the UAAL change was a result of the new COLA methodology. The net effect of changing the assumptions and allocations as a result was a reduction in liability of $668 million. The funded ratio decline was primarily a result of the DC assets and liability being removed from the Account. Since both assets and liabilities were reduced by the same amount, the UAAL did not change. However, removing more than $1.2 billion from both assets and liabilities changes the ratio significantly.

A summary of the key results from the June 30, 2018 actuarial valuation is shown in the following table. Further detail on the valuation results can be found in the following sections of this Executive Summary. It should be noted that these results are based on the formal funding policy, and do not reflect the funding approach set out in IC-5.10.4-2-5 that the Indiana Legislature has followed in actually appropriating funds. At the October 26, 2018 Board meeting, the Board adopted a revised funding policy to align with the Legislature's approach. Note that results presented in this Board Summary were calculated prior to the board meeting and are shown for comparison with prior valuations. In addition, it is anticipated that virtually all of the $30 million allocation from the lottery proceeds to fund future post-retirement benefit increases will be directed to the TRF Pre-'96 trust to provide such increases.

Valuation Results	June 30, 2017	June 30, 2018
Unfunded Actuarial Accrued Liability	$ 11,785,668,904	$ 10,861,866,130
Funded Ratio (Actuarial Assets)	29.58%	25.52%
Normal Cost	5.37%	4.75%
UAAL Amortization	378.28%	455.93%
Actuarially Determined Contribution Rate	383.65%	460.68%
Estimated Contribution Amount	$ 3,188,508,363	$ 3,458,283,110

Numerous components, which are examined in the following discussion, contributed to the change in the plan's assets, liabilities, and actuarial determined contribution rate between June 30, 2017 and June 30, 2018.

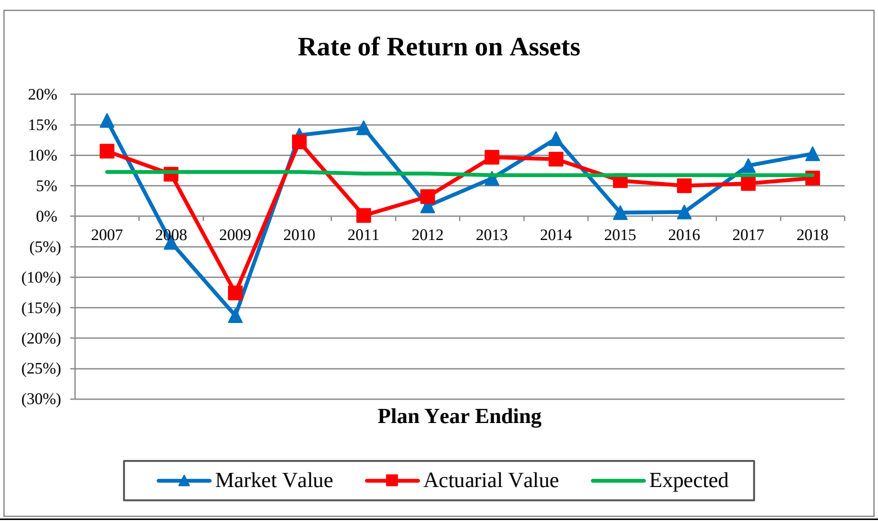
ASSETS

As of June 30, 2018, the plan had net assets of $3.711 billion, when measured on a market value basis. This was an increase of $136 million from the prior year when the DC assets are not considered.

The market value of assets is not used directly in the calculation of the unfunded actuarial accrued liability and the actuarial required contribution rate. An asset valuation method, which smoothes the effect of market fluctuations, is applied to determine the value of assets used in the valuation. The resulting amount is called the actuarial value of assets. In this year's valuation, the actuarial value of assets is $3.721 billion, an increase of $12 million from the prior year when the DC assets are not considered. The components of change in the asset values are shown in the following table:

		Market Value		Actuarial Value
Net Assets, June 30, 2017	$	4,817,629,523	$	4,951,100,101
- Removal of DC Balances	-	1,242,229,627	-	1,242,229,627
- Receipts	+	940,182,674	+	940,182,674
- Expenditures, Net of Administrative Expenses	-	1,153,489,557	-	1,153,489,557
- Net Investment Income	+	349,253,526	+	225,759,312
Net Assets, June 30, 2018	$	3,711,346,539	$	3,721,322,903
Rate of Return, Net of Expenses		10.2%		6.3%

The rate of return on the actuarial value of assets was 6.3%, which was lower than the 6.75% investment return assumption applicable for the year ended June 30, 2018. As a result, there was an experience loss on assets of $17.4 million. The investment return on the market value of assets for FY 2018 of 10.2% resulted in a change in the deferred investment experience from a net deferred investment loss of $133 million in last year's valuation to $10 million in the current valuation. See Table 1 and Table 2 of this report for detailed information on the market and actuarial value of assets.



The rate of return of the actuarial value of assets has been less volatile than the market value return, illustrating the benefits of using an asset smoothing method.

LIABILITIES

The actuarial accrued liability is that portion of the present value of future benefits that is allocated to past service. The remaining portion will be paid by future normal costs. The difference between this liability and the actuarial value of assets as of the valuation date is called the unfunded actuarial accrued liability (UAAL). The dollar amount of unfunded actuarial accrued liability is reduced if the contributions to the plan exceed the normal cost for the year plus interest on the prior year's UAAL.

The unfunded actuarial accrued liability, including expected future COLAs, is shown as of June 30, 2018 in the following table:

	Market Value	Actuarial Value
Actuarial Accrued Liability	$ 14,583,189,033	$ 14,583,189,033
Value of Assets	3,711,346,539	3,721,322,903
Unfunded Actuarial Accrued Liability	$ 10,871,842,494	$ 10,861,866,130
Funded Ratio	25.45%	25.52%

See Table 3 of this report for the development of the unfunded actuarial accrued liability.

The net change in the total UAAL from June 30, 2017 to June 30, 2018 was a decrease of $924 million. Virtually all of this change was attributable to reflecting the new COLA funding legislation. Actuarial liability gains from granting a 13th check in place of a 1% COLA (the previous assumption) and contributions in excess of the actuarial rate contributed as well, offsetting a loss on the actuarial value of assets and retirement experience. The components of the change in the base UAAL are quantified in Table 5 of this report. See Table 6 and Table 7 of this report for a breakdown of the components of experience gains/losses for greater detail.

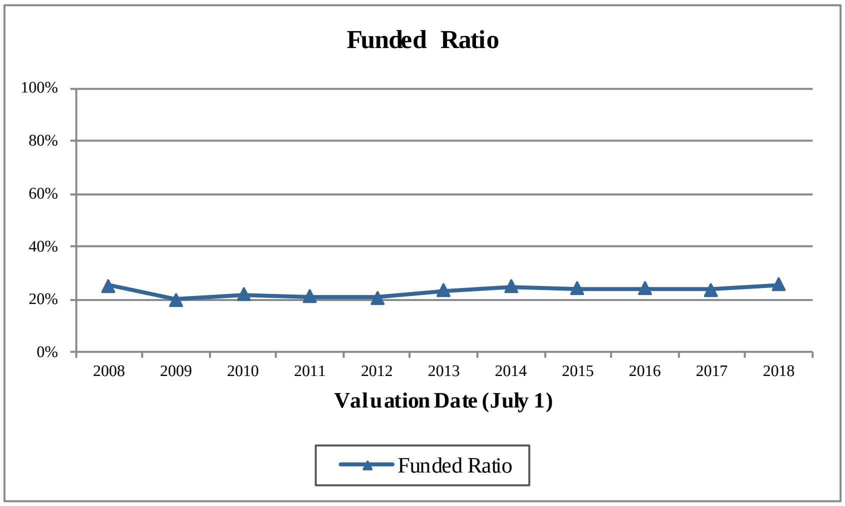
An evaluation of the UAAL on a pure dollar basis may not provide a complete analysis since only the difference between the assets and liabilities (which are both large numbers) is reflected. Another way to evaluate the UAAL and the progress made in its funding is to track the funded ratio, the ratio of the actuarial value of assets to the actuarial accrued liability. The funded status information, which is based on the actuarial value of assets, is shown below (in billions).

	6/30/2014	6/30/2015	6/30/2016	6/30/2017	6/30/2018
Funded Ratio	24.9%	24.0%	24.0%	23.9%	25.5%
UAAL (in billions)	$11.0	$11.8	$11.8	$11.8	$10.9

Note: Results before 2018 restated to exclude the DC assets in the funded ratio calculation.

Note that the funded ratio does not indicate whether or not the plan assets are sufficient to settle benefits earned to date. The funded ratio, by itself, also may not be indicative of future funding requirements. In addition, if the funded ratios were shown using the market value of assets, the results would differ.

The funded ratio over a longer period of years is shown in the following graph. Because the Pre-1996 Account is intended to be funded on a "pay-as-you-go" basis, there is no expectation that the funded ratio improve significantly for many years.



Note: Funded ratios exclude DC account balances

ACTUARIALLY DETERMINED CONTRIBUTION AMOUNT

The Plan's actuarially determined contribution rate consists of two components:

- A "normal cost" for the portion of projected liabilities allocated by the actuarial cost method to service of members during the year following the valuation date.

- An "unfunded actuarial accrued liability contribution" for the excess of the portion of projected liabilities allocated to service to date over the actuarial value of assets.

The UAAL contribution rate is determined by calculating the amortization payment on the UAAL as a level dollar amount over 5 years for each new amortization base. Because the COLA portion of the benefits are funded through lottery proceeds, this portion of the benefit only considers the base benefit without any COLA. Whenever the Plan exceeds 100% funded on a combined (base benefits plus future assumed COLAs), all prior amortization bases are eliminated and the negative UAAL (or "surplus") is used to reduce the normal cost over a rolling 30-year period.

In additional to the components above that are designed to fund the guaranteed base benefit, the Board is responsible for determining the allocation of lottery proceeds to fund future COLAs and/or 13th checks. Because there are five plans that must, by law, provide the same COLA or 13th check each year, the funding strategy needs to consider the overall funding needs as well as the specific plan. The long-term assumption is that a COLA of 0.4% will be granted starting in 2022, 0.5% starting in 2034, and then 0.6% in 2039 and beyond. Considering the biennial budgeting cycle in Indiana, the near-term goal is to accumulate funds by June 30, 2021 to fund the two COLAs in the following biennium (January, 2022 and January, 2023). The $30 million allocation from lottery proceeds beginning in FY 2019 is expected to provide the needed funds for the next biennium and allow for a sufficient reserve to provide the accumulations in subsequent biennial periods. See Table 10 for further details.

The actuarially determined employer rate is the contribution rate required to fund the base benefit. In practice, the State has been funding TRF Pre-'96 by providing annually increasing appropriations. When these appropriations increase to the point that they are approximately equal to the expected benefit payments, the appropriations will be set equal to the expected annual benefit payments, but not in excess of the unfunded UAAL. As noted earlier, the Board officially adopted a funding policy revision to align with the State's scheduled of appropriations.

See Table 11 of this report for the detailed development of the contribution amounts which are summarized in the following table:

		June 30, 2017		June 30, 2018
Normal Cost		5.37%		4.75%
UAAL Amortization		378.28%		455.93%
Actuarially Determined Contribution Rate		383.65%		460.68%
Estimated Payroll	$	831,100,000	$	750,690,959
Estimated Contribution Amount	$	3,188,508,363	$	3,458,283,110
Scheduled Appropriation	$	917,900,000	$	945,437,000
Lottery Proceeds Needed for Anticipated COLA		N/A	$	23,502,683

The actuarial required contribution, determined this year based on the snapshot of the plan taken on the valuation date of June 30, 2018, will change each year as the deferred investment experience is recognized and other experience (both investment and demographic) impacts the plan. Therefore, it is expected to change each year.

SUMMARY OF PRINCIPAL RESULTS

	June 30, 2016	June 30, 2017	June 30, 2018
MEMBERSHIP			
Active Members	14,327	13,128	11,710
Retired Members and Beneficiaries	52,575	53,240	53,227
Inactive Vested Members	3,119	2,504	2,635
Total Members	70,021	68,872	67,572
Projected Annual Salaries of Active Members	$ 934,500,000	$ 831,100,000	$ 750,690,959
Annual Retirement Payments for Retired Members, Disabled Members and Beneficiaries	$ 1,082,306,112	$ 1,106,961,432	$ 1,117,463,235
ASSETS AND LIABILITIES			
Net Assets			
Market Value of Assets (MVA)	$ 4,787,528,950	$ 4,817,629,523	$ 3,711,346,539
Actuarial Value of Assets (AVA)	5,008,989,223	4,951,100,101	3,721,322,903
Actuarial Accrued Liability (AAL)	16,840,200,410	16,736,769,005	14,583,189,033
Unfunded Actuarial Accrued Liability (UAAL): AAL - AVA	$ 11,831,211,187	$ 11,785,668,904	$ 10,861,866,130
Funded Ratios			
AVA / AAL	29.74%	29.58%	25.52%
MVA / AAL	28.43%	28.78%	25.45%
CONTRIBUTIONS			
Normal Cost	4.62%	5.37%	4.75%
Amortization of UAAL	287.32%	378.28%	455.93%
Actuarially Determined Contribution Rate	291.94%	383.65%	460.68%
Estimated Contribution Amount	$ 2,728,210,245	$ 3,188,508,363	$ 3,458,283,110

Note: Liability and funded ratio results for 2018 include both the base plan benefit and supplemental benefit.

This report presents the actuarial valuation results of the Teachers' Retirement Fund Pre-1996 Account as of June 30, 2018. This valuation was prepared at the request of the Indiana Public Retirement System.

Please pay particular attention to our actuarial certification letter, where the guidelines employed in the preparation of this report are outlined. We also comment on the sources and reliability of both the data and the actuarial assumptions upon which our findings are based. Those comments are the basis for our certification that this report is complete and accurate to the best of our knowledge and belief.

A summary of the findings which result from this valuation is presented in the previous section. Section 3 describes the assets and investment experience of the plan. Sections 4 and 5 describe how the obligations of the plan are to be met under the actuarial cost method in use. Section 6 provides information required by the Governmental Accounting Standards Board (GASB) for reporting and disclosure under GASB 67 and GASB 68.

This report includes several appendices:

- Appendix A Schedules of valuation data classified by various categories of members.
- Appendix B A summary of the current benefit structure, as determined by the provisions of governing law on June 30, 2018.
- Appendix C A summary of the actuarial methods and assumptions used to estimate liabilities and determine contribution rates.
- Appendix D A glossary of actuarial terms.

In many respects, an actuarial valuation can be thought of as an inventory process. The inventory is taken as of the actuarial valuation date, which for this valuation is June 30, 2018. On that date, the assets available for the payment of benefits are appraised. The assets are compared with the liabilities of the plan, which are generally in excess of assets. The actuarial process then leads to a method of determining the contributions needed by members and the employer in the future to balance the plan assets and liabilities.

Market Value of Assets

The current market value represents the "snapshot" or "cash-out" value of plan assets as of the valuation date. In addition, the market value of assets provides a basis for measuring investment performance from time to time.

Table 1 summarizes the changes in the market value of assets for the last two years. Table 13 (in the GASB section) provides detail regarding the allocation of investments in the trust.

Actuarial Value of Assets

The market value of assets, representing a "cash-out" value of plan assets, may not be the best measure of the plan's ongoing ability to meet its obligations. To arrive at a suitable value of assets for the actuarial valuation, a technique for determining the actuarial value of assets is used which dampens swings in the market value while still indirectly recognizing market values. Under the asset smoothing methodology, the difference between the actual and assumed investment return on the market value of assets is recognized evenly over a five-year period.

Table 2 shows the development of the actuarial value of assets (AVA) as of the valuation date.

TABLE 1

DEVELOPMENT OF MARKET VALUE OF ASSETS

	June 30, 2017	June 30, 2018
1. Market Value of Assets, Beginning of Year	$ 4,787,528,950	$ 4,817,629,523
2. Receipts		
a. Member (Includes Purchased Service) [1]	$ 28,836,181	$ 12,765,451
b. Employer (Includes Purchased Service) [2]	4,524,443	4,168,409
c. Non-Employer Entity Contributions	871,000,000	917,900,000
d. Member Reassignment Transfers	(652,910)	1,428,141
e. Miscellaneous Income	0	228,825
f. Total	$ 903,707,714	$ 936,490,826
3. Expenditures		
a. Benefit Payments	$ 1,253,251,178	$ 1,249,120,312
b. Refund of Contributions	4,993,314	3,403,651
c. Administrative Expense	6,226,019	5,385,350
d. Transfer to Defined Contribution	0	1,205,276,351
e. Miscellaneous Expenditures	0	115,773
f. Total	$ 1,264,470,511	$ 2,463,301,437
4. Investment Return		
a. Investment Income	$ 390,488,141	$ 420,005,967
b. Securities Lending Income	375,229	521,660
c. Total	$ 390,863,370	$ 420,527,627
5. Market Value of Assets, End of Year: (1) + (2f) - (3f) + (4c)	$ 4,817,629,523	$ 3,711,346,539
a. DC Account Balances [3]	$ 1,242,229,627	0
b. Market Value of Assets without DC Balance	$ 3,575,399,896	$ 3,711,346,539
6. Rate of Return on Market Value of Assets, Net of Expenses[4]	8.34%	10.23%

[1] Includes member DC balances.
[2] Includes $9,951 of member service purchases during fiscal year 2017 and $24,517 of member service purchases during fiscal year 2018.
[3] Effective January 1, 2018, DC account balances are deemed a separate defined contribution plan and are no longer included as part of the assets of the plan.
[4] Based on individual fund experience. Assumes cash flows occur at mid-year.

TABLE 2

DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS

		For Plan Year Ending June 30, 2018
1. Market Value, as of June 30, 2017		
a. Market Value, Including DC Account Balances	$	4,817,629,523
b. DC Account Balances[1]		(1,242,229,627)
c. Market Value, Net of DC Account Balance	$	3,575,399,896
2. Receipts [2]	$	940,182,674
3. Expenditures, Net of Administrative Expenses [3]	$	(1,153,489,557)
4. Expected Return on Assets [4]	$	234,140,386
5. Expected Market Value as of June 30, 2018: (1c) + (2) + (3) + (4)	$	3,596,233,399
6. Actual Market Value as of June 30, 2018	$	3,711,346,539
7. Year end 2018 asset gain/(loss): (6) - (5)	$	115,113,140

8. Deferred Investment Gains and Losses

	Year Ended June 30:		Gain/(Loss)	Factor		Deferred Amount
a.	2015	$	(252,177,720)	20%	$	(50,435,544)
b.	2016		(208,900,691)	40%		(83,560,276)
c.	2017		53,214,906	60%		31,928,944
d.	2018		115,113,140	80%		92,090,512
e.	Total				$	(9,976,364)

9. Initial Actuarial Value as of June 30, 2018: (6) - (8e)	$	3,721,322,903
10. Constraining Values		
a. 80% of Market Value: (6) x 0.8	$	2,969,077,231
b. 120% of Market Value: (6) x 1.2	$	4,453,615,847
11. DC Account Balance as of June 30, 2018[1]	$	0
12. Actuarial Value as of June 30, 2018	$	3,721,322,903
13. Actuarial Rate of Return, Net of Expenses [5]		6.27%
14. Actuarial Value of Assets as a Percent of Market Value: (12) / (6)		100.3%

[1] Effective January 1, 2018, DC account balances are deemed a separate defined contribution plan and are no longer included as part of the market value of assets or actuarial value of assets of the Plan.
[2] Includes DC Annuitizations, DC Plan Forfeitures, Employer Contributions, Employee Service Purchases, and Miscellaneous Receipts.
[3] Includes DB Benefit Payments, Member Reassignment Transfers, and Miscellaneous Expenses.
[4] Assumes cash flows occur at mid-year and a discount rate of 6.75%.
[5] Assumes cash flows occur at mid-year.

In the previous section, an actuarial valuation was compared with an inventory process, and an analysis was given of the inventory of assets of the Teachers' Retirement Fund Pre-1996 Account as of the valuation date, June 30, 2018. In this section, the discussion will focus on the commitments (future benefit payments) of the plan, which are referred to as its liabilities.

The liability calculations for the June 30, 2018 Teachers' Retirement Fund Pre-1996 Account valuation are based on census data collected as of June 30, 2017. Standard actuarial techniques are used to adjust these results from June 30, 2017 to June 30, 2018. While these roll-forward techniques are based on the expectation that all actuarial assumptions are met during the intervening year, there will, of course, be many of the assumptions that are not met exactly. In general, this does not materially affect the resulting calculations or conclusions in this report. Should there be a year in which significant events that would affect the results occur, we would make adjustments in the roll-forward methods to compensate.

All liabilities reflect the benefit provisions and actuarial assumptions in place as of June 30, 2018.

Actuarial Accrued Liability

A fundamental principle in financing the liabilities of a retirement program is that the cost of its benefits should be related to the period in which benefits are earned, rather than to the period of benefit distribution. An actuarial cost method is a mathematical technique that allocates the present value of future benefits into annual costs. In order to do this allocation, it is necessary for the funding method to "breakdown" the present value of future benefits into two components:

(1) that which is attributable to the past and

(2) that which is attributable to the future.

Actuarial terminology calls the part attributable to the past the "past service liability" or the "actuarial accrued liability." The portion allocated to the future is known as the present value of future normal costs, with the specific piece of it allocated to the current year being called the "normal cost."

Table 3 contains the calculation of actuarial accrued liability for the Plan under the Entry Age Normal actuarial cost. This amount is split between the base benefit and the COLA benefit. Once permanent COLAs have been granted, the obligation for future payments will also be included.

TABLE 3

ACTUARIAL ACCRUED LIABILITY

As of June 30, 2018	Base Plan	Supplemental Plan *Granted*	Supplemental Plan *Future*	Total
1. Actuarial Accrued Liability				
a. Active & Inactive Members	$ 3,288,693,913	$ 0	$ 133,519,647	$ 3,422,213,560
b. In-pay Members	10,885,874,652	0	275,100,821	11,160,975,473
c. Total	$ 14,174,568,565	$ 0	$ 408,620,468	$ 14,583,189,033
2. Actuarial Value of Assets	$ 3,721,322,903	$ 0	$ 0	$ 3,721,322,903
3. Unfunded Actuarial Accrued Liability: (1c) - (2)	$ 10,453,245,662	$ 0	$ 408,620,468	$ 10,861,866,130
4. Funded Ratio: (2) / (1c)	26.3%	N/A	0.0%	25.5%

TABLE 4

SOLVENCY TEST

	Actuarial Accrued Liabilities (AAL)					Portion of AAL Covered by Assets			
Actuarial Valuation as of June 30	Active Member Contributions	Retirees and Beneficiaries	Active Member (Employer Financed Portion)	Total Actuarial Accrued Liabilities	Actuarial Value of Assets	Active Member Contributions	Retirees and Beneficiaries	Active Member (Employer Financed Portion)	Total Actuarial Accrued Liabilities
2018	$0	$11,160,975	$3,422,214	$14,583,189	$3,721,323	N/A	33.3%	0.0%	25.5%
2017	1,242,230	11,653,674	3,840,865	16,736,769	4,951,100	100.0	31.8%	0.0%	29.6
2016	1,161,803	11,461,481	4,216,916	16,840,200	5,008,989	100.0	33.6%	0.0%	29.7
2015	1,303,468	10,606,053	5,108,225	17,017,746	5,171,639	100.0	36.5%	0.0%	30.4
2014	1,525,192	9,876,539	4,953,485	16,355,216	5,358,351	100.0	38.8%	0.0%	32.8
2013	1,636,978	10,254,953	4,570,448	16,462,379	5,235,104	100.0	35.1%	0.0%	31.8
2012	1,782,353	9,451,792	5,287,870	16,522,015	4,978,107	100.0	33.8%	0.0%	30.1
2011	2,015,580	8,776,916	5,525,908	16,318,404	5,227,402	100.0	36.6%	0.0%	32.0
2010	2,353,715	8,153,240	5,775,111	16,282,066	5,382,410	100.0	37.1%	0.0%	33.1
2009	2,389,886	7,891,346	5,745,861	16,027,093	5,109,086	100.0	34.5%	0.0%	31.9

Note: Dollar amounts are in thousands of dollars. Amounts before 2018 reflect the inclusion of DC balances in both the active member contributions and the assets.

TABLE 5

RECONCILIATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY

		For Year Ending June 30, 2018
1. Unfunded Actuarial Accrued Liability as of June 30, 2017	$	11,785,668,904
2. Normal Cost		44,602,627
3. Actuarially Determined Contribution		(3,188,508,363)
4. Interest		583,319,014
5. Expected Unfunded Actuarial Accrued Liability as of June 30, 2018	$	9,225,082,182
6. Actuarial Value of Asset Changes		
a. Investment Experience (Gain)/Loss	$	17,390,338
b. Contributions Above the Actuarially Determined Contribution	$	2,042,463,221
7. Actuarial Accrued Liability Changes		
a. Actuarial Accrued Liability Experience (Gain)/Loss	$	393,442,929
b. Additional Liability Due to Benefit Changes		0
c. Additional Liability Due to Assumption Changes		(1,077,104,740)
d. Additional Liability Due to Actuarial Firm Change		(148,028,268)
8. Total Experience (Gain)/Loss	$	1,228,163,480
9. Unfunded Actuarial Accrued Liability as of June 30, 2018: (5) + (8)	$	10,453,245,662

Note: For this purpose, COLAs are excluded from consideration as of June 30, 2018.

TABLE 6

ACTUARIAL GAIN/(LOSS)

Liabilities		
1. Actuarial Accrued Liability as of June 30, 2017	$	16,736,769,005
DC Account Balances[1]		1,242,229,627
Actuarial Accrued Liability, Net of DC Account Balance	$	15,494,539,378
2. Normal Cost for Plan Year Ending June 30, 2018		44,602,627
3. Benefit Payments During Plan Year[2]		(1,152,607,698)
4. Service Purchases (employee and employer)		24,517
5. Member Reassignment Transfers		1,428,141
6. New DC Annuitizations		16,301,373
7. Interest at 6.75%		1,010,590,774
8. Change Due to Benefit Changes		0
9. Change Due to Assumption Changes		(1,077,104,740)
10. Change Due to Actuarial Firm Change		(148,028,268)
11. Expected Actuarial Accrued Liability as of June 30, 2018	$	14,189,746,104
12. Actuarial Accrued Liability as of June 30, 2018	$	14,583,189,033
Assets		
13. Actuarial Value of Assets as of June 30, 2017	$	4,951,100,101
DC Account Balances[1]		(1,242,229,627)
Actuarial Value of Assets, Net of DC Account Balance	$	3,708,870,474
14. Receipts During Plan Year		940,182,674
15. Expenditures, Excluding Expenses, During Plan Year		(1,153,489,557)
16. Interest at 6.75%		243,149,650
17. Expected Actuarial Value of Assets as of June 30, 2018	$	3,738,713,241
18. Actuarial Value of Assets as of June 30, 2018	$	3,721,322,903
Experience Gain / (Loss)		
19. Liability Actuarial Experience Gain/(Loss): (11) - (12)	$	(393,442,929)
20. Asset Actuarial Experience Gain/(Loss): (18) - (17)	$	(17,390,338)
21. Total Actuarial Experience Gain/(Loss): (19) + (20)	$	(410,833,267)

[1] Effective January 1, 2018, DC account balances are deemed a separate defined contribution plan and are no longer included as part of the market value of assets or actuarial value of assets of the Plan.
[2] Does not include miscellaneous expenses or benefit overpayments.

TABLE 7

EXPERIENCE GAIN/(LOSS) ANALYSIS BY SOURCE

Liability Sources		Gain/(Loss)
Retirement	$	(15,661,000)
Termination		(27,554,000)
Disability		(463,000)
Mortality		10,476,000
Salary		1,305,000
New Entrants/Rehires		(4,371,000)
Miscellaneous/COLA		(357,175,000)
Total Liability Experience Gain/(Loss)	$	(393,443,000)
as a % of AAL		(2.8%)
Asset Experience Gain/(Loss)	$	(17,390,000)
Net Actuarial Experience Gain/(Loss)	$	(410,833,000)

TABLE 8

PROJECTED BENEFIT PAYMENTS

Plan Year Ending June 30	Benefit Amount
2019	$ 1,206,698,299
2020	1,219,190,281
2021	1,228,053,629
2022	1,211,797,502
2023	1,215,344,237
2024	1,216,159,115
2025	1,214,732,454
2026	1,210,320,760
2027	1,202,616,282
2028	1,191,432,954
2029	1,176,795,005
2030	1,158,933,200
2031	1,137,401,639
2032	1,112,322,925
2033	1,083,549,813
2034	1,051,709,494
2035	1,017,052,322
2036	979,399,201
2037	939,114,384
2038	896,578,042
2039	852,588,576
2040	807,538,740
2041	761,430,272
2042	714,679,719
2043	667,702,247
2044	620,928,033
2045	574,777,106
2046	529,643,642
2047	485,892,229
2048	443,843,267

Note: Payouts reflect nominal payouts for current members, assuming that all future assumptions are met.

The previous two sections were devoted to a discussion of the assets and liabilities of the plan. We now turn to considering how the benefits will be funded. The method used to determine the incidence of the contributions in various years is called the actuarial cost method. Under an actuarial cost method, the contributions required to meet the difference between current assets and current liabilities are allocated each year between two elements: (1) the normal cost rate and (2) the unfunded actuarial accrued liability contribution rate.

The term "fully funded" is often applied to a plan in which contributions at the normal cost rate are sufficient to pay for the benefits of existing employees as well as for those of new employees. More often than not, plans are not fully funded, either because of past benefit improvements that have not been completely funded, contribution levels, or because of actuarial deficiencies that have occurred because experience has not been as favorable as anticipated by the actuarial assumptions. Under these circumstances, an unfunded actuarial accrued liability (UAAL) exists. Likewise, when the actuarial value of assets is greater than the actuarial accrued liability, a surplus exists.

Description of Contribution Components

The Entry Age Normal (EAN) actuarial cost method is used for the valuation. Under that method, the normal cost for each year from entry age to assumed exit age is a constant percentage of the member's year by year projected compensation. The portion of the present value of future benefits not provided by the present value of future normal costs is the actuarial accrued liability. The unfunded actuarial accrued liability/(surplus) represents the difference between the actuarial accrued liability and the actuarial value of assets as of the valuation date. For TRF Pre-’96 purposes, this calculation excludes consideration of future COLAs. The unfunded actuarial accrued liability is calculated each year and reflects experience gains and losses. New amortization bases are funded over 5 years.

Funding for future COLAs is provided by lottery proceeds. This amount is intended to fund the COLAs anticipated to be granted in the next biennium by the start of that biennium.

In general, contributions are computed in accordance with a level percent-of-payroll funding objective. The contribution rate based on the June 30, 2018 actuarial valuation will be used to calculate the actuarially determined employer contribution rate to Teachers’ Retirement Fund Pre-1996 Account for the plan year ending June 30, 2020. As discussed earlier, the series of increasing appropriations is the actual funding mechanism being used to allow TRF Pre-’96 to systematically wind down.

Contribution Summary

In Table 9 the amortization payment related to the unfunded actuarial accrued liability/(surplus), as of June 30, 2018, is developed. The portion of the lottery proceeds needed to fund the assumed COLAs is developed in Table 10. Table 11 develops the actuarial required contribution rate for the Plan. The contribution amount shown in this report are based on the actuarial assumptions and cost methods described in Appendix C. Additionally, in Table 12 the contribution amounts under alternative discount rates are provided to illustrate the sensitivity of the contribution requirements relative to the selection of the investment return assumption.

TABLE 9

SCHEDULE OF AMORTIZATION BASES

Amortization Bases	Original Amount	June 30, 2018 Remaining Payments	Date of Last Payment	Outstanding Balance as of June 30, 2018	Annual Contribution
2016 UAAL Base	11,831,211,187	3	7/1/2021	7,556,371,005	2,685,006,170
2017 UAAL Base	2,022,095,048	4	7/1/2022	1,668,711,177	458,899,566
2018 UAAL Base	1,228,163,480	5	7/1/2023	1,228,163,480	278,721,633
Total				$ 10,453,245,662	$ 3,422,627,369

1. Total UAAL Amortization Payments	$ 3,422,627,369
2. Projected Payroll for FY 2019	$ 750,690,959
3. UAAL Amortization Payment Rate	455.93%
4. Remaining Amortization Period in Years (Weighted) [1]	3.3

[1] The weighted average remaining UAAL amortization period is calculated by weighting the remaining amortization period of each base by the amortization amount of each base.

TABLE 10

DEVELOPMENT OF SUPPLEMENTAL RESERVE FUNDING

Projected COLAs in Next Biennium Beginning July 1, 2021

First Anticipated COLA		
1. Date of COLA commencement		January 1, 2022
2. Rate of COLA		0.4%
3. Value as of July 1, 2021 of COLA	$	40,356,176
Second Anticipated COLA		
4. Date of COLA commencement		January 1, 2023
5. Rate of COLA		0.4%
6. Value as of July 1, 2021 of COLA		37,562,135
7. Total COLA Funding Requirement as of July 1, 2021: (3) + (6)	$	77,918,311

Funding Sources for Projected COLAs

8. Assets as of June 30, 2018 Available for Future COLAs	$	0
9. Expected Earnings through July 1, 2021		0
10. Projected Available Assets at July 1, 2021	$	0
11. Required Additional Funding for Anticipated COLAs: (7) - (10)	$	77,918,311

Minimum Lottery Allocation Amount

12. Annual Payment for FYE 2019, 2021, and 2021	$	23,502,683

TABLE 11

ACTUARIAL REQUIRED CONTRIBUTION RATE

	Base Plan		Supplemental Plan		Total	
1. Projected Payroll for FY 2019	$	750,690,959				
2. Normal Cost Rate as of June 30, 2017		4.75%		0.21%		4.96%
3. Amortization of UAAL as of June 30, 2018						
a. Dollar Amount	$	3,422,627,369			$	3,422,627,369
b. Percent of Projected Pay		455.93%				455.93%
4. Actuarially Determined Contribution Rate: (2) + (3b)		460.68%				460.68%
5. Supplemental Plan Lottery Proceeds			$	23,502,683	$	23,502,683
6. Estimated Actuarially Determined Contribution Amount	$	3,458,283,110	$	23,502,683	$	3,481,785,793

TABLE 12

INVESTMENT RETURN SENSITIVITY

	1.00% Decrease: (5.75%)	0.75% Decrease: (6.00%)	0.50% Decrease: (6.25%)	0.25% Decrease: (6.50%)	Current Assumption: (6.75%)
Funded Status					
Actuarial Accrued Liability	$15,939,578,396	$15,580,436,748	$15,235,104,401	$14,902,901,851	$14,583,189,033
Actuarial Value of Assets	3,721,322,903	3,721,322,903	3,721,322,903	3,721,322,903	3,721,322,903
Unfunded Actuarial Accrued Liability	$12,218,255,493	$11,859,113,845	$11,513,781,498	$11,181,578,948	$10,861,866,130
Funded Ratio	23.3%	23.9%	24.4%	25.0%	25.5%
Actuarially Determined Contribution Amount					
Normal Cost	$50,302,694	$46,638,885	$43,253,868	$40,125,715	$37,234,272
UAAL Amortization	3,781,003,569	3,711,130,214	3,643,635,552	3,578,407,649	3,515,340,805
Actuarially Determined Contribution Amount	$3,831,306,263	$3,757,769,099	$3,686,889,420	$3,618,533,364	$3,552,575,077
Actuarially Determined Contribution Rate	510.37%	500.57%	491.13%	482.03%	473.24%

	0.25% Increase: (7.00%)	0.50% Increase: (7.25%)	0.75% Increase: (7.50%)	1.00% Increase: (7.75%)	1.25% Increase: (8.00%)
Funded Status					
Actuarial Accrued Liability	$14,275,362,707	$13,978,854,049	$13,693,126,415	$13,417,673,267	$13,152,016,245
Actuarial Value of Assets	3,721,322,903	3,721,322,903	3,721,322,903	3,721,322,903	3,721,322,903
Unfunded Actuarial Accrued Liability	$10,554,039,804	$10,257,531,146	$9,971,803,512	$9,696,350,364	$9,430,693,342
Funded Ratio	26.1%	26.6%	27.2%	27.7%	28.3%
Actuarially Determined Contribution Amount					
Normal Cost	$34,561,011	$32,088,895	$29,802,253	$27,686,673	$25,728,889
UAAL Amortization	3,454,335,153	3,395,296,297	3,338,134,967	3,282,766,697	3,229,111,535
Actuarially Determined Contribution Amount	$3,488,896,164	$3,427,385,192	$3,367,937,220	$3,310,453,370	$3,254,840,424
Actuarially Determined Contribution Rate	464.76%	456.56%	448.64%	440.99%	433.58%

Note: Comparisons are based on funding the COLA in the same method as the base benefit, rather than with lottery proceeds. Consequently, these results are for comparative purposes only and will not match the actual results under the funding policy.

GASB NO. 67 AND GASB NO. 68

The Governmental Accounting Standards Board issued Statement No. 67 (GASB 67), "Financial Reporting for Pension Plans" and Statement No. 68 (GASB 68), "Accounting and Financial Reporting for Pensions" in June 2012. The effective date for reporting under GASB 67 for the INPRS Plans was the fiscal year ending June 30, 2014. GASB 68's effective date for employers is the first fiscal year beginning after June 15, 2014.

The sections that follow provide the results of all the required calculations, presented in the order set out in GASB 68 for note disclosure and Required Supplementary Information (RSI). Some of this information was provided by the INPRS for use in this report.

The discount rate used for these disclosures is the assumed return on assets of 6.75%. We have verified that the current assets in conjunction with future contributions made on behalf of current members (including all contributions to fund any past service liability) will be sufficient to make the anticipated benefit payments to be provided to the current members.

To the best of our knowledge, the information contained in this report is complete and accurate. The calculations were performed by qualified actuaries according to generally accepted actuarial principles and practices, as well as in conformity with Actuarial Standards of Practice issued by the Actuarial Standards Board. The calculations are based on the current provisions of the plan, and on actuarial assumptions that are internally consistent and individually reasonable based on the actual experience of the plan. In addition, the calculations were completed in compliance with applicable law and, in our opinion, meet the requirements of GASB 67 and GASB 68.

TABLE 13

STATEMENT OF FIDUCIARY NET POSITION

			For Fiscal Year Ending June 30, 2018
1. Assets			
a. Cash		$	656,685
b. Receivables			
i.	Contributions and Miscellaneous Receivables	$	2,749,280
ii.	Investments Receivable		27,624,520
iii.	Foreign Exchange Contracts Receivable		1,077,013,956
iv.	Interest and Dividends		9,722,117
v.	Receivables Due From Other Funds		0
vi.	Total Receivables	$	1,117,109,873
c. Investments			
i.	Short-Term Investments	$	0
ii.	Pooled Repurchase Agreements		473,114
iii.	Pooled Short-Term Investments		165,854,029
iv.	Pooled Fixed Income		1,262,677,748
v.	Pooled Equity		833,248,722
vi.	Pooled Alternative Investments		1,506,821,248
vii.	Pooled Derivatives		2,993,174
viii.	Pooled Investments		0
ix.	Securities Lending Collateral		40,124,877
x.	Total Investments	$	3,812,192,912
d. Net Capital Assets			0
e. Other Assets			0
f. Total Assets: a + b(vi) + c(x) + d + e		$	4,929,959,470
2. Liabilities			
a. Administrative Payable		$	493,167
b. Retirement Benefits Payable			618,254
c. Investments Payable			62,250,765
d. Foreign Exchange Contracts Payable			1,074,614,844
e. Securities Lending Obligations			40,124,877
f. Securities Sold Under Agreement to Repurchase			38,922,159
g. Due To Other Funds			1,588,865
h. Due to Other Governments			0
i. Total Liabilities: a + b + c + d + e + f + g + h		$	1,218,612,931
3. Fiduciary Net Position Restricted for Pensions: (1)(f) - (2)(i)		**$**	**3,711,346,539**

TABLE 14

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION

For Fiscal Year Ending June 30, 2018			
1. Fiduciary Net Position as of June 30, 2017		**$**	**4,817,629,523**
2. Additions			
a. Contributions			
i.	Member Contributions [1]		12,740,934
ii.	Employer Contributions		4,168,409
iii.	Service Purchases (Employer and Member) [2]		24,517
iv.	Non-Employer Contributing Entity Contributions		917,900,000
v.	Total Contributions	$	934,833,860
b. Investment Income/(Loss)			
i.	Net Appreciation/(Depreciation)	$	384,895,770
ii.	Net Interest and Dividend Income		62,121,786
iii.	Securities Lending Income		638,066
iv.	Other Net Investment Income		236,609
v.	Investment Management Expenses		(25,427,895)
vi.	Direct Investment Expenses		(1,820,303)
vii.	Securities Lending Expenses		(116,406)
viii.	Total Investment Income/(Loss)	$	420,527,627
c. Other Additions			
i.	Member Reassignments		3,106,625
ii.	Miscellaneous Receipts		228,825
iii.	Total Other Additions	$	3,335,450
d. Total Revenue (Additions): a(v) + b(viii) + c(iii)		$	1,358,696,937
3. Deductions			
a. Pension, Survivor and Disability Benefits [3]		$	1,249,120,312
b. Death and Funeral Benefits			0
c. Distributions of Contributions and Interest			3,403,651
d. Administrative Expenses			5,385,350
e. Transfer to Defined Contribution [4]			1,205,276,351
f. Member Reassignments			1,678,484
g. Miscellaneous Expenses		$	115,773
h. Total Expenses (Deductions)		**$**	**2,464,979,921**
4. Net Increase (Decrease) in Fiduciary Net Position: (2)(d) - (3)(h)		**$**	**(1,106,282,984)**
5. Fiduciary Net Position as of June 30, 2018: (1) + (4)			**3,711,346,539**

[1] Includes member DC account contributions through December 31, 2017.
[2] Service purchases paid by employer of $0 and employee of $24,517.
[4] Includes distributions of DC account balances to retired members through December 31, 2017.
[5] Effective January 1, 2018, DC account balances are treated as a separate defined contribution plan.

TABLE 15

SCHEDULE OF CHANGES IN NET PENSION LIABILITY

For Fiscal Year Ending June 30, 2018

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) – (b)
1. Balance at June 30, 2017	$ 16,736,769,005	$ 4,817,629,523	$ 11,919,139,482
Separation of DC Balances [1]	1,242,229,627	1,242,229,627	0
Balance, without DC	$ 15,494,539,378	$ 3,575,399,896	$ 11,919,139,482
2. Changes for the Year:			
Service Cost (SC) [2]	44,602,627		44,602,627
Interest Cost	1,010,564,919		1,010,564,919
Experience (Gains)/Losses	(162,413,866)		(162,413,866)
Assumption Changes	(668,484,272)		(668,484,272)
Plan Amendments	0		0
Benefit Payments [3]	(1,153,373,784)	(1,153,373,784)	0
Service Purchases			
Employer Contributions	0	0	0
Employee Contributions	24,517	24,517	0
Member Reassignments [4]	1,428,141	1,428,141	0
DC Annuitizations	16,301,373	16,301,373	0
Employer Contributions		4,168,409	(4,168,409)
Non-employer Contributions		917,900,000	(917,900,000)
Employee Contributions [5]		131,409	(131,409)
Net Investment Income		354,638,876	(354,638,876)
Administrative Expenses		(5,385,350)	5,385,350
Other		113,052	(113,052)
Net Changes	$ (911,350,345)	$ 135,946,643	$ (1,047,296,988)
3. Balance at June 30, 2018 [1]	$ 14,583,189,033	$ 3,711,346,539	$ 10,871,842,494

[1] Effective January 1, 2018, DC account balances are treated as a separate defined contribution plan.
[2] Service cost provided as of beginning of year. Interest to end of year is included in the interest cost.
[3] Excludes distributions of DC account balances to retired members.
[4] Includes net interfund transfers of employer contributed amounts.
[5] Includes DC plan forfeitures of member contributions. Excludes member DC contributions.

TABLE 16

DEFERRED OUTFLOWS OF RESOURCES

	June 30, 2017	Remaining Period	Recognition	June 30, 2018
1. Liability Experience				
June 30, 2018 Loss	$ 0	1.00	$ 0	$ 0
June 30, 2017 Loss	0	0.00	0	0
June 30, 2016 Loss	0	0.00	0	0
June 30, 2015 Loss	0	0.00	0	0
June 30, 2014 Loss	0	0.00	0	0
2. Assumption Changes				
June 30, 2018 Loss	$ 0	1.00	$ 0	$ 0
June 30, 2017 Loss	0	0.00	0	0
June 30, 2016 Loss	0	0.00	0	0
June 30, 2015 Loss	0	0.00	0	0
June 30, 2014 Loss	0	0.00	0	0
3. Investment Experience				
June 30, 2018 Loss	$ 0	5.00	$ 0	$ 0
June 30, 2017 Loss	0	4.00	0	0
June 30, 2016 Loss	121,268,822	3.00	40,422,940	80,845,882
June 30, 2015 Loss	100,383,074	2.00	50,191,536	50,191,538
June 30, 2014 Loss	0	1.00	0	0
Total Outflows: (1)+(2)+(3)	**$ 221,651,896**		**$ 90,614,476**	**$ 131,037,420**

Information was provided prospectively from June 30, 2013 for GASB No. 68 purposes. Results prior to 2018 were produced by the prior actuary.

In accordance with GASB, the original amortization period for liability experience and assumption changes are amortized over the expected future working lifetime of all members, whereas the investment experience is amortized over five years.

TABLE 17

DEFERRED INFLOWS OF RESOURCES

	June 30, 2017	Remaining Period	Recognition	June 30, 2018
1. Liability Experience				
June 30, 2018 Gain	$ 162,413,866	1.00	$ 162,413,866	$ 0
June 30, 2017 Gain	0	0.00	0	0
June 30, 2016 Gain	0	0.00	0	0
June 30, 2015 Gain	0	0.00	0	0
June 30, 2014 Gain	0	0.00	0	0
2. Assumption Changes				
June 30, 2018 Gain	$ 668,484,272	1.00	$ 668,484,272	$ 0
June 30, 2017 Gain	0	0.00	0	0
June 30, 2016 Gain	0	0.00	0	0
June 30, 2015 Gain	0	0.00	0	0
June 30, 2014 Gain	0	0.00	0	0
3. Investment Experience				
June 30, 2018 Gain	$ 120,680,246	5.00	$ 24,136,050	$ 96,544,196
June 30, 2017 Gain	47,720,843	4.00	11,930,211	35,790,632
June 30, 2016 Gain	0	3.00	0	0
June 30, 2015 Gain	0	2.00	0	0
June 30, 2014 Gain	55,801,887	1.00	55,801,887	0
Total Inflows: (1)+(2)+(3)	**$ 1,055,101,114**		**$ 922,766,286**	**$ 132,334,828**

Information was provided prospectively from June 30, 2013 for GASB No. 68 purposes. Results prior to 2018 were produced by the prior actuary.

In accordance with GASB, the original amortization period for liability experience and assumption changes are amortized over the expected future working lifetime of all members, whereas the investment experience is amortized over five years.

TABLE 18

DEFERRED INFLOWS / OUTFLOWS TO BE RECOGNIZED IN PENSION EXPENSE

Fiscal Year Ending June 30	Deferred Outflows	Deferred Inflows	Net Deferred Outflows/(Inflows)
Current Year:			
2018	$ 90,614,476	$ 922,766,286	$ (832,151,810)
Future Years:			
2019	$ 90,614,478	$ 36,066,261	$ 54,548,217
2020	40,422,942	36,066,261	4,356,681
2021	0	36,066,260	(36,066,260)
2022	0	24,136,046	(24,136,046)
2023	0	0	0
Thereafter	0	0	0

TABLE 19

PENSION EXPENSE UNDER GASB NO. 68

			For Fiscal Year Ending June 30, 2018
1. Service Cost, beginning of year		$	44,602,627
2. Interest Cost, including interest on service cost			1,010,564,919
3. Member Contributions [1]			(131,409)
4. Administrative Expenses			5,385,350
5. Expected Return on Assets [2]			(233,958,630)
6. Plan Amendments			0
7. Recognition of Deferred Inflows / Outflows of Resources Related to:			
a. Liability Experience (Gains) / Losses	(162,413,866)		
b. Assumption Change (Gains) / Losses	(668,484,272)		
c. Investment Experience (Gains) / Losses	(1,253,672)		
d. Total: (7a)+(7b)+(7c)			(832,151,810)
8. Miscellaneous (Income) / Expense			(113,052)
9. Total Collective Pension Expense: (1)+(2)+(3)+(4)+(5)+(6)+(7d)+(8)			(5,802,005)
10. Employer Service Purchases			0
Pension Expense / (Income): (9) + (10)		**$**	**(5,802,005)**

[1] Includes DC plan forfeitures. Excludes member contributions and member service purchases of $24,517.
[2] Cash flows assumed to occur mid-year.

GASB NO. 67 and GASB NO. 68
NOTES TO THE FINANCIAL STATEMENTS

The material presented herein is a subset of the information requested as Notes to the Financial Statements. Required information not provided herein is to be supplied by the plan.

Actuarial Assumptions and Inputs

Significant actuarial assumptions and other inputs used to measure the total pension liability:

Type of Plan	The Teachers' Retirement Fund Pre-1996 Account is a cost-sharing multiple-employer plan for GASB accounting purposes.
Measurement Date	June 30, 2018
Valuation Date	
Assets:	June 30, 2018
Liabilities:	June 30, 2017 – The TPL as of June 30, 2018 was determined based on an actuarial valuation prepared as of June 30, 2017 rolled forward one year to June 30, 2018, using the following key actuarial assumptions and other inputs, such as benefit accruals and actual benefit payments during that time period.
Inflation	2.25%
Future Salary Increases	2.50% - 12.50% based on service
Cost-of-Living Increases	As of June 30, 2018: In lieu of a COLA on January 1, 2019, members in pay were provided a 13th check on October 1, 2018. It is assumed a 13th check would continue for the 2020 and 2021 fiscal years. Thereafter, the following COLAs, compounded annually, were assumed: 0.4% beginning on January 1, 2022 0.5% beginning on January 1, 2034 0.6% beginning on January 1, 2039 As of June 30, 2017: 1.0% compounded annually, beginning January 1, 2020. In lieu of a COLA, members in pay were provided a 13th check on October 1, 2017 and October 1, 2018, which is reflected in the valuation.

Mortality Assumption (Healthy)	RP-2014 (with MP-2014 improvement removed) White Collar mortality tables, with future mortality improvement projected generationally using future mortality improvement inherent in the Social Security Administration's 2014 Trustee report.
Mortality Assumption (Disabled)	RP-2014 (with MP-2014 improvement removed) Disability mortality tables, with future mortality improvement projected generationally using future mortality improvement inherent in the Social Security Administration's 2014 Trustee report.
Experience Study	The most recent comprehensive experience study was completed in April 2015 and was based on member experience between June 30, 2011 and June 30, 2014. The demographic assumptions were updated as needed for the June 30, 2015 actuarial valuation based on the results of the study.
Discount Rate	6.75%

The discount rate is equal to the expected long-term rate of return on plan investments, net of investment expense and including price inflation. There was no change in the discount rate from the prior measurement date.

The plan is funded on a pay-as-you-go basis where the INPRS Board of Trustees has established a funding policy of requesting appropriations from the State in an amount equal to the actuarially determined contribution, which is based on the assumptions and methods selected by the Board for the annual actuarial valuations and projected covered member payroll. The June 30, 2018 actuarial valuation assumes a long-term rate of return on assets of 6.75%, a 5-year level dollar closed method for amortizing the unfunded actuarial accrued liability (since the plan is closed to new entrants and the active population continues to decline this was changed retroactively as of June 30, 2016), and a 5-year smoothing method for recognizing investment gains and losses in the actuarial value of assets.

In the past several years, the Board has followed its current funding policy and the State has complied in its contributions to the plan. While the expected benefit payments are currently greater than the contributions, the State is anticipated to increase their contributions at a steady level of 3% per year until they are fully funding the benefit payments, ensuring the plan maintains it path towards full funding based on the Board’s funding policy. As a result, it is presumed that the projected plan assets will be sufficient to cover the future benefit payments for current members and a detailed projection of plan assets and cash flows has not been prepared.

Discount Rate Sensitivity

	1% Decrease 5.75%	Current Rate 6.75%	1% Increase 7.75%
Net Pension Liability	$12,228,231,857	$10,871,842,494	$9,706,326,728

Classes of Plan Members Covered

The June 30, 2018 valuation was performed using census data provided by INPRS as of June 30, 2017. Standard actuarial techniques were used to roll forward the total pension liability computed as of June 30, 2017 to the June 30, 2018 measurement date using actual benefit payments during that period of time.

Number as of June 30, 2017	
1. Currently Receiving Benefits:	
Retired Members, Disabled Members, and Beneficiaries	53,227
2. Inactive Members Entitled To But Not Yet Receiving Benefits	2,635
3. Inactive Non-vested Members Entitled to a Refund of Member Contributions	0
4. Active Members	11,710
Total Covered Plan Members: (1)+(2)+(3)+(4)	67,572

Money-Weighted Rate of Return

The money-weighted rate of return equals investment performance, net of pension plan investment expense, adjusted for the changing amounts actually invested. For the fiscal year ending June 30, 2018, the money-weighted return on the plan assets is 9.5%.

Components of Net Pension Liability

As of June 30, 2018	
Total Pension Liability	$ 14,583,189,033
Fiduciary Net Position	3,711,346,539
Net Pension Liability	$ 10,871,842,494
Ratio of Fiduciary Net Position to Total Pension Liability	25.45%

GASB NO. 67 AND GASB NO. 68: REQUIRED SUPPLEMENTAL INFORMATION
SCHEDULE OF CHANGES IN THE TOTAL PENSION LIABILITY AND PLAN FIDUCIARY NET POSITION

Fiscal Year Ending June 30	2013	2014	2015	2016	2017	2018
Total Pension Liability						
Total Pension Liability - beginning	$16,522,014,519	$16,463,598,481	$16,355,216,031	$17,017,746,329	$16,840,200,410	$16,736,769,005
DC Account Balances - beginning	1,974,075,962	1,814,049,671	1,715,340,174	1,421,455,452	1,265,128,371	1,242,229,627
DB Pension Liability - beginning	$14,547,938,557	$14,649,548,810	$14,639,875,857	$15,596,290,877	$15,575,072,039	$15,494,539,378
Service Cost (SC), beginning-of-year	81,343,107	68,860,011	57,750,841	46,787,226	43,204,075	44,602,627
Interest Cost, including interest on SC	957,228,337	961,628,534	959,894,924	1,019,403,246	1,016,915,164	1,010,564,919
Experience (Gains)/Losses	(40,718,985)	(70,517,351)	(140,465,814)	(5,793,718)	22,415,814	(162,413,866)
Assumption Changes	0	0	1,033,157,373	0	(61,548,006)	(668,484,272)
Plan Amendments	0	(25,523,806)	0	0	4,212,840	0
DC Annuitizations	86,941,060	93,981,713	143,225,034	35,185,531	30,502,555	16,301,373
Actual Benefit Payments	(988,335,242)	(1,034,563,166)	(1,100,434,461)	(1,118,121,746)	(1,135,661,960)	(1,153,373,784)
Member Reassignments	0	(3,801,799)	3,265,736	1,320,623	(573,143)	1,428,141
Service Purchases	5,151,976	262,911	21,387	0	0	24,517
Net Change in Total Pension Liability	101,610,253	(9,672,953)	956,415,020	(21,218,838)	(80,532,661)	(911,350,345)
DB Pension Liability - ending	$14,649,548,810	$14,639,875,857	$15,596,290,877	$15,575,072,039	$15,494,539,378	$14,583,189,033
DC Account Balances - ending	1,814,049,671	1,715,340,174	1,421,455,452	1,265,128,371	1,242,229,627	0
(a) Total Pension Liability - ending	$16,463,598,481	$16,355,216,031	$17,017,746,329	$16,840,200,410	$16,736,769,005	$14,583,189,033
Plan Fiduciary Net Position						
Plan Fiduciary Net Position – beginning	$5,058,910,388	$5,215,201,405	$5,501,866,875	$5,099,909,470	$4,787,528,950	$4,817,629,523
DC Account Balances - beginning	1,974,075,962	1,814,049,671	1,715,340,174	1,421,455,452	1,265,128,371	1,242,229,627
DB Plan Fiduciary Net Position – beginning	$3,084,834,426	$3,401,151,734	$3,786,526,701	$3,678,454,018	$3,522,400,579	$3,575,399,896
Contributions – employer	9,484,114	6,325,502	5,810,942	5,048,222	4,524,443	4,168,409
Contributions – non-employer	1,003,596,233	825,616,000	845,615,950	887,500,000	871,000,000	917,900,000
Contributions – member	0	5,486	0	131,562	9,951	155,926
Net investment income	212,553,417	504,802,035	953,124	40,767,462	288,850,452	354,638,876
Actual benefit payments	(988,335,491)	(1,034,563,166)	(1,100,434,460)	(1,118,121,745)	(1,135,661,960)	(1,153,373,784)
Net member reassignments	(384)	(3,801,516)	3,265,890	0	0	1,428,141
DC Annuitizations	86,940,500	93,982,450	143,225,000	35,185,500	30,502,450	16,301,373
Administrative expense	(7,926,278)	(7,010,722)	(6,530,516)	(6,564,440)	(6,226,019)	(5,385,350)
Other	5,197	18,898	21,387	0	0	113,052
Net change in Plan Fiduciary Net Position	316,317,308	385,374,967	(108,072,683)	(156,053,439)	52,999,317	135,946,643
DB Plan Fiduciary Net Position – ending	$3,401,151,734	$3,786,526,701	$3,678,454,018	$3,522,400,579	$3,575,399,896	$3,711,346,539
DC Account Balances - ending [1]	1,814,049,671	1,715,340,174	1,421,455,452	1,265,128,371	1,242,229,627	0
(b) Plan Fiduciary Net Position - ending	$5,215,201,405	$5,501,866,875	$5,099,909,470	$4,787,528,950	$4,817,629,523	$3,711,346,539

[1] Effective January 1, 2018, DC account balances are handled by a third party annuity provider and are treated as a separate defined contribution plan.
Information was provided prospectively from June 30, 2013 for GASB No. 67 and GASB No. 68 purposes. Results prior to 2018 were produced by the prior actuary.

GASB NO. 67 AND GASB NO. 68: REQUIRED SUPPLEMENTAL INFORMATION

SCHEDULE OF THE NET PENSION LIABILITY

Fiscal Year Ending June 30	2013	2014	2015	2016	2017	2018
Total Pension Liability	$16,463,598,481	$16,355,216,031	$17,017,746,329	$16,840,200,410	$16,736,769,005	$14,583,189,033
Plan Fiduciary Net Position	5,215,201,405	5,501,866,875	5,099,909,470	4,787,528,950	4,817,629,523	3,711,346,539
Net Pension Liability	$11,248,397,076	$10,853,349,156	$11,917,836,859	$12,052,671,460	$11,919,139,482	$10,871,842,494
Ratio of Plan Fiduciary Net Position to Total Pension Liability	31.68%	33.64%	29.97%	28.43%	28.78%	25.45%
Covered-employee payroll [1]	$1,383,428,000	$1,262,828,000	$1,074,826,991	$989,093,421	$912,684,850	$824,769,947
Net Pension Liability as a percentage of covered-employee payroll	813.08%	859.45%	1108.81%	1218.56%	1305.94%	1318.17%

[1] As provided by INPRS.

Information was provided prospectively from June 30, 2013 for GASB No. 67 and GASB No. 68 purposes. Results prior to 2018 were produced by the prior actuary.

GASB NO. 67 AND GASB NO. 68: REQUIRED SUPPLEMENTAL INFORMATION

SCHEDULE OF EMPLOYER CONTRIBUTIONS

Fiscal Year Ending June 30	2013	2014	2015	2016	2017	2018
Actuarially Determined Contribution [1]	$1,013,079,780	$831,941,502	$851,426,892	$892,548,222	$875,524,443	$922,068,409
Actual employer contributions	$1,013,079,780	$831,941,502	$851,426,892	$892,548,222	$875,524,443	$922,068,409
Annual contribution (deficiency) / excess	$0	$0	$0	$0	$0	$0
Covered-employee payroll [2]	$1,383,428,000	$1,262,828,000	$1,074,826,991	$989,093,421	$912,684,850	$824,769,947
Actual contributions as a percentage of covered-employee payroll	73.23%	65.88%	79.22%	90.24%	95.93%	111.80%

[1] The plan is funded on a pay-as-you-go basis, therefore the actuarially determined contribution was set equal to the state appropriation to fund the plan.
[2] As provided by INPRS.

Information was provided prospectively from June 30, 2013 for GASB No. 67 and GASB No. 68 purposes. Results prior to 2018 were produced by the prior actuary.

GASB NO. 67 AND GASB NO. 68: REQUIRED SUPPLEMENTAL INFORMATION

SCHEDULE OF MONEY-WEIGHTED RETURNS

For Fiscal Year Ending June 30	Money-Weighted Return
2018	9.5%
2017	8.1%
2016	1.0%
2015	0.6%
2014	12.7%
2013	5.1%

Information was provided prospectively from June 30, 2013 for GASB No. 67 and GASB No. 68 purposes. Returns provided by INPRS.

MEMBER DATA RECONCILIATION

	Active Members	Inactive Vested	Inactive Deceased	Disabled	Retired	Beneficiary	Total
1. As of June 30, 2016 [1]	**13,128**	**2,504**	**0**	**596**	**47,362**	**5,282**	**68,872**
2. Data Adjustments							
New Participants	76	0	0	0	0	0	76
Rehires	43	(43)	0	0	0	0	0
Terminations:							
Not Vested	(26)	0	0	0	0	0	(26)
Deferred Vested	(677)	677	0	0	0	0	0
Disability	(7)	(7)	0	14	0	0	0
Retirements	(806)	(511)	0	0	1,317	0	0
Refund / Benefits Ended	(7)	(5)	0	0	0	(11)	(23)
Transfer / Millie Morgan	0	(26)	0	0	0	0	(26)
Deaths:							
With Beneficiary	(4)	(8)	0	(10)	(319)	341	0
Without Beneficiary	(7)	(8)	0	(22)	(860)	(442)	(1,339)
Entitled to Future Pension Benefit	(3)	(1)	4	0	0	0	0
Data Corrections	0	19	40	(21)	32	(32)	38
Net Change	(1,418)	87	44	(39)	170	(144)	(1,300)
3. As of June 30, 2017 [2]	**11,710**	**2,591**	**44**	**557**	**47,532**	**5,138**	**67,572**

[1] Effective January 1, 2018, DC accounts are treated as a separate defined contribution plan, thus the counts provided exclude members with nonvested pension benefits.
[2] Valuation results as of June 30, 2018 were calculated using June 30, 2017 census data, adjusted for certain activity before the valuation date. Headcounts may include multiple records for individuals, such as members with multiple periods of service.

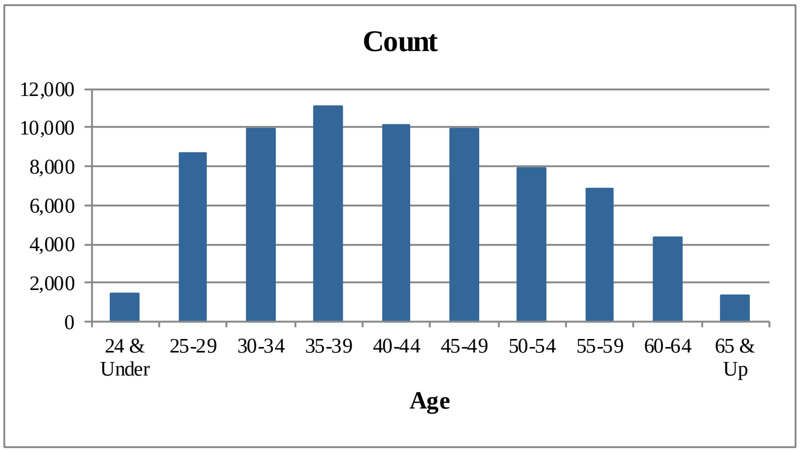
SUMMARY OF MEMBERSHIP DATA

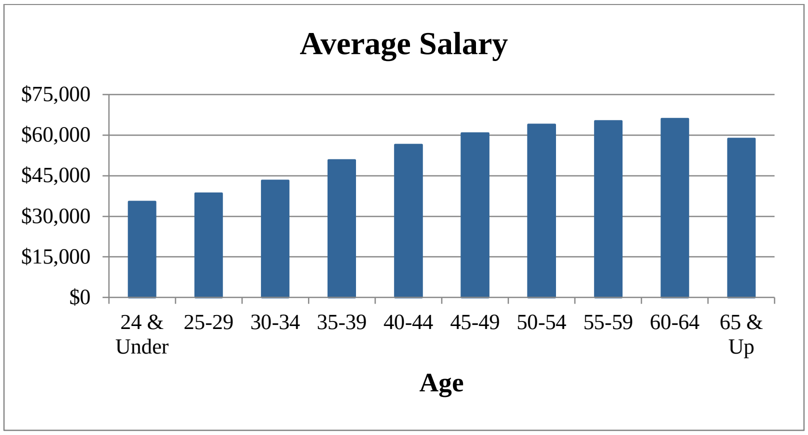
	Combined TRF Plans		Pre -1996 Account
Valuation Date	**June 30, 2017**	**June 30, 2018**	**June 30, 2018**
Date of Membership Data [1]	June 30, 2016	June 30, 2017	June 30, 2017
ACTIVE MEMBERS			
Number of Active Members	71,225	71,706	11,710
Annual Membership Data Salary [2]	$ 3,808,875,005	$ 3,869,532,988	$ 826,104,060
Anticipated Payroll for Next Fiscal Year	$ 4,046,700,000	$ 4,125,634,441	$ 750,690,959
Active Member Averages			
Age	42.6	42.5	55.3
Service	13.5	13.0	28.1
Annual Membership Data Salary	$ 53,477	$ 53,964	$ 70,547
INACTIVE MEMBERS			
Number of Inactive Members	6,756	7,631	2,635
Inactive Member Averages			
Age	52.8	52.9	58.4
Service	16.5	14.8	18.9
RETIREES, DISABLEDS, AND BENEFICIARIES			
Number of Members			
Retired	52,714	53,389	47,532
Disabled	767	736	557
Beneficiaries	5,555	5,391	5,138
Total	59,036	59,516	53,227
Annual Benefits			
Retired	$ N/A	$ 1,140,223,085	$ 1,034,754,181
Disabled	N/A	10,259,964	8,461,653
Beneficiaries	N/A	77,403,509	74,247,401
Total	$ 1,209,139,704	$ 1,227,886,558	$ 1,117,463,235
Annual Benefits			
Pension	$ 1,069,782,192	$ 1,089,268,981	$ 990,250,366
DC Plan Annuities	139,357,512	138,617,577	127,212,869
Total	$ 1,209,139,704	$ 1,227,886,558	$ 1,117,463,235

[1] The valuation results were calculated using the prior year's census data and were adjusted for certain activity during fiscal year.
[2] The 2018 amount for the combined TRF Plans includes 287 records from the 1996 Account with less than a year of service who are missing a salary. Their salaries were defaulted to the average salary of $50,727.

ACTIVE MEMBERS[1]
As of June 30, 2017 for the June 30, 2018 Valuation
Combined TRF Plans

	Count of Members			FY 2017 Annual Membership Data Salary		
Age	Male	Female	Total	Male	Female	Total
24 & Under	265	1,186	1,451	$ 9,531,297	$ 41,726,716	$ 51,258,013
25-29	2,052	6,640	8,692	81,902,535	252,187,843	334,090,378
30-34	2,572	7,384	9,956	121,451,522	308,109,968	429,561,490
35-39	3,023	8,022	11,045	168,881,656	391,580,253	560,461,909
40-44	2,782	7,371	10,153	175,095,295	397,454,209	572,549,504
45-49	2,724	7,252	9,976	184,102,883	421,092,802	605,195,684
50-54	2,075	5,878	7,953	147,544,193	360,135,869	507,680,062
55-59	1,725	5,111	6,836	122,192,501	323,618,907	445,811,409
60-64	1,154	3,175	4,329	82,221,256	203,630,496	285,851,752
65 & Up	352	963	1,315	20,570,393	56,502,393	77,072,787
Total	18,724	52,982	71,706	1,113,493,532	2,756,039,456	3,869,532,988





[1] Includes 287 records from the 1996 Account with less than a year of service who are missing a salary. Their salaries were defaulted to the average salary of $50,727.

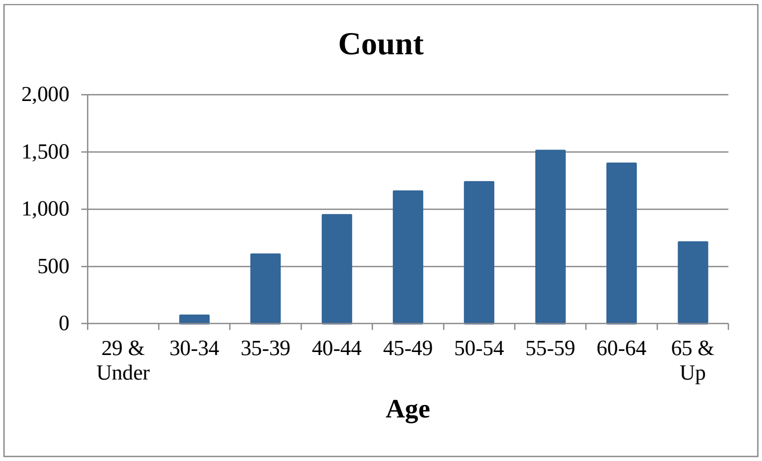
AGE AND SERVICE DISTRIBUTION[1]
As of June 30, 2017 for the June 30, 2018 Valuation
Combined TRF Plans

Age		0-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 34	Total
24 & Under	Number	1,451	0	0	0	0	0	0	0	1,451
	Total Salary	$ 51,258,013	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 51,258,013
	Average Sal.	$ 35,326	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 35,326
25-29	Number	7,137	1,554	1	0	0	0	0	0	8,692
	Total Salary	$ 266,172,062	$ 67,869,093	$ 49,222	$ 0	$ 0	$ 0	$ 0	$ 0	$ 334,090,378
	Average Sal.	$ 37,295	$ 43,674	$ 49,222	$ 0	$ 0	$ 0	$ 0	$ 0	$ 38,437
30-34	Number	3,416	4,950	1,590	0	0	0	0	0	9,956
	Total Salary	$ 124,041,281	$ 222,049,351	$ 83,470,857	$ 0	$ 0	$ 0	$ 0	$ 0	$ 429,561,490
	Average Sal.	$ 36,312	$ 44,858	$ 52,497	$ 0	$ 0	$ 0	$ 0	$ 0	$ 43,146
35-39	Number	2,100	2,326	5,215	1,404	0	0	0	0	11,045
	Total Salary	$ 80,285,500	$ 103,790,542	$ 288,223,455	$ 88,162,412	$ 0	$ 0	$ 0	$ 0	$ 560,461,909
	Average Sal.	$ 38,231	$ 44,622	$ 55,268	$ 62,794	$ 0	$ 0	$ 0	$ 0	$ 50,743
40-44	Number	1,508	1,338	2,079	4,330	896	2	0	0	10,153
	Total Salary	$ 58,774,688	$ 60,783,384	$ 112,964,043	$ 276,253,236	$ 63,653,385	$ 120,767	$ 0	$ 0	$ 572,549,504
	Average Sal.	$ 38,975	$ 45,429	$ 54,336	$ 63,800	$ 71,042	$ 60,384	$ 0	$ 0	$ 56,392
45-49	Number	1,282	1,099	1,468	2,052	3,421	651	3	0	9,976
	Total Salary	$ 49,149,764	$ 51,236,889	$ 79,364,947	$ 130,091,370	$ 245,619,198	$ 49,589,067	$ 144,449	$ 0	$ 605,195,684
	Average Sal.	$ 38,338	$ 46,621	$ 54,063	$ 63,397	$ 71,797	$ 76,174	$ 48,150	$ 0	$ 60,665
50-54	Number	726	722	1,002	1,195	1,351	2,151	806	0	7,953
	Total Salary	$ 27,831,802	$ 32,192,695	$ 54,694,277	$ 74,762,434	$ 95,433,296	$ 161,415,167	$ 61,350,392	$ 0	$ 507,680,062
	Average Sal.	$ 38,336	$ 44,588	$ 54,585	$ 62,563	$ 70,639	$ 75,042	$ 76,117	$ 0	$ 63,835
55-59	Number	453	463	710	894	996	992	1,866	462	6,836
	Total Salary	$ 15,935,499	$ 19,893,430	$ 37,351,409	$ 54,614,594	$ 67,793,413	$ 72,421,847	$ 141,919,151	$ 35,882,065	$ 445,811,409
	Average Sal.	$ 35,178	$ 42,966	$ 52,608	$ 61,090	$ 68,066	$ 73,006	$ 76,055	$ 77,667	$ 65,215
60-64	Number	297	224	383	501	573	507	461	1,383	4,329
	Total Salary	$ 9,164,965	$ 9,004,227	$ 20,038,233	$ 30,501,313	$ 39,434,931	$ 37,145,289	$ 34,141,592	$ 106,421,201	$ 285,851,752
	Average Sal.	$ 30,858	$ 40,197	$ 52,319	$ 60,881	$ 68,822	$ 73,265	$ 74,060	$ 76,950	$ 66,032
65 & Up	Number	171	131	114	148	145	103	102	401	1,315
	Total Salary	$ 3,230,732	$ 4,309,579	$ 4,682,506	$ 8,482,278	$ 9,976,995	$ 7,487,150	$ 7,626,422	$ 31,277,126	$ 77,072,787
	Average Sal.	$ 18,893	$ 32,898	$ 41,075	$ 57,313	$ 68,807	$ 72,691	$ 74,769	$ 77,998	$ 58,610
Total	Number	18,541	12,807	12,562	10,524	7,382	4,406	3,238	2,246	71,706
	Total Salary	$ 685,844,307	$ 571,129,192	$ 680,838,950	$ 662,867,637	$ 521,911,217	$ 328,179,287	$ 245,182,005	$ 173,580,392	$ 3,869,532,988
	Average Sal.	$ 36,991	$ 44,595	$ 54,198	$ 62,986	$ 70,701	$ 74,485	$ 75,720	$ 77,284	$ 53,964

[1] Includes 287 records from the 1996 Account with less than a year of service who are missing a salary. Their salaries were defaulted to the average salary of $50,727.

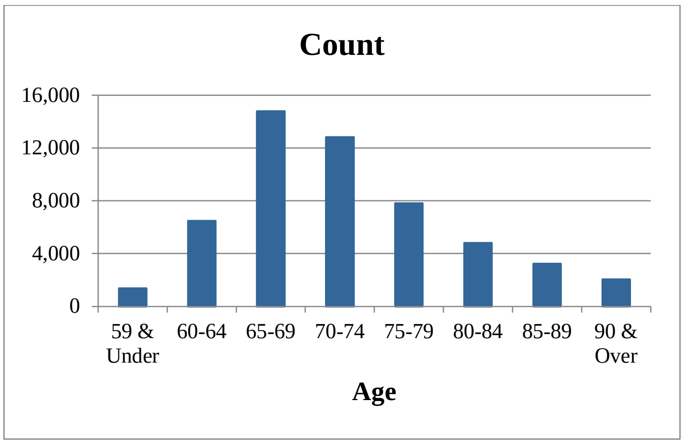
INACTIVE VESTED MEMBERS
As of June 30, 2017 for the June 30, 2018 Valuation
Combined TRF Plans

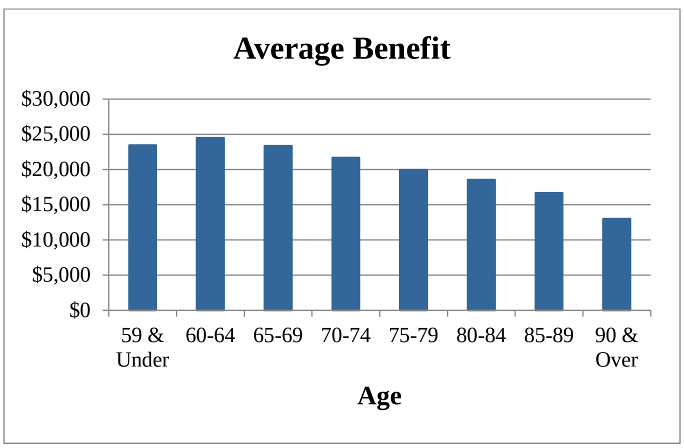
	Count of Members		
Age	Male	Female	Total
29 & Under	0	0	0
30-34	11	59	70
35-39	155	449	604
40-44	263	685	948
45-49	357	798	1,155
50-54	304	932	1,236
55-59	350	1,159	1,509
60-64	297	1,102	1,399
65 & Up	154	556	710
Total	1,891	5,740	7,631



RETIRED MEMBERS
As of June 30, 2017 for the June 30, 2018 Valuation
Combined TRF Plans

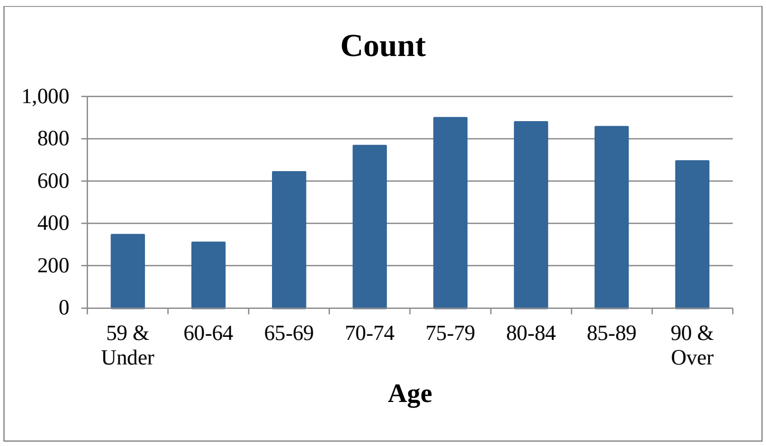
	Count of Members			Annual Benefits		
Age	Male	Female	Total	Male	Female	Total
59 & Under	362	1,009	1,371	$8,839,673	$23,319,365	$32,159,038
60-64	1,728	4,760	6,488	46,103,920	112,729,463	158,833,383
65-69	4,078	10,718	14,796	106,726,210	238,845,428	345,571,638
70-74	4,385	8,449	12,834	107,110,335	171,057,544	278,167,879
75-79	3,006	4,798	7,804	67,968,326	87,776,434	155,744,760
80-84	1,909	2,908	4,817	40,780,596	48,501,465	89,282,061
85-89	1,178	2,044	3,222	23,648,901	30,099,384	53,748,285
90 & Over	631	1,426	2,057	10,623,878	16,092,164	26,716,042
Total	17,277	36,112	53,389	$411,801,839	$728,421,247	$1,140,223,086

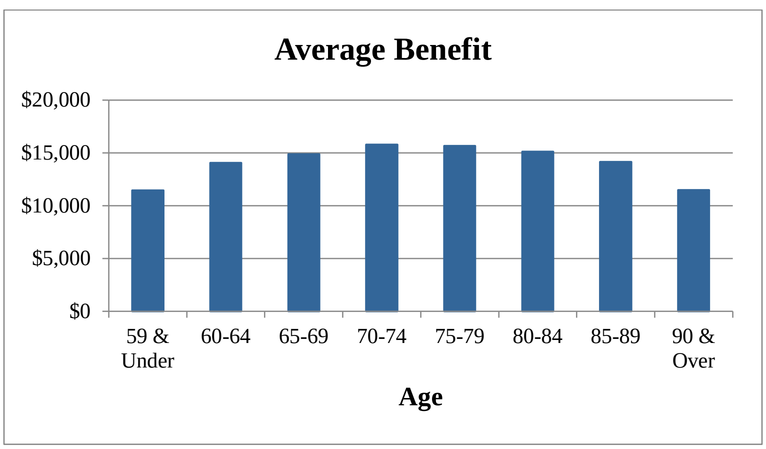




BENEFICIARIES RECEIVING BENEFITS
As of June 30, 2017 for the June 30, 2018 Valuation
Combined TRF Plans

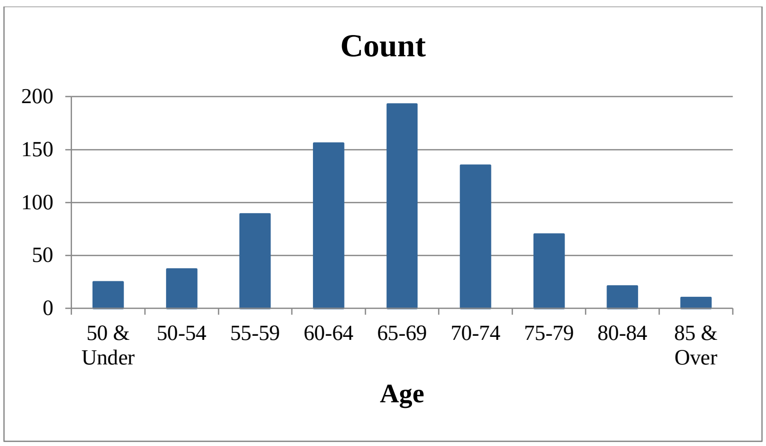
	Count of Members			Annual Benefits		
Age	Male	Female	Total	Male	Female	Total
59 & Under	154	192	346	$ 1,642,941	$ 2,324,874	$ 3,967,815
60-64	135	175	310	1,602,026	2,758,464	4,360,490
65-69	258	385	643	3,500,608	6,061,916	9,562,524
70-74	285	481	766	4,065,326	8,029,224	12,094,550
75-79	229	669	898	2,836,015	11,221,149	14,057,164
80-84	178	700	878	2,147,497	11,117,208	13,264,705
85-89	148	708	856	1,526,283	10,596,110	12,122,393
90 & Over	104	590	694	906,795	7,067,072	7,973,867
Total	1,491	3,900	5,391	$ 18,227,491	$ 59,176,017	$ 77,403,508

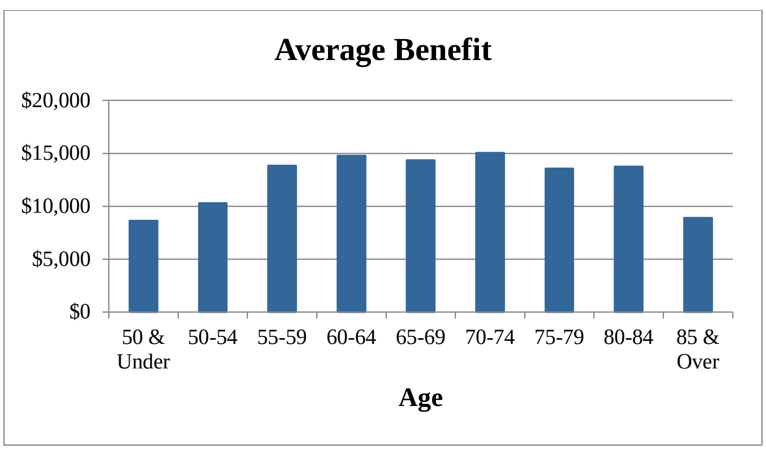




DISABLED MEMBERS
As of June 30, 2017 for the June 30, 2018 Valuation
Combined TRF Plans

	Count of Members			Annual Benefits		
Age	Male	Female	Total	Male	Female	Total
50 & Under	2	23	25	$ 11,493	$ 204,215	$ 215,708
50-54	11	26	37	105,500	275,783	381,284
55-59	16	73	89	270,394	960,602	1,230,996
60-64	29	127	156	456,114	1,846,545	2,302,659
65-69	49	144	193	752,501	2,017,386	2,769,886
70-74	48	87	135	864,110	1,168,087	2,032,197
75-79	19	51	70	296,084	653,722	949,805
80-84	8	13	21	117,579	170,970	288,549
85 & Over	5	5	10	47,554	41,325	88,879
Total	187	549	736	$ 2,921,329	$ 7,338,635	$ 10,259,964





MEMBERS AND BENEFICIARIES RECEIVING BENEFITS
As of June 30, 2017 for the June 30, 2018 Valuation
Pre-1996 Account

Schedule of Average Benefit Payments [1,2]

	Years of Credited Service						
For the Year Ended June 30, 2018	< 10	10 - 14	15 - 19	20 - 24	25 - 29	30 +	Total
Average Monthly Defined Benefit	$169	$309	$550	$910	$1,286	$1,884	$1,550
Average Monthly DC Annuity [3]	$47	$205	$202	$278	$374	$615	$478
Average Final Average Salary [4]	$31,463	$25,025	$39,194	$48,790	$54,160	$59,913	$55,486
Number of Benefit Recipients	167	1,294	3,551	5,675	8,638	33,902	53,227

[1] Calculated using the prior year census data, adjusted for certain activity during the fiscal year.
[2] Members with less than 10 years of service are primarily members receiving a disability benefit.
[3] This represents those retirees who elected to receive their ASA as a supplemental monthly payment in addition to the monthly Defined Benefit payment.
[4] Excludes the 407 in-pay members who are missing a final average salary in the data.

MEMBERS AND BENEFICIARIES RECEIVING BENEFITS
As of June 30, 2017 for the June 30, 2018 Valuation
Pre-1996 Account

Schedule of Benefit Recipients by Type of Benefit Option [1,2]

	Number of Recipients by Benefit Option							
Amount of Monthly Benefit (in dollars)	5-Year Certain & Life	Straight Life	Joint with 100% Survivor Benefits	Joint with Two-Thirds Survivor Benefits	Joint with One-Half Survivor Benefits	Survivors	Disability	Total Benefit Recipients
1 - 500	1,194	568	576	69	129	798	58	3,392
501 - 1,000	1,710	995	1,103	259	390	1,463	128	6,048
1,001 - 1,500	2,934	1,914	2,630	754	1,085	1,299	185	10,801
1,501 - 2,000	3,522	2,929	3,738	1,374	1,633	953	132	14,281
2,001 - 2,500	2,427	2,517	2,676	1,006	1,334	418	40	10,418
2,501 - 3,000	1,090	1,273	1,147	435	580	120	14	4,659
Over 3,000	796	1,012	883	401	449	87	0	3,628
Total	13,673	11,208	12,753	4,298	5,600	5,138	557	53,227

[1] Calculated using the prior year census data, adjusted for certain activity during the fiscal year.
[2] Members who elected Social Security Integration were included in their selected benefit option of either 5-Year Certain & Life, Straight Life, Modified Cash Refund Plus 5-Year Certain & Life, Joint With 100% Survivor Benefits, Joint With Two-Thirds Survivor Benefits, or Joint With One-Half Survivor Benefits.

MEMBERS AND BENEFICIARIES RECEIVING BENEFITS
As of June 30, 2017 for the June 30, 2018 Valuation
Pre-1996 Account

Schedule of Retirees and Beneficiaries [1]

	Added to Rolls		Removed from Rolls		Rolls - End of Year				
	Number	Annual Benefits [2]	Number	Annual Benefits [2]	Number	Total Annual Benefits [2]	Percent Change In Total Annual Benefits	Average Annual Benefit	Percent Change In Average Annual Benefit
2018 [3]	1,483	$33,330	1,496	$20,240	53,227	1,117,463	0.9%	20,994	1.0%
2017 [3]	1,953	47,305	1,288	18,257	53,240	1,106,961	2.3	20,792	1.0
2016 [3]	3,466	95,994	1,105	14,677	52,575	1,082,306	7.8	20,586	3.0
2015 [3]	1,886	50,261	1,017	14,293	50,214	1,003,910	3.1	19,993	1.3
2014 [3]	0	93,605	0	14,524	49,345	973,635	0.0	19,731	0.0
2013	3,422	93,605	1,077	14,524	49,345	973,635	8.4	19,731	3.3
2012	2,541	63,923	962	12,216	47,000	898,006	5.6	19,107	2.0
2011	3,003	77,290	1,060	13,121	45,421	850,711	7.6	18,729	3.0
2010	1,940	47,657	1,010	11,982	43,478	790,773	3.8	18,188	1.5
2009	2,344	56,819	929	11,062	42,548	762,067	8.7	17,911	3.6

[1] Dollar amounts are in thousands except for the average annual benefit.
[2] Annual benefits includes members selecting an annuity for their ASA. End of year annual benefits are not equal to prior end of year annual benefits plus additions less removals due to beneficiary benefit changes, data changes, and COLA increases.
[3] The valuation results were calculated using the prior year census data, adjusted for certain activity during the fiscal year.

Definitions

Fiscal year	Twelve month period ending June 30.
Participation	Any full-time Indiana teachers in a public school corporation, certain INPRS employees, and some employees in charter schools, innovation schools, turnaround schools and public universities who were hired on or before June 30, 1995.
Average annual compensation	Average of highest five years of compensation. Years do not need to be consecutive.
Member contributions	All Fund members are required by state law to contribute 3% of salary contributions to their Annuity Savings Account. These 3% contributions are generally "picked up" by the employer and contributed on a pre-tax basis on behalf of the employee. Extra voluntary contributions by the member are also possible, but on a post-tax basis. At retirement, there are six alternatives for receiving the proceeds of this account, including lump sums, full and partial rollovers, full and partial annuitization of the balance, and deferred distribution.
Minimum pension benefit	The minimum pension benefit paid to a regularly retired member receiving an unreduced pension benefit is $185 per month effective July 1, 2017 per SEA 46.

Eligibility for Benefits

Deferred vested	Ten years of service. Benefit commences at regular or early retirement eligibility.
Disability retirement	
Regular disability benefit	Five years of service.
Disability retirement benefit	Five years of service and determined to be disabled by the Social Security Administration. Annual verification of Social Security disability is required.
Early retirement	Age 50 with 15 years of service.
Normal retirement	Age 65 with ten years of service, or age 60 with 15 years of service, or if age is at least 55 and the sum of age plus credited service is at least 85.
Pre-retirement death	15 years of service or age 65 with 10 years of service. Spouse to whom member had been married for two or more years is automatically eligible, or a dependent may be designated as beneficiary.

Monthly Benefits Payable

Normal retirement	State pension equal to total service times 1.1% of Average Annual Compensation. Beginning July 1, 2017, the minimum pension benefit is $185 per month.
Early retirement	State pension is computed as regular retirement benefit, but reduced for each month between age at early retirement and attainment of age 65. The age reduction factor is calculated as the sum of the following: • 1/10 of 1% for each month from age 60 to 65. • 5/12 of 1% for each month from age at early retirement to 60.
Deferred retirement	Computed as a regular retirement benefit with state pension based on service and Average Annual Compensation at termination.
Disability	
Regular disability benefit	$125 per month plus $5 per month for each year of service credit over five years.
Disability retirement benefit	Computed as a regular retirement benefit using creditable service to the date of disability and without reduction for early retirement. The minimum benefit is $180 per month.
Pre-retirement death	Computed as regular retirement benefit but reduced in accordance with a 100% joint and survivor election.
Cost-of-Living-Adjustments	The employer-funded monthly pension benefits for members in pay status are increased periodically to preserve purchasing power that is diminished due to inflation. Such increases are not guaranteed by Statute and will only be provided by legislative action. A "13th check" was paid to each member in pay status during fiscal year 2018 and 2019. The amount of the 13th check varied based on the years of creditable service the member had earned prior to retirement. Legislation passed in the 2018 legislative session creates a funding mechanism to provide for future benefit increases or 13th checks. Under the law, the INPRS Board may designate a portion of the proceeds from lottery revenues into TRF Pre-'96. Increases or payments are made upon passed legislation subject to the availability of funds to provide the benefit.

Forms of payment	The normal form of benefit payment (Option A-1) is a single life annuity with a five-year certain period. There are five optional forms of payment available, as listed below. Additionally, members retiring between ages 50 and 62 may integrate their pension benefit with their Social Security benefit by choosing Social Security Integration (Option A-4) in conjunction with the normal form or any other optional form selected. Optional forms of payment are calculated on an actuarially equivalent basis.
Additional Forms of Payment	
Option A-2:	Straight Life benefit with no certain period
Option A-3:	Modified Cash Refund Annuity (operates in conjunction with the Annuity Savings Account)
Option B-1:	100% Survivorship
Option B-2:	66 2/3% Survivorship
Option B-3:	50% Survivorship
	State law provides for actuarially-adjusted and re-calculated benefits based on a new optional form election in the event of the death of the member's spouse after retirement.

Changes in Plan Provisions since the Prior Year

Legislation passed in the 2018 legislative session creates a funding mechanism to provide for future benefit increases or 13th checks. Under the law, the INPRS Board may designate a portion of the proceeds from lottery revenues into TRF Pre-'96. Increases or payments are made upon passed legislation subject to the availability of funds to provide the benefit.

ACTUARIAL METHODS

1. Actuarial Cost Method

The actuarial cost method is Entry Age Normal - Level Percent of Payroll.

The normal cost is calculated separately for each active member and is equal to the level percentage of payroll needed as an annual contribution from entry age to retirement age to fund projected benefits. The actuarial accrued liability on any valuation date is the accumulated value of such normal costs from entry age to the valuation date.

For funding, gains and losses occurring from census experience different than assumed, assumption changes, and benefit changes are amortized over a 5-year period with level payments each year. A new gain or loss base is established each year based on the additional gain or loss during that year and that base is amortized over a new 5-year period (gain or loss bases established prior to June 30, 2016 were amortized over 30 years and will continue to be amortized over 30 -year period). However, when the plan is at or above 100% funded (based on Actuarial Value of Assets), the past amortization bases are considered fully amortized and a single amortization base equal to the surplus is amortized over a 30-year period with level payments each year. The purpose of the method is to give a smooth progression of the costs from year to year and, at the same time, provide for an orderly funding of the unfunded liabilities.

For accounting, gains and losses occurring from census experience different than assumed and assumption changes are amortized into expense over the average expected future service of all plan participants. Gains and losses occurring from investment experience different than assumed are amortized into expense over a 5-year period. The effect of plan changes on the plan liability are fully recognized in expense in the year in which they occur.

Member census data as of June 30, 2017 was used in the valuation and adjusted, where appropriate, to reflect changes between June 30, 2017 and June 30, 2018. The valuation results from June 30, 2017 were rolled-forward to June 30, 2018 to reflect benefit accruals during the year less benefits paid.

2. COLA Funding Amount

The COLA Funding Amount is developed by determining the assets needed at the start of the next biennium to fund the post-retirement benefit increases anticipated to be granted in that biennium. This amount is divided by a present value factor to determine the needed annual amount needed.

3. Asset Valuation Method

Actuarial Value of Assets is equal to a five-year smoothing of gains and losses on the Market Value of Assets subject to a 20% corridor.

4. Anticipated Payroll

The Anticipated Payroll for the fiscal year beginning July 1, 2018 is equal to the actual payroll during the year ending June 30, 2018, increased with one year of salary scale.

5. State Appropriations

Based on the assumptions and methods previously described, an actuarially determined contribution amount is computed. The Board considers this information when requesting funds from the State.

Changes in Methods since the Prior Year

None.

ACTUARIAL ASSUMPTIONS

Valuation Date — June 30, 2018

Economic Assumptions

1. Investment return — 6.75% per year, compounded annually (net of administrative and investment expenses)

2. Inflation — 2.25% per year

3. Salary increase

Sample Rates			
Years of Service	Merit & Seniority	Inflation	Total
1	10.25%	2.25%	12.50%
5	2.75%	2.25%	5.00%
10	2.75%	2.25%	5.00%
15	1.50%	2.25%	3.75%
20	0.25%	2.25%	2.50%
25	0.25%	2.25%	2.50%
30	0.25%	2.25%	2.50%
35	0.25%	2.25%	2.50%
40	0.25%	2.25%	2.50%

4. Cost-of-Living Adjustment (COLA) — In lieu of a COLA on January 1, 2019, members in pay were provided a 13th check on October 1, 2018. It is assumed a 13th check would continue for the 2020 and 2021 fiscal years. Thereafter, the following COLAs, compounded annually, were assumed:

0.4% beginning on January 1, 2022
0.5% beginning on January 1, 2034
0.6% beginning on January 1, 2039

Demographic Assumptions

1. Mortality — The mortality assumption includes an appropriate level of conservatism that reflects expected future mortality improvement.

   a. Healthy mortality — RP-2014 (with MP-2014 improvement removed) White Collar Mortality Tables projected on a fully generational basis using the future mortality improvement scale inherent in the mortality projection included in the Social Security Administration's 2014 Trustee Report.

   b. Disabled mortality — RP-2014 (with MP-2014 improvement removed) Disability Mortality Tables projected on a fully generational basis using the future mortality improvement scale inherent in the mortality projection included in the Social Security Administration's 2014 Trustee Report.

2. Disability

Attained Age	Sample Rates
25	0.0001
30	0.0001
35	0.0001
40	0.0001
45	0.0002
50	0.0005
55	0.0009
60	0.0010

3. Retirement

Regular Retirement		Rule of 85 Retirement		Early Retirement	
Age	Probability	Age	Probability	Age	Probability
				50-53	0.020
				54	0.050
		55	0.150	55	0.050
		56	0.150	56	0.050
		57	0.150	57	0.065
		58	0.150	58	0.080
		59	0.200	59	0.120
60	0.200	60	0.200		
61	0.250	61	0.250		
62	0.300	62	0.300		
63	0.350	63	0.350		
64	0.400	64	0.400		
65	0.450	65	0.450		
66	0.450	66	0.450		
67	0.450	67	0.450		
68	0.450	68	0.450		
69	0.450	69	0.450		
70	1.000	70	1.000		

Inactive vested members are assumed to commence their retirement benefit at their earliest normal retirement date.

4. Termination

Years of Service	Service-Based Male	Service-Based Female
0	0.3500	0.3500
1	0.1400	0.1400
2	0.1100	0.1100
3	0.0900	0.0900
4	0.0800	0.0800
5	0.0700	0.0700
6	0.0600	0.0600
7	0.0500	0.0550
8	0.0450	0.0500
9	0.0450	0.0450

Attained Age	Sample Age-Based* Male	Sample Age-Based* Female
30	0.0225	0.0300
35	0.0225	0.0300
40	0.0225	0.0200
45	0.0225	0.0200
50	0.0225	0.0200
55	0.0225	0.0200
60	0.0225	0.0200

*Age-Based rates apply only if 10 or more years of service.

Other Assumptions

1. Form of payment — 100% of members are assumed to elect the normal form of benefit payment (Option A-1), a single life annuity with a five-year certain period.

2. Marital status

   a. Percent married — 100% of members are assumed to be married for purposes of valuing death-in-service benefits.

   b. Spouse's age — Male spouses are assumed to be three years older than female spouses.

3. Pay increase timing — Beginning of (fiscal) year. Payroll amounts stated in the valuation data are amounts projected to be paid during the current year.

4. Decrement timing — Decrements are assumed to occur at the beginning of the year.

5. Actuarial equivalence basis for optional forms of payment — 6.75% interest with a 50% unisex blend of the 2013 IRS combined mortality basis projected to 2018.

6. Miscellaneous adjustments	The Average Annual Compensation was increased by $400 to account for the inclusion of unused sick leave in the calculation of Average Annual Compensation.

Changes in Assumptions since the Prior Year

The COLA assumption was changed due to passage of Senate Enrolled Act No. 373. In lieu of a 1% COLA occurring beginning on January 1, 2020, we now assume that the COLA will be replaced by a 13th check for 2020 and 2021. The COLA assumption thereafter, would be 0.4% beginning on January 1, 2022, changing to 0.5% beginning on January 1, 2034, and ultimately 0.6% beginning on January 1, 2039.

Data Adjustments

Active and retired member data is reported as of June 30. Member census data as of June 30, 2017 was used in the valuation and adjusted, where appropriate, to reflect changes between June 30, 2017 and June 30, 2018. Standard actuarial roll-forward techniques were then used to project the total pension liability computed as of June 30, 2017 to the June 30, 2018 measurement date.

The member census data and the asset information for this valuation were furnished as of June 30, 2018. We did not audit the information provided, but we did review it thoroughly for reasonableness and compared it with the prior year's submission for consistency.

For members reported with no gender, the member is assumed to be female. Additionally, active members missing a salary are assumed to have earned the average salary.

Other Technical Valuation Procedures

Salary increases are assumed to apply to annual amounts.

Decrements are assumed to occur at the beginning of the year. Standard adjustments are made for multiple decrements.

No actuarial liability is included for participants who terminated without being vested prior to the valuation date, except those due a refund of contributions.

Accrued Service	Service credited under the system that was rendered before the date of the actuarial valuation.
Actuarial Assumptions	Estimates of future experience with respect to demographic or economic events. Demographic assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of retirement system benefits between future normal cost and actuarial accrued liability. Sometimes referred to as the "actuarial funding method."
Actuarial Equivalent	A single amount or series of amounts of equal value to another single amount or series of amounts computed on the basis of a given set of actuarial assumptions.
Actuarial Accrued Liability	The difference between the actuarial present value of system benefits and the actuarial value of future normal costs. Also referred to as "accrued liability" or "actuarial liability."
Actuarial Present Value	The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest and by probabilities of payment.
Amortization	Paying off an interest-discounted amount with periodic payments of interest and principal, as opposed to paying off with lump sum payment.
Experience Gain (Loss)	The difference between actual experience and actuarial assumptions anticipated experience during the period between two actuarial valuation dates.
Normal Cost	The actuarial present value of retirement system benefits allocated to the current year by the actuarial cost method.
Unfunded Actuarial Accrued Liability	The difference between actuarial liability and the actuarial value of assets. Sometimes referred to as "unfunded accrued liability" or "unfunded liability". Most retirement systems have unfunded actuarial liability. They arise anytime new benefits are added and anytime an actuarial loss is realized.

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Indiana Public Retirement System

Teachers' Retirement Fund
1996 Account

Actuarial Valuation as of
June 30, 2018

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November 1, 2018

Board of Trustees
Indiana Public Retirement System
1 North Capitol, Suite 001
Indianapolis, IN 46204

Dear Members of the Board:

At your request, we performed an actuarial valuation of the Teachers' Retirement Fund 1996 Account (TRF '96) as of June 30, 2018, for the purpose of estimating the actuarial required contribution for the plan year ending June 30, 2020. The major findings of the valuation are contained in this report, which reflects the benefit and funding provisions in place on June 30, 2018. There was a change in the actuarial assumption from the prior year for the Cost-of-Living-Adjustment (COLA) to reflect future expectations after the passage of Senate Enrolled Act No. 373. Additionally, effective January 1, 2018, the Defined Contribution (DC) account was separated from the defined benefit portion of the TRF '96 trust. This has been reflected as a plan change and recognized immediately for both funding and GASB.

This is the first actuarial valuation report prepared by Cavanaugh Macdonald Consulting, LLC (CMC). As part of our transition work, we replicated the June 30, 2017 actuarial valuation. Results were well within acceptable limits, but as is typical in a takeover situation, there were some differences in the key valuation results. Based on our experience, these differences are neither unusual nor significant. In our replication, we matched the actuarial liability within 2.9% and the normal cost within 0.7%.

In preparing our report, we relied, without audit, on information (some oral and some in writing) supplied by Indiana Public Retirement System (INPRS) staff. This information includes, but is not limited to, statutory provisions, member data and financial information. We did review the data to ensure that it was reasonably consistent and comparable with data from prior years. 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.

We certify that all costs and liabilities for TRF '96 have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the plan and reasonable expectations); and which, in combination, offer the best estimate of anticipated experience affecting the plan. Nevertheless, the emerging costs will vary from those presented in this report to the extent actual experience differs from that projected by the actuarial assumptions.

While the assumptions were generally developed by the prior actuary, we believe they are reasonable. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in Appendix C. Specifically, we presented the existing assumptions with adjustments to the COLA assumption for the 2018 valuations to the Board on February 23, 2018, and the Board subsequently adopted their use. These assumptions are applicable to both the funding and Governmental Accounting Standards Board (GASB) Statement Number 67 valuation calculations, unless otherwise noted.

Future actuarial measurements may differ significantly from the current measurements presented in this report 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.

Actuarial computations presented in this report are for purposes of determining the funding rates for the Plan. The calculations in the enclosed report have been made on a basis consistent with our understanding of the Plan's funding requirements and goals as adopted by the Board. Additionally, we have included actuarial computations for use in preparing certain reporting and disclosure requirements under Governmental Accounting Standards Board Statements Number 67 and Number 68. Determinations for purposes other than meeting these funding and disclosure requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

The Comprehensive Annual Financial Report (CAFR) for INPRS contains several exhibits that disclose the actuarial position of the System. This report provides data and tables for use in the following sections of the CAFR:

Financial Section:
- Note 1 - Tables of Plan Membership
- Note 7 - Net Pension Liability and Actuarial Information - Defined Benefit Plans
- Schedule of Changes in Net Pension Liability and Plan Fiduciary Net Position
- Schedule of Contributions
- Schedule of Notes to Required Supplementary Information

Actuarial Section:
- Summary of INPRS Funded Status (Included in the Executive Summary)
- Historical Summary of Actuarial Valuation Results by Retirement Plan
- Summary of Actuarial Assumptions, Methods and Plan Provisions
- Analysis of Financial Experience (Included in the Unfunded Actuarial Accrued Liability Reconciliation)
- Solvency Test
- Schedule of Active Member Valuation Data
- Schedule of Retirants and Beneficiaries

Statistical Section:
- Membership Data Summary
- Ratio of Active Members to Annuitants
- Schedule of Benefit Recipients by Type of Benefit Option
- Schedule of Average Benefit Payments

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

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. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

The calculations were completed in compliance with applicable law and the calculations for GASB disclosure, in our opinion, meet the requirements of GASB 67 and GASB 68. We are available to answer any questions on the material contained in the report, or to provide explanations or further details as may be appropriate.

We respectfully submit the following report and look forward to discussing it with you.

Sincerely,

Brent A. Banister

Patrice Beckham

Brent A. Banister Ph.D., FSA, EA, MAAA, FCA
Chief Actuary

Patrice A. Beckham, FSA, EA, FCA, MAAA
Principal and Consulting Actuary

Sections	**Page**

This report presents the results of the June 30, 2018 actuarial valuation of the Teachers' Retirement Fund 1996 Account (TRF '96). The primary purposes of performing this actuarial valuation are to:

- Determine the level of contributions for the plan year ending June 30, 2020 that will be sufficient to meet the funding policy set out by the Board to comply with Indiana statutes.
- Disclose asset and liability measurements as well as the current funded status of the plan on the valuation date.
- Compare actual and expected experience under the plan during the plan year ending June 30, 2018.
- Analyze and report on trends in plan contributions, assets and liabilities over the past several years.

VALUATION RESULTS

There are three significant changes from the prior year reflected in this report. This is the first actuarial valuation report prepared by Cavanaugh Macdonald Consulting, LLC (CMC). Second, during this past year, the Defined Contribution portion of the Plan was transferred to a separate trust, removing it from any prospective consideration in this valuation. Finally, legislation was passed to change how post-retirement benefit increases are funded.

As part of our transition work, we replicated the June 30, 2017 actuarial valuation. For the most direct comparison of replication results, we compared measurements as of the date the census data was collected (June 30, 2016). Note that while these measures were used in the roll forward to obtain June 30, 2017 valuation results, these specific measures are not shown in any valuation report. Results were well within acceptable limits, but as is typical in a takeover situation, there were some differences in the key valuation results. Based on our experience, these differences are neither unusual nor significant. A summary of the key actuarial measurements in the replication results is shown in the following table:

	June 30, 2017 Valuation Results		
	CMC	Nyhart	CMC/Nyhart
Present Value of Future Benefits	$6,786,323,420	$6,959,076,908	97.5%
Actuarial Accrued Liability	4,959,868,401	5,109,330,599	97.1%
Normal Cost	169,781,892	171,001,203	99.3%

It should be noted that while the key liability numbers were a very close match, some items reported in the valuation, such as the Unfunded Actuarial Accrued Liability (UAAL), are derived from calculations of these fundamental measures and may vary proportionately more than the underlying liability measures.

As had been anticipated from past legislation, the Defined Contribution (DC) assets were moved from the TRF '96 trust fund to a separate trust. These funds will now remain separate from the Defined Benefit (DB) assets and benefit obligations being valued in this report. In the future, when a member retires and annuitizes some or all that member's DC balance, the annuitization will take place directly with an insurance company, and no additional retirement liability will be assumed by the DB plan. As a result of this change, comparisons between the results of the 2018 and 2017 valuations will be affected.

Further changes occurred as a result of Senate Enrolled Act No. 373, which changed the funding of future post-retirement benefit increases. Under the law, the Board may designate a portion of the employer contribution rate (up to 1%) to be directed into a sub-account of the trust fund. In certain cases, proceeds from lottery revenues could also be added, although this provision is not currently anticipated to be used for TRF '96. As part of the biennial budget process, the Legislature will have the option to provide for benefit increases, either permanently or as a one-time additional check, that will be paid from the accumulated assets of the sub-account. As a consequence of this legislative change, the Board adopted a new assumption for future Cost-of-Living Adjustments (COLAs), effective with this valuation. This new assumption is based on an anticipated 0.4% permanent COLA being granted each January 1 from 2022 to 2033, followed by a 0.5% COLA from 2034 to 2038, and then 0.6% in 2039 and beyond. The prior assumption was that a 1.0% COLA would be granted each year. Further, the development of the actuarially determined contribution rate has been modified. Separate rates are developed for both the "base" (no COLA) benefit as well as a "surcharge" for the future COLA benefits. Under Board policy, the total employer contribution rate will be adjusted once the total funded ratio (the base and COLA benefits combined) reaches 105%. Further details are shown in the report.

The actuarial valuation results provide a "snapshot" view of the plan's financial condition on June 30, 2018. The plan's UAAL changed from $500 million last year to $85 million this year and the funded ratio increased from 93% to 98%. The most substantial factor in this change was a result of the new COLA methodology. The effect of changing the COLA assumption was a reduction in actuarial accrued liability of $285 million.

A summary of the key results from the June 30, 2018 actuarial valuation is shown in the following table. Further detail on the valuation results can be found in the following sections of this Executive Summary.

Valuation Results	June 30, 2017	June 30, 2018
Unfunded Actuarial Accrued Liability	$ 500,103,355	$ 84,781,574
Funded Ratio (Actuarial Assets)	92.77%	98.48%
Normal Cost	5.68%	5.06%
UAAL Amortization	1.26%	(0.49%)
Actuarially Determined Contribution Rate	6.94%	4.57%
Surcharge	0.00%	0.14%
Total Contribution Rate	6.94%	4.71%

Numerous components, which are examined in the following discussion, contributed to the change in the plan's assets, liabilities, and actuarial determined contribution rate between June 30, 2017 and June 30, 2018.

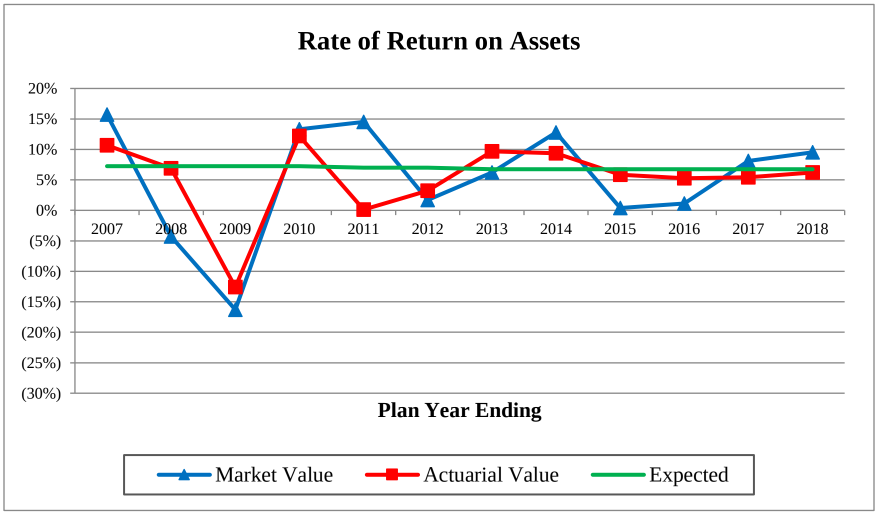
ASSETS

As of June 30, 2018, the plan had net assets of $5.452 billion, when measured on a market value basis. This was an increase of $578 million from the prior year when the DC assets are not considered.

The market value of assets is not used directly in the calculation of the unfunded actuarial accrued liability and the actuarial required contribution rate. An asset valuation method, which smoothes the effect of market fluctuations, is applied to determine the value of assets used in the valuation. The resulting amount is called the actuarial value of assets. In this year's valuation, the actuarial value of assets is $5.478 billion, an increase of $442 million from the prior year when the DC assets are not considered. The components of change in the asset values are shown in the following table:

		Market Value		Actuarial Value
Net Assets, June 30, 2017	$	6,252,040,308	$	6,414,133,686
- Removal of DC Balances	-	1,378,142,685	-	1,378,142,685
- Receipts	+	248,354,041	+	248,354,041
- Expenditures, Net of Administrative Expenses	-	122,399,006	-	122,399,006
- Net Investment Income	+	452,499,049	+	316,536,084
Net Assets, June 30, 2018	$	5,452,351,707	$	5,478,482,120
Rate of Return, Net of Expenses		9.5%		6.2%

The rate of return on the actuarial value of assets was 6.2%, which was lower than the 6.75% investment return assumption applicable for the year ended June 30, 2018. As a result, there was an experience loss on assets of $28 million. The investment return on the market value of assets for FY 2018 of 9.5% resulted in a change in the deferred investment experience from a net deferred investment loss of $162 million in last year's valuation to $26 million in the current valuation. See Table 1 and Table 2 of this report for detailed information on the market and actuarial value of assets.



The rate of return of the actuarial value of assets has been less volatile than the market value return, illustrating the benefits of using an asset smoothing method.

LIABILITIES

The actuarial accrued liability is that portion of the present value of future benefits that is allocated to past service. The remaining portion will be paid by future normal costs. The difference between this liability and the actuarial value of assets as of the valuation date is called the unfunded actuarial accrued liability (UAAL). The dollar amount of unfunded actuarial accrued liability is reduced if the contributions to the plan exceed the normal cost for the year plus interest on the prior year's UAAL.

The unfunded actuarial accrued liability, including expected future COLAs, is shown as of June 30, 2018 in the following table:

	Market Value	Actuarial Value
Actuarial Accrued Liability	$ 5,563,263,694	$ 5,563,263,694
Value of Assets	5,452,351,707	5,478,482,120
Unfunded Actuarial Accrued Liability	$ 110,911,987	$ 84,781,574
Funded Ratio	98.01%	98.48%

See Table 3 of this report for the development of the unfunded actuarial accrued liability.

The net change in the total UAAL from June 30, 2017 to June 30, 2018 was a decrease of $415 million. Virtually all of this change was attributable to reflecting the new COLA funding legislation. Actuarial liability gains from granting a 13th check in place of a 1% COLA (the previous assumption) and contributions in excess of the actuarial rate contributed as well, offsetting a loss on the actuarial value of assets and retirement experience. The components of the change in the base UAAL are quantified in Table 5 of this report. See Table 6 and Table 7 of this report for a breakdown of the components of experience gains/losses for greater detail.

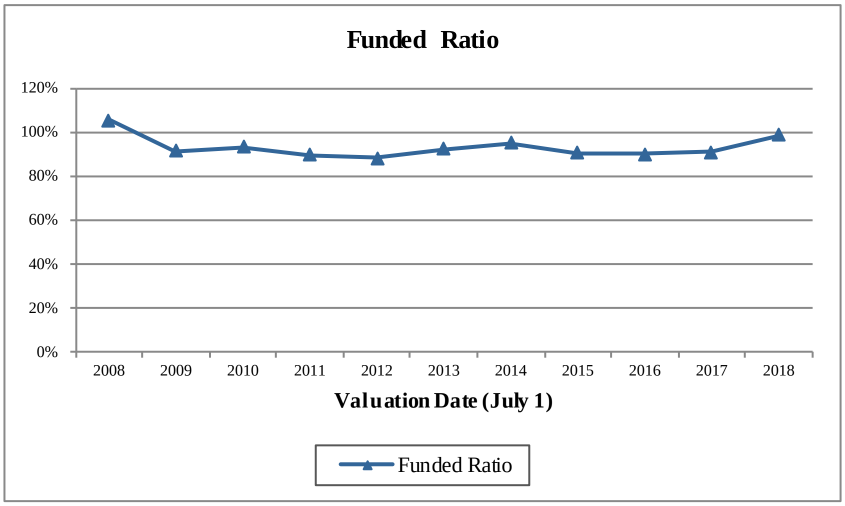
An evaluation of the UAAL on a pure dollar basis may not provide a complete analysis since only the difference between the assets and liabilities (which are both large numbers) is reflected. Another way to evaluate the UAAL and the progress made in its funding is to track the funded ratio, the ratio of the actuarial value of assets to the actuarial accrued liability. The funded status information, which is based on the actuarial value of assets, is shown below (in millions).

	6/30/2014	6/30/2015	6/30/2016	6/30/2017	6/30/2018
Funded Ratio	95.1%	90.6%	89.8%	91.0%	98.5%
UAAL (in millions)	$202	$445	$526	$500	$85

Note: Results before 2018 restated to exclude the DC assets in the funded ratio calculation.

Note that the funded ratio does not indicate whether or not the plan assets are sufficient to settle benefits earned to date. The funded ratio, by itself, also may not be indicative of future funding requirements. In addition, if the funded ratios were shown using the market value of assets, the results would differ.

The funded ratio over a longer period of years is shown in the following graph. The Plan's funded status has been holding steady just below 100% funded for several years.



Note: Funded ratios exclude DC account balances

ACTUARIALLY DETERMINED CONTRIBUTION RATE

The Plan's actuarially determined contribution rate consists of two components:

- A "normal cost" for the portion of projected liabilities allocated by the actuarial cost method to service of members during the year following the valuation date.
- An "unfunded actuarial accrued liability contribution" for the excess of the portion of projected liabilities allocated to service to date over the actuarial value of assets.

The UAAL contribution rate is determined by calculating the amortization payment on the UAAL as a level dollar amount over 20 years for each new amortization base. Because the COLA portion of the benefits are funded through the surcharge, this portion of the benefit only considers the base benefit without any COLA. Whenever the Plan exceeds 100% funded on a combined (base benefits plus future assumed COLAs), all prior amortization bases are eliminated and the negative UAAL (or "surplus") is used to reduce the normal cost over a rolling 30-year period.

In additional to the components above that are designed to fund the guaranteed base benefit, the Board is responsible for determining the surcharge to fund future COLAs and/or 13th checks. Because there are five plans that must, by law, provide the same COLA or 13th check each year, the funding strategy needs to consider the overall funding needs as well as the specific plan. The long-term assumption is that a COLA of 0.4% will be granted starting in 2022, 0.5% starting in 2034, and then 0.6% in 2039 and beyond. Considering the biennial budgeting cycle in Indiana, the near-term goal is to accumulate funds by June 30, 2021 to fund the two COLAs in the following biennium (January, 2022 and January, 2023). Because the surcharge will begin being collected January 1, 2019, this allows 2½ years to collect the needed funds. Under this approach, the recommended surcharge rate for TRF '96 will be 0.14%. See Table 10 for further details.

The total employer rate is the sum of the contributions to the base fund plus the surcharge. The total employer contribution rate is lowered part way toward the normal cost rate when the funded ratio is over 105% funded, and then ultimately reduced to the normal cost rate should the plan reach 120% funded. The Board could decide, however, to set the rate higher in order to provide a sufficient surcharge for the COLA funding while preserving the base funding.

See Table 11 of this report for the detailed development of the contribution rates which are summarized in the following table:

	June 30, 2017	June 30, 2018
Normal Cost	5.68%	5.06%
UAAL Amortization	1.26%	(0.49%)
Total Recommended Contribution	6.94%	4.57%
Surcharge	0.00%	0.14%
Total Contribution Rate	6.94%	4.71%

The actuarial required contribution, determined this year based on the snapshot of the plan taken on the valuation date of June 30, 2018, will change each year as the deferred investment experience is recognized and other experience (both investment and demographic) impacts the plan. Therefore, it is expected to change each year.

SUMMARY OF PRINCIPAL RESULTS

	June 30, 2016	June 30, 2017	June 30, 2018
MEMBERSHIP			
Active Members	55,265	58,097	59,996
Retired Members and Beneficiaries	4,977	5,796	6,289
Inactive Vested Members	4,335	4,252	4,996
Total Members	64,577	68,145	71,281
Projected Annual Salaries of Active Members	$ 3,127,400,000	$ 3,215,600,000	$ 3,374,943,482
Annual Retirement Payments for Retired Members, Disabled Members and Beneficiaries	$ 91,159,800	$ 102,178,272	$ 110,423,323
ASSETS AND LIABILITIES			
Net Assets			
Market Value of Assets (MVA)	$ 5,611,229,694	$ 6,252,040,308	$ 5,452,351,707
Actuarial Value of Assets (AVA)	5,865,729,417	6,414,133,686	5,478,482,120
Actuarial Accrued Liability (AAL)	6,391,750,065	6,914,237,041	5,563,263,694
Unfunded Actuarial Accrued Liability (UAAL): AAL - AVA	$ 526,020,648	$ 500,103,355	$ 84,781,574
Funded Ratios			
AVA / AAL	91.77%	92.77%	98.48%
MVA / AAL	87.79%	90.42%	98.01%
CONTRIBUTIONS			
Normal Cost	5.39%	5.68%	5.06%
Amortization of UAAL	1.34%	1.26%	(0.49%)
Actuarially Determined Contribution Rate	6.73%	6.94%	4.57%
Surcharge	0.00%	0.00%	0.14%
Total Contribution Rate	6.73%	6.94%	4.71%

Note: Liability and funded ratio results for 2018 include both the base plan benefit and the supplemental benefit.

This report presents the actuarial valuation results of the Teachers' Retirement Fund 1996 Account as of June 30, 2018. This valuation was prepared at the request of the Indiana Public Retirement System.

Please pay particular attention to our actuarial certification letter, where the guidelines employed in the preparation of this report are outlined. We also comment on the sources and reliability of both the data and the actuarial assumptions upon which our findings are based. Those comments are the basis for our certification that this report is complete and accurate to the best of our knowledge and belief.

A summary of the findings which result from this valuation is presented in the previous section. Section 3 describes the assets and investment experience of the plan. Sections 4 and 5 describe how the obligations of the plan are to be met under the actuarial cost method in use. Section 6 provides information required by the Governmental Accounting Standards Board (GASB) for reporting and disclosure under GASB 67 and GASB 68.

This report includes several appendices:

- Appendix A — Schedules of valuation data classified by various categories of members.
- Appendix B — A summary of the current benefit structure, as determined by the provisions of governing law on June 30, 2018.
- Appendix C — A summary of the actuarial methods and assumptions used to estimate liabilities and determine contribution rates.
- Appendix D — A glossary of actuarial terms.

In many respects, an actuarial valuation can be thought of as an inventory process. The inventory is taken as of the actuarial valuation date, which for this valuation is June 30, 2018. On that date, the assets available for the payment of benefits are appraised. The assets are compared with the liabilities of the plan, which are generally in excess of assets. The actuarial process then leads to a method of determining the contributions needed by members and the employer in the future to balance the plan assets and liabilities.

Market Value of Assets

The current market value represents the "snapshot" or "cash-out" value of plan assets as of the valuation date. In addition, the market value of assets provides a basis for measuring investment performance from time to time.

Table 1 summarizes the changes in the market value of assets for the last two years. Table 13 (in the GASB section) provides detail regarding the allocation of investments in the trust.

Actuarial Value of Assets

The market value of assets, representing a "cash-out" value of plan assets, may not be the best measure of the plan's ongoing ability to meet its obligations. To arrive at a suitable value of assets for the actuarial valuation, a technique for determining the actuarial value of assets is used which dampens swings in the market value while still indirectly recognizing market values. Under the asset smoothing methodology, the difference between the actual and assumed investment return on the market value of assets is recognized evenly over a five-year period.

Table 2 shows the development of the actuarial value of assets (AVA) as of the valuation date.

TABLE 1

DEVELOPMENT OF MARKET VALUE OF ASSETS

	June 30, 2017	June 30, 2018
1. Market Value of Assets, Beginning of Year	$ 5,611,229,694	$ 6,252,040,308
2. Receipts		
a. Member (Includes Purchased Service) [1]	$ 92,837,951	$ 47,175,667
b. Employer (Includes Purchased Service) [2]	227,206,663	235,819,031
c. Member Reassignment Transfers	5,150,436	5,602,016
d. Miscellaneous Income	0	299,365
e. Total	$ 325,195,050	$ 288,896,079
3. Expenditures		
a. Benefit Payments	$ 132,591,893	$ 145,482,849
b. Refund of Contributions	11,133,314	5,135,388
c. Administrative Expense	5,552,446	5,208,400
d. Transfer to Defined Contribution	0	1,469,542,403
e. Miscellaneous Expenditures	0	159,215
f. Total	$ 149,277,653	$ 1,625,528,255
4. Investment Return		
a. Investment Income	$ 464,435,231	$ 536,244,823
b. Securities Lending Income	457,986	698,752
c. Total	$ 464,893,217	$ 536,943,575
5. Market Value of Assets, End of Year: (1) + (2e) - (3f) + (4c)	$ 6,252,040,308	$ 5,452,351,707
a. DC Account Balances [3]	$ 1,378,142,685	$ 0
b. Market Value of Assets without DC Balance	$ 4,873,897,623	$ 5,452,351,707
6. Rate of Return on Market Value of Assets, Net of Expenses[4]	8.34%	9.52%

[1] Includes $57,709 of member service purchases during fiscal year 2017 and $20,985 of member service purchases during fiscal year 2018.
[2] Includes $0 of employer service purchases during fiscal year 2017 and $143,792 of employer service purchases during fiscal year 2018.
[3] Effective January 1, 2018, DC account balances are deemed a separate defined contribution plan and are no longer included as part of the assets of the Plan.
[4] Based on individual fund experience. Assumes cash flows occur at mid-year.

TABLE 2

DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS

		For Plan Year Ending June 30, 2018
1. Market Value, as of June 30, 2017		
a. Market Value, Including DC Account Balances	$	6,252,040,308
b. DC Account Balances[1]		1,378,142,685
c. Market Value, Net of DC Account Balance	$	4,873,897,623
2. Receipts [2]	$	248,354,041
3. Expenditures, Net of Administrative Expenses [3]	$	(122,399,006)
4. Expected Return on Assets [4]	$	333,239,072
5. Expected Market Value as of June 30, 2018: (1c) + (2) + (3) + (4)	$	5,333,091,730
6. Actual Market Value as of June 30, 2018	$	5,452,351,707
7. Year end 2018 asset gain/(loss): (6) - (5)	$	119,259,977

8. Deferred Investment Gains and Losses

	Year Ended June 30:		Gain/(Loss)	Factor		Deferred Amount
a.	2015	$	(288,494,543)	20%	$	(57,698,909)
b.	2016		(232,260,573)	40%		(92,904,229)
c.	2017		48,441,238	60%		29,064,743
d.	2018		119,259,977	80%		95,407,982
e.	Total				$	(26,130,413)

9. Initial Actuarial Value as of June 30, 2018: (6) - (8e)	$	5,478,482,120
10. Constraining Values		
a. 80% of Market Value: (6) x 0.8	$	4,361,881,366
b. 120% of Market Value: (6) x 1.2	$	6,542,822,048
11. DC Account Balance as of June 30, 2018[1]	$	0
12. Actuarial Value as of June 30, 2018	$	5,478,482,120
13. Actuarial Rate of Return, Net of Expenses [5]		6.21%
14. Actuarial Value of Assets as a Percent of Market Value: (12) / (6)		100.5%

[1] Effective January 1, 2018, DC account balances are deemed a separate defined contribution plan and are no longer included as part of the market value of assets or actuarial value of assets of the Plan.
[2] Includes DC Annuitizations, DC Plan Forfeitures, Employer Contributions and Service Purchases, Employee Service Purchases, and Miscellaneous Receipts.
[3] Includes DB Benefit Payments, Member Reassignment Transfers, and Miscellaneous Expenses.
[4] Assumes cash flows occur at mid-year and a discount rate of 6.75%.
[5] Assumes cash flows occur at mid-year.

In the previous section, an actuarial valuation was compared with an inventory process, and an analysis was given of the inventory of assets of the Teachers' Retirement Fund 1996 Account as of the valuation date, June 30, 2018. In this section, the discussion will focus on the commitments (future benefit payments) of the plan, which are referred to as its liabilities.

The liability calculations for the June 30, 2018 Teachers' Retirement Fund 1996 Account valuation are based on census data collected as of June 30, 2017. Standard actuarial techniques are used to adjust these results from June 30, 2017 to June 30, 2018. While these roll-forward techniques are based on all actuarial assumptions being met during the intervening year, there will, of course, be many of the assumptions that will not be met exactly. In general, this does not materially affect the resulting calculations or conclusions in this report. Should there be a year in which significant events occur that would affect the results, we adjustments in the roll-forward methods would be made to appropriately reflect the events.

All liabilities reflect the benefit provisions and actuarial assumptions in place as of June 30, 2018.

Actuarial Accrued Liability

A fundamental principle in financing the liabilities of a retirement program is that the cost of its benefits should be related to the period in which benefits are earned, rather than to the period of benefit distribution. An actuarial cost method is a mathematical technique that allocates the present value of future benefits into annual costs. In order to do this allocation, it is necessary for the funding method to "breakdown" the present value of future benefits into two components:

(1) that which is attributable to the past and

(2) that which is attributable to the future.

Actuarial terminology calls the part attributable to the past the "past service liability" or the "actuarial accrued liability." The portion allocated to the future is known as the present value of future normal costs, with the specific piece of it allocated to the current year being called the "normal cost."

Table 3 contains the calculation of actuarial accrued liability for the Plan under the Entry Age Normal actuarial cost. This amount is split between the base benefit and the COLA benefit. Once permanent COLAs have been granted, the obligation for future payments will also be included.

TABLE 3

ACTUARIAL ACCRUED LIABILITY

		Supplemental Plan		
As of June 30, 2018	**Base Plan**	***Granted***	***Future***	**Total**
1. Actuarial Accrued Liability				
a. Active & Inactive Members	$ 4,112,523,490	$ 0	$ 218,681,226	$ 4,331,204,716
b. In-pay Members	1,198,180,330	0	33,878,648	1,232,058,978
c. Total	$ 5,310,703,820	$ 0	$ 252,559,874	$ 5,563,263,694
2. Actuarial Value of Assets	$ 5,478,482,120	$ 0	$ 0	$ 5,478,482,120
3. Unfunded Actuarial Accrued Liability: (1c) - (2)	$ (167,778,300)	$ 0	$ 252,559,874	$ 84,781,574
4. Funded Ratio: (2) / (1c)	103.2%	N/A	0.0%	98.5%

TABLE 4

SOLVENCY TEST

	Actuarial Accrued Liabilities (AAL)					Portion of AAL Covered by Assets			
Actuarial Valuation as of June 30	Active Member Contributions	Retirees and Beneficiaries	Active Member (Employer Financed Portion)	Total Actuarial Accrued Liabilities	Actuarial Value of Assets	Active Member Contributions	Retirees and Beneficiaries	Active Member (Employer Financed Portion)	Total Actuarial Accrued Liabilities
2018	$0	$1,232,059	$4,331,205	$5,563,264	$5,478,482	N/A	100.0%	98.0%	98.5%
2017	1,378,143	1,213,780	4,322,314	6,914,237	6,414,134	100.0	100.0	88.4	92.8
2016	1,204,885	1,091,802	4,095,063	6,391,750	5,865,729	100.0	100.0	87.2	91.8
2015	1,159,597	908,353	3,837,741	5,905,691	5,461,172	100.0	100.0	88.4	92.5
2014	1,102,686	777,287	3,357,020	5,236,993	5,035,232	100.0	100.0	94.0	96.1
2013	975,309	798,486	2,975,573	4,749,368	4,453,828	100.0	100.0	90.1	93.8
2012	882,942	662,558	2,792,809	4,338,309	3,936,455	100.0	100.0	85.6	90.7
2011	840,341	562,445	2,594,053	3,996,839	3,664,657	100.0	100.0	87.2	91.7
2010	750,575	483,117	2,380,867	3,614,559	3,422,554	100.0	100.0	91.9	94.7
2009	655,843	432,942	2,046,748	3,135,533	2,920,735	100.0	100.0	89.5	93.1

Note: Dollar amounts are in thousands of dollars. Amounts before 2018 reflect the inclusion of DC balances in both the active member contributions and the assets.

TABLE 5

RECONCILIATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY

		For Year Ending June 30, 2018
1. Unfunded Actuarial Accrued Liability as of June 30, 2017	$	500,103,355
2. Normal Cost		182,558,143
3. Actuarially Determined Contribution		(223,080,894)
4. Interest		31,021,690
5. Expected Unfunded Actuarial Accrued Liability as of June 30, 2018	$	490,602,294
6. Actuarial Value of Asset Changes		
a. Investment Experience (Gain)/Loss	$	27,644,291
b. Contributions Above the Actuarially Determined Contribution	$	(5,160,410)
7. Actuarial Accrued Liability Changes		
a. Actuarial Accrued Liability Experience (Gain)/Loss	$	28,885,670
b. Additional Liability Due to Benefit Changes		0
c. Additional Liability Due to Assumption Changes		(538,002,351)
d. Additional Liability Due to Actuarial Firm Change		(171,747,794)
8. Total Experience (Gain)/Loss	$	(658,380,594)
9. Unfunded Actuarial Accrued Liability as of June 30, 2018: (5) + (8)	$	(167,778,300)

Note: For this purpose, COLAs are excluded from consideration as of June 30, 2018.

TABLE 6

ACTUARIAL GAIN/(LOSS)

Liabilities		
1. Actuarial Accrued Liability as of June 30, 2017	$	6,914,237,041
DC Account Balances[1]		1,378,142,685
Actuarial Accrued Liability, Net of DC Account Balance	$	5,536,094,356
2. Normal Cost for Plan Year Ending June 30, 2018		182,558,143
3. Benefit Payments During Plan Year[2]		(121,671,607)
4. Service Purchases (employee and employer)		164,777
5. Member Reassignment Transfers		5,602,016
6. New DC Annuitizations		6,503,849
7. Interest at 6.75%		382,316,761
8. Change Due to Benefit Changes		0
9. Change Due to Assumption Changes		(538,002,351)
10. Change Due to Actuarial Firm Change		(171,747,794)
11. Expected Actuarial Accrued Liability as of June 30, 2018	$	5,281,818,150
12. Actuarial Accrued Liability as of June 30, 2018	$	5,310,703,820
Assets		
13. Actuarial Value of Assets as of June 30, 2017	$	6,414,133,686
DC Account Balances[1]		(1,378,142,685)
Actuarial Value of Assets, Net of DC Account Balance	$	5,035,991,001
14. Receipts During Plan Year		248,354,041
15. Expenditures, Excluding Expenses, During Plan Year		(122,399,006)
16. Interest at 6.75%		344,180,375
17. Expected Actuarial Value of Assets as of June 30, 2018	$	5,506,126,411
18. Actuarial Value of Assets as of June 30, 2018	$	5,478,482,120
Experience Gain / (Loss)		
19. Liability Actuarial Experience Gain/(Loss): (11) - (12)	$	(28,885,670)
20. Asset Actuarial Experience Gain/(Loss): (18) - (17)	$	(27,644,291)
21. Total Actuarial Experience Gain/(Loss): (19) + (20)	$	(56,529,961)

[1] Effective January 1, 2018, DC account balances are deemed a separate defined contribution plan and are no longer included as part of the market value of assets or actuarial value of assets of the Plan.
[2] Does not include miscellaneous expenses or benefit overpayments.

TABLE 7

EXPERIENCE GAIN/(LOSS) ANALYSIS BY SOURCE

Liability Sources		Gain/(Loss)
Retirement	$	(11,665,000)
Termination		(17,834,000)
Disability		(1,014,000)
Mortality		2,041,000
Salary		(221,000)
New Entrants/Rehires		(39,200,000)
Miscellaneous/COLA		39,007,000
Total Liability Experience Gain/(Loss)	$	(28,886,000)
as a % of AAL		(0.5%)
Asset Experience Gain/(Loss)	$	(27,644,000)
Net Actuarial Experience Gain/(Loss)	$	(56,530,000)

TABLE 8

PROJECTED BENEFIT PAYMENTS

Plan Year Ending June 30	Benefit Amount
2019	$ 146,714,619
2020	160,053,123
2021	174,423,042
2022	186,767,465
2023	202,422,127
2024	219,221,395
2025	238,184,224
2026	259,177,311
2027	282,693,896
2028	308,886,479
2029	338,440,849
2030	371,021,422
2031	406,831,406
2032	445,923,532
2033	487,374,450
2034	531,431,194
2035	577,355,581
2036	624,823,944
2037	673,249,173
2038	722,559,665
2039	771,911,987
2040	821,176,894
2041	869,088,225
2042	915,767,230
2043	960,462,987
2044	1,003,069,048
2045	1,043,111,713
2046	1,080,483,336
2047	1,114,155,690
2048	1,143,492,318

Note: Payouts reflect nominal payouts for current members, assuming that all future assumptions are met.

The previous two sections were devoted to a discussion of the assets and liabilities of the plan. We now turn to considering how the benefits will be funded. The method used to determine the incidence of the contributions in various years is called the actuarial cost method. Under an actuarial cost method, the contributions required to meet the difference between current assets and current liabilities are allocated each year between two elements: (1) the normal cost rate and (2) the unfunded actuarial accrued liability contribution rate.

The term "fully funded" is often applied to a plan in which contributions at the normal cost rate are sufficient to pay for the benefits of existing employees as well as for those of new employees. More often than not, plans are not fully funded, either because of past benefit improvements that have not been completely funded, contribution levels, or because of actuarial deficiencies that have occurred because experience has not been as favorable as anticipated by the actuarial assumptions. Under these circumstances, an unfunded actuarial accrued liability (UAAL) exists. Likewise, when the actuarial value of assets is greater than the actuarial accrued liability, a surplus exists.

Description of Contribution Rate Components

The Entry Age Normal (EAN) actuarial cost method is used for the valuation. Under that method, the normal cost for each year from entry age to assumed exit age is a constant percentage of the member's year by year projected compensation. The portion of the present value of future benefits not provided by the present value of future normal costs is the actuarial accrued liability. The unfunded actuarial accrued liability/(surplus) represents the difference between the actuarial accrued liability and the actuarial value of assets as of the valuation date. For TRF '96 purposes, this calculation excludes consideration of future COLAs. The unfunded actuarial accrued liability is calculated each year and reflects experience gains and losses. New amortization bases are funded over 20 years.

Funding for future COLAs is provided by using a surcharge. This rate is intended to fund the COLAs anticipated to be granted in the next biennium by the start of that biennium.

In general, contributions are computed in accordance with a level percent-of-payroll funding objective. The contribution rate based on the June 30, 2018 actuarial valuation will be used to calculate the actuarially determined employer contribution rate to the Teachers' Retirement Fund 1996 Account for the plan year ending June 30, 2020.

Contribution Rate Summary

In Table 9 the amortization payment related to the unfunded actuarial accrued liability/(surplus), as of June 30, 2018, is developed. The surcharge needed to fund the assumed COLAs is developed in Table 10. Table 11 develops the actuarial required contribution rate for the Plan. The contribution rates shown in this report are based on the actuarial assumptions and cost methods described in Appendix C. Additionally, in Table 12 the contribution amounts under alternative discount rates are provided to illustrate the sensitivity of the contribution requirements relative to the selection of the investment return assumption.

TABLE 9

SCHEDULE OF AMORTIZATION BASES

Amortization Bases	Original Amount [1]	June 30, 2018 Remaining Payments	Date of Last Payment	Outstanding Balance as of June 30, 2018	Annual Contribution
2009 UAAL Base	207,614,962	21	7/1/2039	180,365,102	15,281,273
2010 UAAL Base	(13,454,741)	22	7/1/2040	(11,939,983)	(990,323)
2011 UAAL Base	142,796,003	23	7/1/2041	129,217,523	10,510,348
2012 UAAL Base	73,543,037	24	7/1/2042	67,754,724	5,413,069
2013 UAAL Base	(101,184,698)	25	7/1/2043	(94,773,895)	(7,447,608)
2014 UAAL Base	(89,424,398)	26	7/1/2044	(85,044,480)	(6,582,002)
2015 UAAL Base	246,415,298	27	7/1/2045	237,665,155	18,137,176
2016 UAAL Base	88,135,653	18	7/1/2036	83,567,950	7,642,571
2017 UAAL Base	(16,626,579)	19	7/1/2037	(16,209,802)	(1,441,753)
2018 UAAL Base	(658,380,594)	20	7/1/2038	(658,380,594)	(57,090,507)
Total				$ (167,778,300)	$ (16,567,756)

1. Total UAAL Amortization Payments	$ (16,567,756)
2. Projected Payroll for FY 2018	$ 3,374,943,482
3. UAAL Amortization Payment Rate	(0.49%)
4. Remaining Amortization Period in Years (Weighted)[2]	13.8

[1] The original amounts from 2017 to 2013 were provided by the prior actuary. Amounts prior to that were estimated by INPRS.
[2] The weighted average remaining UAAL amortization period is calculated by weighting the remaining amortization period of each base by the amortization amount of each base.

TABLE 10

DEVELOPMENT OF SURCHARGE RATE

Projected COLAs in Next Biennium Beginning July 1, 2021

First Anticipated COLA		
1. Date of COLA commencement		January 1, 2022
2. Rate of COLA		0.4%
3. Value as of July 1, 2021 of COLA	$	6,369,279
Second Anticipated COLA		
4. Date of COLA commencement		January 1, 2023
5. Rate of COLA		0.4%
6. Value as of July 1, 2021 of COLA		6,464,828
7. Total COLA Funding Requirement as of July 1, 2021: (3) + (6)	$	12,834,106

Funding Sources for Projected COLAs

8. Assets as of June 30, 2018 Available for Future COLAs	$	0
9. Expected Earnings through July 1, 2021		0
10. Projected Available Assets at July 1, 2021	$	0
11. Required Additional Funding for Anticipated COLAs: (7) - (10)		12,834,106

Surcharge Rate

12. Projected Payroll from 1/1/19 to 6/30/19	$	1,687,471,741
13. Projected Payroll from 7/1/19 to 6/30/20		3,459,317,069
14. Projected Payroll from 7/1/20 to 6/30/21		3,545,799,996
15. Value of (12), (13), and (14) as of July 1, 2021	$	9,438,343,495
16. Surcharge Rate: (11) /(15)		0.14%

TABLE 11

ACTUARIAL REQUIRED CONTRIBUTION RATE

	Base Plan	Supplemental Plan	Total
1. Projected Payroll for FY 2019	$ 3,374,943,482		
2. Normal Cost Rate as of June 30, 2017	5.06%	0.29%	5.35%
3. Amortization of UAAL as of June 30, 2018			
a. Dollar Amount	$ (16,567,756)		$ (16,567,756)
b. Percent of Projected Pay	(0.49%)		(0.49%)
4. Preliminary Actuarially Determined Contribution Rate: (2) + (3b)	4.57%		4.57%
5. Supplemental Plan Surcharge Rate		0.14%	0.14%
6. Actuarially Determined Contribution Rate Subject to Legal Constraints	4.57%	0.14%	4.71%
7. Board Policy Contribution Rate	7.36%	0.14%	7.50%

TABLE 12

INVESTMENT RETURN SENSITIVITY

	1.00% Decrease: (5.75%)	0.75% Decrease: (6.00%)	0.50% Decrease: (6.25%)	0.25% Decrease: (6.50%)	Current Assumption: (6.75%)
Funded Status					
Actuarial Accrued Liability	$6,524,499,552	$6,264,374,780	$6,018,003,934	$5,784,558,264	$5,563,263,694
Actuarial Value of Assets	5,478,482,120	5,478,482,120	5,478,482,120	5,478,482,120	5,478,482,120
Unfunded Actuarial Accrued Liability	$1,046,017,432	$785,892,660	$539,521,814	$306,076,144	$84,781,574
Funded Ratio	84.0%	87.5%	91.0%	94.7%	98.5%
Actuarially Determined Contribution Amount					
Normal Cost	$239,821,379	$223,240,028	$207,884,766	$193,660,334	$180,479,181
UAAL Amortization	82,365,378	62,535,879	43,097,897	24,035,254	5,332,537
Actuarially Determined Contribution Amount	$322,186,757	$285,775,907	$250,982,663	$217,695,588	$185,811,718
Actuarially Determined Contribution Rate	9.55%	8.47%	7.44%	6.45%	5.51%

	0.25% Increase: (7.00%)	0.50% Increase: (7.25%)	0.75% Increase: (7.50%)	1.00% Increase: (7.75%)	1.25% Increase: (8.00%)
Funded Status					
Actuarial Accrued Liability	$5,353,396,922	$5,154,281,817	$4,965,286,090	$4,785,818,240	$4,615,324,692
Actuarial Value of Assets	5,478,482,120	5,478,482,120	5,478,482,120	5,478,482,120	5,478,482,120
Unfunded Actuarial Accrued Liability	($125,085,198)	($324,200,303)	($513,196,030)	($692,663,880)	($863,157,428)
Funded Ratio	102.3%	106.3%	110.3%	114.5%	118.7%
Actuarially Determined Contribution Amount					
Normal Cost	$168,260,811	$156,931,196	$146,422,237	$136,671,272	$127,620,623
UAAL Amortization	(13,024,960)	(31,051,254)	(48,759,723)	(66,163,130)	(83,273,643)
Actuarially Determined Contribution Amount	$155,235,851	$125,879,942	$97,662,514	$70,508,142	$44,346,980
Actuarially Determined Contribution Rate	4.60%	3.73%	2.89%	2.09%	1.31%

Note: Comparisons are based on funding the COLA in the same method as the base benefit, rather than with a surcharge. Consequently, these results are for comparative purposes only and will not match the actual results under the funding policy.

GASB NO. 67 AND GASB NO. 68

The Governmental Accounting Standards Board issued Statement No. 67 (GASB 67), "Financial Reporting for Pension Plans" and Statement No. 68 (GASB 68), "Accounting and Financial Reporting for Pensions" in June 2012. The effective date for reporting under GASB 67 for the INPRS Plans was the fiscal year ending June 30, 2014. GASB 68's effective date for employers is the first fiscal year beginning after June 15, 2014.

The sections that follow provide the results of all the required calculations, presented in the order set out in GASB 68 for note disclosure and Required Supplementary Information (RSI). Some of this information was provided by the INPRS for use in this report.

The discount rate used for these disclosures is the assumed return on assets of 6.75%. We have verified that the current assets in conjunction with future contributions made on behalf of current members (including all contributions to fund any past service liability) will be sufficient to make the anticipated benefit payments to be provided to the current members.

To the best of our knowledge, the information contained in this report is complete and accurate. The calculations were performed by qualified actuaries according to generally accepted actuarial principles and practices, as well as in conformity with Actuarial Standards of Practice issued by the Actuarial Standards Board. The calculations are based on the current provisions of the plan, and on actuarial assumptions that are internally consistent and individually reasonable based on the actual experience of the plan. In addition, the calculations were completed in compliance with applicable law and, in our opinion, meet the requirements of GASB 67 and GASB 68.

TABLE 13

STATEMENT OF FIDUCIARY NET POSITION

			June 30, 2018
1. Assets			
a. Cash		$	1,766,720
b. Receivables			
i.	Contributions and Miscellaneous Receivables	$	4,079,397
ii.	Investments Receivable		40,568,580
iii.	Foreign Exchange Contracts Receivable		1,581,671,901
iv.	Interest and Dividends		14,277,622
v.	Receivables Due From Other Funds		0
vi.	Total Receivables	$	1,640,597,500
c. Investments			
i.	Short-Term Investments	$	0
ii.	Pooled Repurchase Agreements		694,802
iii.	Pooled Short-Term Investments		243,568,484
iv.	Pooled Fixed Income		1,854,332,438
v.	Pooled Equity		1,223,685,248
vi.	Pooled Alternative Investments		2,212,874,602
vii.	Pooled Derivatives		4,395,690
viii.	Pooled Investments		0
ix.	Securities Lending Collateral		58,925,523
x.	Total Investments	$	5,598,476,787
d. Net Capital Assets			0
e. Other Assets			0
f. Total Assets: a + b(vi) + c(x) + d + e		$	7,240,841,007
2. Liabilities			
a. Administrative Payable		$	724,124
b. Retirement Benefits Payable			355,242
c. Investments Payable			91,419,694
d. Foreign Exchange Contracts Payable			1,578,148,632
e. Securities Lending Obligations			58,925,523
f. Securities Sold Under Agreement to Repurchase			57,159,970
g. Due To Other Funds			1,756,115
h. Due to Other Governments			0
i. Total Liabilities: a + b + c + d + e + f + g + h		$	1,788,489,300
3. Fiduciary Net Position Restricted for Pensions: (1)(f) - (2)(i)		**$**	**5,452,351,707**

TABLE 14

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION

For Fiscal Year Ending June 30, 2018			
1. Fiduciary Net Position as of June 30, 2017		**$**	**6,252,040,308**
2. Additions			
a. Contributions			
i.	Member Contributions [1]		47,154,682
ii.	Employer Contributions		235,675,239
iii.	Service Purchases (Employer and Member) [2]		164,777
iv.	Non-Employer Contributing Entity Contributions		0
v.	Total Contributions	$	282,994,698
b. Investment Income/(Loss)			
i.	Net Appreciation/(Depreciation)	$	490,878,362
ii.	Net Interest and Dividend Income		81,623,219
iii.	Securities Lending Income		852,817
iv.	Other Net Investment Income		299,206
v.	Investment Management Expenses		(33,816,955)
vi.	Direct Investment Expenses		(2,739,008)
vii.	Securities Lending Expenses		(154,066)
viii.	Total Investment Income/(Loss)	$	536,943,575
c. Other Additions			
i.	Member Reassignments		7,131,387
ii.	Miscellaneous Receipts		299,365
iii.	Total Other Additions	$	7,430,752
d. Total Revenue (Additions): a(v) + b(viii) + c(iii)		$	827,369,025
3. Deductions			
a. Pension, Survivor and Disability Benefits [3]		$	145,482,849
b. Death and Funeral Benefits			0
c. Distributions of Contributions and Interest			5,135,388
d. Administrative Expenses [4]			5,208,400
e. Transfer to Defined Contribution [5]			1,469,542,403
f. Member Reassignments			1,529,371
g. Miscellaneous Expenses			159,215
h. Total Expenses (Deductions)		$	1,627,057,626
4. Net Increase (Decrease) in Fiduciary Net Position: (2)(d) - (3)(h)			**(799,688,601)**
5. Fiduciary Net Position as of June 30, 2018: (1) + (4)		**$**	**5,452,351,707**

[1] Includes member DC account contributions through December 31, 2017.
[2] Service purchases paid by employer of $143,792 and employee of $20,985.
[3] Includes distributions of DC account balances to retired members through December 31, 2017.
[4] Includes contributions made by INPRS for its employees in the DC plan of $101,777.
[5] Effective January 1, 2018, DC account balances are treated as a separate defined contribution plan.

TABLE 15

SCHEDULE OF CHANGES IN NET PENSION LIABILITY

	For Fiscal Year Ending June 30, 2018		
	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) – (b)
1. Balance at June 30, 2017	$ 6,914,237,041	$ 6,252,040,308	$ 662,196,733
Separation of DC Balances [1]	1,378,142,685	1,378,142,685	0
Balance, without DC	$ 5,536,094,356	$ 4,873,897,623	$ 662,196,733
2. Changes for the Year:			
Service Cost (SC) [2]	182,558,143		182,558,143
Interest Cost	382,297,585		382,297,585
Experience (Gains)/Losses	(142,274,764)		(142,274,764)
Assumption Changes	(285,442,477)		(285,442,477)
Plan Amendments	0		0
Benefit Payments [3]	(122,239,791)	(122,239,791)	0
Service Purchases			
Employer Contributions	143,792	143,792	0
Employee Contributions	20,985	20,985	0
Member Reassignments [4]	5,602,016	5,602,016	0
DC Annuitizations	6,503,849	6,503,849	0
Employer Contributions		235,675,239	(235,675,239)
Non-employer Contributions		0	0
Employee Contributions [5]		108,795	(108,795)
Net Investment Income		457,707,449	(457,707,449)
Administrative Expenses [6]		(5,208,400)	5,208,400
Other		140,150	(140,150)
Net Changes	$ 27,169,338	$ 578,454,084	$ (551,284,746)
3. Balance at June 30, 2018 [1]	$ 5,563,263,694	$ 5,452,351,707	$ 110,911,987

[1] Effective January 1, 2018, DC account balances are treated as a separate defined contribution plan.
[2] Service cost provided as of beginning of year. Interest to end of year is included in the interest cost.
[3] Excludes distributions of DC account balances to retired members.
[4] Includes net interfund transfers of employer contributed amounts.
[5] Includes DC plan forfeitures of member contributions. Excludes member DC contributions.
[6] Includes contributions made by INPRS for its employees in the DC plan of $101,777.

TABLE 16

DEFERRED OUTFLOWS OF RESOURCES

	June 30, 2017	Remaining Period	Recognition	June 30, 2018
1. Liability Experience				
June 30, 2018 Loss	$ 0	11.47	$ 0	$ 0
June 30, 2017 Loss	43,141,335	13.00	3,318,564	39,822,771
June 30, 2016 Loss	25,608,018	12.00	2,134,001	23,474,017
June 30, 2015 Loss	0	11.00	0	0
June 30, 2014 Loss	348,977	9.00	38,775	310,202
2. Assumption Changes				
June 30, 2018 Loss	$ 0	11.47	$ 0	$ 0
June 30, 2017 Loss	0	13.00	0	0
June 30, 2016 Loss	0	12.00	0	0
June 30, 2015 Loss	207,421,538	11.00	18,856,504	188,565,034
June 30, 2014 Loss	0	9.00	0	0
3. Investment Experience				
June 30, 2018 Loss	$ 0	5.00	$ 0	$ 0
June 30, 2017 Loss	0	4.00	0	0
June 30, 2016 Loss	135,880,893	3.00	45,293,631	90,587,262
June 30, 2015 Loss	110,627,869	2.00	55,313,935	55,313,934
June 30, 2014 Loss	0	1.00	0	0
Total Outflows: (1)+(2)+(3)	**$ 523,028,630**		**$ 124,955,410**	**$ 398,073,220**

Information was provided prospectively from June 30, 2013 for GASB No. 68 purposes. Results prior to 2018 were produced by the prior actuary.

In accordance with GASB, the original amortization period for liability experience and assumption changes are amortized over the expected future working lifetime of all members, whereas the investment experience is amortized over five years.

TABLE 17

DEFERRED INFLOWS OF RESOURCES

	June 30, 2017	Remaining Period	Recognition	June 30, 2018
1. Liability Experience				
June 30, 2018 Gain	$ 142,274,764	11.47	$ 12,404,078	$ 129,870,686
June 30, 2017 Gain	0	13.00	0	0
June 30, 2016 Gain	0	12.00	0	0
June 30, 2015 Gain	32,102,128	11.00	2,918,375	29,183,753
June 30, 2014 Gain	0	9.00	0	0
2. Assumption Changes				
June 30, 2018 Gain	$ 285,442,477	11.47	$ 24,886,005	$ 260,556,472
June 30, 2017 Gain	107,255,249	13.00	8,250,404	99,004,845
June 30, 2016 Gain	0	12.00	0	0
June 30, 2015 Gain	0	11.00	0	0
June 30, 2014 Gain	0	9.00	0	0
3. Investment Experience				
June 30, 2018 Gain	$ 124,644,161	5.00	$ 24,928,833	$ 99,715,328
June 30, 2017 Gain	43,372,223	4.00	10,843,056	32,529,167
June 30, 2016 Gain	0	3.00	0	0
June 30, 2015 Gain	0	2.00	0	0
June 30, 2014 Gain	51,111,165	1.00	51,111,165	0
Total Inflows: (1)+(2)+(3)	**$ 786,202,167**		**$ 135,341,916**	**$ 650,860,251**

Information was provided prospectively from June 30, 2013 for GASB No. 68 purposes. Results prior to 2018 were produced by the prior actuary.

In accordance with GASB, the original amortization period for liability experience and assumption changes are amortized over the expected future working lifetime of all members, whereas the investment experience is amortized over five years.

TABLE 18

DEFERRED INFLOWS / OUTFLOWS TO BE RECOGNIZED IN PENSION EXPENSE

Fiscal Year Ending June 30	Deferred Outflows	Deferred Inflows	Net Deferred Outflows/(Inflows)
Current Year:			
2018	$ 124,955,410	$ 135,341,916	$ (10,386,506)
Future Years:			
2019	$ 124,955,409	$ 84,230,751	$ 40,724,658
2020	69,641,475	84,230,751	(14,589,276)
2021	24,347,844	84,230,750	(59,882,906)
2022	24,347,844	73,387,691	(49,039,847)
2023	24,347,844	48,458,862	(24,111,018)
Thereafter	130,432,804	276,321,446	(145,888,642)

TABLE 19

PENSION EXPENSE UNDER GASB NO. 68

			For Fiscal Year Ending June 30, 2018
1. Service Cost, beginning of year		$	182,558,143
2. Interest Cost, including interest on service cost			382,297,585
3. Member Contributions [1]			(108,795)
4. Administrative Expenses [2]			5,106,623
5. Expected Return on Assets [3]			(333,063,288)
6. Plan Amendments			0
7. Recognition of Deferred Inflows / Outflows of Resources Related to:			
a. Liability Experience (Gains) / Losses	(9,831,113)		
b. Assumption Change (Gains) / Losses	(14,279,905)		
c. Investment Experience (Gains) / Losses	13,724,512		
d. Total: (7a)+(7b)+(7c)			(10,386,506)
8. Miscellaneous (Income) / Expense			(140,150)
9. Total Collective Pension Expense: (1)+(2)+(3)+(4)+(5)+(6)+(7d)+(8)			226,263,612
10. Employer Service Purchases [4]			143,792
Pension Expense / (Income): (9) + (10)		**$**	**226,407,404**

[1] Includes DC plan forfeitures. Excludes member DC contributions and member service purchases of $20,985.
[2] Includes contributions made by INPRS for its employees in the DC plan of $101,777.
[3] Cash flows assumed to occur mid-year.
[4] To be expensed by the employers who purchased the service.

GASB NO. 67 and GASB NO. 68
NOTES TO THE FINANCIAL STATEMENTS

The material presented herein is a subset of the information requested as Notes to the Financial Statements. Required information not provided herein is to be supplied by the plan.

Actuarial Assumptions and Inputs

Significant actuarial assumptions and other inputs used to measure the total pension liability:

Type of Plan	The Teachers' Retirement Fund 1996 Account is a cost-sharing multiple-employer plan for GASB accounting purposes.
Measurement Date	June 30, 2018
Valuation Date	
Assets:	June 30, 2018
Liabilities:	June 30, 2017 – The TPL as of June 30, 2018 was determined based on an actuarial valuation prepared as of June 30, 2017 rolled forward one year to June 30, 2018, using the following key actuarial assumptions and other inputs, such as benefit accruals and actual benefit payments during that time period.
Inflation	2.25%
Future Salary Increases	2.50% - 12.50% based on years of service
Cost-of-Living Increases	As of June 30, 2018: In lieu of a COLA on January 1, 2019, members in pay were provided a 13th check on October 1, 2018. It is assumed a 13th check would continue for the 2020 and 2021 fiscal years. Thereafter, the following COLAs, compounded annually, were assumed: 0.4% beginning on January 1, 2022 0.5% beginning on January 1, 2034 0.6% beginning on January 1, 2039 As of June 30, 2017: 1.0% compounded annually, beginning January 1, 2020. In lieu of a COLA, members in pay were provided a 13th check on October 1, 2017 and October 1, 2018, which is reflected in the valuation.

Mortality Assumption (Healthy)	RP-2014 (with MP-2014 improvement removed) White Collar mortality tables, with future mortality improvement projected generationally using future mortality improvement inherent in the Social Security Administration's 2014 Trustee report.
Mortality Assumption (Disabled)	RP-2014 (with MP-2014 improvement removed) Disability mortality tables, with future mortality improvement projected generationally using future mortality improvement inherent in the Social Security Administration's 2014 Trustee report.
Experience Study	The most recent comprehensive experience study was completed in April 2015 and was based on member experience between June 30, 2011 and June 30, 2014. The demographic assumptions were updated as needed for the June 30, 2015 actuarial valuation based on the results of the study.
Discount Rate	6.75%

The discount rate is equal to the expected long-term rate of return on plan investments, net of investment expense and including price inflation. There was no change in the discount rate from the prior measurement date.

The INPRS Board of Trustees has established a funding policy of setting the employer contribution rate equal to the greater of 7.5% (the current contribution rate) or a rate equal to the actuarially determined contribution rate, which is based on the assumptions and methods selected by the Board for the annual actuarial valuations and projected covered member payroll. The June 30, 2018 actuarial valuation assumes a long-term rate of return on assets of 6.75%, a 20-year level dollar closed method for amortizing the future layers of unfunded actuarial accrued liability (30 years for amortization layers established prior to June 30, 2016), and a 5-year smoothing method for recognizing investment gains and losses in the actuarial value of assets. Any surplus is amortized over 30 years.

In the past several years, the Board has followed its current funding policy and the State has complied in its contributions to the plan. Therefore, if past practice is continued, the appropriations will be sufficient to fully fund the plan within 20 to 30 years. As a result, it is presumed that the projected plan assets will be sufficient to cover the future benefit payments for current members and a detailed projection of plan assets and cash flows has not been prepared.

Discount Rate Sensitivity

	1% Decrease 5.75%	Current Rate 6.75%	1% Increase 7.75%
Net Pension Liability	$1,072,147,845	$110,911,987	($666,533,467)

Classes of Plan Members Covered

The June 30, 2018 valuation was performed using census data provided by INPRS as of June 30, 2017. Standard actuarial techniques were used to roll forward the total pension liability computed as of June 30, 2017 to the June 30, 2018 measurement date using actual benefit payments during that period of time.

Number as of June 30, 2017	
1. Currently Receiving Benefits:	
Retired Members, Disabled Members, and Beneficiaries	6,289
2. Inactive Members Entitled To But Not Yet Receiving Benefits	4,996
3. Inactive Non-vested Members Entitled to a Refund of Member Contributions	0
4. Active Members	59,996
Total Covered Plan Members: (1)+(2)+(3)+(4)	71,281

Money-Weighted Rate of Return

The money-weighted rate of return equals investment performance, net of pension plan investment expense, adjusted for the changing amounts actually invested. For the fiscal year ending June 30, 2018, the money-weighted return on the plan assets is 9.3%.

Components of Net Pension Liability

As of June 30, 2018		
Total Pension Liability	$	5,563,263,694
Fiduciary Net Position		5,452,351,707
Net Pension Liability	$	110,911,987
Ratio of Fiduciary Net Position to Total Pension Liability		98.01%

GASB NO. 67 AND GASB NO. 68: REQUIRED SUPPLEMENTAL INFORMATION
SCHEDULE OF CHANGES IN THE TOTAL PENSION LIABILITY AND PLAN FIDUCIARY NET POSITION

Fiscal Year Ending June 30	2013	2014	2015	2016	2017	2018
Total Pension Liability						
Total Pension Liability - beginning	$4,338,309,018	$4,748,148,931	$5,236,993,169	$5,905,691,033	$6,391,750,065	$6,914,237,041
DC Account Balances - beginning	899,338,904	990,704,762	1,120,728,729	1,170,914,523	1,217,432,610	1,378,142,685
DB Pension Liability - beginning	$3,438,970,114	$3,757,444,169	$4,116,264,440	$4,734,776,510	$5,174,317,455	$5,536,094,356
Service Cost (SC), beginning-of-year	147,336,605	155,314,388	170,892,424	167,836,193	168,650,636	182,558,143
Interest Cost, including interest on SC	240,281,897	262,263,149	287,264,315	328,017,487	357,392,165	382,297,585
Experience (Gains)/Losses	(15,994,636)	504,077	(40,857,253)	29,876,020	46,459,899	(142,274,764)
Assumption Changes	0	0	263,991,050	0	(115,505,653)	(285,442,477)
Plan Amendments	0	(4,504,201)	0	0	1,352,763	0
DC Annuitizations	11,621,194	15,151,081	22,574,841	8,931,954	8,503,495	6,503,849
Actual Benefit Payments	(68,792,905)	(77,253,362)	(90,266,941)	(99,506,626)	(109,334,779)	(122,239,791)
Member Reassignments	0	6,922,378	4,889,464	4,370,023	4,258,375	5,602,016
Service Purchases	4,021,900	422,761	24,170	15,894	0	164,777
Net Change in Total Pension Liability	318,474,055	358,820,271	618,512,070	439,540,945	361,776,901	27,169,338
DB Pension Liability - ending	$3,757,444,169	$4,116,264,440	$4,734,776,510	$5,174,317,455	$5,536,094,356	$5,563,263,694
DC Account Balances - ending	990,704,762	1,120,728,729	1,170,914,523	1,217,432,610	1,378,142,685	0
(a) Total Pension Liability - ending	$4,748,148,931	$5,236,993,169	$5,905,691,033	$6,391,750,065	$6,914,237,041	$5,563,263,694
Plan Fiduciary Net Position						
Plan Fiduciary Net Position – beginning	$4,018,148,904	$4,433,677,345	$5,189,442,330	$5,379,113,041	$5,611,229,693	$6,252,040,308
DC Account Balances - beginning	899,338,904	990,704,762	1,120,728,729	1,170,914,523	1,217,432,610	1,378,142,685
DB Plan Fiduciary Net Position – beginning	$3,118,810,000	$3,442,972,583	$4,068,713,601	$4,208,198,518	$4,393,797,083	$4,873,897,623
Contributions – employer	180,714,000	194,750,861	205,763,142	215,625,986	227,206,663	235,819,031
Contributions – non-employer	0	0	0	0	0	0
Contributions – member	0	0	0	43,175	57,709	129,780
Net investment income	207,098,438	492,856,485	2,684,489	61,722,129	354,926,957	457,707,449
Actual benefit payments	(68,793,300)	(77,253,362)	(90,266,941)	(99,506,625)	(109,334,779)	(122,239,791)
Net member reassignments	0	6,922,371	4,890,290	4,369,512	4,258,236	5,602,016
DC Annuitizations	11,621,100	15,151,500	22,575,000	8,931,800	8,504,000	6,503,849
Administrative expense	(6,482,000)	(6,707,587)	(6,185,233)	(5,603,306)	(5,552,446)	(5,208,400)
Other	4,345	20,750	24,170	15,894	34,200	140,150
Net change in Plan Fiduciary Net Position	324,162,583	625,741,018	139,484,917	185,598,565	480,100,540	578,454,084
DB Plan Fiduciary Net Position – ending	$3,442,972,583	$4,068,713,601	$4,208,198,518	$4,393,797,083	$4,873,897,623	$5,452,351,707
DC Account Balances - ending [1]	990,704,762	1,120,728,729	1,170,914,523	1,217,432,610	1,378,142,685	0
(b) Plan Fiduciary Net Position - ending	$4,433,677,345	$5,189,442,330	$5,379,113,041	$5,611,229,693	$6,252,040,308	$5,452,351,707

[1] Effective January 1, 2018, DC account balances are handled by a third party annuity provider and are treated as a separate defined contribution plan.
Information was provided prospectively from June 30, 2013 for GASB No. 67 and GASB No. 68 purposes. Results prior to 2018 were produced by the prior actuary.

GASB NO. 67 AND GASB NO. 68: REQUIRED SUPPLEMENTAL INFORMATION

SCHEDULE OF THE NET PENSION LIABILITY

Fiscal Year Ending June 30	2013	2014	2015	2016	2017	2018
Total Pension Liability	$4,748,148,931	$5,236,993,169	$5,905,691,033	$6,391,750,065	$6,914,237,041	$5,563,263,694
Plan Fiduciary Net Position	4,433,677,345	5,189,442,330	5,379,113,041	5,611,229,693	6,252,040,308	5,452,351,707
Net Pension Liability	$314,471,586	$47,550,839	$526,577,992	$780,520,372	$662,196,733	$110,911,987
Ratio of Plan Fiduciary Net Position to Total Pension Liability	93.38%	99.09%	91.08%	87.79%	90.42%	98.01%
Covered-employee payroll [1]	$2,442,496,000	$2,598,115,000	$2,742,186,608	$2,881,397,273	$3,020,463,178	$3,129,070,354
Net Pension Liability as a percentage of covered-employee payroll	12.88%	1.83%	19.20%	27.09%	21.92%	3.54%

[1] As provided by INPRS.

Information was provided prospectively from June 30, 2013 for GASB No. 67 and GASB No. 68 purposes. Results prior to 2018 were produced by the prior actuary.

GASB NO. 67 AND GASB NO. 68: REQUIRED SUPPLEMENTAL INFORMATION

SCHEDULE OF EMPLOYER CONTRIBUTIONS

Fiscal Year Ending June 30	2013	2014	2015	2016	2017	2018
Actuarially Determined Contribution [1]	$164,400,000	$177,711,000	$178,260,000	$180,375,469	$198,444,431	$210,586,435
Actual employer contributions [2]	$180,714,567	$194,750,861	$205,525,842	$215,625,986	$227,206,663	$235,675,239
Annual contribution (deficiency) / excess	$16,314,567	$17,039,861	$27,265,842	$35,250,517	$28,762,232	$25,088,804
Covered-employee payroll [3]	$2,442,496,000	$2,598,115,000	$2,742,186,608	$2,881,397,273	$3,020,463,178	$3,129,070,354
Actual contributions as a percentage of covered-employee payroll	7.40%	7.50%	7.49%	7.48%	7.52%	7.53%

[1] Actuarially determined contribution rate was developed in the actuarial funding valuation completed two years prior to the fiscal year. This rate was applied to the actual covered employee payroll for the fiscal year to determine the contribution amount.
[2] Excludes service purchases paid for by the employer of $143,792.
[3] As provided by INPRS.

Information was provided prospectively from June 30, 2013 for GASB No. 67 and GASB No. 68 purposes. Results prior to 2018 were produced by the prior actuary.

GASB NO. 67 AND GASB NO. 68: REQUIRED SUPPLEMENTAL INFORMATION

SCHEDULE OF MONEY-WEIGHTED RETURNS

For Fiscal Year Ending June 30	Money-Weighted Return
2018	9.3%
2017	8.1%
2016	1.0%
2015	0.6%
2014	12.7%
2013	5.1%

Information was provided prospectively from June 30, 2013 for GASB No. 67 and GASB No. 68 purposes. Returns provided by INPRS.

MEMBER DATA RECONCILIATION

	Active Members	Inactive Vested	Inactive Deceased	Disabled	Retired	Beneficiary	Total
1. As of June 30, 2016 [1]	**58,097**	**4,252**	**0**	**171**	**5,352**	**273**	**68,145**
2. Data Adjustments							
New Participants	4,979	0	0	0	0	0	4,979
Rehires	300	(299)	0	0	(1)	0	0
Terminations:							
Not Vested	(1,691)	(7)	0	0	0	0	(1,698)
Deferred Vested	(1,192)	1,192	0	0	0	0	0
Disability	(3)	(10)	0	13	0	0	0
Retirements	(284)	(257)	0	0	541	0	0
Refund / Benefits Ended	(182)	(15)	0	0	0	0	(197)
Transfer / Millie Morgan	(1)	(18)	0	0	0	0	(19)
Deaths:							
With Beneficiary	(5)	(4)	0	(3)	(19)	31	0
Without Beneficiary	(19)	(14)	0	(4)	(25)	(43)	(105)
Entitled to Future Pension Benefit	(3)	(2)	5	0	0	0	0
Data Corrections	0	164	9	2	9	(8)	176
Net Change	1,899	730	14	8	505	(20)	3,136
3. As of June 30, 2017 [2]	**59,996**	**4,982**	**14**	**179**	**5,857**	**253**	**71,281**

[1] Effective January 1, 2018, DC accounts are treated as a separate defined contribution plan, thus the counts provided exclude members with nonvested pension benefits.
[2] Valuation results as of June 30, 2018 were calculated using June 30, 2017 census data, adjusted for certain activity before the valuation date. Headcounts may include multiple records for individuals, such as members with multiple periods of service.

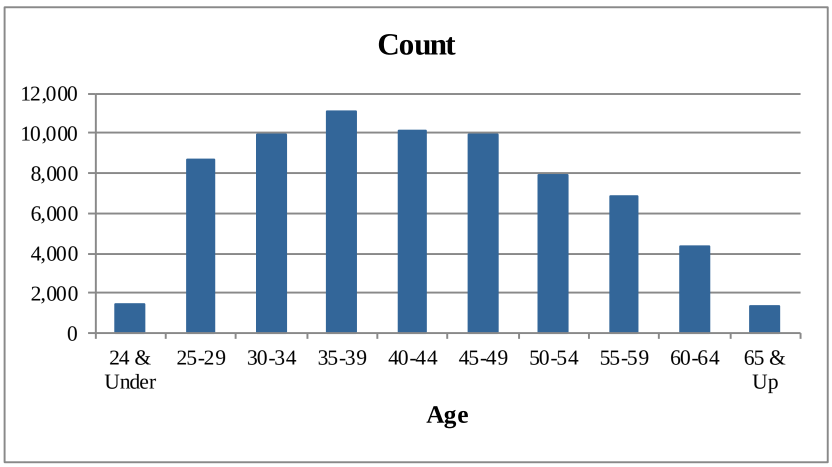
SUMMARY OF MEMBERSHIP DATA

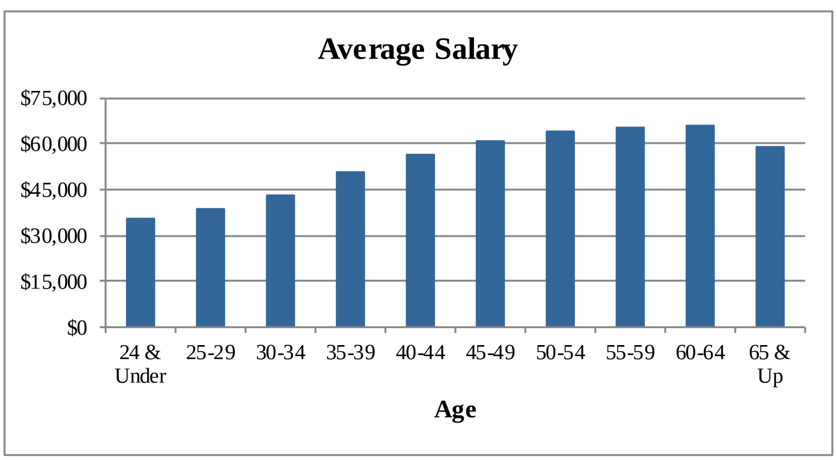
	Combined TRF Plans		1996 Account
Valuation Date	**June 30, 2017**	**June 30, 2018**	**June 30, 2018**
Date of Membership Data [1]	June 30, 2016	June 30, 2017	June 30, 2017
ACTIVE MEMBERS			
Number of Active Members	71,225	71,706	59,996
Annual Membership Data Salary [2]	$ 3,808,875,005	$ 3,869,532,988	$ 3,043,428,928
Anticipated Payroll for Next Fiscal Year	$ 4,046,700,000	$ 4,125,634,441	$ 3,374,943,482
Active Member Averages			
Age	42.6	42.5	40.0
Service	13.5	13.0	10.5
Annual Membership Data Salary	$ 53,477	$ 53,964	$ 50,727
INACTIVE MEMBERS			
Number of Inactive Members	6,756	7,631	4,996
Inactive Member Averages			
Age	52.8	52.9	50.2
Service	16.5	14.8	12.8
RETIREES, DISABLEDS, AND BENEFICIARIES			
Number of Members			
Retired	52,714	53,389	5,857
Disabled	767	736	179
Beneficiaries	5,555	5,391	253
Total	59,036	59,516	6,289
Annual Benefits			
Retired	$ N/A	$ 1,140,223,085	$ 105,468,904
Disabled	N/A	10,259,964	1,798,311
Beneficiaries	N/A	77,403,509	3,156,108
Total	$ 1,209,139,704	$ 1,227,886,558	$ 110,423,323
Annual Benefits			
Pension	$ 1,069,782,192	$ 1,089,268,981	$ 99,018,615
DC Plan Annuities	139,357,512	138,617,577	11,404,708
Total	$ 1,209,139,704	$ 1,227,886,558	$ 110,423,323

[1] The valuation results were calculated using the prior year's census data and were adjusted for certain activity during fiscal year.
[2] The 2018 amounts include 287 records from the 1996 Account with less than a year of service who are missing a salary. Their salaries were defaulted to the average salary of $50,727.

ACTIVE MEMBERS[1]
As of June 30, 2017 for the June 30, 2018 Valuation
Combined TRF Plans

	Count of Members			FY 2017 Annual Membership Data Salary		
Age	Male	Female	Total	Male	Female	Total
24 & Under	265	1,186	1,451	$ 9,531,297	$ 41,726,716	$ 51,258,013
25-29	2,052	6,640	8,692	81,902,535	252,187,843	334,090,378
30-34	2,572	7,384	9,956	121,451,522	308,109,968	429,561,490
35-39	3,023	8,022	11,045	168,881,656	391,580,253	560,461,909
40-44	2,782	7,371	10,153	175,095,295	397,454,209	572,549,504
45-49	2,724	7,252	9,976	184,102,883	421,092,802	605,195,684
50-54	2,075	5,878	7,953	147,544,193	360,135,869	507,680,062
55-59	1,725	5,111	6,836	122,192,501	323,618,907	445,811,409
60-64	1,154	3,175	4,329	82,221,256	203,630,496	285,851,752
65 & Up	352	963	1,315	20,570,393	56,502,393	77,072,787
Total	18,724	52,982	71,706	1,113,493,532	2,756,039,456	3,869,532,988





[1] Includes 287 records from the 1996 Account with less than a year of service who are missing a salary. Their salaries were defaulted to the average salary of $50,727.

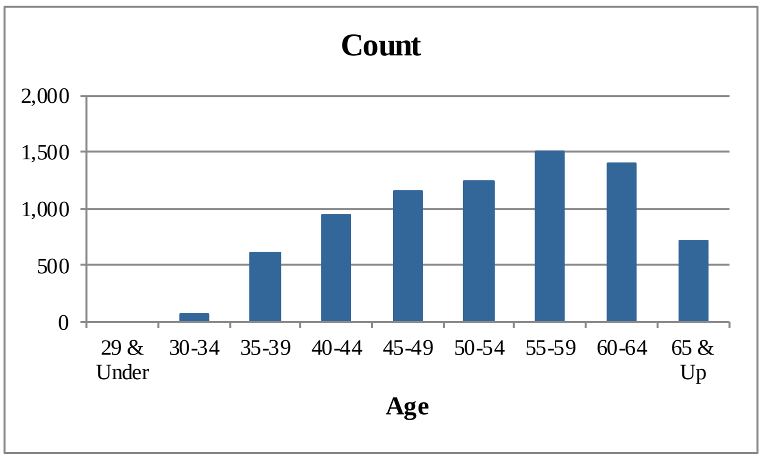
AGE AND SERVICE DISTRIBUTION[1]
As of June 30, 2017 for the June 30, 2018 Valuation
Combined TRF Plans

Age		0-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 34	Total
24 & Under	Number	1,451	0	0	0	0	0	0	0	1,451
	Total Salary	$ 51,258,013	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 51,258,013
	Average Sal.	$ 35,326	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 35,326
25-29	Number	7,137	1,554	1	0	0	0	0	0	8,692
	Total Salary	$ 266,172,062	$ 67,869,093	$ 49,222	$ 0	$ 0	$ 0	$ 0	$ 0	$ 334,090,378
	Average Sal.	$ 37,295	$ 43,674	$ 49,222	$ 0	$ 0	$ 0	$ 0	$ 0	$ 38,437
30-34	Number	3,416	4,950	1,590	0	0	0	0	0	9,956
	Total Salary	$ 124,041,281	$ 222,049,351	$ 83,470,857	$ 0	$ 0	$ 0	$ 0	$ 0	$ 429,561,490
	Average Sal.	$ 36,312	$ 44,858	$ 52,497	$ 0	$ 0	$ 0	$ 0	$ 0	$ 43,146
35-39	Number	2,100	2,326	5,215	1,404	0	0	0	0	11,045
	Total Salary	$ 80,285,500	$ 103,790,542	$ 288,223,455	$ 88,162,412	$ 0	$ 0	$ 0	$ 0	$ 560,461,909
	Average Sal.	$ 38,231	$ 44,622	$ 55,268	$ 62,794	$ 0	$ 0	$ 0	$ 0	$ 50,743
40-44	Number	1,508	1,338	2,079	4,330	896	2	0	0	10,153
	Total Salary	$ 58,774,688	$ 60,783,384	$ 112,964,043	$ 276,253,236	$ 63,653,385	$ 120,767	$ 0	$ 0	$ 572,549,504
	Average Sal.	$ 38,975	$ 45,429	$ 54,336	$ 63,800	$ 71,042	$ 60,384	$ 0	$ 0	$ 56,392
45-49	Number	1,282	1,099	1,468	2,052	3,421	651	3	0	9,976
	Total Salary	$ 49,149,764	$ 51,236,889	$ 79,364,947	$ 130,091,370	$ 245,619,198	$ 49,589,067	$ 144,449	$ 0	$ 605,195,684
	Average Sal.	$ 38,338	$ 46,621	$ 54,063	$ 63,397	$ 71,797	$ 76,174	$ 48,150	$ 0	$ 60,665
50-54	Number	726	722	1,002	1,195	1,351	2,151	806	0	7,953
	Total Salary	$ 27,831,802	$ 32,192,695	$ 54,694,277	$ 74,762,434	$ 95,433,296	$ 161,415,167	$ 61,350,392	$ 0	$ 507,680,062
	Average Sal.	$ 38,336	$ 44,588	$ 54,585	$ 62,563	$ 70,639	$ 75,042	$ 76,117	$ 0	$ 63,835
55-59	Number	453	463	710	894	996	992	1,866	462	6,836
	Total Salary	$ 15,935,499	$ 19,893,430	$ 37,351,409	$ 54,614,594	$ 67,793,413	$ 72,421,847	$ 141,919,151	$ 35,882,065	$ 445,811,409
	Average Sal.	$ 35,178	$ 42,966	$ 52,608	$ 61,090	$ 68,066	$ 73,006	$ 76,055	$ 77,667	$ 65,215
60-64	Number	297	224	383	501	573	507	461	1,383	4,329
	Total Salary	$ 9,164,965	$ 9,004,227	$ 20,038,233	$ 30,501,313	$ 39,434,931	$ 37,145,289	$ 34,141,592	$ 106,421,201	$ 285,851,752
	Average Sal.	$ 30,858	$ 40,197	$ 52,319	$ 60,881	$ 68,822	$ 73,265	$ 74,060	$ 76,950	$ 66,032
65 & Up	Number	171	131	114	148	145	103	102	401	1,315
	Total Salary	$ 3,230,732	$ 4,309,579	$ 4,682,506	$ 8,482,278	$ 9,976,995	$ 7,487,150	$ 7,626,422	$ 31,277,126	$ 77,072,787
	Average Sal.	$ 18,893	$ 32,898	$ 41,075	$ 57,313	$ 68,807	$ 72,691	$ 74,769	$ 77,998	$ 58,610
Total	Number	18,541	12,807	12,562	10,524	7,382	4,406	3,238	2,246	71,706
	Total Salary	$ 685,844,307	$ 571,129,192	$ 680,838,950	$ 662,867,637	$ 521,911,217	$ 328,179,287	$ 245,182,005	$ 173,580,392	$ 3,869,532,988
	Average Sal.	$ 36,991	$ 44,595	$ 54,198	$ 62,986	$ 70,701	$ 74,485	$ 75,720	$ 77,284	$ 53,964

[1] Includes 287 records from the 1996 Account with less than a year of service who are missing a salary. Their salaries were defaulted to the average salary of $50,727.

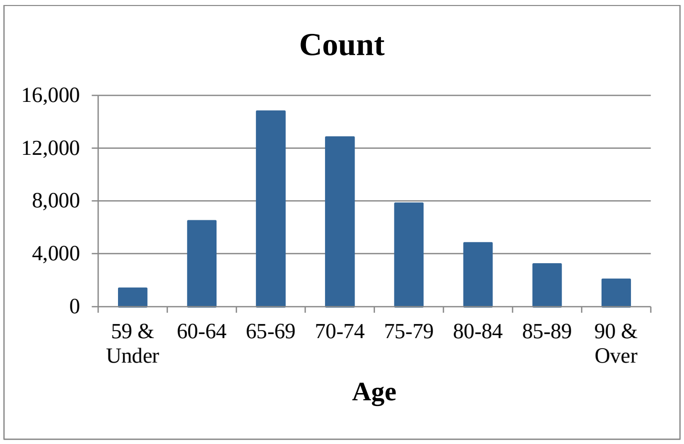
INACTIVE VESTED MEMBERS
As of June 30, 2017 for the June 30, 2018 Valuation
Combined TRF Plans

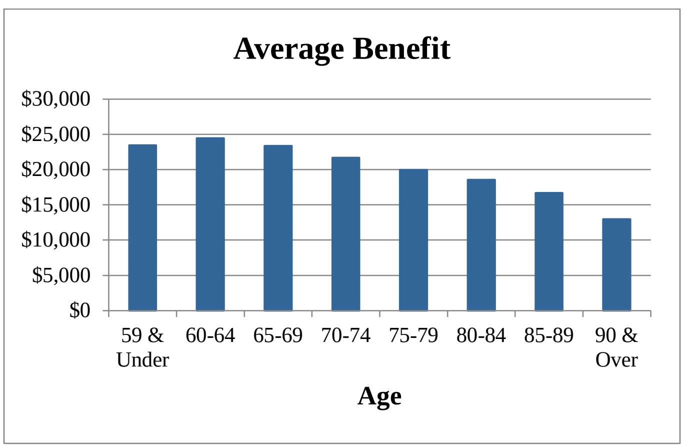
	Count of Members		
Age	Male	Female	Total
29 & Under	0	0	0
30-34	11	59	70
35-39	155	449	604
40-44	263	685	948
45-49	357	798	1,155
50-54	304	932	1,236
55-59	350	1,159	1,509
60-64	297	1,102	1,399
65 & Up	154	556	710
Total	1,891	5,740	7,631



RETIRED MEMBERS
As of June 30, 2017 for the June 30, 2018 Valuation
Combined TRF Plans

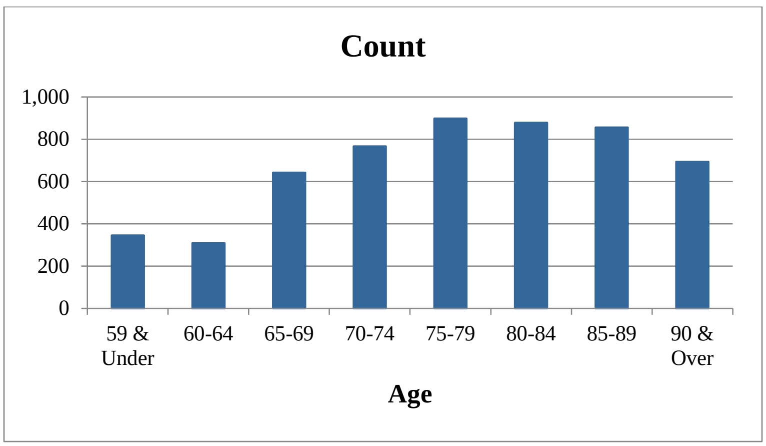
	Count of Members			Annual Benefits		
Age	Male	Female	Total	Male	Female	Total
59 & Under	362	1,009	1,371	$8,839,673	$23,319,365	$32,159,038
60-64	1,728	4,760	6,488	46,103,920	112,729,463	158,833,383
65-69	4,078	10,718	14,796	106,726,210	238,845,428	345,571,638
70-74	4,385	8,449	12,834	107,110,335	171,057,544	278,167,879
75-79	3,006	4,798	7,804	67,968,326	87,776,434	155,744,760
80-84	1,909	2,908	4,817	40,780,596	48,501,465	89,282,061
85-89	1,178	2,044	3,222	23,648,901	30,099,384	53,748,285
90 & Over	631	1,426	2,057	10,623,878	16,092,164	26,716,042
Total	17,277	36,112	53,389	$411,801,839	$728,421,247	$1,140,223,086

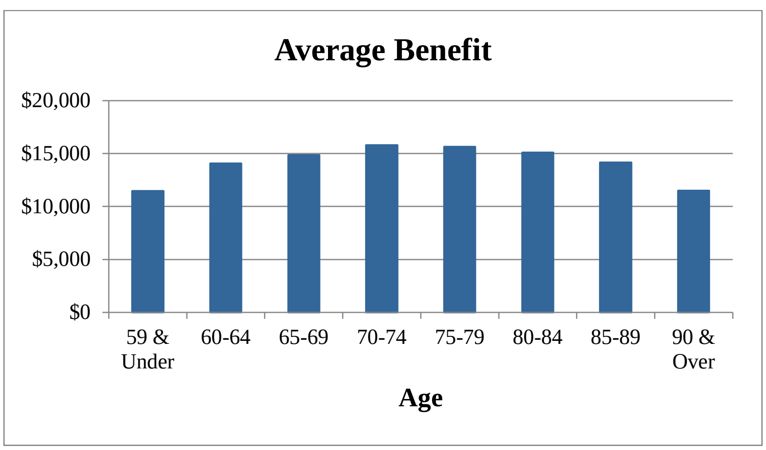




BENEFICIARIES RECEIVING BENEFITS
As of June 30, 2017 for the June 30, 2018 Valuation
Combined TRF Plans

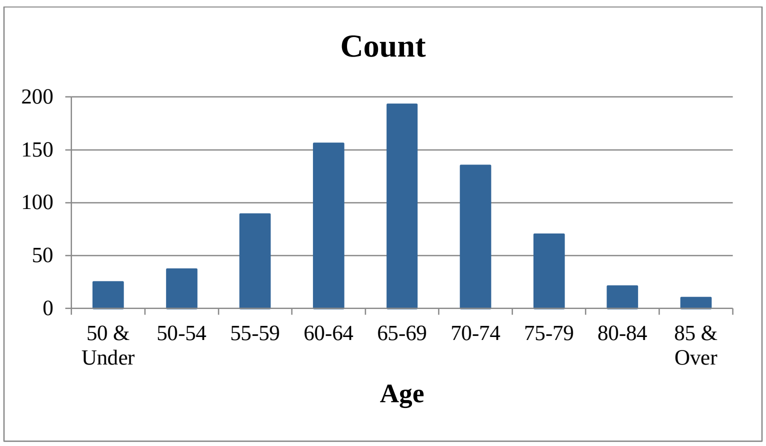
	Count of Members			Annual Benefits		
Age	Male	Female	Total	Male	Female	Total
59 & Under	154	192	346	$ 1,642,941	$ 2,324,874	$ 3,967,815
60-64	135	175	310	1,602,026	2,758,464	4,360,490
65-69	258	385	643	3,500,608	6,061,916	9,562,524
70-74	285	481	766	4,065,326	8,029,224	12,094,550
75-79	229	669	898	2,836,015	11,221,149	14,057,164
80-84	178	700	878	2,147,497	11,117,208	13,264,705
85-89	148	708	856	1,526,283	10,596,110	12,122,393
90 & Over	104	590	694	906,795	7,067,072	7,973,867
Total	1,491	3,900	5,391	$ 18,227,491	$ 59,176,017	$ 77,403,508

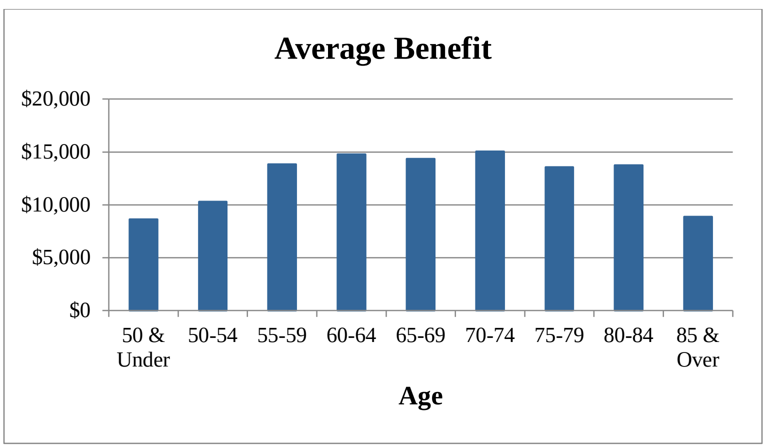




DISABLED MEMBERS
As of June 30, 2017 for the June 30, 2018 Valuation
Combined TRF Plans

	Count of Members			Annual Benefits		
Age	Male	Female	Total	Male	Female	Total
50 & Under	2	23	25	$ 11,493	$ 204,215	$ 215,708
50-54	11	26	37	105,500	275,783	381,283
55-59	16	73	89	270,394	960,602	1,230,996
60-64	29	127	156	456,114	1,846,545	2,302,659
65-69	49	144	193	752,501	2,017,386	2,769,887
70-74	48	87	135	864,110	1,168,087	2,032,197
75-79	19	51	70	296,084	653,722	949,806
80-84	8	13	21	117,579	170,970	288,549
85 & Over	5	5	10	47,554	41,325	88,879
Total	187	549	736	$ 2,921,329	$ 7,338,635	$ 10,259,964





MEMBERS AND BENEFICIARIES RECEIVING BENEFITS
As of June 30, 2017 for the June 30, 2018 Valuation
1996 Account

Schedule of Average Benefit Payments [1,2]

	Years of Credited Service						
For the Year Ended June 30, 2018	< 10	10 - 14	15 - 19	20 - 24	25 - 29	30 +	Total
Average Monthly Defined Benefit	$175	$493	$779	$1,133	$1,530	$2,278	$1,312
Average Monthly DC Annuity[3]	$67	$150	$243	$334	$494	$742	$393
Average Final Average Salary[4]	$38,058	$46,696	$55,207	$61,506	$66,412	$75,286	$61,952
Number of Benefit Recipients	181	790	1,645	1,019	873	1,781	6,289

[1] Calculated using the prior year census data, adjusted for certain activity during the fiscal year.
[2] Members with less than 10 years of service are primarily members receiving a disability benefit.
[3] This represents those retirees who elected to receive their ASA as a supplemental monthly payment in addition to the monthly Defined Benefit payment.
[4] Excludes the 100 in-pay members who are missing a final average salary in the data.

MEMBERS AND BENEFICIARIES RECEIVING BENEFITS
As of June 30, 2017 for the June 30, 2018 Valuation
1996 Account

Schedule of Benefit Recipients by Type of Benefit Option [1,2]

	Number of Recipients by Benefit Option							
Amount of Monthly Benefit (in dollars)	5-Year Certain & Life	Straight Life	Joint with 100% Survivor Benefits	Joint with Two-Thirds Survivor Benefits	Joint with One-Half Survivor Benefits	Survivors	Disability	Total Benefit Recipients
1 - 500	255	190	138	24	38	65	54	764
501 - 1,000	495	401	369	84	150	89	72	1,660
1,001 - 1,500	395	364	313	97	125	40	34	1,368
1,501 - 2,000	283	240	260	78	111	25	8	1,005
2,001 - 2,500	164	130	195	51	89	20	8	657
2,501 - 3,000	63	107	101	38	45	8	2	364
Over 3,000	89	101	150	58	66	6	1	471
Total	1,744	1,533	1,526	430	624	253	179	6,289

[1] Calculated using the prior year census data, adjusted for certain activity during the fiscal year.
[2] Members who elected Social Security Integration were included in their selected benefit option of either 5-Year Certain & Life, Straight Life, Modified Cash Refund Plus 5-Year Certain & Life, Joint With 100% Survivor Benefits, Joint With Two-Thirds Survivor Benefits, or Joint With One-Half Survivor Benefits.

MEMBERS AND BENEFICIARIES RECEIVING BENEFITS
As of June 30, 2017 for the June 30, 2018 Valuation
1996 Account

Schedule of Retirees and Beneficiaries [1]

	Added to Rolls		Removed from Rolls		Rolls - End of Year				
	Number	Annual Benefits [2]	Number	Annual Benefits [2]	Number	Total Annual Benefits [2]	Percent Change In Total Annual Benefits	Average Annual Benefit	Percent Change In Average Annual Benefit
2018 [3]	710	$9,562	217	$1,002	6,289	110,423	8.1%	17,558	(0.4%)
2017 [3]	855	12,106	36	564	5,796	102,178	12.1	17,629	(3.8)
2016 [3]	858	16,075	17	305	4,977	91,160	20.4	18,316	0.1
2015 [3]	499	9,101	28	353	4,136	75,714	12.7	18,306	(0.1)
2014 [3]	0	12,216	0	251	3,665	67,169	0.0	18,327	0.0
2013	712	12,216	18	251	3,665	67,169	21.1	18,327	(1.8)
2012	433	8,132	16	236	2,971	55,475	15.8	18,672	(0.4)
2011	390	7,666	17	253	2,554	47,887	17.7	18,750	0.5
2010	249	4,859	12	129	2,181	40,701	12.1	18,662	(0.1)
2009	270	5,145	10	119	1,944	36,312	(16.5)	18,679	(2.8)

[1] Dollar amounts are in thousands except for the average annual benefit.
[2] Annual benefits includes members selecting an annuity for their ASA. End of year annual benefits are not equal to prior end of year annual benefits plus additions less removals due to beneficiary benefit changes, data changes, and COLA increases.
[3] The valuation results were calculated using the prior year census data, adjusted for certain activity during the fiscal year.

Definitions

Fiscal year	Twelve month period ending June 30.
Participation	Any full-time Indiana teachers in a public school corporation, certain INPRS employees, and some employees in charter schools, innovation schools, turnaround schools and public universities who were hired after June 30, 1995.
Average annual compensation	Average of highest five years of compensation. Years do not need to be consecutive.
Member contributions	All Fund members are required by state law to contribute 3% of salary contributions to their Annuity Savings Account. These 3% contributions are generally "picked up" by the employer and contributed on a pre-tax basis on behalf of the employee. Extra voluntary contributions by the member are also possible, but on a post-tax basis. At retirement, there are six alternatives for receiving the proceeds of this account, including lump sums, full and partial rollovers, full and partial annuitization of the balance, and deferred distribution.
Minimum pension benefit	The minimum pension benefit paid to a regularly retired member receiving an unreduced pension benefit is $185 per month effective July 1, 2017 per SEA 46.

Eligibility for Benefits

Deferred vested	Ten years of service. Benefit commences at regular or early retirement eligibility.
Disability retirement	
Regular disability benefit	Five years of service.
Disability retirement benefit	Five years of service and determined to be disabled by the Social Security Administration. Annual verification of Social Security disability is required.
Early retirement	Age 50 with 15 years of service.
Normal retirement	Age 65 with ten years of service, or age 60 with 15 years of service, or if age is at least 55 and the sum of age plus credited service is at least 85.
Pre-retirement death	15 years of service or age 65 with 10 years of service. Spouse to whom member had been married for two or more years is automatically eligible, or a dependent may be designated as beneficiary.

Monthly Benefits Payable

Normal retirement	State pension equal to total service times 1.1% of Average Annual Compensation. Beginning July 1, 2017, the minimum pension benefit is $185 per month.
Early retirement	State pension is computed as regular retirement benefit, but reduced for each month between age at early retirement and attainment of age 65. The age reduction factor is calculated as the sum of the following: • 1/10 of 1% for each month from age 60 to 65. • 5/12 of 1% for each month from age at early retirement to 60.
Deferred retirement	Computed as a regular retirement benefit with state pension based on service and Average Annual Compensation at termination.
Disability	
Regular disability benefit	$125 per month plus $5 per month for each year of service credit over five years.
Disability retirement benefit	Computed as a regular retirement benefit using creditable service to the date of disability and without reduction for early retirement. The minimum benefit is $180 per month.
Pre-retirement death	Computed as regular retirement benefit but reduced in accordance with a 100% joint and survivor election.
Cost-of-Living-Adjustments	The employer-funded monthly pension benefits for members in pay status are increased periodically to preserve purchasing power that is diminished due to inflation. Such increases are not guaranteed by Statute and will only be provided by legislative action. A "13th check" was paid to each member in pay status during fiscal year 2018 and 2019. The amount of the 13th check varied based on the years of creditable service the member had earned prior to retirement. Legislation passed in the 2018 legislative session creates a funding mechanism to provide for future benefit increases or 13th checks. The INPRS Board has the authority to have employers contribute up to 1% of member pay into the fund. Increases or payments are made upon passed legislation subject to the availability of funds to provide the benefit.

Forms of payment	The normal form of benefit payment (Option A-1) is a single life annuity with a five-year certain period. There are five optional forms of payment available, as listed below. Additionally, members retiring between ages 50 and 62 may integrate their pension benefit with their Social Security benefit by choosing Social Security Integration (Option A-4) in conjunction with the normal form or any other optional form selected. Optional forms of payment are calculated on an actuarially equivalent basis.
Additional Forms of Payment	
Option A-2:	Straight Life benefit with no certain period
Option A-3:	Modified Cash Refund Annuity (operates in conjunction with the Annuity Savings Account)
Option B-1:	100% Survivorship
Option B-2:	66 2/3% Survivorship
Option B-3:	50% Survivorship
	State law provides for actuarially-adjusted and re-calculated benefits based on a new optional form election in the event of the death of the member's spouse after retirement.

Changes in Plan Provisions since the Prior Year

Legislation passed in the 2018 legislative session creates a funding mechanism to provide for future benefit increases or 13th checks. The INPRS Board has the authority to have employers contribute up to 1% of member pay into the fund. Increases or payments are made upon passed legislation subject to the availability of funds to provide the benefit.

ACTUARIAL METHODS

1. Actuarial Cost Method

The actuarial cost method is Entry Age Normal - Level Percent of Payroll.

The normal cost is calculated separately for each active member and is equal to the level percentage of payroll needed as an annual contribution from entry age to retirement age to fund projected benefits. The actuarial accrued liability on any valuation date is the accumulated value of such normal costs from entry age to the valuation date.

For funding, gains and losses occurring from census experience different than assumed, assumption changes, and benefit changes are amortized over a 20-year period with level payments each year. A new gain or loss base is established each year based on the additional gain or loss during that year and that base is amortized over a new 20-year period (gain or loss bases established prior to June 30, 2016 were amortized over 30 years and will continue to be amortized over 30 -year period). However, when the plan is at or above 100% funded (based on Actuarial Value of Assets), the past amortization bases are considered fully amortized and a single amortization base equal to the surplus is amortized over a 30-year period with level payments each year. The purpose of the method is to give a smooth progression of the costs from year to year and, at the same time, provide for an orderly funding of the unfunded liabilities.

For accounting, gains and losses occurring from census experience different than assumed and assumption changes are amortized into expense over the average expected future service of all plan participants. Gains and losses occurring from investment experience different than assumed are amortized into expense over a 5-year period. The effect of plan changes on the plan liability are fully recognized in expense in the year in which they occur.

Member census data as of June 30, 2017 was used in the valuation and adjusted, where appropriate, to reflect changes between June 30, 2017 and June 30, 2018. The valuation results from June 30, 2017 were rolled-forward to June 30, 2018 to reflect benefit accruals during the year less benefits paid.

2. COLA Surcharge

The COLA Surcharge is developed by determining the assets needed at the start of the next biennium to fund the post-retirement benefit increases anticipated to be granted in that biennium. This amount is divided by the present value of expected payroll over which the accumulations will occur.

3. Asset Valuation Method

Actuarial Value of Assets is equal to a five-year smoothing of gains and losses on the Market Value of Assets subject to a 20% corridor.

4. **Anticipated Payroll**

   The Anticipated Payroll for the fiscal year beginning July 1, 2018 is equal to the actual payroll during the year ending June 30, 2018, increased with one year of salary scale.

5. **Employer Contribution Rates**

   Based on the assumptions and methods previously described, an actuarially determined contribution rate is computed for each employer. The Board considers this information, but has ultimate authority in setting the employer contribution rates.

Changes in Methods since the Prior Year

None.

ACTUARIAL ASSUMPTIONS

Valuation Date — June 30, 2018

Economic Assumptions

1. Investment return — 6.75% per year, compounded annually (net of administrative and investment expenses)

2. Inflation — 2.25% per year

3. Salary increase

Sample Rates			
Years of Service	Merit & Seniority	Inflation	Total
1	10.25%	2.25%	12.50%
5	2.75%	2.25%	5.00%
10	2.75%	2.25%	5.00%
15	1.50%	2.25%	3.75%
20	0.25%	2.25%	2.50%
25	0.25%	2.25%	2.50%
30	0.25%	2.25%	2.50%
35	0.25%	2.25%	2.50%
40	0.25%	2.25%	2.50%

4. Cost-of-Living Adjustment (COLA) — In lieu of a COLA on January 1, 2019, members in pay were provided a 13th check on October 1, 2018. It is assumed a 13th check would continue for the 2020 and 2021 fiscal years. Thereafter, the following COLAs, compounded annually, were assumed:

0.4% beginning on January 1, 2022
0.5% beginning on January 1, 2034
0.6% beginning on January 1, 2039

Demographic Assumptions

1. Mortality — The mortality assumption includes an appropriate level of conservatism that reflects expected future mortality improvement.

a. Healthy mortality — RP-2014 (with MP-2014 improvement removed) White Collar Mortality Tables projected on a fully generational basis using the future mortality improvement scale inherent in the mortality projection included in the Social Security Administration's 2014 Trustee Report.

b. Disabled mortality — RP-2014 (with MP-2014 improvement removed) Disability Mortality Tables projected on a fully generational basis using the future mortality improvement scale inherent in the mortality projection included in the Social Security Administration's 2014 Trustee Report.

2. Disability

Attained Age	Sample Rates
25	0.0001
30	0.0001
35	0.0001
40	0.0001
45	0.0002
50	0.0005
55	0.0009
60	0.0010

3. Retirement

Regular Retirement		Rule of 85 Retirement		Early Retirement	
Age	Probability	Age	Probability	Age	Probability
				50-53	0.020
				54	0.050
		55	0.150	55	0.050
		56	0.150	56	0.050
		57	0.150	57	0.065
		58	0.150	58	0.080
		59	0.200	59	0.120
60	0.200	60	0.200		
61	0.250	61	0.250		
62	0.300	62	0.300		
63	0.350	63	0.350		
64	0.400	64	0.400		
65	0.450	65	0.450		
66	0.450	66	0.450		
67	0.450	67	0.450		
68	0.450	68	0.450		
69	0.450	69	0.450		
70+	1.000	70+	1.000		

Inactive vested members are assumed to commence their retirement benefit at their earliest normal retirement date.

4. Termination

Years of Service	Service-Based Male	Service-Based Female
0	0.3500	0.3500
1	0.1400	0.1400
2	0.1100	0.1100
3	0.0900	0.0900
4	0.0800	0.0800
5	0.0700	0.0700
6	0.0600	0.0600
7	0.0500	0.0550
8	0.0450	0.0500
9	0.0450	0.0450

Attained Age	Sample Age-Based* Male	Sample Age-Based* Female
30	0.0225	0.0300
35	0.0225	0.0300
40	0.0225	0.0200
45	0.0225	0.0200
50	0.0225	0.0200
55	0.0225	0.0200
60	0.0225	0.0200

*Age-Based rates apply only if 10 or more years of service.

Other Assumptions

1. Form of payment — 100% of members are assumed to elect the normal form of benefit payment (Option A-1), a single life annuity with a five-year certain period.

2. Marital status
   a. Percent married — 100% of members are assumed to be married for purposes of valuing death-in-service benefits.

   b. Spouse's age — Male spouses are assumed to be three years older than female spouses.

3. Pay increase timing — Beginning of (fiscal) year. Payroll amounts stated in the valuation data are amounts projected to be paid during the current year.

4. Decrement timing — Decrements are assumed to occur at the beginning of the year.

5. Actuarial equivalence basis for optional forms of payment — 6.75% interest with a 50% unisex blend of the 2013 IRS combined mortality basis projected to 2018.

6. Miscellaneous adjustments	The Average Annual Compensation was increased by $400 to account for the inclusion of unused sick leave in the calculation of Average Annual Compensation.

Changes in Assumptions since the Prior Year

The COLA assumption was changed due to passage of Senate Enrolled Act No. 373. In lieu of a 1% COLA occurring beginning on January 1, 2020, we now assume that the COLA will be replaced by a 13th check for 2020 and 2021. The COLA assumption thereafter, would be 0.4% beginning on January 1, 2022, changing to 0.5% beginning on January 1, 2034, and ultimately 0.6% beginning on January 1, 2039.

Data Adjustments

Active and retired member data is reported as of June 30. Member census data as of June 30, 2017 was used in the valuation and adjusted, where appropriate, to reflect changes between June 30, 2017 and June 30, 2018. Standard actuarial roll-forward techniques were then used to project the total pension liability computed as of June 30, 2017 to the June 30, 2018 measurement date.

The member census data and the asset information for this valuation were furnished as of June 30, 2018. We did not audit the information provided, but we did review it thoroughly for reasonableness and compared it with the prior year's submission for consistency.

For members reported with no gender, the member is assumed to be female. Additionally, active members missing a salary are assumed to have earned the average salary.

Other Technical Valuation Procedures

Salary increases are assumed to apply to annual amounts.

Decrements are assumed to occur at the beginning of the year. Standard adjustments are made for multiple decrements.

No actuarial liability is included for participants who terminated without being vested prior to the valuation date, except those due a refund of contributions.

Accrued Service	Service credited under the system that was rendered before the date of the actuarial valuation.
Actuarial Assumptions	Estimates of future experience with respect to demographic or economic events. Demographic assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of retirement system benefits between future normal cost and actuarial accrued liability. Sometimes referred to as the "actuarial funding method."
Actuarial Equivalent	A single amount or series of amounts of equal value to another single amount or series of amounts computed on the basis of a given set of actuarial assumptions.
Actuarial Accrued Liability	The difference between the actuarial present value of system benefits and the actuarial value of future normal costs. Also referred to as "accrued liability" or "actuarial liability."
Actuarial Present Value	The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest and by probabilities of payment.
Amortization	Paying off an interest-discounted amount with periodic payments of interest and principal, as opposed to paying off with lump sum payment.
Experience Gain (Loss)	The difference between actual experience and actuarial assumptions anticipated experience during the period between two actuarial valuation dates.
Normal Cost	The actuarial present value of retirement system benefits allocated to the current year by the actuarial cost method.
Unfunded Actuarial Accrued Liability	The difference between actuarial liability and the actuarial value of assets. Sometimes referred to as "unfunded accrued liability" or "unfunded liability". Most retirement systems have unfunded actuarial liability. They arise anytime new benefits are added and anytime an actuarial loss is realized.