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# *Indiana Public Retirement System*

1977 Police Officers' and Firefighters' Pension and Disability Fund

Actuarial Valuation as of  
June 30, 2015



October 29, 2015

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

**Re: Certification of the Actuarial Valuations of the Indiana Public Retirement System as of June 30, 2015**

Dear Board of Trustees:

Actuarial valuations are performed annually for the Indiana Public Retirement System ("INPRS") defined benefit pension plans ("Plans"). The results of the June 30, 2015 actuarial valuations for all plans other than the Teachers' Retirement Fund are presented in individual valuation reports pursuant to the engagement letter between INPRS and PricewaterhouseCoopers LLP ("PwC"), originally executed on June 7, 2010, as amended through the date of this report. The reports are intended to provide the Board of Trustees ("Board") with information on the funded status of the Plans, development of the contribution rates, and certain financial statement disclosure information.

Under Indiana statutes, employer contribution rates and amounts, as applicable, are adopted annually for each Plan by the Board. The contributions are actuarially determined based on the funding policy, actuarial assumptions, and actuarial methods adopted by the Board. Contributions determined by the actuarial valuation become effective either twelve or eighteen months after the valuation date, depending on the applicable employer. Therefore, contribution rates and amounts determined by the June 30, 2015 actuarial valuation and adopted by the Board will become effective on either July 1, 2016 or January 1, 2017. If new legislation is enacted between the valuation date and the date the contributions become effective, the Board may adjust the recommended contributions before adopting them, in order to reflect this new legislation. Such adjustments are based on information supplied by the actuary.

**Financing Objectives and Funding Policy**

In setting contribution levels, the Board's principal objectives have been:

- To set contributions such that the unfunded actuarial accrued liability ("UAAL") will be amortized over a period not greater than 30 years.
- To set contributions such that they remain relatively level over time.

To accomplish this, the Board's funding policy requires that employer contributions be equal to the sum of the employer normal cost (which pays the current year cost of benefits accruing) and an amortization of the UAAL in equal installments.

**Progress Toward Realization of Financing Objectives**

The funded ratio (the ratio of the actuarial value of assets to the actuarial accrued liability) is a standard measure of a Plan's funded status. In the absence of benefit improvements it should increase over time, until it reaches 100% if contributions equal or exceed the actuarially determined amount. The combined funded ratio for all Plans (excluding the Teachers' Retirement Fund) decreased by 2.7% from the preceding year to 84.3%, primarily due to changes in the actuarial assumptions pursuant to the experience study completed in April 2015, investment returns being less than the 6.75% assumed, and other adverse member experience.

**Benefit Provisions**

The benefit provisions reflected in the valuation reports are those which were in effect at June 30, 2015, as set forth in the related Indiana statutes. There were no material changes in benefit provisions since the 2014 valuations.

**Assets and Member Data**

The valuations were based on asset values of the trust funds as of June 30, 2015 and member census data as of June 30, 2014, adjusted for certain activity during fiscal year 2015. All asset information and member data were provided by INPRS. While certain checks for reasonableness were performed, the data was used unaudited. The accuracy of the results presented in the reports is dependent upon the accuracy and completeness of the underlying asset and census information.



### **Actuarial Assumptions and Methods**

The actuarial assumptions used in the June 30, 2015 valuations were adopted by the Board pursuant to the experience studies completed in April 2015, which reflected the experience period from July 1, 2010 through June 30, 2014. The June 30, 2015 valuations incorporate member census data as of June 30, 2014, adjusted for certain activity during fiscal year 2015. Standard actuarial techniques were used to roll forward valuation results over one year.

The actuarial assumptions and methods are summarized in the Actuarial Assumptions and Methods section of each valuation report. We believe the actuarial assumptions and methods are reasonable for the purposes of the valuation reports and comply with the parameters set forth in Statements No. 67 and No. 68 of the Governmental Accounting Standards Board ("GASB"). Different assumptions and methods may be reasonable for other purposes. As such, the results presented in the valuation reports should only be relied upon for the intended purpose.

### **Certification**

We certify that the information presented herein is accurate and fairly portrays the actuarial position of each Plan administered by INPRS (other than the Teachers' Retirement Fund) as of June 30, 2015, based on the underlying census data, asset information and selected assumptions and methods. This information is presented in several schedules and exhibits in this report, including the following:

#### Financial Section:

- Note 1 - Tables of Plan Membership (Included in the Historical Summary)
- Note 8 - Net Pension Liability and Actuarial Information - Defined Benefit Plans (Included in the Accounting Section)
- Schedule of Changes in Net Pension Liability and Plan Fiduciary Net Position
- Schedule of Contributions (Actuarially Determined Contribution)
- Schedule of Notes to Required Supplementary Information

#### Actuarial Section:

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

#### Statistical Section:

- Membership Data Summary (Included in the Historical Summary)
- Ratio of Active Members to Annuitants (Census Counts Included in the Historical Summary)
- Schedule of Benefit Recipients by Type of Benefit Option
- Schedule of Average Benefit Payments

This report contains certain accounting information required to be included in the System's Comprehensive Annual Financial Report. This information for the system has been prepared in accordance with our understanding of GASB No.67. This report also contains employer accounting information prepared in accordance with our understanding of GASB No. 68.

To the best of our knowledge this actuarial statement is complete and accurate and has been prepared in accordance with generally accepted actuarial principles and practice and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with our understanding of the requirements of Indiana state law. The undersigned actuaries are members of the Society of Actuaries and other professional organizations, including the American Academy of Actuaries, and meet the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States relating to pension plans. There is no relationship between the PwC practitioners involved in this engagement and INPRS that may impair our objectivity.



This document has been prepared pursuant to an engagement letter between INPRS and PwC, and is intended solely for the use and benefits of INPRS and not for reliance by any other person.

Respectfully submitted,

A handwritten signature in black ink that reads "Cindy Fraterrigo".

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Ms. Cindy Fraterrigo  
Member, American Academy of Actuaries  
Fellow of the Society of Actuaries  
Enrolled Actuary (No. 14-06229)

A handwritten signature in black ink that reads "Brandon A. Robertson".

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Mr. Brandon Robertson  
Member, American Academy of Actuaries  
Associate of the Society of Actuaries  
Enrolled Actuary (No. 14-07568)

The content of this document is limited to the matters specifically addressed herein and does not address any other potential tax consequences, or the potential application of tax penalties, to any matter other than as set forth herein. Our conclusions are not binding upon any taxing authority or the courts and there is no assurance that any relevant taxing authority will not successfully assert a contrary position. In addition, no exceptions (including the reasonable cause exception) are available for any federal or state penalties imposed if any portion of a transaction is determined to lack economic substance or fails to satisfy any similar rule of law, and our advice will not protect you from any such penalties. This document supersedes all prior written or oral advice with respect to the issues addressed in this document and all such prior communications should not be relied upon by any person for any purpose.

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## SECTION I - EXECUTIVE SUMMARY

### **HIGHLIGHTS OF THE ACTUARY'S REPORT**

This report presents the results of the actuarial valuation of the 1977 Police Officers' and Firefighters' Pension and Disability Fund (the "1977 Fund") and has been prepared to present the current funded status of the Plan, contribution requirements for calendar year 2017 (January 1, 2017 through December 31, 2017), and certain financial statement disclosure information. The valuation was performed using census data for plan members as of June 30, 2014, adjusted for certain activity during fiscal year 2015, as provided by INPRS and summarized in Section IV, asset information as of June 30, 2015 provided by INPRS, the actuarial assumptions and methods approved by the Board and summarized in Section V, and the plan provisions effective June 30, 2015 summarized in Section VI.

#### **Contribution Rate**

The Board sets, at its discretion, the applicable employer contribution rate upon considering the results of the actuarial valuation and other analysis as appropriate. The Board has approved an employer contribution rate of 17.5% for calendar year 2017. The contribution rate becomes effective on January 1, 2017. Therefore, the actual dollar amount of employer cost will depend on the actual payroll during calendar year 2017. The approved rate exceeds the actuarially determined contribution rate for calendar year 2017 of 8.54%.

Members of the 1977 Fund contribute 6% of the compensation of a first class officer during their first 32 years of service. However, the employer may elect to "pick-up" all or part of the employee contribution. If a member terminates employment with less than 20 years of service, the accumulated contributions with interest can be withdrawn as a lump sum or the member may direct the 1977 Fund to make a direct rollover of the distribution amount. When a member becomes vested with at least 20 years of service, the member's account balance may not be refunded and is instead combined with the employer contributions in order to fund the member's future retirement annuity benefit.

#### **Funded Status**

The funded status of the 1977 Fund is measured by the funded ratio, which is the ratio of the assets available for benefits to a benefit liability measure for the 1977 Fund. While there are several such measures that could be appropriately used, the benefit liability measure that ties most closely to INPRS's funding strategy is the Actuarial Accrued Liability ("AAL").

Using the Actuarial Value of Assets ("AVA"), an asset value that smoothes the market gains and losses over four (4) years, the 1977 Fund AAL funded ratio increased from 98.3% at June 30, 2014 to 105.5% at June 30, 2015. The increase is due to changes in actuarial assumptions pursuant to the experience study completed in April 2015, census experience gains, and lower than assumed COLA, partially offset by investment returns being less than the 6.75% assumed.

#### **Investment Experience**

For the fiscal year ending June 30, 2015, the INPRS actual time-weighted return net of fees was 0.0%. Based on the value of assets allocated to the 1977 Fund as of the prior valuation date and contribution and benefit payment activity during the year, the allocation of returns to the 1977 Fund represent a return of approximately (0.1%) on market value and 5.1% on actuarial value. The return on actuarial value is different due to the smoothing of returns greater or less than expected returns over four years.

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## SECTION I - EXECUTIVE SUMMARY

### **HIGHLIGHTS OF THE ACTUARY'S REPORT (CONTINUED)**

#### **Cost-of-Living Adjustment**

Benefits for retired members are increased annually based on increases in the CPI-U index. The increase is subject to a 3% maximum and 0% minimum, and is assumed to be 2.00% annually. There was no increase in monthly benefits provided to retired members, disabled members, and beneficiaries effective July 1, 2015. There was a 1.4% increase in monthly benefits provided to retired members, disabled members, and beneficiaries effective July 1, 2014.

#### **Changes in Actuarial Assumptions**

An assumption study was performed in April of 2015 resulting in an update to the following assumptions:

The **inflation assumption** decreased from 3.00% to 2.25% per year.

The **future salary increase assumption** decreased from 3.25% to 2.50% per year.

The **future COLA assumption** decreased from 2.25% to 2.00% per year.

The **mortality assumption** changed from the 2013 IRS Static Mortality projected five (5) years with Scale AA to the RP-2014 (with MP-2014 improvement removed) Blue Collar mortality tables, with future mortality improvement projected generationally using future mortality improvement inherent in the Social Security Administration's 2014 Trustee report.

The **disability assumption** was adjusted to reflect recent experience.

The **termination assumption** is a service-based table of rates. The rates at most years of service were decreased to reflect recent experience.

#### **Changes in Plan Provisions**

It is our understanding that there were no changes to the Plan that impacted the pension benefits during the fiscal year.

#### **Changes in Actuarial Methods**

There were no method changes for the June 30, 2015 valuation.

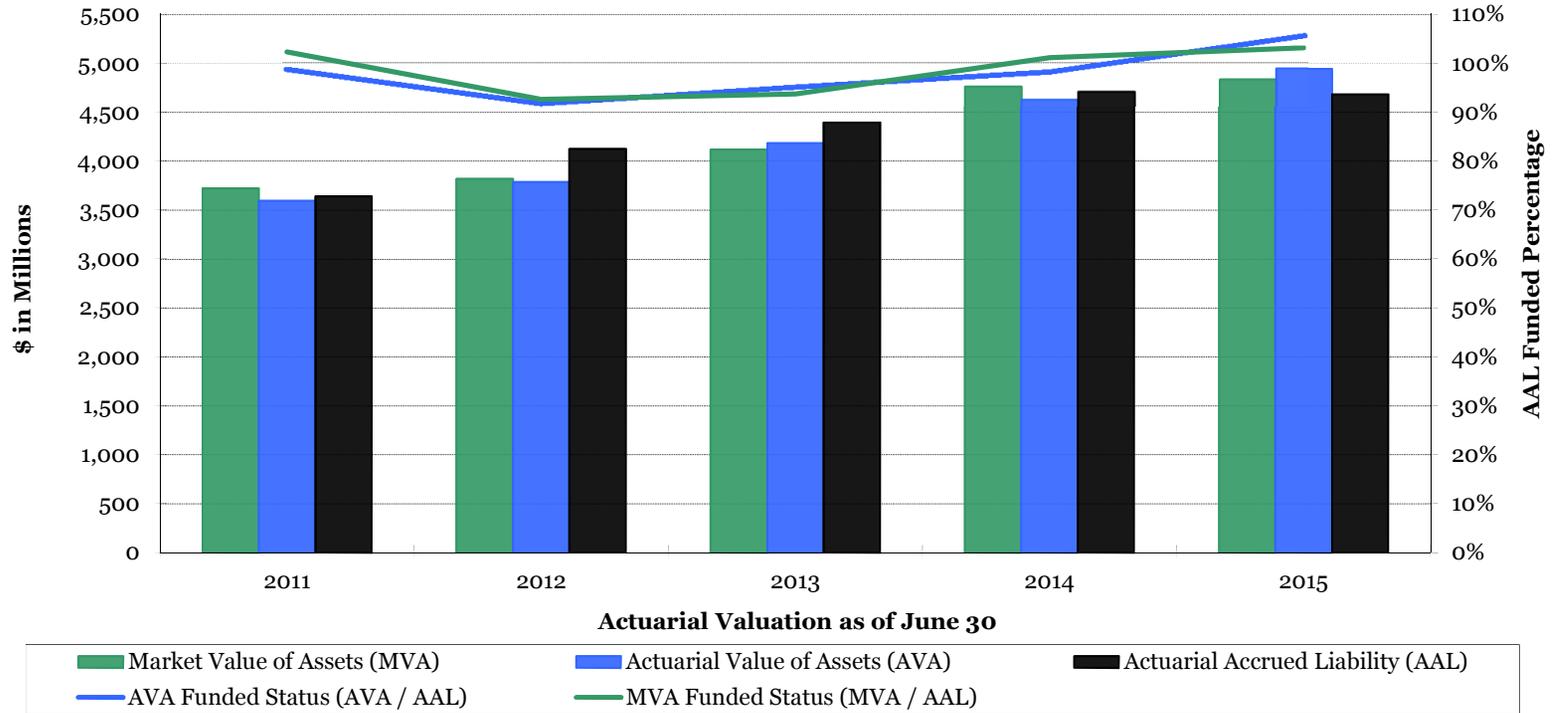
#### **Governmental Accounting Standards**

This report contains certain financial statement information, including notes and required supplemental information, prepared in accordance with our understanding of Governmental Accounting Standards No. 67 and No. 68 ("GASB 67" and "GASB 68") to assist INPRS with the implementation of the new standards. GASB 67 is effective for fiscal years beginning after June 15, 2013. GASB 68 is effective for employers sponsoring and/or participating in public pension plans for fiscal years beginning after June 15, 2014.

SECTION I - EXECUTIVE SUMMARY

HISTORICAL SUMMARY

**1977 Fund – 5 Year History of Funded Status**

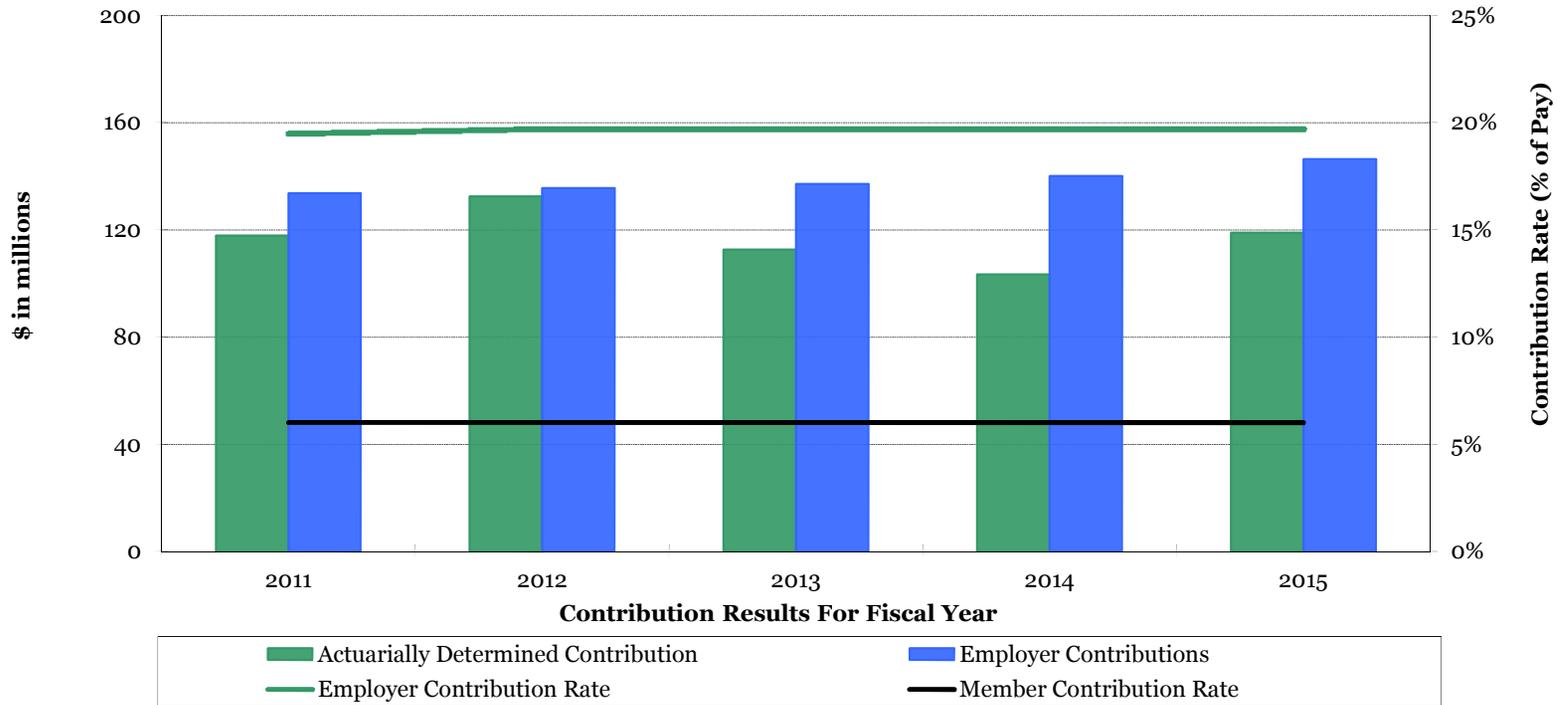


<b>Actuarial Valuation as of June 30:</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Actuarial Accrued Liability (AAL)	\$3,639.0	\$4,122.4	\$4,392.9	\$4,707.0	\$4,680.7
Actuarial Value of Assets (AVA)	3,593.8	3,786.6	4,180.7	4,625.5	4,939.3
Market Value of Assets (MVA)	3,721.4	3,817.0	4,116.9	4,758.0	4,828.4
Unfunded Liability (AAL - AVA)	45.2	335.8	212.2	81.5	-258.6
AVA Funded Status (AVA / AAL)	98.8%	91.9%	95.2%	98.3%	105.5%
MVA Funded Status (MVA / AAL)	102.3%	92.6%	93.7%	101.1%	103.2%

SECTION I - EXECUTIVE SUMMARY

**HISTORICAL SUMMARY (CONTINUED)**

**1977 Fund – 5 Year History of Contributions**



<b><u>Contribution Results For Fiscal Year:</u></b>	<b><u>2011</u></b>	<b><u>2012</u></b>	<b><u>2013</u></b>	<b><u>2014</u></b>	<b><u>2015</u></b>
Actuarially Determined Contribution <sup>1</sup>	\$117.8	\$132.5	\$112.6	\$103.4	\$118.9
Employer Contributions <sup>2</sup>	\$133.7	\$135.6	\$137.1	\$140.1	\$146.4
ADC % Contributed	113.5%	102.3%	121.8%	135.5%	123.1%
Employer Contribution Rate <sup>3</sup>	19.50%	19.70%	19.70%	19.70%	19.70%
Member Contribution Rate <sup>4</sup>	6.0%	6.0%	6.0%	6.0%	6.0%

<sup>1</sup> The ADC amount is based on the ADC Rates in effect during the fiscal year, multiplied by actual payroll for the fiscal year.

<sup>2</sup> Excludes employer service purchases.

<sup>3</sup> Rates shown are those in effect on January 1 during the fiscal year.

<sup>4</sup> Members contribute 6% of pay to the Fund during their first 32 years of service.

SECTION I - EXECUTIVE SUMMARY

**HISTORICAL SUMMARY (CONTINUED)**

**Summary of Valuation Results <sup>1</sup>**

<b><u>Valuation Date</u></b>	<b><u>June 30, 2011</u></b>	<b><u>June 30, 2012</u></b>	<b><u>June 30, 2013</u></b>	<b><u>June 30, 2014</u></b>	<b><u>June 30, 2015</u></b>
Development of Actuarially Determined Contribution Rate:					
1. Anticipated Payroll <sup>2</sup>	\$ 687,342,353	\$ 697,111,339	\$ 706,603,233	\$ 734,023,680	\$ 764,214,642
2. Normal Cost (Beginning of Year)					
a. Amount	\$ 123,438,234	\$ 130,912,451	\$ 133,074,656	\$ 138,204,281	\$ 129,369,091
b. Percentage of Payroll	17.96%	18.78%	18.83%	18.83%	16.93%
3. Unfunded Actuarial Accrued Liability Annual Amortizations					
a. Amount	\$ 3,671,206	\$ 25,053,170	\$ 16,255,805	\$ 6,857,014	\$ (19,036,586)
b. Percentage of Payroll	0.53%	3.59%	2.30%	0.93%	(2.49%)
4. Expected Employee Contributions <sup>3</sup>					
a. Amount	\$ 40,582,006	\$ 40,821,968	\$ 40,636,183	\$ 42,213,980	\$ 45,065,879
b. Percentage of Payroll	5.90%	5.85%	5.75%	5.75%	5.90%
5. Actuarially Determined Contribution Rate:					
a. Percentage of Payroll: (2)(b) + (3)(b) - 4(b)	<b>12.59%</b>	<b>16.52%</b>	<b>15.38%</b>	<b>14.01%</b>	<b>8.54%</b>
b. Effective Date	January 1, 2013	January 1, 2014	January 1, 2015	January 1, 2016	January 1, 2017
<b><u>Calendar Year</u></b>	<b><u>2013</u></b>	<b><u>2014</u></b>	<b><u>2015</u></b>	<b><u>2016</u></b>	<b><u>2017</u></b>
Approved Funding Rate	<b>19.70%</b>	<b>19.70%</b>	<b>19.70%</b>	<b>19.70%</b>	<b>17.50%</b>

<sup>1</sup> The contribution rates shown were developed on a funding basis only and do not reflect accounting requirements

<sup>2</sup> For the 1977 Fund, payroll is the applicable first class officer pay for each member.

<sup>3</sup> Only members with less than 32 years of service contribute to the plan. Current payroll for active members with less than 32 years of service as of June 30, 2015 is \$751,097,985.

SECTION I - EXECUTIVE SUMMARY

**HISTORICAL SUMMARY (CONTINUED)**

**Summary of Valuation Results (Continued) <sup>1</sup>**

	<u>June 30, 2011</u>	<u>June 30, 2012</u>	<u>June 30, 2013</u>	<u>June 30, 2014</u>	<u>June 30, 2015</u>
Census Information					
Active					
Number	13,376	13,390	13,287	13,295	13,390
Average Age	41.1	41.1	41.9	41.9	42.1
Average Years of Service	13.6	13.6	14.4	14.4	14.7
Anticipated Payroll of Actives <sup>2</sup>	\$ 687,342,353	\$ 697,111,339	\$ 706,603,233	\$ 734,023,680	\$ 764,214,642
Inactive - Vested					
Number	126	122	129	129	155
Average Age	50.2	50.1	49.9	49.9	50.0
Average Years of Service	22.8	22.4	22.6	22.6	22.7
Inactive - Non-Vested <sup>3</sup>					
Number	791	751	796	796	822
Retiree/Beneficiary/Disabled					
Number	2,966	3,208	3,491	3,491	3,736
Average Age	61.5	61.7	61.7	61.7	62.2
Annual Benefits Payable <sup>4</sup>	\$ 68,178,739	\$ 76,916,985	\$ 87,301,272	\$ 87,301,272	\$ 96,335,985

<sup>1</sup> The valuation results beginning as of June 30, 2014 were calculated using census data as of the prior year end, adjusted for certain activity during the current fiscal year.

<sup>2</sup> For the 1977 Fund, payroll is the applicable first class officer pay for each member. Figures shown are the anticipated pay for the one-year period following the valuation date.

<sup>3</sup> As of June 30, 2014, inactive non-vested members entitled to a refund of their member contribution had balances totaling \$6,991,619.

<sup>4</sup> Figures shown reflect cost-of-living increases effective July 1 following the date of the census data.

SECTION I - EXECUTIVE SUMMARY

**HISTORICAL SUMMARY (CONTINUED)**

**Summary of Valuation Results (Continued)**

	<u>June 30, 2011</u>	<u>June 30, 2012</u>	<u>June 30, 2013</u>	<u>June 30, 2014</u>	<u>June 30, 2015</u>
<b>Actuarial Accrued Liability (AAL)</b>					
Member Contribution Balance	\$ 679,848,776	\$ 728,891,808	\$ 782,124,168	\$ 809,877,043	\$ 832,760,403
Retiree/Beneficiary/Disabled	970,676,496	1,135,537,898	1,288,456,658	1,280,920,387	1,362,021,464
Active and Inactive	<u>1,988,431,007</u>	<u>2,258,006,406</u>	<u>2,322,366,151</u>	<u>2,616,200,032</u>	<u>2,485,912,578</u>
Total	\$ 3,638,956,279	\$ 4,122,436,112	\$ 4,392,946,977	\$ 4,706,997,462	\$ 4,680,694,445
<b>Actuarial Value of Assets (AVA)</b>					
Member Contribution Balance	\$ 679,848,776	\$ 728,891,808	\$ 782,124,168	\$ 809,877,043	\$ 832,760,403
Retiree/Beneficiary/Disabled	970,676,496	1,135,537,898	1,288,456,658	1,280,920,387	1,362,021,464
Active and Inactive	<u>1,943,261,593</u>	<u>1,922,164,986</u>	<u>2,110,122,792</u>	<u>2,534,677,540</u>	<u>2,744,548,162</u>
Total	\$ 3,593,786,865	\$ 3,786,594,692	\$ 4,180,703,618	\$ 4,625,474,970	\$ 4,939,330,029
<b>Market Value of Assets (MVA)</b>					
Member Contribution Balance	\$ 679,848,776	\$ 728,891,808	\$ 782,124,168	\$ 809,877,043	\$ 832,760,403
Retiree/Beneficiary/Disabled	970,676,496	1,135,537,898	1,288,456,658	1,280,920,387	1,362,021,464
Active and Inactive	<u>2,070,841,180</u>	<u>1,952,583,928</u>	<u>2,046,280,295</u>	<u>2,667,180,355</u>	<u>2,633,632,694</u>
Total	\$ 3,721,366,452	\$ 3,817,013,634	\$ 4,116,861,121	\$ 4,757,977,785	\$ 4,828,414,561
<b>Unfunded Actuarial Accrued Liability: AAL - AVA <sup>1</sup></b>					
Member Contribution Balance	\$ -	\$ -	\$ -	\$ -	\$ -
Retiree/Beneficiary/Disabled	-	-	-	-	-
Active and Inactive	<u>45,169,414</u>	<u>335,841,420</u>	<u>212,243,359</u>	<u>81,522,492</u>	<u>(258,635,584)</u>
Total	\$ 45,169,414	\$ 335,841,420	\$ 212,243,359	\$ 81,522,492	\$ (258,635,584)
<b>Funded Percentage: AVA / AAL <sup>1</sup></b>					
Member Contribution Balance	100.0%	100.0%	100.0%	100.0%	100.0%
Retiree/Beneficiary/Disabled	100.0%	100.0%	100.0%	100.0%	100.0%
Active and Inactive	<u>97.7%</u>	<u>85.1%</u>	<u>90.9%</u>	<u>96.9%</u>	<u>110.4%</u>
Total	98.8%	91.9%	95.2%	98.3%	105.5%
<b>Summary of Assumptions</b>					
Valuation Interest Rate	7.0%	6.75%	6.75%	6.75%	6.75%
Salary Scale	3.25%	3.25%	3.25%	3.25%	2.50%
Cost-of-Living Assumption	2.25%	2.25%	2.25%	2.25%	2.00%

<sup>1</sup> In determining the unfunded actuarial accrued liability and funded percentage, the assets are allocated first to member contribution balances, then to the retiree/beneficiary/disabled liability, and then to the active/inactive liability.

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## SECTION II - FUNDING

### **FUNDING**

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SECTION II - FUNDING

A. Development of Funded Status

	<b>June 30, 2014</b>	<b>June 30, 2015</b>
1. Actuarial Accrued Liability		
a. Member Contribution Account	809,877,043	832,760,403
b. Retirees, Beneficiaries, and Disableds	1,280,920,387	1,362,021,464
c. Actives and Inactives	2,616,200,032	2,485,912,578
d. Total: (1)(a) + (1)(b) + (1)(c)	\$ 4,706,997,462	\$ 4,680,694,445
2. Actuarial Value of Assets <sup>1</sup>		
a. Member Contribution Account	809,877,043	832,760,403
b. Retirees, Beneficiaries, and Disableds	1,280,920,387	1,362,021,464
c. Actives and Inactives	2,534,677,540	2,744,548,162
d. Total: (2)(a) + (2)(b) + (2)(c)	\$ 4,625,474,970	\$ 4,939,330,029
3. Unfunded Actuarial Accrued Liability <sup>1</sup>		
a. Member Contribution Account: (1)(a) - (2)(a)	-	-
b. Retirees, Beneficiaries, and Disableds: (1)(b) - (2)(b)	-	-
c. Actives and Inactives: (1)(c) - (2)(c)	81,522,492	(258,635,584)
d. Total: (1)(d) - (2)(d)	\$ 81,522,492	\$ (258,635,584)
4. Funded Percentage <sup>1</sup>		
a. Member Contribution Account: (2)(a) / (1)(a)	100.0%	100.0%
b. Retirees, Beneficiaries, and Disableds: (2)(b) / (1)(b)	100.0%	100.0%
c. Actives and Inactives: (2)(c) / (1)(c)	96.9%	110.4%
d. Total: (2)(d) / (1)(d)	98.3%	105.5%

<sup>1</sup> In determining the unfunded actuarial accrued liability and funded percentage, the assets are allocated first to member contribution balances, then to the retiree/beneficiary/disabled liability, and then to the active/inactive liability.

SECTION II - FUNDING

**B. Unfunded Actuarial Accrued Liability Reconciliation**

	<b>June 30, 2014</b>	<b>June 30, 2015</b>
1. Unfunded Actuarial Accrued Liability, Prior Year	\$ 212,243,359	\$ 81,522,492
2. Unfunded Actuarial Accrued Liability (Gain) / Loss		
a. Actuarial Value of Assets Experience	\$ (115,939,956)	\$ 33,100,585
b. Actuarial Accrued Liability Experience	-	(27,314,026)
c. Additional Liability Due to Cost-of-living Adjustments	(11,754,267) <sup>1</sup>	(34,326,415) <sup>2</sup>
d. Additional Liability Due to Changes in Actuarial Assumptions	-	(309,801,126) <sup>3</sup>
e. Additional Liability Due to Changes in Plan Provisions	-	-
f. Total New Amortization Bases:	\$ (127,694,223)	\$ (338,340,982)
(2)(a) + (2)(b) + (2)(c) + (2)(d) + (2)(e)		
g. Reduction in UAAL Due to Prior Year Contributions, Net of Interest	(3,026,644)	(1,817,094)
h. Change in Unfunded Actuarial Accrued Liability:	\$ (130,720,867)	\$ (340,158,076)
(2)(f) + (2)(g)		
3. Unfunded Actuarial Accrued Liability, Current Year: (1) + (2)(h)	\$ 81,522,492	\$ (258,635,584)

<sup>1</sup> A Cost-of-Living Adjustment (COLA) of 1.4% was effective as of July 1, 2014, rather than the assumed COLA of 2.25%.

<sup>2</sup> A Cost-of-Living Adjustment (COLA) of 0% was effective as of July 1, 2015, rather than the assumed COLA of 2.25%.

<sup>3</sup> The mortality, termination, disability, salary scale, and COLA assumptions were updated pursuant to an experience study completed in April 2015.

SECTION II - FUNDING

**C. Actuarial Accrued Liability Reconciliation**

1. June 30, 2014 Actuarial Accrued Liability	\$	4,706,997,462	
2. Normal Cost		138,204,281	
3. Actual Benefit Payments <sup>1</sup>		116,489,902	
4. Employer Service Purchases <sup>2</sup>		294,643	
5. Interest of 6.75% on (1) + (2) - (3)/2 + (4)/2		<u>323,129,528</u>	
6. Expected June 30, 2014 Actuarial Accrued Liability: (1) + (2) - (3) + (4) + (5)	\$	5,052,136,012	
		<u>Dollar Change</u> <u>in Liability</u>	<u>Percent Change</u> <u>in Liability</u>
7. (Gain)/Loss Components			
a. Census <sup>2</sup>	\$	(27,314,026)	(0.6%)
b. Cost-of-Living Adjustment <sup>3</sup>		(34,326,415)	(0.7%)
c. Assumption Changes <sup>4</sup>		(309,801,126)	(6.1%)
d. Plan Changes		-	0.0%
e. Total: (7)(a) + (7)(b) + (7)(c) + (7)(d)	\$	<u>(371,441,567)</u>	<u>(7.4%)</u>
8. Actual June 30, 2015 Actuarial Accrued Liability: (6) + (7)(e)	\$	<b>4,680,694,445</b>	

<sup>1</sup> Includes refunds of accumulated member contributions and net interfund transfers.

<sup>2</sup> Includes transfers from PERF to 1977 Fund and additional service purchases for existing 1977 Fund Employers.

<sup>3</sup> A Cost-of-Living Adjustment (COLA) of 0% was effective as of July 1, 2015, rather than the assumed COLA of 2.25%.

<sup>4</sup> The mortality, termination, disability, salary scale, and COLA assumptions were updated pursuant to an experience study completed in April 2015.

SECTION II - FUNDING

**D. Reconciliation of Market Value of Assets**

	<b>June 30, 2014</b>	<b>June 30, 2015</b>
1. Market Value of Assets, Prior June 30	\$ 4,116,861,121	\$ 4,757,977,785
2. Receipts		
a. Employer Contributions	\$ 140,119,065	\$ 146,696,360 <sup>1</sup>
b. Member Contributions	41,791,345	43,523,241
c. Investment Income and Dividends Net of Fees	569,383,013	(2,281,689)
d. Security Lending Income Net of Fees	672,807	681,740
e. Member Reassignments	-	-
f. Miscellaneous Income	32,706	15,287
g. Total Receipts: (2)(a) + (2)(b) + (2)(c) + (2)(d) + (2)(e) + (2)(f)	\$ 751,998,936	\$ 188,634,939
3. Disbursements		
a. Benefits Paid During the Year	\$ 105,522,090	\$ 112,874,523
b. Refund of Contributions and Interest	3,572,337	3,615,379
c. Administrative and Project Expenses	1,787,845	1,708,261
d. Member Reassignments	-	-
e. Miscellaneous Disbursements	-	-
f. Total Disbursements: (3)(a) + (3)(b) + (3)(c) + (3)(d) + (3)(e)	\$ 110,882,272	\$ 118,198,163
4. Market Value of Assets, Current June 30: (1) + (2)(g) - (3)(f)	<b>\$ 4,757,977,785</b>	<b>\$ 4,828,414,561</b>
5. Market Value of Assets Approximate Annual Rate of Return <sup>2</sup>	13.7%	(0.1%)

<sup>1</sup> Includes \$294,643 of contributions for transfers from PERF to 1977 Fund and additional service purchases for existing 1977 Fund employees.

<sup>2</sup> Based on individual fund experience. Net of expenses and assuming cash flows occur at mid-year.

SECTION II - FUNDING

**E. Reconciliation of Actuarial Value of Assets**

1.	Market Value of Assets, June 30, 2014		\$	4,757,977,785
2.	Market Value of Assets, June 30, 2015			4,828,414,561
3.	Expected Earnings/Expenses			
a.	Expected Investment Earnings at 6.75% on June 30, 2014 Market Value			321,163,500
b.	Receipts with Expected Investment Earnings at 6.75% <sup>1</sup>			196,655,315
c.	Disbursements with Expected Investment Earnings at 6.75% <sup>1</sup>			120,421,436
4.	Expected Assets, June 30, 2015: (1) + (3)(a) + (3)(b) - (3)(c)		\$	5,155,375,164
5.	2014-2015 Gain/(Loss): (2) - (4)			(326,960,603)
6.	Smoothing of Gain/(Loss)			
	<u>Year</u>	<u>Gain/(Loss)</u>	<u>% Unrecognized</u>	
a.	2014-2015	\$ (326,960,603)	75%	(245,220,452)
b.	2013-2014	\$ 287,921,206	50%	143,960,603
c.	2012-2013	\$ (38,622,475)	25%	(9,655,619)
7.	Preliminary Actuarial Value of Assets, June 30, 2015: (2) - (6)(a) - (6)(b) - (6)(c)		\$	4,939,330,029
8.	Corridor			
a.	120% of Market Value: 1.2 x (2)			5,794,097,473
b.	80% of Market Value: 0.8 x (2)			3,862,731,649
9.	Actuarial Value of Assets, June 30, 2015: (7), but not greater than (8)(a) or less than (8)(b)		\$	<b>4,939,330,029</b>
10.	Actuarial Value of Assets as a Percent of Market Value: (9) / (2)			102.3%
11.	Actuarial Value of Assets Approximate Annual Rate of Investment Return <sup>1</sup>			5.1%

<sup>1</sup> Assumes cash flows occur at mid-year.

SECTION II - FUNDING

**F. Contribution Rate**

	<b>June 30, 2014</b>	<b>June 30, 2015</b>
<b>Development of Actuarially Determined Contribution Rate:</b>		
1. Anticipated Payroll <sup>1</sup>	\$ 734,023,680	\$ 764,214,642
2. Normal Cost (Beginning of Year)		
a. Amount	\$ 138,204,281	\$ 129,369,091
b. Percentage of Payroll	18.83%	16.93%
3. Unfunded Actuarial Accrued Liability (UAAL) Annual Amortizations		
a. Amount	\$ 6,857,014	\$ (19,036,586)
b. Percentage of Payroll	0.93%	(2.49%)
4. Expected Employee Contributions <sup>2</sup>		
a. Amount	\$ 42,213,980	\$ 45,065,879
b. Percentage of Payroll	5.75%	5.90%
5. Actuarially Determined Contribution Rate:		
a. Percentage of Payroll: (2)(b) + (3)(b) - 4(b)	<b>14.01%</b>	<b>8.54%</b>
b. Effective Date	January 1, 2016	January 1, 2017
<b>Approved Funding Rate:</b>	<b>19.70%</b>	<b>17.50%</b>
<b>Expected Percentage of Actuarially Determined Contribution Contributed:</b>		
6. Fiscal Year Beginning	July 1, 2015	July 1, 2016
7. Actuarially Determined Contribution Rates for:		
a. July 1 - December 31	15.38%	14.01%
b. January 1 - June 30	14.01%	8.54%
8. Approved Funding Rates for:		
a. July 1 - December 31	19.70%	19.70%
b. January 1 - June 30	19.70%	17.50%
9. Expected Percentage of Actuarially Determined Contribution Contributed: $\frac{\{(8)(a) + (8)(b)\} / 2}{\{(7)(a) + (7)(b)\} / 2}$	134.06%	164.97%

<sup>1</sup> For the 1977 Fund, payroll is the applicable first class officer pay for each member.

<sup>2</sup> Only members with less than 32 years of service contribute to the plan. Anticipated payroll for active members with less than 32 years of service as of June 30, 2014 is \$751,097,985.

SECTION II - FUNDING

**G. Unfunded Actuarial Accrued Liability Amortization Schedule**

	<u>Date Base Established</u>	<u>Reason</u>	<u>Remaining Unfunded</u>	<u>Remaining Period</u>	<u>Amortization Amount</u>
1.	6/30/2015	Surplus	(258,635,584)	30	(19,036,586)
	Total		\$ (258,635,584)	30.0	\$ (19,036,586)

<sup>1</sup> 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.

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## SECTION II - FUNDING

### H. History of Employer Contribution Rates <sup>1, 2</sup>

<u>Valuation Date</u>	<u>Effective Date</u>	<u>Contribution Rate</u>
December 31, 2000	July 1, 2002	21.0%
December 31, 2001	July 1, 2003	21.0%
December 31, 2002	July 1, 2004	21.0%
December 31, 2003	July 1, 2005	21.0%
December 31, 2004	July 1, 2006	21.0%
December 31, 2005	July 1, 2007	21.0%
December 31, 2006	July 1, 2008	19.5%
December 31, 2007	July 1, 2009	19.5%
December 31, 2008	July 1, 2010	19.5%
June 30, 2009	January 1, 2011	19.5%
June 30, 2010	January 1, 2012	19.7%
June 30, 2011	January 1, 2013	19.7%
June 30, 2012	January 1, 2014	19.7%
June 30, 2013	January 1, 2015	19.7%
June 30, 2014	January 1, 2016	19.7%
June 30, 2015	January 1, 2017	17.5%

<sup>1</sup> Valuation results prior to June 30, 2010 were calculated by the prior actuary.

<sup>2</sup> Prior to the June 30, 2011 valuation date, rates shown reflect application of contribution rate smoothing rules.

SECTION II - FUNDING

**I. Approximate Annual Rate of Return for Year Ending June 30, 2015<sup>1</sup>**

	<u>Market Value of Assets</u>	<u>Actuarial Value of Assets</u>
1. Balance, beginning of year	\$ 4,757,977,785	\$ 4,625,474,970
2. Balance, end of year	4,828,414,561	4,939,330,029
3. Total increase: (2) - (1)	70,436,776	313,855,059
4. Contributions	190,234,888	190,234,888
5. Benefit payments <sup>2</sup>	116,489,902	116,489,902
6. Net additions: (4) - (5)	73,744,986	73,744,986
7. Net investment increase: (3) - (6)	(3,308,210)	240,110,073
8. Average assets: [(1) + (2)] / 2	4,794,850,278	4,662,347,463
9. Approximate rate of return: (7) / (8)	(0.1%)	5.1%

**J. Historical Investment Experience**

<u>Year Ending</u>	<u>Actual Rate of Investment Return</u>		<u>Actuarial Assumed Interest Rate</u>
	<u>Market Basis<sup>3</sup></u>	<u>Actuarial Basis<sup>1</sup></u>	
December 31, 2005	7.8%	13.5%	7.25%
December 31, 2006	13.7%	15.5%	7.25%
December 31, 2007	6.3%	10.8%	7.25%
December 31, 2008	(30.8%)	(1.2%)	7.25%
June 30, 2009 <sup>4</sup>	(20.6%)	0.2%	7.25%
June 30, 2010	13.9%	0.1%	7.25%
June 30, 2011	20.1%	3.5%	7.0%
June 30, 2012	0.7%	2.9%	7.0%
June 30, 2013	6.0%	8.3%	6.75%
June 30, 2014	13.7%	8.8%	6.75%
June 30, 2015	0.0%	5.1%	6.75%

<sup>1</sup> Based on individual fund experience. Net of expenses and assuming cash flows occur at mid-year.

<sup>2</sup> Includes refunds of accumulated member contributions and net interfund transfers.

<sup>3</sup> INPRS actual time-weighted rate of return net of fees for 2012-2015. PERF Consolidated Defined Benefit time-weighted rate of return reported as gross of fees for 2005-2011.

<sup>4</sup> Figures shown are for the six-month period from January 1, 2009 to June 30, 2009.

SECTION II - FUNDING

**K. Interest Rate Sensitivity**

The investment return assumption (discount rate) should be based on an estimated long-term investment yield for the plan, with consideration given to the nature and mix of current and expected plan investments. Management and the Board continually monitor the investment rate of return assumption and the Board formally reviews the assumption and makes changes as appropriate. The Board last changed the assumption for the June 30, 2012 valuation from 7.0% to 6.75%.

To illustrate the importance of the investment rate of return, which is used to discount the actuarial liabilities of the Plan, the Funded Ratio and Actuarially Determined Contribution Rate (for the calendar year beginning January 1, 2017) are shown below and on the following page at interest rates from 5.75% to 8.00%, in 0.25% increments.

	1.00% Decrease: (5.75%)	0.75% Decrease: (6.0%)	0.50% Decrease: (6.25%)	0.25% Decrease: (6.5%)	Current Assumption: (6.75%)
<b><u>Funded Status</u></b>					
Actuarial Accrued Liability	\$ 5,450,116,281	\$ 5,241,549,857	\$ 5,044,265,987	\$ 4,857,538,680	\$ 4,680,694,445
Actuarial Value of Assets	<u>4,939,330,029</u>	<u>4,939,330,029</u>	<u>4,939,330,029</u>	<u>4,939,330,029</u>	<u>4,939,330,029</u>
Unfunded Actuarial Accrued Liability	\$ 510,786,252	\$ 302,219,828	\$ 104,935,958	\$ (81,791,349)	\$ (258,635,584)
Funded Ratio	90.6%	94.2%	97.9%	101.7%	105.5%
<b><u>Actuarially Determined Contribution Rate</u></b>					
Normal Cost Percentage	22.12%	20.66%	19.32%	18.08%	16.93%
UAAL Amortization Percentage	4.47%	2.71%	0.96%	(0.77%)	(2.49%)
Expected Employee Contribution Percentage	<u>5.90%</u>	<u>5.90%</u>	<u>5.90%</u>	<u>5.90%</u>	<u>5.90%</u>
Actuarially Determined Contribution Rate	20.69%	17.47%	14.38%	11.41%	8.54%

SECTION II - FUNDING

**K. Interest Rate Sensitivity (Continued)**

	0.25% Increase: (7.0%)	0.50% Increase: (7.25%)	0.75% Increase: (7.5%)	1.00% Increase: (7.75%)	1.25% Increase: (8.0%)
<b><u>Funded Status</u></b>					
Actuarial Accrued Liability	\$ 4,513,108,169	\$ 4,354,199,320	\$ 4,203,428,479	\$ 4,060,294,168	\$ 3,924,329,915
Actuarial Value of Assets	<u>4,939,330,029</u>	<u>4,939,330,029</u>	<u>4,939,330,029</u>	<u>4,939,330,029</u>	<u>4,939,330,029</u>
Unfunded Actuarial Accrued Liability	\$ (426,221,860)	\$ (585,130,709)	\$ (735,901,550)	\$ (879,035,861)	\$ (1,015,000,114)
Funded Ratio	109.4%	113.4%	117.5%	121.6%	125.9%
<b><u>Actuarially Determined Contribution Rate</u></b>					
Normal Cost Percentage	15.86%	14.88%	13.96%	13.11%	12.33%
UAAL Amortization Percentage	(4.20%)	(5.90%)	(7.58%)	(9.26%)	(10.92%)
Expected Employee Contribution Percentage	<u>5.90%</u>	<u>5.90%</u>	<u>5.90%</u>	<u>5.90%</u>	<u>5.90%</u>
Actuarially Determined Contribution Rate	5.76%	3.08%	0.48%	0.00%	0.00%

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SECTION III - ACCOUNTING

**ACCOUNTING**

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SECTION III - ACCOUNTING

**PLAN FINANCIAL STATEMENTS UNDER GASB #67**

**A. Statement of Fiduciary Net Position under GASB #67 as of June 30, 2015**

1. Assets		
a. Cash	\$	1,126,655
b. Receivables		
i. Contributions Receivable	\$	2,016,553
ii. Miscellaneous Receivables		271,773
iii. Investments Receivable		75,978,571
iv. Foreign Exchange Contract Receivable		1,110,886,491
v. Interest and Dividends		12,408,732
vi. Due From Other Funds		-
vii. Total Receivables	\$	1,201,562,120
c. Total Investments		
i. Short-Term Investments	\$	-
ii. Pooled Short-Term Investments		223,933,889
iii. Pooled Fixed Income		1,654,559,889
iv. Pooled Equity		1,069,427,390
v. Pooled Alternative Investments		1,885,912,115
vi. Pooled Derivatives		182,453
vii. Securities Lending Collateral		241,868,119
viii. Total Investments	\$	5,075,883,855
d. Net Capital Assets		186,894
e. Prepaid Expenses		-
f. Total Assets: (1)(a) + (1)(b)(vii) + (1)(c)(viii) + (1)(d) + (1)(e)	\$	6,278,759,524
2. Liabilities		
a. Accounts Payable	\$	65,416
b. Retirement Benefits Payable		1,170,475
c. Salaries and Benefits Payable		-
d. Investments Payable		55,028,887
e. Foreign Exchange Contracts Payable		1,115,258,934
f. Securities Lending Obligations		241,868,119
g. Securities Sold Under Agreement to Repurchase		36,767,293
h. Due To Other Funds		185,839
i. Due To Other Governments		-
j. Total Liabilities: (2)(a) + (2)(b) + (2)(c) + (2)(d) + (2)(e) + (2)(f) + (2)(g) + (2)(h) + (2)(i)	\$	1,450,344,963
3. Fiduciary Net Position Restricted for Pensions: (1)(f) - (2)(j)	\$	<b>4,828,414,561</b>

SECTION III - ACCOUNTING

**PLAN FINANCIAL STATEMENTS UNDER GASB #67**

**B. Statement of Changes in Fiduciary Net Position under GASB #67 for the Year Ended June 30, 2015**

1. Fiduciary Net Position as of June 30, 2014	\$	4,757,977,785
2. Additions		
a. Contributions		
i. Member Contributions	\$	43,523,241
ii. Employer Contributions		146,401,717
iii. Employer Service Purchases <sup>1</sup>		294,643
iv. Non-Employer Contributing Entity Contributions		-
v. Total Contributions	\$	190,219,601
b. Investment Income/(Loss)		
i. Net Appreciation/(Depreciation) <sup>2,3</sup>	\$	(32,382,192)
ii. Net Interest and Dividend Income		64,297,451
iii. Securities Lending Income		812,914
iv. Other Net Investment Income		885,227
v. Investment Expenses		(35,082,175)
vi. Securities Lending Expenses		(131,174)
vii. Total Investment Income/(Loss)	\$	(1,599,949)
c. Other Additions		
i. Member Reassignments	\$	-
ii. Miscellaneous Receipts		15,287
iii. Total Other Additions	\$	15,287
d. Total Revenue (Additions): (2)(a)(v) + (2)(b)(vii) + (2)(c)(iii)	\$	188,634,939
3. Deductions		
a. Pension and Disability Benefits	\$	112,014,530
b. Death, Survivor, and Funeral Benefits		859,993
c. Distributions of Contributions and Interest		3,615,379
d. Member Reassignments		-
e. Administrative and Project Expenses		1,708,261
f. Total Expenses (Deductions): (3)(a) + (3)(b) + (3)(c) + (3)(d) + (3)(e)	\$	118,198,163
4. Net Increase (Decrease) in Fiduciary Net Position: (2)(d) - (3)(h)	\$	70,436,776
5. Fiduciary Net Position as of June 30, 2015: (1) + (4)	\$	<b>4,828,414,561</b>

<sup>1</sup> Includes contributions for transfers from PERF to 1977 Fund and additional service purchases for existing 1977 Fund employers.

<sup>2</sup> The calculation of realized gains and losses is independent of the calculation of the net change in the fair value of pension plan investments.

<sup>3</sup> Realized gains and losses on investments that had been held in more than one reporting period and sold in the current period were included as a change in the fair value reported in the prior period(s) and the current period.

SECTION III - ACCOUNTING

**EMPLOYER FINANCIAL STATEMENTS UNDER GASB #68**

**C. Collective Net Pension Liability under GASB #68 for the Year Ended June 30, 2015**

1.	Total Pension Liability		
	a. Total Pension Liability - Beginning of year	\$	4,706,997,462
	b. Service cost <sup>1</sup>		138,204,281
	c. Interest cost <sup>2</sup>		323,129,528
	d. Experience (gains)/losses		(61,640,441)
	e. Assumption changes		(309,801,126)
	f. Plan amendments		-
	g. Benefit payments <sup>3</sup>		(116,489,902)
	h. Member reassignments <sup>4</sup>		-
	i. Employer Service Purchases		294,643
	j. Total Pension Liability - End of year	\$	<u>4,680,694,445</u>
2.	Plan Fiduciary Net Position		
	a. Plan Fiduciary Net Position - Beginning of year	\$	4,757,977,785
	b. Employer Contributions <sup>5</sup>		146,696,360
	c. Member contributions		43,523,241
	d. Non-employer contributing entity contributions		-
	e. Investment return		
	i. Expected investment return <sup>6</sup>	\$	358,807,573
	ii. Investment gain/(loss)		<u>(325,178,886)</u>
	iii. Total investment return	\$	33,628,687
	iv. Investment Expenses		<u>(35,213,349)</u>
	v. Net investment return		(1,584,662)
	f. Benefit payments <sup>3</sup>		(116,489,902)
	g. Member reassignments <sup>4</sup>		-
	h. Administrative and Project Expenses		<u>(1,708,261)</u>
	i. Plan Fiduciary Net Position - End of year	\$	<u>4,828,414,561</u>
3.	Collective Net Pension Liability		
	a. Collective Net Pension Liability: (1)(j) - (2)(i)	\$	<b>(147,720,116)</b>
	b. Plan Fiduciary Net Position as a Percentage of the Collective Pension Liability : (2)(i) / (1)(j)		103.2%

<sup>1</sup> As of the beginning of the year.

<sup>2</sup> Includes interest of 6.75% on the beginning-of-year service cost.

<sup>3</sup> Includes refunds of accumulated member contributions.

<sup>4</sup> Includes net interfund transfers.

<sup>5</sup> Includes \$294,643 of contributions for transfers from PERF to 1977 Fund and additional service purchases for existing 1977 Fund employees.

<sup>6</sup> 6.75%, net of investment expenses and assuming cash flows occur at mid-year.

SECTION III - ACCOUNTING

**EMPLOYER FINANCIAL STATEMENTS UNDER GASB #68**

**D. Collective Deferred Inflows and Outflows of Resources under GASB #68 for the Year Ended June 30, 2015**<sup>1</sup>

Fiscal Year Established	Reason	Remaining Balance At Beginning of Year	Remaining Period <sup>2</sup>	Annual Recognition	Remaining Balance At End of Year
1. Liability experience					
a. Inflows					
2014	Experience gain	\$ 10,489,006	8.29	\$ 1,265,261	\$ 9,223,745
2015	Experience gain	61,640,441	9.31	6,620,886	55,019,555
b. Outflows					
None					
2. Assumption changes					
a. Inflows					
2015	Assumption change gain	\$ 309,801,126	9.31	\$ 33,276,169	\$ 276,524,957
b. Outflows					
None					
3. Investment experience <sup>3</sup>					
a. Inflows					
2014	Investment gain	\$ 204,952,260	4.00	\$ 51,238,066	\$ 153,714,194
b. Outflows					
2015	Investment loss	\$ (360,392,235)	5.00	\$ (72,078,447)	\$ (288,313,788)
4. Total collective deferred inflows / outflows: (1) + (2) + (3)					
a. Inflows					
	Total	\$ <b>586,882,833</b>		\$ <b>92,400,382</b>	\$ <b>494,482,451</b>
b. Outflows					
	Total	\$ <b>(360,392,235)</b>		\$ <b>(72,078,447)</b>	\$ <b>(288,313,788)</b>

<sup>1</sup> The effort and cost to re-create financial statement information for 10 years was not practical. Information was prepared prospectively from June 30, 2013 for GASB #68 purposes.

<sup>2</sup> The initial amortization period for liability experience gains / losses and assumption change gains / losses is equal to the expected future working lifetime of all members, active and inactive. The initial amortization period for investment gains / losses is five years.

<sup>3</sup> Net of investment expenses.

SECTION III - ACCOUNTING

**EMPLOYER FINANCIAL STATEMENTS UNDER GASB #68**

**D. Deferred Inflows and Outflows of Resources under GASB #68 for the Year Ended June 30, 2015 (Continued) <sup>1</sup>**

Amounts reported as deferred inflows / (outflows) of resources to be recognized in pension expense:

Year Ending June 30:

2015	\$	20,321,935
2016	\$	20,321,935
2017	\$	20,321,935
2018	\$	20,321,931
2019	\$	(30,916,131)
2020	\$	41,162,316
Thereafter	\$	134,956,677

<sup>1</sup> The effort and cost to re-create financial statement information for 10 years was not practical. Information was prepared prospectively from June 30, 2013 for GASB #68 purposes.

SECTION III - ACCOUNTING

**EMPLOYER FINANCIAL STATEMENTS UNDER GASB #68**

**E. Collective Pension Expense under GASB #68 for the Year Ended June 30, 2015**

1. Service cost		
a. Total service cost <sup>1</sup>	\$	138,204,281
b. Member contributions		(43,523,241)
c. Administrative and Project Expenses		<u>1,708,261</u>
d. Net employer service cost: (1)(a) + (1)(b) + (1)(c)		96,389,301
2. Interest cost <sup>2</sup>		323,129,528
3. Expected return on assets <sup>3</sup>		(358,807,573)
4. Plan amendments		-
5. Recognition of deferred (inflows) / outflows of resources related to:		
a. Liability experience (gains) / losses		(7,886,147)
b. Assumption changes (gains) / losses		(33,276,169)
c. Investment (gains) / losses		<u>20,840,381</u>
d. Total: (5)(a) + (5)(b) + (5)(c)		(20,321,935)
6. Total collective pension expense: (1)(d) + (2) + (3) + (4) + (5)(d)	\$	<b>40,389,321</b>
7. Employer Service Purchases <sup>4</sup>		<u>294,643</u>
8. Total Pension Expense: (6) + (7)	\$	<b>40,683,964</b>

<sup>1</sup> As of the beginning of the year.

<sup>2</sup> Includes interest of 6.75% on the beginning-of-year service cost.

<sup>3</sup> 6.75% net of investment expenses and assuming cash flows occur at mid-year.

<sup>4</sup> To be expensed by the employers who purchased service for members during the year.

SECTION III - ACCOUNTING

**NOTES TO THE FINANCIAL STATEMENTS UNDER GASB #67 AND #68**

**F. Selected Notes to the Financial Statements under GASB #67 and #68**

1. The 1977 Fund is a cost-sharing multiple-employer plan for GASB accounting purposes.
2. Significant actuarial assumptions and other inputs used to measure the total pension liability:
  - Measurement Date                      June 30, 2015
  - Valuation Date  
    Assets:                                      June 30, 2015
  - Liabilities:                                June 30, 2014 - Member census data as of June 30, 2014 was used in the valuation and adjusted, where appropriate, to reflect changes between June 30, 2014 and June 30, 2015. Standard actuarial roll forward techniques were then used to project the total pension liability computed as of June 30, 2014 to the June 30, 2015 measurement date.
  - Inflation                                      2.25%
  - Future Salary Increases                 2.50%
  - Cost-of-Living Increases                2.00% compounded annually, beginning July 1, 2016. Actual COLA increases at July 1, 2014 (1.4%) and July 1, 2015 (0%) are reflected in the valuation.
  - Mortality Assumption                    RP-2014 (with MP-2014 improvement removed) Blue Collar 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, 2010 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                              The discount rate used to measure the total pension liability was 6.75% as of June, 30, 2015, and is equal to the long-term expected return on plan investments. The projection of cash flows used to determine the discount rate assumed that employer contributions would be made at the actuarially calculated rate computed in accordance with the current funding policy adopted by the Board, which requires payment of the normal cost and amortization of the unfunded actuarially accrued liability in level dollar installments over 30 years utilizing a closed period approach. Since the current funding policy was adopted, the employer contribution rate has been set by the Board at a level equal to or exceeding the actuarially calculated rate. Based on this assumption, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members.

SECTION III - ACCOUNTING

**NOTES TO THE FINANCIAL STATEMENTS UNDER GASB #67 AND #68**

**F. Selected Notes to the Financial Statements under GASB #67 and #68 (Continued)**

	1% Decrease (5.75%)	Current Rate (6.75%)	1% Increase (7.75%)
- Discount Rate Sensitivity			
Net Pension Liability	\$ 621,701,720	\$ (147,720,116)	\$ (768,120,393)
3. Classes of plan members covered: <sup>1</sup>			
- Retired members, beneficiaries and disabled members receiving benefits:		\$	3,736
- Terminated vested plan members entitled to but not yet receiving benefits:			155
- Terminated non-vested plan members entitled to a distribution of contributions:			822
- Active Plan Members:			13,390
- Total membership:		\$	18,103
4. 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, 2015, the money-weighted return on the plan assets is (0.1%).			
5. The components of the Net Pension Liability for the total 1977 Fund plan as of June 30, 2015, are as follows:			
- Total Pension Liability		\$	4,680,694,445
- Plan Fiduciary Net Position			4,828,414,561
- Net Pension Liability		\$	(147,720,116)
- Plan Fiduciary Net Position as a Percentage of the Total Pension Liability			103.2%

<sup>1</sup> The valuation results as of June 30, 2015 were calculated using June 30, 2014 census data, adjusted for certain activity during fiscal year 2015.

SECTION III - ACCOUNTING

**REQUIRED SUPPLEMENTARY INFORMATION UNDER GASB #67 AND #68**

**G. Schedule of Changes in the Net Pension Liability and Plan Fiduciary Net Position under GASB #67 and #68**<sup>1</sup>

Year Ending June 30:	<u>2013</u>	<u>2014</u>	<u>2015</u>
1. Total Pension Liability			
a. Total Pension Liability - Beginning of year	\$ 4,122,436,112	\$ 4,392,946,977	\$ 4,706,997,462
b. Service cost <sup>2</sup>	130,912,451	133,074,656	138,204,281
c. Interest cost <sup>3</sup>	283,732,680	301,824,523	323,129,528
d. Experience (gains)/losses	(39,592,111)	(11,754,267)	(61,640,441)
e. Assumption changes	(4,810,241)	-	(309,801,126)
f. Plan amendments	-	-	-
g. Benefit payments <sup>4</sup>	(99,802,915)	(109,094,427)	(116,489,902)
h. Member reassignments <sup>5</sup>	71,001	-	-
i. Employer Service Purchases	-	-	294,643
j. Total Pension Liability - End of year	<u>\$ 4,392,946,977</u>	<u>\$ 4,706,997,462</u>	<u>\$ 4,680,694,445</u>
2. Plan Fiduciary Net Position			
a. Plan Fiduciary Net Position - Beginning of year	\$ 3,817,013,634	\$ 4,116,861,121	\$ 4,757,977,785
b. Employer contributions <sup>6</sup>	137,110,691	140,119,065	146,696,360
c. Member contributions	40,786,098	41,791,345	43,523,241
d. Non-employer contributing entity contributions	-	-	-
e. Net investment return	223,527,670	570,088,526	(1,584,662)
f. Benefit payments <sup>4</sup>	(99,802,915)	(109,094,427)	(116,489,902)
g. Member reassignments <sup>5</sup>	71,001	-	-
h. Administrative and Project Expenses	(1,845,058)	(1,787,845)	(1,708,261)
i. Plan Fiduciary Net Position - End of year	<u>\$ 4,116,861,121</u>	<u>\$ 4,757,977,785</u>	<u>\$ 4,828,414,561</u>

<sup>1</sup> The effort and cost to re-create financial statement information for 10 years was not practical. Information was prepared prospectively from June 30, 2012 for GASB #67 purposes and prospectively from June 30, 2013 for GASB #68 purposes.

<sup>2</sup> As of the beginning of the year.

<sup>3</sup> Includes interest of 6.75% on the beginning-of-year service cost.

<sup>4</sup> Includes refunds of accumulated member contributions.

<sup>5</sup> Includes net interfund transfers.

<sup>6</sup> For 2015, includes \$294,643 of contributions for transfers from PERF to 1977 Fund and additional service purchases for existing 1977 Fund employees.

SECTION III - ACCOUNTING

**REQUIRED SUPPLEMENTARY INFORMATION UNDER GASB #67 AND #68**

**H. Schedule of Net Pension Liability and Related Ratios under GASB #67 and #68**<sup>1</sup>

1. Year Ending	2. Total Pension Liability	3. Plan Fiduciary Net Position	4. Net Pension Liability (2) - (3)	5. Fiduciary Net Position as a Percentage of Total Pension Liability (3) / (2)	6. Actual Covered Employee Payroll <sup>2</sup>	7. Net Pension Liability as a Percentage of Covered Payroll (4) / (6)
6/30/2013	\$ 4,392,946,977	\$ 4,116,861,121	\$ 276,085,856	93.7%	\$ 695,000,000	39.7%
6/30/2014	\$ 4,706,997,462	\$ 4,757,977,785	\$ (50,980,323)	101.1%	\$ 710,580,690	-7.2%
6/30/2015	\$ 4,680,694,445	\$ 4,828,414,561	\$ (147,720,116)	103.2%	\$ 745,336,167	-19.8%

<sup>1</sup> The effort and cost to re-create financial statement information for 10 years was not practical. Information was prepared prospectively from June 30, 2012 for GASB #67 purposes and prospectively from June 30, 2013 for GASB #68 purposes.

<sup>2</sup> Pensionable pay as provided by INPRS. Gross member compensation, which may include components of compensation that are not included in pensionable pay, was not made available to PwC.

SECTION III - ACCOUNTING

**REQUIRED SUPPLEMENTARY INFORMATION UNDER GASB #67 AND #68**

**I. Schedule of Contributions under GASB #67 and #68** <sup>1, 2</sup>

1.  Year Ending	2.  Actuarially Determined Contribution <sup>3</sup>	3.  Actual Employer Contributions <sup>4</sup>	4.  Contribution Excess / (Deficiency) (Deficiency)  (3) - (2)	5.  Actual Covered Employee Payroll <sup>5</sup>	6.  Contributions as a Percentage of Covered Payroll  (3) / (5)
6/30/2013	\$ 112,590,000	\$ 137,110,691	\$ 24,520,691	\$ 695,000,000	19.7%
6/30/2014	\$ 103,425,019	\$ 140,119,065	\$ 36,694,046	\$ 710,580,690	19.7%
6/30/2015	\$ 118,881,119	\$ 146,401,717	\$ 27,520,598	\$ 745,336,167	19.6%

<sup>1</sup> The effort and cost to re-create financial statement information for 10 years was not practical. Information was prepared prospectively from June 30, 2012 for GASB #67 purposes and prospectively from June 30, 2013 for GASB #68 purposes.

<sup>2</sup> The information shown relates to the employers participating in the Fund. There are no non-employer contributing entities.

<sup>3</sup> The actuarially determined contribution amounts are based on the average of the actuarially determined contribution rates developed in the actuarial valuations completed one year and two years prior to the beginning of the fiscal year, multiplied by actual payroll during the fiscal year.

<sup>4</sup> Excludes employer service purchases.

<sup>5</sup> Pensionable pay as provided by INPRS. Gross member compensation, which may include components of compensation that are not included in pensionable pay, was not made available to PwC.

SECTION III - ACCOUNTING

**REQUIRED SUPPLEMENTARY INFORMATION UNDER GASB #67 AND #68**

**J. Schedule of Money-Weighted Returns under GASB #67 and #68**<sup>1</sup>

1.  Year Ending	2.  Money-Weighted Rate of Return
6/30/2013	5.9%
6/30/2014	13.7%
6/30/2015	(0.1%)

<sup>1</sup> The effort and cost to re-create financial statement information for 10 years was not practical. Information was prepared prospectively from June 30, 2012 for GASB #67 purposes and prospectively from June 30, 2013 for GASB #68 purposes.

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SECTION IV - CENSUS DATA

**CENSUS DATA**

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SECTION IV - CENSUS DATA

**A. Reconciliation of Participant Data**<sup>1</sup>

	<u>Actives</u>	<u>Inactive Non-Vested With Member Contribution Balance</u>	<u>Inactive Vested</u>	<u>Disabled</u>	<u>Retired</u>	<u>Beneficiary</u>	<u>Total</u>
Total as of June 30, 2013	13,287	796	129	707	2,163	621	17,703
<u>Data Adjustments for Activity During Fiscal Year 2014</u>							
PERF to 1977 Fund Transfer	8	-	-	-	-	-	8
Adjusted Total as of June 30, 2013	13,295	796	129	707	2,163	621	17,711
New Entrants	551	9	-	-	-	-	560
Rehires	33	(28)	(5)	-	-	-	-
Non-Vested Terminations	(114)	114	-	-	-	-	-
Vested Terminations	(58)	-	58	-	-	-	-
Retirements	(197)	-	(27)	(6)	230	-	-
Disabilities	(35)	(1)	-	52	(13)	(3)	-
Death with Beneficiary	(8)	(2)	-	(6)	(29)	45	-
Death without Beneficiary	-	-	-	(4)	(9)	(21)	(34)
Refunds	(82)	(66)	-	-	-	-	(148)
Data Adjustments	(2)	-	-	-	25	(16)	7
Total as of June 30, 2014	13,383	822	155	743	2,367	626	18,096
<u>Data Adjustments for Activity During Fiscal Year 2015</u>							
PERF to 1977 Fund Transfer <sup>2</sup>	7	-	-	-	-	-	7
Adjusted Total as of June 30, 2014	13,390	822	155	743	2,367	626	18,103

<sup>1</sup> The valuation results as of June 30, 2015 were calculated using June 30, 2014 census data, adjusted for certain activity during fiscal year 2015.

<sup>2</sup> Employers that transferred coverage from PERF to 1977 Fund include the Pittsboro Police Department and the Walkerton Police Department.

SECTION IV - CENSUS DATA

**B. Census Information as of June 30, 2014**<sup>1</sup>

	<u>Male</u>		<u>Female</u>		<u>Total</u>
1. Active					
a. Number	12,658		732		13,390
b. Average Age	42.1		41.9		42.1
c. Average Years of Service	14.7		14.6		14.7
d. Anticipated Payroll of Actives <sup>2</sup>	\$ 720,591,922	\$	43,622,720	\$	764,214,642
2. Inactive - Vested					
a. Number	147		8		155
b. Average Age	50.1		49.2		50.0
c. Average Years of Service	22.7		22.3		22.7
3. Inactive - Non-Vested <sup>3</sup>					
a. Number	720		102		822
4. Retiree/Beneficiary/Disabled					
a. Number	2,934		802		3,736
b. Average Age	61.7		64.0		62.2
c. Annual Benefits Payable <sup>4</sup>	\$ 81,184,964	\$	15,151,021	\$	96,335,985

<sup>1</sup> The valuation results as of June 30, 2015 were calculated using June 30, 2014 census data, adjusted for certain activity during fiscal year 2015.

<sup>2</sup> For the 1977 Fund, payroll is the applicable first class officer pay for each member. Figures shown are the anticipated pay for the one-year period following June 30, 2015.

<sup>3</sup> As of June 30, 2015, inactive non-vested members entitled to a refund of their member contributions totaling \$6,991,619.

<sup>4</sup> Figures shown reflect the 1.4% cost-of-living increase effective July 1, 2014.

SECTION IV - CENSUS DATA

**C. Schedule of Active Member Valuation Data**<sup>1,2</sup>

1. Valuation Date	2. Active Members	3. Anticipated Payroll (\$ in Thousands) <sup>3</sup>	4. Average Pay (3) / (2)	5. Annual Percent Change
12/31/2006	12,056	557,644	46,254	3.9%
12/31/2007	12,611	603,963	47,892	3.5%
12/31/2008	13,095	644,936	49,251	2.8%
6/30/2009	13,184	649,018	49,228	(0.0%)
6/30/2010	13,362	675,797	50,576	2.7%
6/30/2011	13,376	687,342	51,386	1.6%
6/30/2012	13,390	697,111	52,062	1.3%
6/30/2013	13,287	706,603	53,180	2.1%
6/30/2014	13,295	734,024	55,211	3.8%
6/30/2015	13,390	764,215	57,074	3.4%

<sup>1</sup> Valuation results prior to June 30, 2010 were calculated by the prior actuary.

<sup>2</sup> The valuation results beginning as of June 30, 2014 were calculated using census data as of the prior year end, adjusted for certain activity during the current fiscal year.

<sup>3</sup> For the 1977 Fund, payroll is the applicable first class officer pay for each member. Figures shown are the anticipated pay for the one-year period following the valuation date.

SECTION IV - CENSUS DATA

**D. Schedule of Retirees, Beneficiaries, and Disabled Members**<sup>1,2</sup>

1.	2.	3.	4.	5.	6.	7.	8.	9.
Valuation Date	Added Number	Annual Allowances (\$ in Thousands) <sup>4</sup>	Removed Number	Annual Allowances (\$ in Thousands) <sup>4</sup>	End of Year <sup>3</sup> Number	Annual Allowances (\$ in Thousands) <sup>4</sup>	% Change in Annual Allowances <sup>4</sup>	Average Annual Allowances <sup>4</sup>
12/31/2006	172	3,860	34	592	2,265	41,973	8.6%	18,531
12/31/2007	333	8,101	50	886	2,548	49,537	18.0%	19,442
12/31/2008	255	5,861	273	4,565	2,530	53,588	8.2%	21,181
6/30/2009	102	2,571	24	479	2,608	55,564	3.7%	21,305
6/30/2010	208	4,918	34	641	2,782	60,220	8.4%	21,646
6/30/2011	218	6,179	34	609	2,966	68,179	13.2%	22,987
6/30/2012	281	7,900	39	814	3,208	76,917	12.8%	23,977
6/30/2013	326	10,098	43	845	3,491	87,301	13.5%	25,008
6/30/2014	-	-	-	-	3,491	87,301	0.0%	25,008
6/30/2015	283	8,858	38	727	3,736	96,336	10.3%	25,786

<sup>1</sup> Valuation results prior to June 30, 2010 were calculated by the prior actuary.

<sup>2</sup> The valuation results beginning as of June 30, 2014 were calculated using census data as of the prior year end, adjusted for certain activity during the current fiscal year.

<sup>3</sup> End of year annual allowances are not equal to the prior end of year annual allowances plus additions and less removals because of reductions for beneficiary benefits, data changes, and cost-of-living increases.

<sup>4</sup> Annual allowances reflect cost-of-living increases effective July 1 following the date of the census data.

SECTION IV - CENSUS DATA

**E. Distribution of Active Members by Age and Service**<sup>1</sup>

Attained Age	Distribution of Active Members by Age and Service as of June 30, 2014 <sup>1</sup>								Total
	Under 10	10 to 14 years	15 to 19 years	20 to 24 years	25 to 29 years	30 to 34 years	35 to 39 years	Over 40 years	
<25	157								157
25-29	1,003								1,003
30-34	1,702	146							1,848
35-39	1,142	972	194						2,308
40-44	492	955	1,151	127	1				2,726
45-49	42	440	921	755	181				2,339
50-54	4	34	340	553	750	92	1		1,774
55-59	6	6	62	165	369	323	10	1	942
60-64		4	16	3	98	127	15		263
65-69		1	4	1	3	18	2		29
70&Above			1						1
Total	4,548	2,558	2,689	1,604	1,402	560	28	1	13,390

<sup>1</sup> The valuation results as of June 30, 2015 were calculated using June 30, 2014 census data, adjusted for certain activity during fiscal year 2015.

SECTION IV - CENSUS DATA

**F. Distribution of Inactive Vested Members by Age and Service**<sup>1</sup>

<b>Attained Age</b>	Distribution of Inactive Vested Members by Age and Service as of June 30, 2014 <sup>1</sup>				
	Under 20 years	20 to 24 years	25 to 29 years	Over 30 years	Total
<25					
25-29					
30-34					
35-39					
40-44		8			8
45-49		75	2		77
50-54		49	8		57
55-59			1	7	8
60-64				1	1
65-69		2		1	3
70&Above			1		1
<b>Total</b>		134	12	9	155

<sup>1</sup> The valuation results as of June 30, 2015 were calculated using June 30, 2014 census data, adjusted for certain activity during fiscal year 2015.

SECTION IV - CENSUS DATA

**G. Distribution of Retired Members, Beneficiaries, and Disabled Members by Age and Number of Years Retired <sup>1</sup>**

Attained Age	Distribution of Retired Members, Beneficiaries, and Disabled Members by Age and Number of Years Retired as of June 30, 2014 <sup>1</sup>						
	Under 10	10 to 14 years	15 to 19 years	20 to 24 years	25 to 29 years	Over 30 years	Total
<40	55	10	5	2	1		73
40-44	68	14	4	2			88
45-49	85	34	8	5	1		133
50-54	296	39	32	16	8		391
55-59	836	51	44	27	13	5	976
60-64	580	168	54	32	25	9	868
65-69	109	120	122	46	39	22	458
70-74	11	9	204	45	24	15	308
75-79	1	1	69	122	22	16	231
80-84			22	34	35	10	101
85-89			4	16	38	23	81
90&Above			2	6	8	12	28
Total	2,041	446	570	353	214	112	3,736

<sup>1</sup> The valuation results as of June 30, 2015 were calculated using June 30, 2014 census data, adjusted for certain activity during fiscal year 2015.

SECTION IV - CENSUS DATA

**H. Schedule of Benefit Recipients by Type of Benefit Option <sup>1</sup>**

Number of Benefit Recipients by Benefit Option as of June 30, 2014

Amount of Monthly Benefit	Retiree Single Life Annuity	Retiree 60%		Survivors	Disability	Total
		Joint and Survivor Annuity				
\$ 1 - 500	0	0	14	0	14	
501 - 1,000	0	11	129	31	171	
1,001 - 1,500	37	106	314	98	555	
1,501 - 2,000	103	365	117	221	806	
2,001 - 3,000	286	1,089	43	354	1,772	
over 3,000	68	302	9	39	418	
<b>Total</b>	<b>494</b>	<b>1,873</b>	<b>626</b>	<b>743</b>	<b>3,736</b>	

**I. Schedule of Average Benefit Payments as of June 30, 2014 <sup>1,2</sup>**

	Years of Credited Service						Total
	0-10	10-14	15-19	20-24	25-29	30+	
Average Monthly Defined Benefit	\$ 1,709	\$ 1,862	\$ 1,812	\$ 1,953	\$ 2,473	\$ 2,714	\$ 2,149
Average Final Average Salary	\$ 40,564	\$ 46,871	\$ 44,876	\$ 43,912	\$ 47,030	\$ 50,367	\$ 45,862
Number of Benefit Recipients	421	222	256	1,361	963	513	3,736

<sup>1</sup> The valuation results as of June 30, 2015 were calculated using June 30, 2014 census data, adjusted for certain activity during fiscal year 2015. Monthly benefits reflect the 1.4% cost-of-living increase effective July 1, 2014.

<sup>2</sup> For some members average salary at retirement and years of credited service was not available. The average salary for each group excludes these members.

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SECTION V - ACTUARIAL ASSUMPTIONS AND METHODS

**ACTUARIAL ASSUMPTIONS AND METHODS**

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SECTION V - ACTUARIAL ASSUMPTIONS AND METHODS

**A. Actuarial Assumptions**

The assumptions used in the valuation were selected and approved by the INPRS Board of Trustees. The demographic assumptions are reviewed at least every five years through a study of actual experience. The last study was completed in April 2015. In this way, the actuary provides guidance to the Board in selecting the assumptions. The actuary and other economic and investment professionals also provide advice to the Board for selecting the economic assumptions. In our opinion, the assumptions are reasonable for purposes of this valuation.

Interest Rate / Investment Return

Funding	6.75% (net of administrative and investment expenses)
Accounting	6.75% (net of investment expenses)

Interest on Member Balances                    3.5% per year

Future Salary Increases                         2.50% per year

Inflation     2.25% per year

Cost of Living Increases                         2.00% per year in retirement beginning July 1, 2016. Actual cost-of-living increases of 1.4% at July 1, 2014 and 0% at July 1, 2015 are reflected in the liability valuation at June 30, 2015.

Mortality (Healthy and Disabled)             RP-2014 (with MP-2014 improvement removed) Blue Collar mortality tables, with future mortality improvement projected generationally using future mortality improvement inherent in the Social Security Administration's 2014 Trustee report.

Disability     Based on 2010-2014 experience. Illustrative rates shown below:

<u>Age</u>	<u>Rate</u>
<= 30	0.10%
35	0.16%
40	0.26%
45	0.36%
50	0.46%
55	0.56%
60	0.66%
62+	0.70%

SECTION V - ACTUARIAL ASSUMPTIONS AND METHODS

**A. Actuarial Assumptions (Continued)**

Termination

Based on 2010-2014 experience. Rates shown below:

<u>Service</u>	<u>Rate</u>	<u>Service</u>	<u>Rate</u>
0	10.0%	12-19	1.0%
1	5.0%	20+	2.0%
2	4.0%		
3-4	3.5%		
5	2.5%		
6-8	2.0%		
9-11	1.5%		

Retirement

Based on 2010-2014 experience. Rates shown below:

<u>Ages</u>	<u>Service &lt;32</u>	<u>Service &gt;=32</u>
45-51	10.0%	100.0%
52-57	10.0%	20.0%
58-61	15.0%	20.0%
62-64	20.0%	20.0%
65-69	50.0%	50.0%
70+	100.0%	100.0%

Decrement Timing

Decrements are assumed to occur at the beginning of the year.

Active Members in DROP

Members who are participating in the DROP are assumed to receive an annuity benefit commencing at the end of their DROP period as well as a lump sum payment equal to the number of years they were in the DROP times their annual annuity benefit. The annuity benefit is estimated based on salary and service at the time the member entered the DROP.

Spouse/Beneficiary

80% of male members and 50% of female members are assumed to be married or to have a dependent beneficiary. Male members are assumed to be three (3) years older than females and female members are assumed to be the same age as males.

Disability Retirement

For members hired after 1989 that become disabled, impairments are assumed to be 45% Class 1 (at 65% of salary), 10% Class 2 (at 50% of salary), and 45% Class 3 (at 36% of salary).

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SECTION V - ACTUARIAL ASSUMPTIONS AND METHODS

**A. Actuarial Assumptions (Continued)**

Pre-Retirement Death	Of active member deaths, 10% are assumed to be in the line of duty and 90% are other than in the line of duty.
Data Assumptions	<p>Actives and inactives with either no date of birth and/or no gender are assumed to be age 41 and/or male. Spouse gender is assumed to be the opposite gender of the member.</p> <p>Retirees and disabled members that are not married and do not have a retirement option listed are assumed to be receiving a single life annuity. Retirees and disabled members that are married and do not have a retirement option listed are assumed to be receiving a 60% joint and survivor annuity. Beneficiaries that do not have a retirement option listed are assumed to receive monthly payments for life.</p>
Changes in Assumptions	<p>An assumption study was performed in April of 2015 resulting in an update to the following assumptions:</p> <p>The inflation assumption decreased from 3.00% to 2.25% per year.</p> <p>The future salary increase rate assumption decreased from 3.25% to 2.50% per year.</p> <p>The future COLA assumption decreased from 2.25% to 2.00% per year.</p> <p>The mortality assumption changed from the 2013 IRS Static Mortality projected five (5) years with Scale AA to the RP-2014 (with MP-2014 improvement removed) Blue Collar mortality tables, with future mortality improvement projected generationally using future mortality improvement inherent in the Social Security Administration's 2014 Trustee report.</p> <p>The disability assumption was adjusted to reflect recent experience.</p> <p>The termination assumption is a service-based table of rates. The rates at most years of service were decreased to reflect recent experience.</p>

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## SECTION V - ACTUARIAL ASSUMPTIONS AND METHODS

### **B. Actuarial Methods**

The actuarial methods used in this valuation were selected and approved by the Board. In general, the methods provide orderly funding of all benefits being accrued, as well as unfunded past-service benefit liabilities, over a period of thirty years. However, the smoothing methods employed in determining the Actuarial Value of Assets may accelerate or lengthen the effective funding period, depending on whether gains or losses are experienced. In our opinion, the actuarial methods are reasonable for the purposes of this valuation.

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 30-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 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 (active and inactive). Gains and losses occurring from investment experience different from 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, 2014 was used in the valuation and adjusted, where appropriate, to reflect changes between June 30, 2014 and June 30, 2015. Standard actuarial roll forward techniques were then used to project the liabilities computed as of June 30, 2014 to the June 30, 2015 measurement date.

2. Asset Valuation Method

The Actuarial Value of Assets smoothes the recognition of gains and losses on the Market Value of Assets over four years, subject to a 20% corridor.

3. Employer Contribution Rate

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

4. Anticipated Payroll

The Anticipated Payroll of \$764,214,642 for the fiscal year beginning July 1, 2015 is equal to the actual 1st class officer salary paid during the year ending June 30, 2015 increased with one year of salary scale, plus the 1st class officer salary in effect at June 30, 2015 for two new units, but does not include amounts for members who have reached the age at which retirement is assumed to occur immediately.

5. Changes in Actuarial Methods

There were no method changes for the June 30, 2015 valuation.

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SECTION VI - SUMMARY OF PLAN PROVISIONS

**SUMMARY OF PLAN PROVISIONS**

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SECTION VI - SUMMARY OF PLAN PROVISIONS

**Summary of Plan Provisions**

The benefit provisions for the 1977 Fund are set forth in IC 36-8-8. A summary of those defined pension benefit provisions is presented below:

Participation                      All full-time, fully-paid police officers and firefighters who work for employers participating in the 1977 Fund and who are hired or rehired after April 30, 1977.

Eligibility for Defined Pension Benefits

- a. Normal Retirement      Age 52 with 20 or more years of creditable service
- b. Early Retirement        Age 50 with 20 or more years of creditable service
- c. Late Retirement         Subject to continued employment after normal retirement
- d. Disability Retirement    As determined by a disability medical panel.
- e. Termination             20 or more years of creditable service and no longer active (i.e. vested inactive)
- f. Pre-Retirement Death   Immediate

Amount of Benefits

- a. Normal Retirement      The retirement benefit valued was 50% of the base salary (first-class salary) of a First Class Police Officer and Firefighter with 20 years of service, plus an additional 1% for each completed 6 months of service over 20 years up to a maximum of 74% with 32 years of service.
- b. Early Retirement        Early retirement benefits are reduced by 7% per year for commencement between ages 50 and 52.
- c. Late Retirement         The late retirement benefit is calculated in the same manner as the normal retirement benefit. Creditable service and earnings earned after normal retirement is included in the computation.

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SECTION VI - SUMMARY OF PLAN PROVISIONS

**Summary of Plan Provisions (Continued)**

Amount of Benefits (continued)

d. Disability Retirement

Hired Before 1990 This disability benefit is only available to members hired prior to January 1, 1990 and who do not choose to be covered by the disability benefit for members hired after 1989. The disability benefit is equal to the benefit the member would have received if the member had retired. If the member does not have 20 years of service or is not at least age 52 on the date of disability, the benefit is computed as if the member does have 20 years of service and is age 52 on the date of disability.

Hired after 1989 This disability benefit is for members hired after 1989, or hired prior to January 1, 1990, who have chosen to be covered by this disability benefit. The following describes the three different classes of impairments and the amount of base benefit for each class:

Class 1 Impairment:

A personal injury that occurs while on duty, while responding to an emergency, or due to an occupational disease. The disability benefit is equal to a base benefit of 45% of base salary, plus an additional amount between 10% and 45% of this salary based on degree of impairment. The benefit is payable for life, at which time the member is entitled to a retirement benefit based on the salary and service the member would have earned had the member remained in active service.

Class 2 Impairment:

A proven duty-related disease. The disability benefit is equal to a base benefit of 22% of base salary, plus an additional 0.5% of this salary for each year of service up to a maximum of 30 years of service, plus an additional amount between 10% and 45% of this salary based on degree of impairment. If the member's total benefit is less than 30% of this salary and the member has fewer than 4 years of service, then the benefit is payable for a period equal to the years of service of the member. Otherwise, the benefit is payable for life.

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SECTION VI - SUMMARY OF PLAN PROVISIONS

**Summary of Plan Provisions (Continued)**

Amount of Benefits (continued)

d. Disability Retirement (continued)

Hired after 1989  
(continued)

Class 3 Impairment:

All other impairments that are not Class 1 or Class 2. The disability benefit is equal to a base benefit of 1% of base salary for each year of service up to a maximum of 30 years of service, plus an additional amount between 10% and 45% of this salary based on degree of impairment. If the member's total benefit is less than 30% of this salary and the member has fewer than 4 years of service, then the benefit is payable for a period equal to the years of service of the member. Otherwise, the benefit is payable until age 52, at which time the member is entitled to a retirement benefit based on 20 years of service.

e. Termination

If a member ends employment other than by death or disability before completing 20 years of active service, the member shall be entitled to the member's contributions plus accumulated interest. This benefit is not available to converted members.

If termination is after earning 20 years of service, the termination benefit is the accrued retirement benefit determined as of the termination date and payable commencing of the normal retirement date. The member may elect to receive a reduced early retirement benefit.

f. Pre-Retirement Death

Surviving Spouse

If a member dies other than in the line of duty, the spouse's benefit is equal to 60% of the monthly benefit the member was receiving or was entitled to receive on the date of death.

If a member dies in the line of duty, the spouse's benefit is equal to the monthly benefit the member was receiving or was entitled to receive on the date of death.

In either case, if the member does not have 20 years of service or is not at least age 52 on the date of death, the benefit is computed as if the member does have 20 years of service and is age 52 on the date of death.

SECTION VI - SUMMARY OF PLAN PROVISIONS

**Summary of Plan Provisions (Continued)**

Amount of Benefits (continued)

f. Pre-Retirement Death (continued)

Children	A payment shall be made to each child of a deceased member equal to 20% of the member's benefit until the later of (a) the date the child becomes age 18, or (b) the date the child becomes age 23 if enrolled in a qualified school. If a child is at least 18 and is mentally or physically incapacitated, the child is entitled to an amount equal to the greater of 30% of the base salary, or 55% of the member's benefit payable for the duration of the incapacity. If the member does not have 20 years of service or is not at least age 52 on the date of death, the benefit is computed as if the member does have 20 years of service and is age 52 on the date of death.
Dependent Parents	If a deceased member leaves no surviving spouse and no qualified child but does leave a dependent parent or parents, an amount equal to 50% of the member's benefit shall be paid to the parent or parents jointly during their lifetime. If the member does not have 20 years of service or is not at least age 52 on the date of death, the benefit is computed as if the member does have 20 years of service and is age 52 on the date of death.
No Spouse or Dependent	If a deceased member leaves no surviving spouse, no qualified dependent child, nor a dependent parent, a refund of the member's contributions plus accumulated interest will be made to the member's estate.

g. Additional Death Benefits A funeral death benefit is paid to the heirs or estate upon the member's death from any cause and is equal to at least \$12,000. An additional death benefit of \$150,000 is paid from the Pension Relief Fund to a surviving spouse, children, or parent(s) if death occurs in the line of duty.

Member Contributions Members are assumed to contribute at the rate of 6% of salary until they have completed 32 years of service.

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SECTION VI - SUMMARY OF PLAN PROVISIONS

**Summary of Plan Provisions (Continued)**

Withdrawal from Fund

If a member's employment is terminated prior to eligibility for a retirement annuity, the member may withdraw their contributions from the Fund.

Deferred Retirement Option Plan  
("DROP")

The DROP is an optional form of benefit, which allows members who are eligible for an unreduced retirement benefit to continue to work and earn a salary while accumulating a DROP benefit payable in a lump sum or three annual installments. A member who elects to enter the DROP shall execute an irrevocable election to retire on the DROP retirement date. The member shall select a DROP retirement date not less than 12 months and not more than 36 months after the member's DROP entry date. While in the DROP, the member shall continue to make applicable fund contributions.

When a member enters the DROP, a "DROP frozen benefit" will be calculated. This is equal to the member's monthly retirement benefit based on accrued service and base salary as of the date member enters the DROP. Upon DROP retirement, the member is eligible to receive a lump sum equal to the amount of the DROP frozen benefit multiplied by the number of months in the DROP. You may elect to receive this amount in three annual installments instead of in a single lump sum. In addition, the member will receive a monthly retirement benefit equal to the DROP frozen benefit. The member will not continue to accrue service credit for the years in the DROP. Cost of living adjustments will not apply to the frozen monthly benefit while in the DROP. The cost of living adjustments will begin to be applied to the frozen monthly benefit, however, in the year after the year in which the member retires.

If the member elected to participate in the DROP, the member may, upon retirement, elect to forego DROP benefits, and instead receive monthly retirement benefits calculated as if the member never elected to participate in the DROP. These benefits would be based on accrued service and base salary as of the date the member retires.

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SECTION VI - SUMMARY OF PLAN PROVISIONS

**Summary of Plan Provisions (Continued)**

Forms of Payment

a. Single Life Annuity                      Member will receive a monthly benefit for life, but there are no monthly payments to anyone after death.

b. Joint with 60% Survivor Benefits                      Member will be paid a monthly benefit for life. After death, 60% of the benefit will be paid to the spouse or parent for their lifetime or the dependent until age 18.

Cost-of-Living Adjustments                      Benefits for retired members are increased annually based on increases in the CPI-U index. The increase is subject to a 3% maximum and 0% minimum.

Changes in Provisions                      No changes since prior valuation.

SECTION VII - DEFINITIONS OF TECHNICAL TERMS

**DEFINITIONS OF TECHNICAL TERMS**

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Definitions of Technical Terms

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SECTION VII - DEFINITIONS OF TECHNICAL TERMS

**Definitions of Technical Terms**

Actuarial Accrued Liability (AAL)	That portion, as determined by a particular Actuarial Cost Method, of the Present Value of Future Benefits (PVFB) and expenses which is not provided for by future Normal Costs. Generally, the portion of the PVFB attributable to past service.
Actuarial Assumptions	Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; changes in compensation and Government provided pension benefits; rates of investment earnings and asset appreciation or depreciation; procedures used to determine the Actuarial Value of Assets; characteristics of future entrants for Open Group Actuarial Cost Methods; and other relevant items.
Actuarial Cost Method	A mathematical procedure for allocating the Present Value of Future Benefits to service periods, usually in the form of a Normal Cost and an Actuarial Accrued Liability.
Actuarial Gain/(Loss)	The difference between actual Unfunded Actuarial Accrued Liability and anticipated Unfunded Actuarial Accrued Liability resulting from differences between actual and expected plan experience between two valuation dates.
Actuarial Present Value	The single amount that is equal to a payment or series of payments in the future. It is determined by discounting future payments using predetermined Actuarial Assumptions for interest and by probabilities of payment.
Actuarial Valuation	The determination, as of an Actuarial Valuation Date, of the Present Value of Future Benefits, Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values.
Actuarial Valuation Date	The date as of which an Actuarial Valuation is performed.
Actuarially Determined Contribution	The precise actuarial contribution rate (expressed as a percentage of covered payroll) or amount determined in accordance with a Funding Policy, which generally reflects the Normal Cost and amortization of any Unfunded Actuarial Accrued Liability.
Actuarially Equivalent	Having the same Actuarial Present Value, based on a set of Actuarial Assumptions.

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SECTION VII - DEFINITIONS OF TECHNICAL TERMS

**Definitions of Technical Terms (Continued)**

Amortization	The payment of a present value financial obligation on an installment basis over a future period.
Creditable Service	Service credited under the system that was rendered before the date of the actuarial valuation.
Funding Policy	A set of principles, often including a prescribed Actuarial Cost Method, Actuarial Assumptions, and/or Unfunded Actuarial Accrued Liability Amortization Method, that guide the calculation of the Actuarially Determined Contribution and management decisions regarding funding.
Level Dollar Amortization	Amortization where the installments are equal dollar amounts during each period.
Level Percent Amortization	Amortization where the installments are an equal percent of employee payroll during each period.
Normal Cost (NC)	That portion of the Present Value of Future Benefits which is allocated to the year following the Actuarial Valuation Date by the Actuarial Cost Method. The normal cost is specific to the cost method used.
Plan Assets	Resources, usually in the form of stocks, bonds, and other classes of investments, that have been segregated and restricted in a trust, or equivalent arrangement, in which (a) employer contributions to the plan are irrevocable, (b) assets are dedicated to providing benefits to retirees and their beneficiaries, and (c) assets are legally protected from creditors of the employer(s) or plan administrator, for the payment of benefits in accordance with the terms of the plan.
Plan Members	The individuals covered by the terms of a pension plan. The plan membership generally includes employees in active service, terminated employees who have accumulated benefits but are not yet receiving them, and retired employees and beneficiaries currently receiving benefits.

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SECTION VII - DEFINITIONS OF TECHNICAL TERMS

**Definitions of Technical Terms (Continued)**

Present Value of Future Benefits (PVFB)

Projected benefits estimated to be payable to plan members (retirees and beneficiaries, terminated employees entitled to benefits but not yet receiving them, and current active members upon retirement) as a result of their service through the valuation date and their expected future service. The actuarial present value of projected future benefits as of the valuation date is the present value of the cost to finance benefits payable in the future, discounted to reflect the expected effects of the time value (present value) of money and the probabilities of payment (taking into account mortality, turnover, probability of participating in plan retirement, etc.). Alternatively, it is the amount that would have to be invested on the valuation date so that the amount invested plus investment earnings will provide sufficient assets to pay the projected benefits when due.

Unfunded Actuarial Accrued Liability (UAAL)

The difference between the Actuarial Accrued Liability and Plan Assets as of a particular date. Plan assets may be market value or a smoothed value.

Unfunded Actuarial Accrued Liability Amortization Method

A predetermined process by which any Unfunded Actuarial Accrued Liability will be amortized for calculating the Actuarially Determined Contribution.