

# Arkansas State Police Retirement System

GASB Statement Nos. 67 and 68 Accounting and  
Financial Reporting for Pensions  
June 30, 2017



November 13, 2017

Board of Trustees  
Arkansas State Police Retirement System  
Little Rock, Arkansas

Ladies and Gentlemen:

This report provides information required by the Retirement System in connection with the Governmental Accounting Standards Board (GASB) Statement No. 67 “Financial Reporting for Pension Plans” and Governmental Account Standards Board (GASB) Statement No. 68 “Accounting and Financial Reporting for Pensions”.

Our actuarial calculations for this report were prepared for the purpose of complying with the requirements of GASB Statement Nos. 67 and 68. These calculations have been made on a basis that is consistent with our understanding of these accounting standards.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of satisfying the requirements of GASB Statement Nos. 67 and 68. The calculation of the plan’s liability for this report may not be applicable for funding purposes of the plan. A calculation of the plan’s liability for purposes other than satisfying the requirements of GASB Statement Nos. 67 and 68 may produce significantly different results. This report may be provided to parties other than the Arkansas State Police Retirement System only in its entirety and only with the permission of the Board of Trustees. GRS is not responsible for unauthorized use of this report.

This report is based upon information, furnished to us by Retirement System staff, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. If your understanding of this information is different, please let us know. This information was checked for internal consistency, but it was not audited.

This information is presented in draft form for review by the plan’s auditor. Please let us know if there are any items that the auditor changes so that we may maintain consistency with the plan’s financial statements.

Please see the actuarial valuation report as of June 30, 2017 for additional discussions of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

To the best of our knowledge, this report is complete, accurate, and in accordance with generally recognized actuarial methods. Mita D. Drazilov is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the Academy of Actuaries to render the actuarial opinions herein. The signing individuals are independent of the plan sponsor.

Respectfully submitted,



Mita D. Drazilov, ASA, FCA, MAAA



David L. Hoffman

MD/DLH:bd

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## **SECTION A**

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### **EXECUTIVE SUMMARY**

# Executive Summary as of JUNE 30, 2017

Actuarial Valuation Date	June 30, 2017
Measurement Date of the Net Pension Liability	June 30, 2017
Employer's Fiscal Year Ending Date (Reporting Date)	June 30, 2017

## Membership

Number of	
- Retirees and Beneficiaries and DROP Members	709
- Inactive, Nonretired Members	80
- Active Members	469
- Total	1,258
Covered Payroll #	\$ 29,076,764

## Net Pension Liability

Total Pension Liability	\$ 437,870,023
Plan Fiduciary Net Position	299,525,117
Net Pension Liability	\$ 138,344,906
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	68.41%
Net Pension Liability as a Percentage of Covered Payroll	475.79%

## Development of the Single Discount Rate

Single Discount Rate	7.15%
Long-Term Expected Rate of Investment Return	7.15%
Long-Term Municipal Bond Rate*	3.56%
Last year ending June 30 in the 2018 to 2117 projection period for which projected benefit payments are fully funded	2117

**Total Pension Expense** \$ 24,925,753

## Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	\$ 1,047,769	\$ 3,572,153
Changes in assumptions	15,791,165	-
Net difference between projected and actual earnings on pension plan investments	18,647,357	8,958,574
Total	\$ 35,486,291	\$ 12,530,727

\* Source: Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2017. In describing this index, Fidelity notes that the municipal curves are constructed using option-adjusted analytics of a diverse population of over 10,000 tax-exempt securities.

# Including pay for DROP participants.

# Discussion

## Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67 establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68 establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

## Financial Statements

GASB Statement No. 68 requires state or local governments to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Paragraph 57 of GASB Statement No. 68 states, "Contributions to the pension plan from the employer subsequent to the measurement date of the collective net pension liability and before the end of the employer's reporting period should be reported as a deferred outflow of resources related to pensions." The information contained in this report does not incorporate any contributions made to ASPRS subsequent to the measurement date of June 30, 2017.

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the liability and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position in accordance with GASB Statement No. 67. The *statement of fiduciary net position* presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The *statement of changes in fiduciary net position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

## Notes to Financial Statements

GASB Statement No. 68 requires the notes of the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

GASB Statement Nos. 67 and 68 require the notes of the financial statements for the employers and pension plans, to include certain additional information. The list of disclosure items should include:

- a description of benefits provided by the plan;
- the type of employees and number of members covered by the pension plan;
- a description of the plan's funding policy, which includes member and employer contribution requirements;
- the pension plan's investment policies;
- the pension plan's fiduciary net position, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- the net pension liability using a discount rate that is 1% higher and 1% lower than used to calculate the total pension liability and net pension liability for financial reporting purposes;
- significant assumptions and methods used to calculate the total pension liability;
- inputs to the discount rates; and
- certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with GASB Statement No. 67. This information includes:

- the composition of the pension plan's Board and the authority under which benefit terms may be amended;
- a description of how fair value is determined;
- information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets;
- annual money-weighted rate of return; and
- a description of the terms of the plan's Deferred Retirement Option Program (DROP) and the total DROP balance for those members currently participating in the DROP.



## Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- sources of changes in the net pension liability;
- information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- a comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

## Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. The net pension liability and pension expense should be measured as of the pension plan's fiscal year end (measurement date) on a date that is within the employer's prior fiscal year. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2017 and a measurement date of June 30, 2017.

## Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a Single Discount Rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.15%; the municipal bond rate is 3.56% (based on the weekly rate closest to but not later than the measurement date of the Fidelity "20-Year Municipal GO AA Index"; and the resulting Single Discount Rate is 7.15%.

## **SECTION B**

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### **FINANCIAL STATEMENTS**

# Statement of Pension Expense Under GASB Statement No. 68

## Fiscal Year Ended JUNE 30, 2017

### Total Pension Expense

1. Service Cost	\$ 5,473,626
2. Interest on the Total Pension Liability	30,322,786
3. Current-Period Benefit Changes	-
4. Employee Contributions (made negative for addition here)	-
5. Projected Earnings on Plan Investments (made negative for addition here)	(20,286,033)
6. Pension Plan Administrative Expense	208,424
7. Other Changes in Plan Fiduciary Net Position	0
8. Recognition of Outflow (Inflow) of Resources due to Liabilities	4,216,873
9. Recognition of Outflow (Inflow) of Resources due to Assets	<u>4,990,077</u>
<b>10. Total Pension Expense</b>	<b>\$ 24,925,753</b>

# Statement of Outflows and Inflows Arising from Current Reporting Period Fiscal Year Ended JUNE 30, 2017

## A. Outflows (Inflows) of Resources due to Liabilities

1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	\$ (3,052,763)
2. Assumption Changes (gains) or losses	\$ 15,875,267
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}	4.7608
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability	\$ (641,229)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	\$ 3,334,580
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	<u>\$ 2,693,351</u>
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	\$ (2,411,534)
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	\$ 12,540,687
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	<u>\$ 10,129,153</u>

## B. Outflows (Inflows) of Resources due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$(11,198,217)
2. Recognition period for Assets {in years}	5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	\$ (2,239,643)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$ (8,958,574)

# Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods

## Fiscal Year Ended June 30, 2017

### A. Outflows and Inflows of Resources due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	\$ 5,507,073	\$ 1,290,200	\$ 4,216,873
2. Due to Assets	7,229,720	2,239,643	4,990,077
<b>3. Total</b>	<b>\$ 12,736,793</b>	<b>\$ 3,529,843</b>	<b>\$ 9,206,950</b>

### B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	\$ 354,959	\$ 1,290,200	\$ (935,241)
2. Assumption Changes	5,152,114	-	5,152,114
3. Net Difference between projected and actual earnings on pension plan investments	7,229,720	2,239,643	4,990,077
<b>4. Total</b>	<b>\$ 12,736,793</b>	<b>\$ 3,529,843</b>	<b>\$ 9,206,950</b>

### C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	\$ 1,047,769	\$ 3,572,153	\$ (2,524,384)
2. Assumption Changes	15,791,165	-	15,791,165
3. Net Difference between projected and actual earnings on pension plan investments	18,647,357	8,958,574	9,688,783
<b>4. Total</b>	<b>\$ 35,486,291</b>	<b>\$ 12,530,727</b>	<b>\$ 22,955,564</b>

### D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources
2018	\$ 9,206,950
2019	8,959,684
2020	4,979,476
2021	(190,546)
2022	-
Thereafter	-
<b>Total</b>	<b>\$ 22,955,564</b>

# Statement of Fiduciary Net Position as of JUNE 30, 2017

## Any Additional Required Information to Be Provided by System

### Assets

Cash and Deposits	\$	-
Receivables		
Contributions		-
Accounts Receivable - Other		-
Total Receivables		-
Investments		
Securities Lending Collateral	\$	-
Investment Assets		-
Other		-
Total Investments		-
<b>Total Assets</b>		-

### Liabilities

Payables		
Accrued Expense and Other Liabilities	\$	-
Investment Principal Payable		-
Securities Lending Liability		-
<b>Total Liabilities</b>		-

<b>Net Position Restricted for Pensions</b>		<b><u><u>\$ 299,525,117</u></u></b>
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## Statement of Changes in Fiduciary Net Position for Year Ended JUNE 30, 2017

### Additions

Contributions	
Employer	\$ 19,961,066
Employee	-
Other	-
<b>Total Contributions</b>	<u>\$ 19,961,066</u>
Investment Income	
Net Appreciation in Fair Value of Investments	\$ 32,803,469
Interest and Dividends	-
Less Investment Expense	(1,319,219)
<b>Net Investment Income</b>	<u>\$ 31,484,250</u>
Other	\$ -
<b>Total Additions</b>	<u>\$ 51,445,316</u>

### Deductions

Benefit payments, including refunds of employee contributions	\$ 24,631,787
Pension Plan Administrative Expense	208,424
Other	-
<b>Total Deductions</b>	<u>\$ 24,840,211</u>
<b>Net Increase in Net Position</b>	<b>\$ 26,605,105</b>

### Net Position Restricted for Pensions

Beginning of Year	<u>\$ 272,920,012</u>
End of Year	<u>\$ 299,525,117</u>

## **SECTION C**

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### **REQUIRED SUPPLEMENTARY INFORMATION**



# Schedules of Required Supplementary Information

## Schedule of Changes in Net Pension Liability and Related Ratios

### Current Period

### Fiscal Year Ended JUNE 30, 2017

<b>A. Total pension liability</b>	
1. Service Cost	\$ 5,473,626
2. Interest on the Total Pension Liability	30,322,786
3. Changes of benefit terms	-
4. Difference between expected and actual experience of the Total Pension Liability	(3,052,763)
5. Changes of assumptions	15,875,267
6. Benefit payments, including refunds of employee contributions	<u>(24,631,787)</u>
7. Net change in total pension liability	\$ 23,987,129
8. Total pension liability – beginning	<u>413,882,894</u>
9. Total pension liability – ending	<u><u>\$ 437,870,023</u></u>
<b>B. Plan fiduciary net position</b>	
1. Contributions – employer	\$ 19,961,066
2. Contributions – employee	-
3. Net investment income	31,484,250
4. Benefit payments, including refunds of employee contributions	(24,631,787)
5. Pension Plan Administrative Expense	(208,424)
6. Other	-
7. Net change in plan fiduciary net position	<u>\$ 26,605,105</u>
8. Plan fiduciary net position – beginning	<u>272,920,012</u>
9. Plan fiduciary net position – ending	<u><u>\$ 299,525,117</u></u>
<b>C. Net pension liability</b>	<u><u>\$ 138,344,906</u></u>
<b>D. Plan fiduciary net position as a percentage of the total pension liability</b>	<b>68.41%</b>
<b>E. Covered-employee payroll #</b>	<b>\$ 29,076,764</b>
<b>F. Net pension liability as a percentage of covered employee payroll</b>	<b>475.79%</b>

# Includes pay for DROP participants.

## Schedules of Required Supplementary Information

### Schedule of Changes in Net Pension Liability and Related Ratios Multiyear

Fiscal year ending June 30,	2017	2016	2015	2014
<b>Total Pension Liability</b>				
Service Cost	\$ 5,473,626	\$ 5,488,445	\$ 6,101,608	\$ 4,866,199
Interest on the Total Pension Liability	30,322,786	29,469,678	29,218,802	28,558,511
Benefit Changes	-	-	-	-
Difference between Expected and Actual Experience	(3,052,763)	1,757,687	(3,107,531)	(454,349)
Assumption Changes	15,875,267	-	8,703,080	8,970,858
Benefit Payments	(24,631,787)	(26,035,466)	(23,358,801)	(21,688,239)
Refunds	-	-	-	-
<b>Net Change in Total Pension Liability</b>	23,987,129	10,680,344	17,557,158	20,252,980
<b>Total Pension Liability - Beginning</b>	413,882,894	403,202,550	385,645,392	365,392,412
<b>Total Pension Liability - Ending (a)</b>	<u>\$ 437,870,023</u>	<u>\$ 413,882,894</u>	<u>\$ 403,202,550</u>	<u>\$ 385,645,392</u>
<b>Plan Fiduciary Net Position</b>				
Employer Contributions	\$ 19,961,066	\$ 19,713,295	\$ 19,784,130	\$ 19,501,684
Employee Contributions	-	-	94,814	-
Pension Plan Net Investment Income	31,484,250	(210,045)	6,131,684	43,307,746
Benefit Payments	(24,631,787)	(26,035,466)	(23,358,801)	(21,688,239)
Refunds	-	-	-	-
Pension Plan Administrative Expense	(208,424)	(205,342)	(196,231)	(189,658)
Other	-	-	6	-
<b>Net Change in Plan Fiduciary Net Position</b>	26,605,105	(6,737,558)	2,455,602	40,931,533
<b>Plan Fiduciary Net Position - Beginning</b>	272,920,012	279,657,570	277,201,968	236,270,435
<b>Plan Fiduciary Net Position - Ending (b)</b>	<u>\$ 299,525,117</u>	<u>\$ 272,920,012</u>	<u>\$ 279,657,570</u>	<u>\$ 277,201,968</u>
<b>Net Pension Liability - Ending (a) - (b)</b>	138,344,906	140,962,882	123,544,980	108,443,424
<b>Plan Fiduciary Net Position as a Percentage of Total Pension Liability</b>	68.41 %	65.94 %	69.36 %	71.88 %
<b>Covered Employee Payroll #</b>	\$ 29,076,764	\$ 29,448,593	\$ 29,929,358	\$ 28,548,873
<b>Net Pension Liability as a Percentage of Covered Employee Payroll</b>	475.79 %	478.67 %	412.79 %	379.85 %
<b>Notes to Schedule:</b>	N/A	N/A	N/A	N/A

*# In 2017, actual DROP participant pays were used. In 2016, \$67,241 was used as an estimate of average annual pay for DROP participants. In 2015, \$75,000 was used as an estimate of average annual pay for DROP participants.*

## Schedules of Required Supplementary Information

### Schedule of the Net Pension Liability Multiyear

### Ultimately 10 Fiscal Years Will Be Displayed

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll#	Net Pension Liability as a % of Covered Payroll
2014	\$385,645,392	\$277,201,968	\$ 108,443,424	71.88%	\$28,548,873	379.85%
2015	403,202,550	279,657,570	123,544,980	69.36%	29,929,358	412.79%
2016	413,882,894	272,920,012	140,962,882	65.94%	29,448,593	478.67%
2017	437,870,023	299,525,117	138,344,906	68.41%	29,076,764	475.79%

# In 2017, actual DROP participant pays were used. In 2016, \$67,241 was used as an estimate of average annual pay for DROP participants. In 2015, \$75,000 was used as an estimate of average annual pay for DROP participants.

## Schedule of Contributions Multiyear (\$ in Millions)

### Last 10 Fiscal Years

FY Ending June 30,	Actuarially Determined Contribution	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll#	Actual Contribution as a % of Covered Payroll
2008	\$ 10.0	\$ 11.7	\$ (1.7)	\$ 26.4	44.32%
2009	10.5	12.1	(1.6)	27.6	43.84%
2010	12.7	20.5	(7.8)	28.5	71.93%
2011	12.6	14.1	(1.5)	28.2	50.00%
2012	14.1	19.7	(5.6)	29.5	66.78%
2013	13.6	19.5	(5.9)	28.1	69.40%
2014	14.0	19.5	(5.5)	29.1	67.01%
2015	14.2	19.8	(5.6)	29.9	66.22%
2016	14.3	19.7	(5.4)	29.4	67.01%
2017	14.1	20.0	(5.9)	29.1	68.73%

*# In 2017, actual DROP participant pays were used. In 2016, \$67,241 was used as an estimate of average annual pay for DROP participants. In 2015, \$75,000 was used as an estimate of average annual pay for DROP participants.*

## Notes to Schedule of Contributions

**Valuation Date:** June 30, 2016

**Methods and Assumptions Used to Determine Contribution Rates for Fiscal Year Ending June 30, 2017:**

Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	23 years
Asset Valuation Method	4-Year smoothed market
Inflation	2.50% price inflation
Salary Increases	3.25% to 10.25% including inflation
Investment Rate of Return	7.50%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition.
Mortality	Based on RP-2000 Combined Healthy mortality table, projected to 2020 using Projection Scale BB, set-forward 2 years for males and 1 year for females, with an approximate 14% margin for future mortality improvement.

**Other Information:**

Notes: There were no benefit changes during the year.

# Schedule of Investment Returns Multiyear

## To Be Provided by System

### Last 10 Fiscal Years

<b>FY Ending June 30,</b>	<b>Annual Return<sup>1</sup></b>
2008	
2009	
2010	
2011	
2012	
2013	
2014	
2015	
2016	
2017	

<sup>1</sup> Annual money-weighted rate of return, net of investment expenses.

## **SECTION D**

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### **NOTES TO FINANCIAL STATEMENTS**

## Long-Term Expected Return on Plan Assets

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the current asset allocation percentage and by adding expected price inflation. Best estimates of arithmetic real rates of return for the 10-year period from 2017 to 2026 were based upon capital market assumptions provided by the plan's investment consultant(s). For each major asset class that is included in the pension plan's current asset allocation as of June 30, 2017, these best estimates are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Broad Domestic Equity	37%	5.97%
International Equity	24%	6.54%
Real Assets	16%	4.59%
Absolute Return	5%	3.15%
Domestic Fixed	18%	0.83%
Total	100%	
Total Real Rate of Return		4.82%
Plus: Price Inflation - Actuary's Assumption		2.50%
Less: Investment Expenses (Passive)		0.00%
Net Expected Return		7.32%



## Single Discount Rate

A Single Discount Rate of 7.15% was used to measure the total pension liability. This Single Discount Rate was based on the expected rate of return on pension plan investments of 7.15%. The projection of cash flows used to determine this Single Discount Rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Regarding the sensitivity of the net pension liability to changes in the Single Discount Rate, the following presents the plan's net pension liability, calculated using a Single Discount Rate of 7.15%, as well as what the plan's net pension liability would be if it were calculated using a Single Discount Rate that is one percent lower or one percent higher:

### Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

	1% Decrease 6.15%	Current Single Discount Rate 7.15%	1% Increase 8.15%
Total Pension Liability (TPL)	\$ 489,115,958	\$ 437,870,023	\$ 394,970,201
Net Position Restricted for Pensions	<u>299,525,117</u>	<u>299,525,117</u>	<u>299,525,117</u>
<b>Net Pension Liability (NPL)</b>	<b>\$ 189,590,841</b>	<b>\$ 138,344,906</b>	<b>\$ 95,445,084</b>

**Disclosure Regarding the Deferred Retirement Option Program**

**To Be Provided by System**

## Summary of Population Statistics As of June 30, 2017

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	709
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	80
Active Plan Members	<u>469</u>
Total Plan Members	1,258

**SECTION E**

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**SUMMARY OF BENEFITS**

## Summary of Non-Contributory Benefit Provisions (Last Changed as of 7-1-2009)

The Non-Contributory Plan was created by Act 793 of 1977 and was effective January 1, 1978. All non-retired members are now covered by non-contributory benefits. Act 1071 of 1997 created a Tier Two benefit plan for all officers hired on or after April 3, 1997. Existing members of the plan in effect prior to this date (Tier One) had one year to elect coverage under Tier Two.

### Voluntary Retirement

**With a full benefit**, after 30 years of actual service, regardless of age, or at age 65 with 5 actual years of service for Tier One and Tier Two. The age requirement is reduced by 1 month for every 2 months of Public Safety service credit, but not below age 52 for Tier One or age 55 for Tier Two members.

Public Safety service credit is granted at the rate of 1.5 months of credit for each month of actual Public Safety employment for Tier One. Service is credited at a rate of one for one in Tier Two.

**With a reduced benefit**, once a member's age is within 10 years of becoming eligible for full benefits. The reduction for Tier One is equal to 1/2 of 1% for each month retirement precedes Normal Retirement Age. The reduction for Tier Two is equal to 3/4 of 1% for each month retirement precedes Normal Retirement Age.

### Final Average Pay (FAP)

Average of the highest 60 calendar months' pays for Tier One or 48 calendar months for Tier Two.

### Full Age & Service Retirement Benefit

Tier One: 1.55% of FAP times years and months of credited service. Tier Two: 2.475% of FAP times credited service. If retirement is prior to age 62, an additional .322% of FAP times credited service will be paid until the retiree attains age 62 for Tier One or .513% of FAP times credited service for Tier Two.

Public Safety service credit is granted at the rate of 1.5 months of credit for each month of actual Public Safety employment for Tier One. Service is credited at a rate of one for one in Tier Two.

For Tier One, the portion of the SPRS benefit based on service before 1978 cannot be less than the amount provided by contributory provisions in effect at time of retirement; and if there is credited service for time prior to July 1, 1991, the benefit cannot be less than under the provisions in effect July 1, 1990, (using Social Security offset), plus increases granted since that date.

For Tier One, the minimum monthly benefit is \$150 minus any age and beneficiary option reductions.

## **Vested and Reduced Early Retirement Benefits**

5 years of actual service, and leaving System-covered employment before full retirement age.

Deferred full retirement benefit, based on service and pay at termination, begins when full retirement age would have been reached by continuing covered employment.

In place of a deferred full benefit, a qualifying member may elect an immediate reduced benefit, provided the member is within 10 years of full retirement age. The reduced amount is the full amount reduced by 1/2 of 1% for Tier One and/or 3/4 of 1% for Tier Two for each month of difference in benefit commencement ages.

## **Death While in System Covered Employment**

Member's accumulated contributions before 1978 are refundable.

If the deceased member has 5 or more years of service and has qualifying dependents, monthly benefits are payable instead. A surviving spouse receives a benefit as if the member had retired and elected the joint & 75% survivor option. Payment begins immediately if the member was eligible for a full age and service benefit or had 20 years of service; or payment begins at the spouse's age 50 if the member had 15 or more years of service; or payment begins at the spouse's age 62 if the member had less than 15 years of service.

If a member is killed while in the official line of duty and the surviving spouse is eligible for a deferred benefit, then the surviving spouse may elect to receive a reduced benefit immediately. The reduction of the benefit shall be 1/2 of 1% per month for each of the first 60 months that the benefit commences before when it would have otherwise commenced, plus; 1/4 of 1% per month for each month more than 60 months that the benefit commences before when it would have otherwise commenced. However, the total reduction shall not be more than 50%.

Each dependent child receives a benefit of 10% of annual pay (maximum of 25% of annual pay for all children).

Dependent parents' benefits are payable if neither spouse nor children's benefits are payable.

## **Total And Permanent Disability**

Tier One eligibility: Disabled after 5 years of service.

Tier Two eligibility: Disabled after 5 years of service.

Amount is computed as an age and service benefit, based on service and pay to the time of disability.

## **Death After Retirement**

Retiring member can provide protection for a beneficiary by electing an option which provides beneficiary protection by reducing the retired employee's benefit amount.

Under Tier One, if a straight life annuity is paid, upon the retiree's death, 50% of the retiree's benefit is continued to a surviving spouse. If the deceased retiree leaves children under age 18, 75% of the retiree's benefit is continued to the surviving spouse. If there is no surviving spouse, the 75% will be divided among the children under age 18.

Under Tier Two, if a straight life annuity is elected, no survivor benefit is payable.

## **Benefit Increases After Retirement**

Annually, there is a cost-of-living adjustment equal to 3% of the current benefit amount.

## **Member Contributions**

None.

## **Arkansas State Police Officers Deferred Retirement Option Plan – Tier I (Act 967 of 1995)**

Tier One members with 30 years of credited service and who are eligible to receive a service retirement pension may participate.

Participating members may continue in employment for up to 7 years and have their accrued monthly benefit (at date of participation) credited to an individual account in the Deferred Retirement Option Plan in lieu of any further benefit accruals.

The Deferred Retirement Option Plan accounts accumulate with interest and are paid to the member at termination of active membership in either a lump sum or as an annuity of equivalent value. Interest is credited annually at a rate established by the Board of Trustees.

## **Arkansas State Police Officers Deferred Retirement Option Plan – Tier II (Act 1242 of 2009)**

Tier Two members with at least 30 years of actual service and are eligible to receive a service retirement pension may participate.

Participating members may continue in employment for up to 7 years and have seventy-two percent (72%) of their accrued monthly benefit (at date of participation) credited to an individual account in the Deferred Retirement Option Plan in lieu of any further benefit accruals.

The Deferred Retirement Option Plan accounts accumulate with interest and are paid to the member at termination of active membership in either a lump sum or as an annuity of equivalent value. Interest is credited annually to participant accounts at a rate established by the Arkansas State Police Retirement System Board of Trustees that shall not be greater than five percent (5%) nor less than one percent (1%) per annum.



## **SECTION F**

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### **ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS**

# Summary of Actuarial Assumptions Used for State Police Actuarial Valuations Assumptions Adopted by Board of Trustees after Consulting with Actuary

In accordance with Section 24-6-204 of the Arkansas Code, the Board of Trustees adopts the actuarial assumptions used for actuarial valuation purposes.

The actuarial assumptions used in the valuation are shown in this section. Assumptions were established based upon an Experience Study covering the period July 1, 2006 through June 30, 2012 (please see our report dated February 26, 2013). Economic assumptions have been subsequently updated based on the results of the Economic Assumption review performed for the Arkansas Public Employees Retirement System (please see our report dated May 17, 2017). The actuarial assumptions represent estimates of future experience.

## ***Economic Assumptions***

***The investment return rate*** used in making the valuation was 7.15% per year, compounded annually (net after administrative and investment expenses). The assumed real rate of return is the portion of investment return which is more than the wage inflation rate. Considering assumed wage inflation of 3.25%, the 7.15% investment return rate translates to an effective assumed real rate of return of 3.90%. The wage inflation assumption was revised for the June 30, 2015 valuation and the investment assumption was revised for the June 30, 2017 valuation.

***Pay increase assumptions*** for individual active members are shown on page 28. Part of the assumption for each age is for a merit and/or seniority increase, and the other 3.25% recognizes wage inflation. The wage inflation assumption consists of 2.5% for price inflation and 0.75% for real wage growth. The pay increase assumption for individual active members was revised for the June 30, 2014 valuation.

***Total active member payroll*** is assumed to increase 3.25% a year, which is the portion of the individual pay increase assumptions recognizing wage inflation.

***The number of active members*** is assumed to continue at the present number.

## **Non-Economic Assumptions**

**The mortality tables** used to measure retired life mortality were the RP-2000 Combined Healthy mortality table, Projected to 2020 using Projection Scale BB, set-forward 2 years for males and 1 year for females. Related values are shown on page 26. Disability post-retirement mortality was assumed to be the same as standard post-retirement mortality set forward an additional 10 years. Based upon the experience observed during the most recent experience study, it appears that at the time of the study, the current table provides for an approximate 14% margin for future mortality improvement. Pre-retirement mortality rates are assumed to be 50% of post-retirement mortality rates. The mortality assumption was revised for the June 30, 2013 valuation.

**The probabilities of retirement** for members eligible to retire are shown on page 27. The assumption was revised for the June 30, 2013 valuation.

**The probabilities of death-in-service, disability and withdrawal from service** are shown for sample ages on page 28. The assumption for death-in-service was revised for the June 30, 2013 valuation.

**The individual entry-age normal actuarial cost method of the valuation** was used in determining liabilities and normal cost.

Differences in the past between assumed experience and actual experience (“actuarial gains and losses”) become part of actuarial accrued liabilities.

Unfunded actuarial accrued liabilities are amortized to produce contribution amounts (principal & interest) which are level percent-of-payroll contributions.

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**Present assets (cash & investments) were valued on a market related basis in which differences between actual and assumed returns are phased-in over a four year period.**

**The data about persons now covered and about present assets** was furnished by the System’s administrative staff. Although examined for general reasonableness, the data was not audited by the Actuary.

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The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (MAAA).

**Single Life Retirement Values**  
**RP-2000 Combined Healthy Projected to 2020 Mortality**  
**Male Rates Set-Forward 2 Years**  
**Female Rates Set-Forward 1 Year**  
**and 7.15% Interest**

Sample Ages	Single Life Retirement Values			
	Present Value of \$1 Monthly for Life Increasing 3% Annually		Future Life Expectancy (Years)	
	Men	Women	Men	Women
50	\$203.71	\$215.32	31.13	34.64
55	186.13	199.31	26.58	29.98
60	166.56	180.97	22.23	25.44
65	145.34	160.75	18.14	21.14
70	122.67	139.27	14.35	17.16
75	99.59	117.12	10.95	13.56
80	77.21	94.80	8.02	10.35

Sample Attained Ages	\$100 Benefit Increasing 3% Yearly
55	\$100.00
60	115.93
65	134.39
70	155.79
75	180.60
80	209.36

## Probabilities of Retirement for Members Eligible to Retire

Retirement Ages	Percent of Eligible Active Members Retiring Within Next Year		Years of Service	Percent of Eligible Active Members Retiring Within Next Year
	Tier One	Tier Two		Tier Two
47	2%	-		
48	2%	-		
49	2%	-		
50	6%	2%	30	25%
51	6%	2%	31	15%
52	10%	2%	32	15%
53	10%	6%	33	20%
54	10%	6%	34	35%
55	10%	25%	35	40%
56	10%	20%	36 & Over	100%
57	15%	18%		
58	20%	18%		
59	35%	20%		
60	40%	25%		
61	50%	30%		
62	60%	100%		
63	80%	100%		
64	100%	100%		
65	100%	100%		

A member is assumed to be eligible to retire at age 52 (55 for Tier Two) with 17 years of service, or at any age with 30 years of service (Tier Two). A member is assumed to be eligible to retire early at age 47 (50 for Tier 2) with 17 years of service. For a Tier 2 member with 30 or more years of service at the beginning of a year, the percents shown for service based retirement (30 or more years) take precedence over the percents associated with age based retirement.

It was assumed that members eligible to enter the DROP will do so to maximize the value of their benefits.

## Separations from Active Employment Before Age and Service Retirement & Individual Pay Increases

Sample Ages	Percent of Active Members Separating Within the Next Year				Pay Increase Assumptions for Active Members		
	Death		Disability	Other	Merit & Seniority	Base (Economic)	Increase Next Year
	Male	Female					
20	0.02%	0.01%	0.06%	5.50%	6.29%	3.25%	9.54%
25	0.02%	0.01%	0.09%	5.50%	5.39%	3.25%	8.64%
30	0.03%	0.01%	0.19%	5.50%	4.01%	3.25%	7.26%
35	0.04%	0.02%	0.31%	4.18%	2.29%	3.25%	5.54%
40	0.06%	0.04%	0.43%	2.64%	1.50%	3.25%	4.75%
45	0.08%	0.06%	0.55%	1.43%	1.10%	3.25%	4.35%
50	0.13%	0.09%	0.67%	0.55%	0.80%	3.25%	4.05%
55	0.22%	0.14%	0.79%	0.00%	0.60%	3.25%	3.85%

# Miscellaneous and Technical Assumptions

## June 30, 2017

<b>Marriage Assumption:</b>	95% of males and 95% of females are assumed to be married for purposes of death-in-service benefits. 90% of males and 90% of females are assumed to be married for purposes of death-after-retirement benefits. Male spouses are assumed to be three years older than female spouses for active member valuation purposes.
<b>Pay Increase Timing:</b>	Beginning of year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
<b>Decrement Timing:</b>	Decrements are assumed to occur mid-year.
<b>Eligibility Testing:</b>	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
<b>Decrement Relativity:</b>	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
<b>Decrement Operation:</b>	Disability and withdrawal decrements do not operate during the period a member is assumed to be eligible for an unreduced benefit.
<b>DROP Participants:</b>	For members participating in the DROP, reported payroll is multiplied by 3.7 to estimate present value of future salaries.
<b>Incidence of Contributions:</b>	Contributions are assumed to be received continuously throughout the year.
<b>Benefit Service:</b>	Exact fractional service is used to determine the amount of benefit payable.
<b>Tier One DROP Interest Credit:</b>	Interest is assumed to be credited at 3.25%.
<b>Tier Two DROP Interest Credit:</b>	Interest is assumed to be credited at 3.25%.
<b>Other Liability Adjustments:</b>	Active member non-refund normal costs and actuarial accrued liabilities were increased by 1.5% to reflect non-reported reciprocal service.
<b>Administrative Expenses</b>	The normal cost was increased by 0.70% of payroll to fund administrative expenses.

## **SECTION G**

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### **CALCULATION OF THE SINGLE DISCOUNT RATE**



## Calculation of the Single Discount Rate

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed valuation discount rate is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal bond rate is required, as described in the following paragraph.

The *Single Discount Rate* (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.15%; the municipal bond rate is 3.56%; and the resulting Single Discount Rate is 7.15%.

The tables in this section provide background for the development of the Single Discount Rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities).

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the SDR. It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

# Single Discount Rate Development Projection of Contributions

Fiscal Year Ending 6/30	Contributions from Current Employees	Normal Cost and Expense Contributions	UAL Contributions	Total Contributions
2018	\$ -	\$ 6,912,535	\$ 8,514,743	\$ 15,427,278
2019	-	6,832,070	9,251,317	16,083,387
2020	-	6,615,069	9,771,070	16,386,139
2021	-	6,339,754	9,860,094	16,199,848
2022	-	6,062,020	10,180,547	16,242,567
2023	-	5,844,179	10,511,416	16,355,595
2024	-	5,699,032	10,853,036	16,552,068
2025	-	5,528,408	11,205,760	16,734,168
2026	-	5,314,639	11,569,947	16,884,586
2027	-	5,097,994	11,945,971	17,043,964
2028	-	4,865,504	12,334,214	17,199,717
2029	-	4,618,188	12,735,076	17,353,265
2030	-	4,372,037	13,148,967	17,521,004
2031	-	4,144,814	13,576,308	17,721,122
2032	-	3,937,826	14,017,538	17,955,364
2033	-	3,715,880	14,473,108	18,188,988
2034	-	3,464,983	14,943,483	18,408,466
2035	-	3,206,121	15,429,147	18,635,267
2036	-	2,969,196	15,930,594	18,899,790
2037	-	2,743,720	16,448,338	19,192,059
2038	-	2,534,930	16,982,909	19,517,839
2039	-	2,353,721	17,534,855	19,888,576
2040	-	2,161,783	0	2,161,783
2041	-	1,928,784	0	1,928,784
2042	-	1,680,740	0	1,680,740
2043	-	1,448,438	0	1,448,438
2044	-	1,223,899	0	1,223,899
2045	-	1,011,257	0	1,011,257
2046	-	811,101	0	811,101
2047	-	634,966	0	634,966
2048	-	493,756	0	493,756
2049	-	376,612	0	376,612
2050	-	265,955	0	265,955
2051	-	166,928	0	166,928
2052	-	82,332	0	82,332
2053	-	22,502	0	22,502
2054	-	1,298	0	1,298
2055	-	-	0	0
2056	-	-	0	0
2057	-	-	0	0
2058	-	-	0	0
2059	-	-	0	0
2060	-	-	0	0
2061	-	-	0	0
2062	-	-	0	0
2063	-	-	0	0
2064	-	-	0	0
2065	-	-	0	0
2066	-	-	0	0
2067	-	-	0	0

# Single Discount Rate Development

## Projection of Plan Fiduciary Net Position

Fiscal Year Ending 6/30	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.15%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2018	\$ 299,525,117	\$ 15,427,278	\$ 35,891,098	\$ 208,265	\$ 20,689,777	\$ 299,542,809
2019	299,542,809	16,083,387	27,252,406	206,064	21,017,672	309,185,399
2020	309,185,399	16,386,139	27,748,566	199,906	21,700,538	319,323,604
2021	319,323,604	16,199,848	28,336,304	192,029	22,398,503	329,393,622
2022	329,393,622	16,242,567	29,112,403	184,055	23,093,024	339,432,754
2023	339,432,754	16,355,595	29,904,343	177,776	23,787,190	349,493,420
2024	349,493,420	16,552,068	30,773,269	173,576	24,483,050	359,581,693
2025	359,581,693	16,734,168	31,746,599	168,601	25,176,738	369,577,399
2026	369,577,399	16,884,586	32,774,687	162,383	25,860,815	379,385,730
2027	379,385,730	17,043,964	33,772,737	156,036	26,532,868	389,033,789
2028	389,033,789	17,199,717	34,841,607	149,192	27,190,865	398,433,572
2029	398,433,572	17,353,265	36,066,913	141,816	27,825,554	407,403,662
2030	407,403,662	17,521,004	37,135,902	134,440	28,435,511	416,089,836
2031	416,089,836	17,721,122	38,040,621	127,662	29,032,056	424,674,731
2032	424,674,731	17,955,364	38,846,491	121,490	29,626,010	433,288,124
2033	433,288,124	18,188,988	39,778,844	114,884	30,217,552	441,800,936
2034	441,800,936	18,408,466	40,618,679	107,375	30,804,687	450,288,034
2035	450,288,034	18,635,267	41,950,428	99,553	31,372,969	458,246,289
2036	458,246,289	18,899,790	41,858,838	92,318	31,954,750	467,149,673
2037	467,149,673	19,192,059	42,508,680	85,390	32,579,022	476,326,684
2038	476,326,684	19,517,839	42,413,457	79,010	33,250,194	486,602,250
2039	486,602,250	19,888,576	42,865,341	73,446	33,982,242	497,534,281
2040	497,534,281	2,161,783	43,236,111	67,506	34,128,272	490,520,719
2041	490,520,719	1,928,784	44,275,953	60,243	33,582,339	481,695,645
2042	481,695,645	1,680,740	44,481,554	52,508	32,935,680	471,778,002
2043	471,778,002	1,448,438	44,947,898	45,246	32,202,278	460,435,575
2044	460,435,575	1,223,899	44,872,203	38,194	31,386,313	448,135,389
2045	448,135,389	1,011,257	44,813,902	31,521	30,501,661	434,802,884
2046	434,802,884	811,101	44,678,309	25,269	29,546,339	420,456,746
2047	420,456,746	634,966	44,906,267	19,766	28,506,586	404,672,265
2048	404,672,265	493,756	44,183,634	15,335	27,398,579	388,365,630
2049	388,365,630	376,612	43,516,442	11,669	26,252,108	371,466,239
2050	371,466,239	265,955	42,754,307	8,214	25,066,811	354,036,485
2051	354,036,485	166,928	41,672,155	5,140	23,855,231	336,381,349
2052	336,381,349	82,332	40,643,879	2,527	22,626,135	318,443,411
2053	318,443,411	22,502	38,866,751	690	21,403,971	301,002,442
2054	301,002,442	1,298	36,998,454	42	20,221,858	284,227,102
2055	284,227,102	-	35,641,518	-	19,070,050	267,655,634
2056	267,655,634	-	34,261,797	-	17,933,664	251,327,501
2057	251,327,501	-	32,843,960	-	16,816,015	235,299,556
2058	235,299,556	-	31,461,897	-	15,718,572	219,556,231
2059	219,556,231	-	30,053,577	-	14,642,403	204,145,056
2060	204,145,056	-	28,616,546	-	13,590,991	189,119,501
2061	189,119,501	-	27,157,372	-	12,567,929	174,530,058
2062	174,530,058	-	25,683,256	-	11,576,573	160,423,376
2063	160,423,376	-	24,201,632	-	10,619,999	146,841,743
2064	146,841,743	-	22,720,540	-	9,700,947	133,822,150
2065	133,822,150	-	21,248,150	-	8,821,776	121,395,775
2066	121,395,775	-	19,792,531	-	7,984,430	109,587,674
2067	109,587,674	-	18,361,100	-	7,190,441	98,417,015

# Single Discount Rate Development

## Projection of Plan Fiduciary Net Position

### (Concluded)

Fiscal Year Ending 6/30	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.15%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2068	\$ 98,417,015	\$ -	\$ 16,960,557	\$ -	\$ 6,440,944	\$ 87,897,403
2069	87,897,403	-	15,596,498	-	5,736,715	78,037,619
2070	78,037,619	-	14,273,145	-	5,078,234	68,842,708
2071	68,842,708	-	12,993,683	-	4,465,749	60,314,774
2072	60,314,774	-	11,760,649	-	3,899,321	52,453,446
2073	52,453,446	-	10,576,844	-	3,378,827	45,255,429
2074	45,255,429	-	9,445,410	-	2,903,919	38,713,939
2075	38,713,939	-	8,369,923	-	2,473,987	32,818,003
2076	32,818,003	-	7,354,235	-	2,088,112	27,551,880
2077	27,551,880	-	6,402,231	-	1,745,031	22,894,680
2078	22,894,680	-	5,517,780	-	1,443,114	18,820,015
2079	18,820,015	-	4,704,268	-	1,180,357	15,296,103
2080	15,296,103	-	3,964,310	-	954,394	12,286,187
2081	12,286,187	-	3,299,796	-	762,531	9,748,922
2082	9,748,922	-	2,711,433	-	601,788	7,639,276
2083	7,639,276	-	2,198,192	-	468,980	5,910,064
2084	5,910,064	-	1,757,359	-	360,829	4,513,533
2085	4,513,533	-	1,384,852	-	274,064	3,402,745
2086	3,402,745	-	1,075,405	-	205,514	2,532,855
2087	2,532,855	-	822,890	-	152,189	1,862,154
2088	1,862,154	-	620,545	-	111,342	1,352,951
2089	1,352,951	-	461,306	-	80,529	972,175
2090	972,175	-	338,281	-	57,626	691,519
2091	691,519	-	244,987	-	40,837	487,369
2092	487,369	-	175,424	-	28,684	340,629
2093	340,629	-	124,324	-	19,987	236,292
2094	236,292	-	87,312	-	13,827	162,808
2095	162,808	-	60,835	-	9,503	111,476
2096	111,476	-	42,101	-	6,491	75,867
2097	75,867	-	28,958	-	4,407	51,316
2098	51,316	-	19,805	-	2,973	34,485
2099	34,485	-	13,466	-	1,993	23,011
2100	23,011	-	9,103	-	1,325	15,234
2101	15,234	-	6,115	-	874	9,993
2102	9,993	-	4,076	-	571	6,489
2103	6,489	-	2,691	-	369	4,167
2104	4,167	-	1,758	-	236	2,646
2105	2,646	-	1,135	-	149	1,660
2106	1,660	-	727	-	93	1,026
2107	1,026	-	461	-	57	622
2108	622	-	288	-	34	368
2109	368	-	175	-	20	214
2110	214	-	105	-	12	120
2111	120	-	63	-	6	64
2112	64	-	36	-	3	32
2113	32	-	19	-	2	15
2114	15	-	9	-	1	7
2115	7	-	4	-	0	3
2116	3	-	2	-	0	1
2117	1	-	1	-	0	0

# Single Discount Rate Development

## Present Values of Projected Benefits

Fiscal Year Ending 6/30	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=((c)/(1+sdr)^(a-.5)
2018	\$ 299,525,117	\$ 35,891,098	\$ 35,891,098	\$ -	\$ 34,672,939	\$ -	\$ 34,672,939
2019	299,542,809	27,252,406	27,252,406	-	24,570,646	-	24,570,646
2020	309,185,399	27,748,566	27,748,566	-	23,348,560	-	23,348,560
2021	319,323,604	28,336,304	28,336,304	-	22,252,079	-	22,252,079
2022	329,393,622	29,112,403	29,112,403	-	21,336,013	-	21,336,013
2023	339,432,754	29,904,343	29,904,343	-	20,453,955	-	20,453,955
2024	349,493,420	30,773,269	30,773,269	-	19,643,754	-	19,643,754
2025	359,581,693	31,746,599	31,746,599	-	18,912,803	-	18,912,803
2026	369,577,399	32,774,687	32,774,687	-	18,222,379	-	18,222,379
2027	379,385,730	33,772,737	33,772,737	-	17,524,297	-	17,524,297
2028	389,033,789	34,841,607	34,841,607	-	16,872,535	-	16,872,535
2029	398,433,572	36,066,913	36,066,913	-	16,300,426	-	16,300,426
2030	407,403,662	37,135,902	37,135,902	-	15,663,607	-	15,663,607
2031	416,089,836	38,040,621	38,040,621	-	14,974,531	-	14,974,531
2032	424,674,731	38,846,491	38,846,491	-	14,271,356	-	14,271,356
2033	433,288,124	39,778,844	39,778,844	-	13,638,715	-	13,638,715
2034	441,800,936	40,618,679	40,618,679	-	12,997,353	-	12,997,353
2035	450,288,034	41,950,428	41,950,428	-	12,527,757	-	12,527,757
2036	458,246,289	41,858,838	41,858,838	-	11,666,267	-	11,666,267
2037	467,149,673	42,508,680	42,508,680	-	11,056,819	-	11,056,819
2038	476,326,684	42,413,457	42,413,457	-	10,295,894	-	10,295,894
2039	486,602,250	42,865,341	42,865,341	-	9,711,236	-	9,711,236
2040	497,534,281	43,236,111	43,236,111	-	9,141,610	-	9,141,610
2041	490,520,719	44,275,953	44,275,953	-	8,736,788	-	8,736,788
2042	481,695,645	44,481,554	44,481,554	-	8,191,655	-	8,191,655
2043	471,778,002	44,947,898	44,947,898	-	7,725,185	-	7,725,185
2044	460,435,575	44,872,203	44,872,203	-	7,197,551	-	7,197,551
2045	448,135,389	44,813,902	44,813,902	-	6,708,539	-	6,708,539
2046	434,802,884	44,678,309	44,678,309	-	6,241,942	-	6,241,942
2047	420,456,746	44,906,267	44,906,267	-	5,855,147	-	5,855,147
2048	404,672,265	44,183,634	44,183,634	-	5,376,505	-	5,376,505
2049	388,365,630	43,516,442	43,516,442	-	4,941,967	-	4,941,967
2050	371,466,239	42,754,307	42,754,307	-	4,531,418	-	4,531,418
2051	354,036,485	41,672,155	41,672,155	-	4,122,001	-	4,122,001
2052	336,381,349	40,643,879	40,643,879	-	3,752,020	-	3,752,020
2053	318,443,411	38,866,751	38,866,751	-	3,348,544	-	3,348,544
2054	301,002,442	36,998,454	36,998,454	-	2,974,878	-	2,974,878
2055	284,227,102	35,641,518	35,641,518	-	2,674,543	-	2,674,543
2056	267,655,634	34,261,797	34,261,797	-	2,399,448	-	2,399,448
2057	251,327,501	32,843,960	32,843,960	-	2,146,667	-	2,146,667
2058	235,299,556	31,461,897	31,461,897	-	1,919,119	-	1,919,119
2059	219,556,231	30,053,577	30,053,577	-	1,710,885	-	1,710,885
2060	204,145,056	28,616,546	28,616,546	-	1,520,372	-	1,520,372
2061	189,119,501	27,157,372	27,157,372	-	1,346,567	-	1,346,567
2062	174,530,058	25,683,256	25,683,256	-	1,188,497	-	1,188,497
2063	160,423,376	24,201,632	24,201,632	-	1,045,203	-	1,045,203
2064	146,841,743	22,720,540	22,720,540	-	915,762	-	915,762
2065	133,822,150	21,248,150	21,248,150	-	799,269	-	799,269
2066	121,395,775	19,792,531	19,792,531	-	694,834	-	694,834
2067	109,587,674	18,361,100	18,361,100	-	601,570	-	601,570

# Single Discount Rate Development

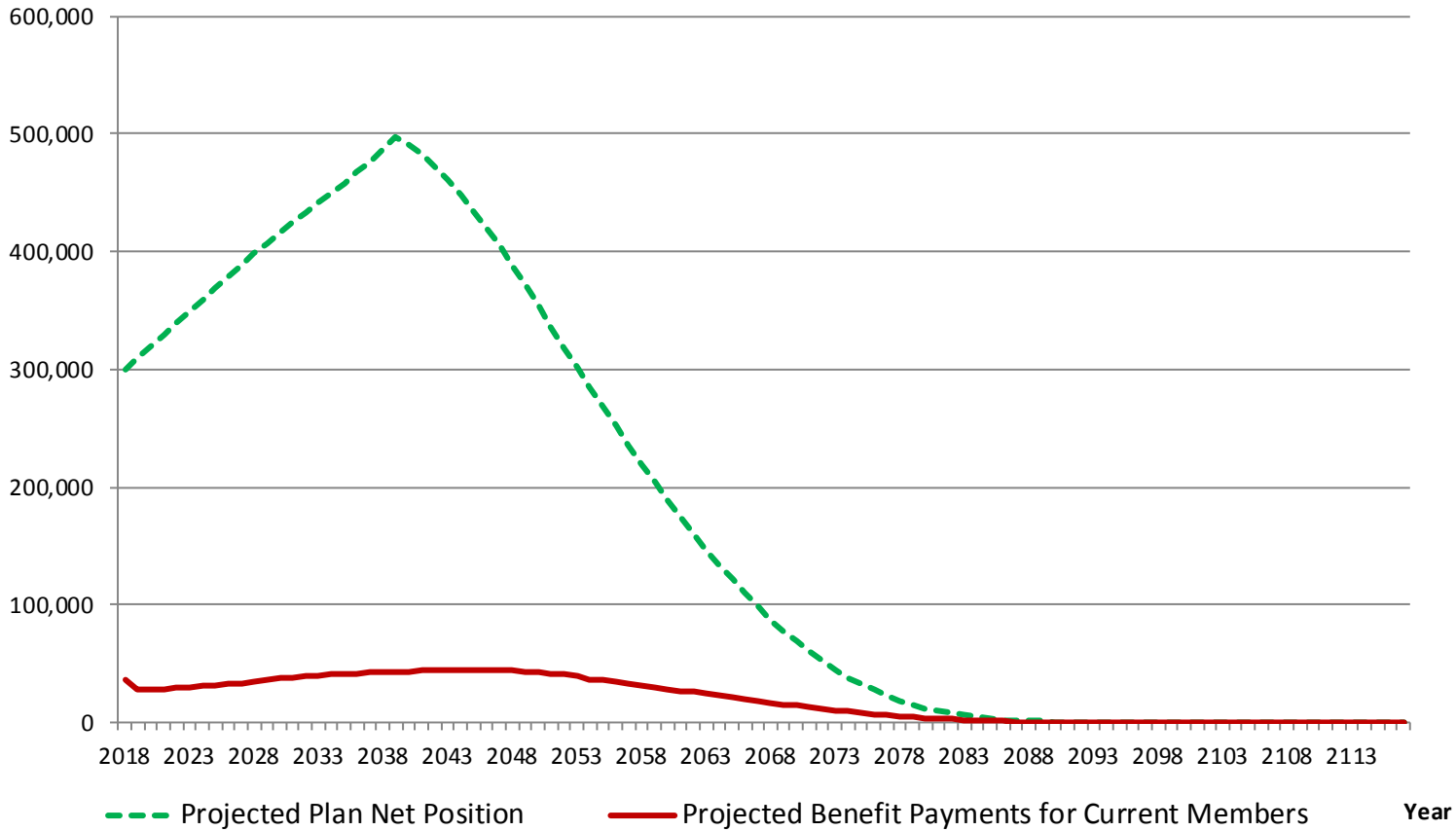
## Present Values of Projected Benefits

### (Concluded)

Fiscal Year Ending 6/30	Projected		Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
	Beginning Plan Net Position	Projected Benefit Payments			(f)=(d)*v <sup>n</sup> ((a)-.5)	(g)=(e)*vf <sup>n</sup> ((a)-.5)	(h)=[(c)/(1+sdr)] <sup>n</sup> (a-.5)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v <sup>n</sup> ((a)-.5)	(g)=(e)*vf <sup>n</sup> ((a)-.5)	(h)=[(c)/(1+sdr)] <sup>n</sup> (a-.5)
2068	\$ 98,417,015	\$ 16,960,557	\$ 16,960,557	\$ -	\$ 518,603	\$ -	\$ 518,603
2069	87,897,403	15,596,498	15,596,498	-	445,072	-	445,072
2070	78,037,619	14,273,145	14,273,145	-	380,129	-	380,129
2071	68,842,708	12,993,683	12,993,683	-	322,962	-	322,962
2072	60,314,774	11,760,649	11,760,649	-	272,808	-	272,808
2073	52,453,446	10,576,844	10,576,844	-	228,976	-	228,976
2074	45,255,429	9,445,410	9,445,410	-	190,837	-	190,837
2075	38,713,939	8,369,923	8,369,923	-	157,823	-	157,823
2076	32,818,003	7,354,235	7,354,235	-	129,418	-	129,418
2077	27,551,880	6,402,231	6,402,231	-	105,147	-	105,147
2078	22,894,680	5,517,780	5,517,780	-	84,574	-	84,574
2079	18,820,015	4,704,268	4,704,268	-	67,294	-	67,294
2080	15,296,103	3,964,310	3,964,310	-	52,924	-	52,924
2081	12,286,187	3,299,796	3,299,796	-	41,113	-	41,113
2082	9,748,922	2,711,433	2,711,433	-	31,529	-	31,529
2083	7,639,276	2,198,192	2,198,192	-	23,855	-	23,855
2084	5,910,064	1,757,359	1,757,359	-	17,798	-	17,798
2085	4,513,533	1,384,852	1,384,852	-	13,090	-	13,090
2086	3,402,745	1,075,405	1,075,405	-	9,487	-	9,487
2087	2,532,855	822,890	822,890	-	6,775	-	6,775
2088	1,862,154	620,545	620,545	-	4,768	-	4,768
2089	1,352,951	461,306	461,306	-	3,308	-	3,308
2090	972,175	338,281	338,281	-	2,264	-	2,264
2091	691,519	244,987	244,987	-	1,530	-	1,530
2092	487,369	175,424	175,424	-	1,023	-	1,023
2093	340,629	124,324	124,324	-	676	-	676
2094	236,292	87,312	87,312	-	443	-	443
2095	162,808	60,835	60,835	-	288	-	288
2096	111,476	42,101	42,101	-	186	-	186
2097	75,867	28,958	28,958	-	120	-	120
2098	51,316	19,805	19,805	-	76	-	76
2099	34,485	13,466	13,466	-	48	-	48
2100	23,011	9,103	9,103	-	31	-	31
2101	15,234	6,115	6,115	-	19	-	19
2102	9,993	4,076	4,076	-	12	-	12
2103	6,489	2,691	2,691	-	7	-	7
2104	4,167	1,758	1,758	-	4	-	4
2105	2,646	1,135	1,135	-	3	-	3
2106	1,660	727	727	-	2	-	2
2107	1,026	461	461	-	1	-	1
2108	622	288	288	-	1	-	1
2109	368	175	175	-	0	-	0
2110	214	105	105	-	0	-	0
2111	120	63	63	-	0	-	0
2112	64	36	36	-	0	-	0
2113	32	19	19	-	0	-	0
2114	15	9	9	-	0	-	0
2115	7	4	4	-	0	-	0
2116	3	2	2	-	0	-	0
2117	-	-	-	-	-	-	-
<b>Totals</b>	<b>\$ 491,837,431</b>	<b>\$ -</b>	<b>\$ 491,837,431</b>	<b>\$ -</b>	<b>\$ 491,837,431</b>	<b>\$ -</b>	<b>\$ 491,837,431</b>

## Projection of Plan Net Position and Benefit Payments

\$ [thousands]



## **SECTION H**

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### **GLOSSARY OF TERMS**



# Glossary of Terms

<b><i>Actuarial Accrued Liability (AAL)</i></b>	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
<b><i>Actuarial Assumptions</i></b>	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
<b><i>Accrued Service</i></b>	Service credited under the system which was rendered before the date of the actuarial valuation.
<b><i>Actuarial Equivalent</i></b>	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
<b><i>Actuarial Cost Method</i></b>	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
<b><i>Actuarial Gain (Loss)</i></b>	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
<b><i>Actuarial Present Value (APV)</i></b>	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future payments at predetermined rates of interest and probabilities of payment.
<b><i>Actuarial Valuation</i></b>	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions.
<b><i>Actuarial Valuation Date</i></b>	The date as of which an actuarial valuation is performed.
<b><i>Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC)</i></b>	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

# Glossary of Terms

<b><i>Amortization Payment</i></b>	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
<b><i>Amortization Method</i></b>	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be “open” (meaning, reset each year) or “closed” (the number of years remaining will decline each year).
<b><i>Cost-of-Living Adjustments</i></b>	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
<b><i>Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)</i></b>	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
<b><i>Covered-Employee Payroll</i></b>	The payroll of employees that are provided with pensions through the pension plan.
<b><i>Deferred Retirement Option Program (DROP)</i></b>	A program that permits a plan member to elect a calculation of benefit payments based on service credits and salary, as applicable, as of the DROP entry date. The plan member continues to provide service to the employer and is paid for the service by the employer after the DROP entry date; however, the pensions that would have been paid to the plan member are credited to an individual member account within the defined benefit pension plan until the end of the DROP period. Other variations for DROP exist and will be more fully detailed in the plan provision section of the valuation report.
<b><i>Deferred Inflows and Outflows</i></b>	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
<b><i>Discount Rate</i></b>	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: <ol style="list-style-type: none"><li>1. The benefit payments to be made while the pension plan’s fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and</li><li>2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.</li></ol>

## Glossary of Terms

***Entry Age Actuarial Cost Method (EAN)***

The EAN is a cost method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit ages(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

***GASB***

The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.

***Fiduciary Net Position***

The fiduciary net position is the market value of the assets of the trust dedicated to the defined benefit provisions.

***Long-Term Expected Rate of Return***

The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.

***Money-Weighted Rate of Return***

The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.

***Multiple-Employer Defined Benefit Pension Plan***

A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.

***Municipal Bond Rate***

The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.

***Net Pension Liability (NPL)***

The NPL is the liability of employers and non-employer contributing entities to plan members for benefits provided through a defined benefit pension plan.

***Non-Employer Contributing Entities***

Non-employer contributing entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB accounting statements, plan members are not considered non-employer contributing entities.

***Normal Cost***

The portion of the actuarial present value allocated to a valuation year is called the normal cost. For purposes of application to the requirements of this Statement, the term normal cost is the equivalent of service cost.

# Glossary of Terms

<b><i>Other Postemployment Benefits (OPEB)</i></b>	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other post-employment benefits do not include termination benefits.
<b><i>Real Rate of Return</i></b>	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
<b><i>Service Cost</i></b>	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.
<b><i>Total Pension Expense</i></b>	The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year: <ol style="list-style-type: none"><li>1. Service Cost</li><li>2. Interest on the Total Pension Liability</li><li>3. Current-Period Benefit Changes</li><li>4. Employee Contributions (made negative for addition here)</li><li>5. Projected Earnings on Plan Investments (made negative for addition here)</li><li>6. Pension Plan Administrative Expense</li><li>7. Other Changes in Plan Fiduciary Net Position</li><li>8. Recognition of Outflow (Inflow) of Resources due to Liabilities</li><li>9. Recognition of Outflow (Inflow) of Resources due to Assets</li></ol>
<b><i>Total Pension Liability (TPL)</i></b>	The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.
<b><i>Unfunded Actuarial Accrued Liability (UAAL)</i></b>	The UAAL is the difference between actuarial accrued liability and valuation assets.
<b><i>Valuation Assets</i></b>	The valuation assets are the assets used in determining the unfunded liability of the plan. For purposes of GASB Statement Nos. 67 and 68, the valuation assets are equal to the market value of assets.



November 13, 2017

Ms. Gail H. Stone, Executive Director  
Arkansas State Police Retirement System  
One Union National Plaza  
124 West Capitol, Suite 400  
Little Rock, Arkansas 72201

Dear Gail,

Please find enclosed 15 copies of the June 30, 2017 GASB Statements No. 67 and No. 68 Accounting and Financial Reporting for Pensions report of the Arkansas State Police Retirement System.

Sincerely,

A handwritten signature in black ink that reads "David L. Hoffman". The signature is written in a cursive, slightly slanted style.

David L. Hoffman

DLH:bd  
Enclosures