



The Police Retirement System of St. Louis

**GASB 67/68 Report
as of September 30, 2018**

Produced by Cheiron

February 2019

TABLE OF CONTENTS

<i>Section</i>	<i>Page</i>
Letter of Transmittal	i
Section I Board Summary	1
Section II Certification	3
Section III Determination of Discount Rate	4
Section IV Projection of Total Pension Liability	5
Section V Note Disclosures	6
Section VI Required Supplementary Information.....	8
Section VII Employer Reporting Amounts	10
 <i>Appendices</i>	
Appendix A Membership Information	13
Appendix B Actuarial Assumptions and Methods	17
Appendix C Summary of Plan Provisions.....	22
Appendix D Determination of Discount Rate	23
Appendix E Glossary of Terms.....	27

LETTER OF TRANSMITTAL

February 8, 2019

Board of Trustees
The Police Retirement System of St. Louis
2020 Market Street
St. Louis, Missouri 63101

Dear Members of the Board:

The purpose of this report is to provide accounting and financial disclosure information under GASB 67 for the Police Retirement System of St. Louis and under GASB 68 for the City of St. Louis. This information includes:

- Determination of the discount rate as of September 30, 2018
- Projection of the Total Pension Liability from the valuation date to the measurement date,
- Calculation of the Net Pension Liability at the discount rate as well as discount rates 1% higher and lower than the discount rate,
- Changes in the Net Pension Liability,
- Schedule of Employer Contributions,
- Disclosure of Deferred Inflows and Outflows, and
- Calculation of the Annual Pension Expense for the System.

If you have any questions about the report or would like additional information, please let us know.

Sincerely,
Cheiron



Stephen T. McElhaney, FSA, FCA, EA
Principal Consulting Actuary



Michael J. Noble, FSA, FCA, EA
Principal Consulting Actuary

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE**

SECTION I - BOARD SUMMARY

The purpose of this report is to provide accounting and financial disclosure information under Government Accounting Standards Board Statements 67 and 68 for the Police Retirement System of St. Louis (PRS) and the City of St. Louis. This information includes:

- Determination of the discount rate as of September 30, 2018
- Projection of the Total Pension Liability from the valuation date to the measurement date,
- Calculation of the Net Pension Liability at the discount rate as well as discount rates 1% higher and lower than the discount rate,
- Changes in the Net Pension Liability,
- Schedule of Employer Contributions,
- Disclosure of Deferred Inflows and Outflows, and
- Calculation of the Annual Pension Expense for the System.

Highlights

The reporting date for the Police Retirement System of St. Louis is September 30, 2018. Measurements as of the reporting date are based on the fair value of assets as of September 30, 2018 and the Total Pension Liability as of the valuation date, October 1, 2017, updated to September 30, 2018. There have been changes in actuarial assumptions since the prior measurement date which decreased the Net Pension Liability. Other than the changes in assumptions, there were no significant events between the valuation date and the measurement date, so the update procedures only included the addition of service cost and interest cost offset by actual benefit payments, based on the revised assumptions.

The table below provides a summary of the key results during this reporting period.

Summary of Results			
		Measurement Date	
		September 30, 2018	September 30, 2017
Net Pension Liability	\$	214,752,116	\$ 282,073,051
Deferred Outflows		(1,303,689)	(46,556,212)
Deferred Inflows		69,459,840	45,445,166
Net Impact on Statement of Net Position	\$	282,908,267	\$ 280,962,005
Pension Expense (\$ Amount)	\$	35,050,823	\$ 64,197,394
Pension Expense (% of Payroll)		45.69%	84.31%

THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE

SECTION I - BOARD SUMMARY

The Net Pension Liability (NPL) decreased approximately \$67.3 million since the prior measurement date, primarily due to an increase in the discount rate assumption. There were also actuarial gains that decreased the NPL and an investment loss. The investment loss is recognized over five years, and the actuarial gains and assumption changes are recognized over the average remaining service life, which is three years. Unrecognized amounts are reported as deferred inflows and deferred outflows. As of the end of the reporting year, the System and the City would report a Net Pension Liability of \$214,752,116 , Deferred Inflows of \$ 69,459,840 , and Deferred Outflows of \$ (1,303,689). Consequently, the net impact on the City's Statement of Net Position due to PRS would be \$282,908,267 at the end of the reporting year. In addition, any contributions between the measurement date and the City's reporting date would be reported as deferred outflows to offset the cash outflow reported.

For the measurement year ending September 30, 2018, the annual pension expense is \$35,050,823 or 45.69% of covered-employee payroll. This amount is not equal to the City's contribution to PRS (\$ 33,104,561), but instead represents the change in the net impact on the City's Statement of Net Position plus employer contributions (\$282,908,267 – \$280,962,005 + \$ 33,104,561). The pension expense is significantly smaller than the expense for the prior year. Volatility in pension expense from year to year is to be expected. It will largely be driven by investment gains or losses, but other changes, such as changes in assumptions, can also have a significant impact. A breakdown of the components of the net pension expense is shown in the report.

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE**

SECTION II - CERTIFICATION

The purpose of this report is to provide accounting and financial reporting information under GASB 67 for the Police Retirement System of St. Louis and under GASB 68 for the City of St. Louis. This report is for the use of the Police Retirement System, the City of St. Louis and their auditors in preparing financial reports in accordance with applicable law and accounting requirements. This report is not appropriate for other purposes, including the measurement of funding requirements for the System or estimating the price to settle the System's obligations.

In preparing our report, we relied on information (some oral and some written) supplied by the System. This information includes, but is not limited to, the plan provisions, employee data, and financial information. In accordance with Actuarial Standard of Practice No. 23, we performed an informal examination of the obvious characteristics of the data for reasonableness and consistency and found the data to be appropriate for Actuarial Valuation purposes.

Future actuarial measurements may differ significantly from the current measurements due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law.

The membership data and plan provisions are the same as were described in the October 1, 2017 Actuarial Valuation Report. The actuarial assumptions, except for the blended discount rate described in Section III, are the same as were described in the October 1, 2017 actuarial valuation.

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board, as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys, and our firm does not provide any legal services or advice.

This report was prepared for Police Retirement System of St. Louis for the purposes described herein and for the use by the Plan auditor in completing an audit related to the matters herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any other user.

Sincerely,
Cheiron



Stephen T. McElhaney, FSA, FCA, EA
Principal Consulting Actuary



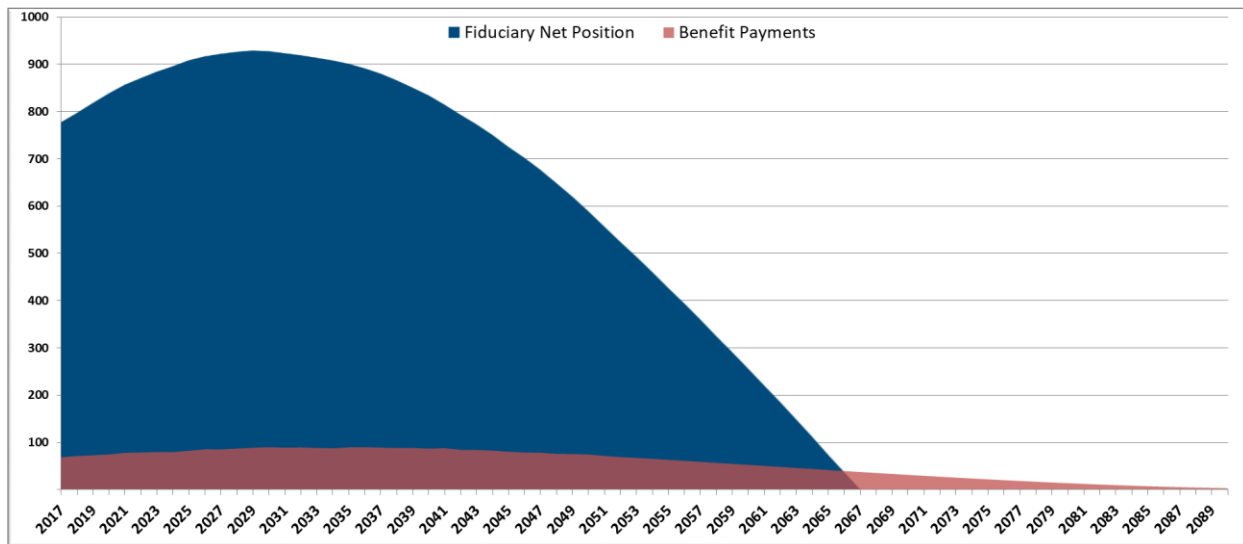
Michael J. Noble, FSA, FCA, EA
Principal Consulting Actuary

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE**

SECTION III - DETERMINATION OF DISCOUNT RATE

The City's funding policy is to contribute exactly the Actuarially Determined Contribution annually. This contribution is equal to the employer normal cost. The employer normal cost is calculated according to the Aggregate Actuarial Cost Method, and is equal to the actuarial present value of future benefits minus the sum of the actuarial value of assets and the present value of future employee contributions, funded over the present value of future salary for current participants.

The discount rate used to measure the Total Pension Liability was 7.24% which is a blend of the assumed long-term expected rate of return of 7.50% on System investments and a municipal bond index rate of 4.18% based on the Bond Buyer GO 20-Year Municipal Bond Index as of September 27, 2018. Following the procedures described in paragraphs 39 - 45 of GASB Statement 67, projections of the System's fiduciary net position have indicated that it is not expected to be sufficient to make projected benefit payments for current Plan members after 2066. Therefore the portion of future projected benefit payments after 2066 are discounted at the municipal bond index rate. The results of these projections are shown in the chart below.



This discount rate is intended to be used for accounting and financial reporting, but is not appropriate for estimating the price to settle the plan's liability.

A similar calculation was made as of September 30, 2017 using a blend of the assumed long-term expected rate of return of 7.50% on System investments and a municipal bond index rate of 3.64%. This calculation resulted in a blended discount rate of 6.67%.

The projection of cash flows used to determine the discount rate assumed that employer contributions continued to be made in accordance with the contribution policy in effect for the July 1, 2017 actuarial valuation.

Appendix D shows the details of this calculation.

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE**

SECTION IV - PROJECTION OF TOTAL PENSION LIABILITY

The Total Pension Liability (TPL) at the end of the measurement year, September 30, 2018, is measured as of a valuation date of October 1, 2017 and projected to September 30, 2018. There were no significant events during the projection period of which we are aware. Because the TPL shown in the prior report was measured as of September 30, 2016 and projected to September 30, 2017, as well as being determined using different actuarial assumptions, it will not match the amounts measured as of September 30, 2017 that are shown in this exhibit.

The table below shows the projection of the TPL at discount rates equal to the rate used for disclosure and plus and minus one percent from the rate used for disclosure.

Projection of Total Pension Liability from Valuation to Measurement Date			
Discount Rate	6.24%	7.24%	8.24%
Valuation Total Pension Liability, September 30, 2017			
Actives	\$ 216,865,922	\$ 184,575,094	\$ 158,845,485
DROP and Re-entered	211,272,004	190,603,968	173,679,281
Retirees	<u>675,088,988</u>	<u>619,646,982</u>	<u>572,184,709</u>
Total	\$ 1,103,226,914	\$ 994,826,044	\$ 904,709,475
Service Cost	17,939,586	14,558,459	11,983,263
Benefit Payments	68,576,111	68,576,111	68,576,111
Interest	67,285,405	70,104,134	72,262,584
Total Pension Liability, September 30, 2018	\$ 1,119,875,794	\$ 1,010,912,526	\$ 920,379,211

THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE

SECTION V - NOTE DISCLOSURES

The table below shows the changes in the Total Pension Liability (TPL), the Plan Fiduciary Net Position (i.e., fair value of System assets), and the Net Pension Liability (NPL) during the Measurement Year.

	Change in Net Pension Liability		
	Increase (Decrease)		
	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)
Balances at September 30, 2017	\$ 1,058,652,529	\$ 776,579,478	\$ 282,073,051
Changes for the year:			
Service cost	16,369,318		16,369,318
Interest	68,899,130		68,899,130
Changes of benefits	0		0
Differences between expected and actual experience	(4,886,531)		(4,886,531)
Changes of assumptions	(59,545,809)		(59,545,809)
Contributions - employer		33,104,561	(33,104,561)
Contributions - member		5,129,154	(5,129,154)
Net investment income		51,089,258	(51,089,258)
Benefit payments	(68,576,111)	(68,576,111)	0
Administrative expense		(1,165,930)	1,165,930
Net changes	<u>(47,740,003)</u>	<u>19,580,932</u>	<u>(67,320,935)</u>
Balances at September 30, 2018	<u>\$ 1,010,912,526</u>	<u>\$ 796,160,410</u>	<u>\$ 214,752,116</u>

During the measurement year, the NPL decreased by approximately \$67.3 million. The service cost and interest cost increased the NPL by approximately \$85.3 million while contributions and investment returns offset by administrative expenses decreased the NPL by approximately \$88.2 million.

There were no changes in benefits during the year. There were actuarial experience gains during the year of approximately \$4.9 million. Assumption changes decreased the NPL by \$59.5 million.

Changes in the discount rate affect the measurement of the TPL. Lower discount rates produce a higher TPL and higher discount rates produce a lower TPL. Because the discount rate does not affect the measurement of assets, the percentage change in the NPL can be very significant for a relatively small change in the discount rate. The table below shows the sensitivity of the NPL to the discount rate.

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE**

SECTION V - NOTE DISCLOSURES

Sensitivity of Net Pension Liability to Changes in Discount Rate			
	1% Decrease 6.24%	Discount Rate 7.24%	1% Increase 8.24%
Total Pension Liability	\$1,119,875,794	\$1,010,912,526	\$920,379,211
Plan Fiduciary Net Position	<u>796,160,410</u>	<u>796,160,410</u>	<u>796,160,410</u>
Net Pension Liability	<u>\$ 323,715,384</u>	<u>\$ 214,752,116</u>	<u>\$124,218,801</u>
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	71.1%	78.8%	86.5%

A one percent decrease in the discount rate increases the TPL by approximately 10.8% and increases the NPL by approximately 50.7%. A one percent increase in the discount rate decreases the TPL by approximately 9.0% and decreases the NPL by approximately 42.2%.

THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE

SECTION VI - REQUIRED SUPPLEMENTARY INFORMATION

The schedules of Required Supplementary Information generally start with information as of the implementation of GASB 67, and eventually will build up to 10 years of information. The schedule below shows the changes in NPL and related ratios required by GASB for the three years since implementation.

Schedule of Changes in Net Pension Liability and Related Ratios					
	FYE 2018	FYE 2017	FYE 2016	FYE 2015	FYE 2014
<u>Total Pension Liability</u>					
Service cost (MOY)	\$ 16,369,318	\$ 17,988,134	\$ 12,617,971	\$ 12,977,679	\$ 12,991,999
Interest (includes interest on service cost)	68,899,130	66,042,714	67,036,489	66,579,275	65,906,383
Changes of benefit terms	0	0	0	0	0
Differences between expected and actual experience	(4,886,531)	3,911,067	(3,684,265)	(2,041,444)	0
Changes of assumptions	(59,545,809)	(55,153,649)	131,846,504	16,248,637	6,650,362
Benefit payments, including refunds of member contributions	(68,576,111)	(63,452,580)	(62,637,432)	(69,533,077)	(60,973,465)
Net change in total pension liability	\$ (47,740,003)	\$ (30,664,314)	\$ 145,179,267	\$ 24,231,070	\$ 24,575,279
Total pension liability - beginning	<u>1,058,652,529</u>	<u>1,089,316,843</u>	<u>944,137,576</u>	<u>919,906,506</u>	<u>895,331,227</u>
Total pension liability - ending	<u>\$ 1,010,912,526</u>	<u>\$ 1,058,652,529</u>	<u>\$ 1,089,316,843</u>	<u>\$ 944,137,576</u>	<u>\$ 919,906,506</u>
<u>Plan fiduciary net position</u>					
Contributions - employer	\$ 33,104,561	\$ 33,826,528	\$ 30,778,664	\$ 30,600,069	\$ 32,324,823
Contributions - member	5,129,154	4,653,968	4,376,867	4,487,942	4,438,346
Net investment income	51,089,258	93,520,079	52,927,643	(8,325,611)	48,094,636
Benefit payments, including refunds of member contributions	(68,576,111)	(63,452,580)	(62,637,432)	(69,533,077)	(60,973,465)
Administrative expense	(1,165,930)	(1,206,161)	(1,102,866)	(1,125,310)	(1,095,653)
Net change in plan fiduciary net position	\$ 19,580,932	\$ 67,341,834	\$ 24,342,876	\$ (43,895,987)	\$ 22,788,687
Plan fiduciary net position - beginning	<u>776,579,478</u>	<u>709,237,644</u>	<u>684,894,768</u>	<u>728,790,755</u>	<u>706,276,668</u>
Plan fiduciary net position - ending	<u>\$ 796,160,410</u>	<u>\$ 776,579,478</u>	<u>\$ 709,237,644</u>	<u>\$ 684,894,768</u>	<u>\$ 729,065,355</u>
Net pension liability - ending	<u>\$ 214,752,116</u>	<u>\$ 282,073,051</u>	<u>\$ 380,079,199</u>	<u>\$ 259,242,808</u>	<u>\$ 190,841,151</u>
Plan fiduciary net position as a percentage of the total pension liability	78.76%	73.36%	65.11%	72.54%	79.25%
Covered payroll	\$ 76,710,452	\$ 76,141,625	\$ 72,684,487	\$ 72,325,153	\$ 72,151,450
Net pension liability as a percentage of covered payroll	279.95%	370.46%	522.92%	358.44%	264.50%

THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE

SECTION VII - EMPLOYER REPORTING AMOUNTS

The City of St. Louis was required to implement GASB 68 for its reporting date of June 30, 2015. The schedules in this section are provided for the City of St. Louis for its 2019 reporting.

The impact of experience gains or losses and assumption changes on the TPL are recognized in expense over the average expected remaining service life of all active and inactive members of the System. As of the measurement date, this recognition period was 2.84 years. The value rounded to the nearest year and used in this calculation was 3 years.

During the year, there was an experience gain of approximately \$4.9 million. Approximately \$1.6 million of that gain was recognized as a reduction in pension expense in the current year and an identical amount will be recognized in each of the next two years, resulting in a deferred inflow of resources as of September 30, 2018 of approximately \$3.3 million. Unrecognized net experience losses from prior periods were approximately \$1.4 million of which \$0.1 million was recognized as an increase in pension expense in the current year. The combination of unrecognized experience gains this year and unrecognized experience losses from prior periods results in a deferred inflow of resources as of September 30, 2018 of approximately \$3.3 million and a deferred outflow of resources of \$1.3 million..

Assumption changes since the last measurement date decreased the TPL approximately \$59.5 million. Approximately \$19.8 million of that increase was recognized as a decrease in pension expense in the current year and an identical amount will be recognized in each of the next two years, resulting in a deferred inflow of resources as of September 30, 2018 of approximately \$39.7 million. Unrecognized amounts due to assumption changes from prior periods were net increases to the TPL of approximately \$7.2 million of which approximately \$25.6 million was recognized as an increase in pension expense in the current year. The combination of unrecognized assumption changes this year and unrecognized assumption changes from prior periods results in a deferred inflow of resources as of September 30, 2018 of approximately \$58.1 million.

The impact of investment gains or losses is recognized over a period of five years. During the measurement year, there was an investment loss of approximately \$6.0 million. Approximately \$1.2 million of that loss was recognized in the current year and an identical amount will be recognized in each of the next four years. Unrecognized net investment gains from prior periods were approximately \$7.4 million and the recognition of these prior gains and losses resulted in \$5.5 million being recognized as an increase in pension expense in the current year. The combination of unrecognized investment losses this year and unrecognized net investment gains from prior periods results in a deferred inflow of resources as of September 30, 2018 of approximately \$8.1 million.

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE**

SECTION VII - EMPLOYER REPORTING AMOUNTS

The table below summarizes the current balances of deferred outflows and deferred inflows of resources along with the net recognition over the next five years.

Schedule of Deferred Inflows and Outflows of Resources	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	\$ 1,303,689	\$ 3,257,687
Changes in assumptions	0	58,081,755
Net difference between projected and actual earnings on pension plan investments	0	8,120,398
Total	<u>\$ 1,303,689</u>	<u>\$ 69,459,840</u>
Amounts reported as deferred outflows and deferred inflows of resources will be recognized in pension expense as follows:		
Measurement year ended June 30:		
2019	\$ (33,236,012)	
2020	(29,059,503)	
2021	(7,059,437)	
2022	1,198,801	
2023	0	
Thereafter	0	

The annual pension expense recognized by the City of St. Louis can be calculated two different ways. First, it is the change in the amounts reported on the City’s Statement of Net Position that relate to PRS and are not attributable to employer contributions. That is, it is the change in NPL plus the changes in deferred outflows and inflows plus employer contributions.

Alternatively, annual pension expense can be calculated by its individual components. While GASB does not require or suggest the organization of the individual components shown in the table below, we believe it helps to understand the level and volatility of pension expense.

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE**

SECTION VII - EMPLOYER REPORTING AMOUNTS

Calculation of Pension Expense		
	Measurement Year Ending	
	2018	2017
Change in Net Pension Liability	\$ (67,320,935)	\$ (98,006,148)
Change in Deferred Outflows	45,252,523	86,068,507
Change in Deferred Inflows	24,014,674	42,308,507
Employer Contributions	<u>33,104,561</u>	<u>33,826,528</u>
Pension Expense	\$ 35,050,823	\$ 64,197,394
Pension Expense as % of Payroll	45.69%	84.31%
Operating Expenses		
Service cost	\$ 16,369,318	\$ 17,988,134
Employee contributions	(5,129,154)	(4,653,968)
Administrative expenses	<u>1,165,930</u>	<u>1,206,161</u>
Total	\$ 12,406,094	\$ 14,540,327
Financing Expenses		
Interest cost	\$ 68,899,130	\$ 66,042,714
Expected return on assets	<u>(57,083,259)</u>	<u>(52,228,886)</u>
Total	\$ 11,815,871	\$ 13,813,828
Changes		
Benefit changes	\$ 0	\$ 0
Recognition of assumption changes	5,715,681	30,980,498
Recognition of liability gains and losses	(1,553,244)	(604,881)
Recognition of investment gains and losses	<u>6,666,421</u>	<u>5,467,622</u>
Total	\$ 10,828,858	\$ 35,843,239
Pension Expense	\$ 35,050,823	\$ 64,197,394

First, there are components referred to as operating expenses. These are items directly attributable to the operation of the plan during the measurement year. Service cost less employee contributions represents the increase in employer-provided benefits attributable to the year, and administrative expenses are the cost of operating PRS for the year.

Second, there are the financing expenses: the interest on the Total Pension Liability less the expected return on assets.

The final category is changes. This category will drive most of the volatility in pension expense from year to year. It includes any changes in benefits made during the year and the recognized amounts due to assumption changes, gains or losses on the TPL, and investment gains or losses. The total pension expense is much less than that of the prior year, decreasing by about \$29 million. The recognition of changes decreased by about \$25 million, slightly less than the total decrease in pension expense.

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE**

APPENDIX A - MEMBERSHIP INFORMATION

Participant Data Reconciliation					
	Actives	DROP	Retirees	Surviving Spouses and Children	Total
Participants as of October 1, 2016	1,122	147	1,433	471	3,173
New Entrants	83				83
Return to Active	0				0
Nonvested terminations	(58)				(58)
Retired	(20)	(9)	29		0
Entered into DROP	(24)	24			0
Re-Entry from DROP	21	(21)			0
Deaths without beneficiary			(14)	(23)	(37)
Deaths with Beneficiary	(1)		(20)	24	3
Disabled	(3)		3	6	6
Benefits Expired				(4)	(4)
Data Correction			2	1	3
Net Change	(2)	(6)	0	4	(4)
Participants as of October 1, 2017	1,120	141	1,433	475	3,169

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE**

APPENDIX A - MEMBERSHIP INFORMATION

Age	Distribution of Active Participants								Total
	Years of Service								
	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 +	
Under 20									0
20 – 24	49								49
	\$42,203								\$42,203
25 – 29	142	19							161
	\$44,696	\$52,254							\$45,588
30 – 34	50	143	22						215
	\$45,583	\$57,184	\$62,697						\$55,050
35 – 39	26	74	102	30					232
	\$46,241	\$57,953	\$62,716	\$63,933					\$59,508
40 – 44	6	21	35	79	3				144
	\$47,400	\$57,815	\$62,207	\$65,562	\$69,924				\$62,951
45 – 49	2	5	23	47	46	3			126
	\$44,144	\$58,807	\$62,499	\$65,252	\$69,486	\$80,475			\$66,067
50 – 54	1		3	16	80	23			123
	\$40,014		\$58,955	\$63,877	\$69,399	\$72,159			\$68,703
55 – 59			1	4	22	23	1		51
			\$70,946	\$66,061	\$69,632	\$72,313	\$81,190		\$70,813
60 – 64		1	1		3	5	5	3	18
		\$55,593	\$60,418		\$70,152	\$76,162	\$78,567	\$82,393	\$74,850
65 +								1	1
								\$75,797	\$75,797
Total	276	263	187	176	154	54	6	4	1,120
	\$44,598	\$57,120	\$62,563	\$65,059	\$69,483	\$73,057	\$79,004	\$80,744	\$58,860

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
 GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE**

APPENDIX A - MEMBERSHIP INFORMATION

Statistics for Active Participants

	Count	Average		
		Age	Service	Compensation
As of October 1, 2017				
Continuing	1,037	40.2	12.8	\$ 60,273
New	83	27.8	0.4	41,209
Total	1,120	39.3	11.9	58,860
As of October 1, 2016				
Continuing	1,013	40.2	12.9	\$ 59,840
New	109	27.7	0.5	40,901
Total	1,122	39.0	11.7	58,000

Statistics for DROP Participants

	Count	Average				DROP Account Balance	Monthly Benefit Amount
		Age	Service	Compensation			
As of October 1, 2017	141	51.2	20.6	\$ 68,520	\$ 78,113	\$ 2,293	
As of October 1, 2016	147	50.5	20.4	\$ 67,675	\$ 68,290	\$ 2,239	

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE**

APPENDIX A - MEMBERSHIP INFORMATION

Statistics for Inactive Participants

	Count	Total Monthly Benefits	Average Monthly Benefits
As of October 1, 2017			
Service Retirees	1,272	\$ 3,590,667	\$ 2,823
Ordinary Disabilities	20	21,732	1,087
Accidental Disabilities	141	359,451	2,549
Surviving Spouses	425	590,927	1,390
Children	50	29,549	591
Total	1,908	\$ 4,592,326	\$ 2,407
As of October 1, 2016			
Service Retirees	1,275	\$ 3,527,913	\$ 2,767
Ordinary Disabilities	17	16,578	975
Accidental Disabilities	141	362,915	2,574
Surviving Spouses	425	581,371	1,368
Children	46	27,186	591
Total	1,904	\$ 4,515,962	\$ 2,372

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE**

APPENDIX B - ACTUARIAL ASSUMPTIONS AND METHODS

A summary of the actuarial assumptions and methods used to calculate the Total Pension Liability as of September 30, 2018 (except for the discount rate as described in Section III) is provided below, including any assumptions that differ from those used in the October 1, 2017 actuarial valuation.

A. Actuarial Assumptions

1. Mortality Rates:

- Healthy Retirees: RP-2014 Blue Collar Healthy Annuitant Table, with a 1.15 adjustment to base tables for males and females, and fully generational mortality improvements using Scale MP-2015
- Disabled Retirees: RP-2014 Disabled Annuitant Table, with 0.90 adjustment to the base table for males and no adjustment to the base table for females, and fully generational mortality improvements using Scale MP-2015
- Actives, Ordinary: RP-2014 Blue Collar Healthy Annuitant Table, with no adjustment to base tables for males and females, and fully generational mortality improvements using Scale MP-2015
- Actives, Accidental: 0.0003 per year for all ages in addition to ordinary mortality rates.

2. Disability:

CCA 1985 Unisex Class 4 table; see table of sample rates
10% of disabilities are assumed ordinary and the remaining 90% are accidental disabilities.

Age	Disability (%)
25	0.0256
35	0.5080
45	0.9400
55	2.2880
60	3.4340

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE**

APPENDIX B - ACTUARIAL ASSUMPTIONS AND METHODS

3. Withdrawal Rates before Retirement:

Service-related rates based on experience; see table of sample rates.

Years of Service	Withdrawal (%)
1-4	6.00
5-9	4.00
10-18	1.00
19+	0.00

4. DROP Rates:

Years of Service	DROP Rate (%)
20	60
21	30
22-27	5
28	5
29	5
30	80

5. Retirement Rates:

Years of Service	Retirement Rate (%)
20-21	12
22-24	6
25	5
26-29	2
30	20

DROP and retirement rates are additive, so at 30 years of service the chance of either entering DROP or retirement is 100%. All members are assumed to retire by age 65.

6. Marriage

75% of male active members are assumed to be married and 25% of female active members. The male spouse is assumed to be 3 years older than the female.

7. Children

Each member is assumed to have 1.5 children at retirement, disability or death; the child is assumed to be 30 years younger than the member and to receive benefits until he or she is 20 years old.

APPENDIX B - ACTUARIAL ASSUMPTIONS AND METHODS

8. DROP Participation

Members participate in DROP based on their completed service; see table for rates

- No disability is assumed while in DROP
- One-third of participants are expected to retire from DROP after four years
- One-third of participants are expected to re-enter the plan after five years in DROP and remain in the plan for two years
- The remaining third of participants are expected to re-enter the plan after five years in DROP and remain in the plan for eight years

9. Special Advisor and Consultant Benefits

Assumed to be paid to all eligible members.

10. Form of Payment

There are no optional forms of payment; automatic survivor benefits are paid to all members.

11. Investment Return

7.50% compounded annually for funding purposes.

12. Salary Increases

Wage inflation is assumed to be 3.0%. Individual salaries are expected to increase according to the following table which includes wage inflation and promotion.

Service	Salary Increase (%)
0-9	6.25
10-19	3.50
20+	3.00

13. Cost-of-Living Adjustments

2.5% per year.

THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE

APPENDIX B - ACTUARIAL ASSUMPTIONS AND METHODS

14. Expenses

Prior year actual expenses increased by the assumed inflation rate (2.5%), rounded to the nearest \$1,000.

15. Interest on Member Contributions

4% per year.

16. Rationale for actuarial assumptions

The actuarial assumptions were adopted by the Board of Trustees based upon recommendations made in an actuarial experience study performed by Cheiron covering the years 2010 through 2015 subsequent to the October 1, 2015 valuation.

17. Changes in actuarial assumptions from the October 1, 2017 actuarial valuation

None

APPENDIX B - ACTUARIAL ASSUMPTIONS AND METHODS

B. Actuarial Methods

1. Actuarial Value of Assets

The market value of assets less unrecognized returns in each of the last five years, but no earlier than October 1, 2005. Initial unrecognized return is equal to the difference between the actual market return and expected return on the actuarial value of assets, and is recognized over a five-year period. The actuarial value is further adjusted, if necessary, to be within 20% of the market value. The actuarial asset value was initialized at the market value as of October 1, 2005.

2. Actuarial Cost Method

For determining contributions, the cost method used in this valuation is the Aggregate Cost method. Under this method, the difference between the present value of future benefits and the actuarial value of assets is allocated as a level percentage over the future salary of the participants.

There is no actuarial accrued liability with this method. For accounting purposes, the actuarial accrued liability is determined under the entry age normal method.

3. Changes in Actuarial Methods since the October 1, 2017 actuarial valuation

None

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE**

APPENDIX C - SUMMARY OF PLAN PROVISIONS

The plan provisions are the same as those summarized in the October 1, 2017 actuarial valuation report.

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE**

APPENDIX D - DETERMINATION OF DISCOUNT RATE

FYE	Projected Beginning Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expense	Projected Investment Earnings	Projected Ending Fiduciary Net Position	"Funded" Portion of Benefit Payments	"Unfunded" Portion of Benefit Payments
2018	776,579,478	38,233,715	68,576,111	1,237,000	51,089,258	796,089,340	68,576,111	0
2019	796,089,340	35,151,391	71,405,391	1,223,909	58,326,686	816,938,116	71,405,391	0
2020	816,938,116	34,379,842	72,812,181	1,175,723	59,811,908	837,141,962	72,812,181	0
2021	837,141,962	32,460,185	74,587,684	1,148,481	61,192,136	855,058,118	74,587,684	0
2022	855,058,118	30,844,936	77,904,736	1,144,376	62,354,381	869,208,322	77,904,736	0
2023	869,208,322	29,957,739	78,797,599	1,126,666	63,350,753	882,592,548	78,797,599	0
2024	882,592,548	28,477,732	79,741,937	1,081,795	64,266,953	894,513,502	79,741,937	0
2025	894,513,502	27,256,431	79,565,225	1,043,132	65,123,984	906,285,560	79,565,225	0
2026	906,285,560	26,558,436	82,469,462	1,031,166	65,874,688	915,218,057	82,469,462	0
2027	915,218,057	25,790,787	85,525,451	1,022,118	66,404,164	920,865,438	85,525,451	0
2028	920,865,438	24,065,047	85,233,477	955,408	66,777,380	925,518,981	85,233,477	0
2029	925,518,981	23,280,527	86,936,194	936,009	67,035,525	927,962,830	86,936,194	0
2030	927,962,830	21,366,609	88,704,389	854,099	67,086,246	926,857,198	88,704,389	0
2031	926,857,198	19,918,037	89,974,628	802,979	66,905,094	922,902,721	89,974,628	0
2032	922,902,721	18,821,233	88,935,170	770,155	66,607,605	918,626,235	88,935,170	0
2033	918,626,235	17,948,553	89,309,888	740,705	66,242,021	912,766,216	89,309,888	0
2034	912,766,216	17,214,453	88,325,269	723,177	65,812,390	906,744,613	88,325,269	0
2035	906,744,613	16,679,169	87,560,393	710,262	65,369,699	900,522,826	87,560,393	0
2036	900,522,826	15,686,623	89,592,008	674,578	64,793,024	890,735,887	89,592,008	0
2037	890,735,887	14,976,099	89,975,674	662,493	64,019,158	879,092,978	89,975,674	0
2038	879,092,978	13,044,808	89,047,727	568,947	63,112,439	865,633,551	89,047,727	0
2039	865,633,551	11,221,480	88,262,158	479,336	62,068,069	850,181,606	88,262,158	0
2040	850,181,606	10,100,322	88,290,587	426,343	60,868,794	832,433,792	88,290,587	0
2041	832,433,792	9,196,196	86,777,925	383,815	59,561,682	814,029,930	86,777,925	0
2042	814,029,930	8,305,442	87,730,803	341,393	58,115,068	792,378,244	87,730,803	0
2043	792,378,244	7,418,038	84,389,933	298,327	56,583,119	771,691,141	84,389,933	0
2044	771,691,141	6,594,884	83,978,389	254,677	55,018,037	749,070,996	83,978,389	0
2045	749,070,996	5,606,861	82,746,014	209,562	53,332,185	725,054,466	82,746,014	0
2046	725,054,466	4,548,820	80,243,158	159,877	51,585,976	700,786,227	80,243,158	0
2047	700,786,227	3,595,519	78,579,073	111,053	49,793,828	675,485,447	78,579,073	0

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE**

APPENDIX D - DETERMINATION OF DISCOUNT RATE

FYE	Projected Beginning Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expense	Projected Investment Earnings	Projected Ending Fiduciary Net Position	"Funded" Portion of Benefit Payments	"Unfunded" Portion of Benefit Payments
2048	675,485,447	2,562,981	78,294,553	56,247	47,870,744	647,568,372	78,294,553	0
2049	647,568,372	1,481,220	75,911,532	0	45,826,950	618,965,011	75,911,532	0
2050	618,965,011	1,188,792	75,523,296	0	43,685,226	588,315,733	75,523,296	0
2051	588,315,733	861,589	74,536,201	0	41,410,828	556,051,948	74,536,201	0
2052	556,051,948	529,177	71,514,598	0	39,090,066	524,156,594	71,514,598	0
2053	524,156,594	263,870	69,062,672	0	36,778,430	492,136,222	69,062,672	0
2054	492,136,222	18,992	67,305,078	0	34,432,604	459,282,740	67,305,078	0
2055	459,282,740	8,142	65,358,455	0	32,039,872	425,972,299	65,358,455	0
2056	425,972,299	0	63,163,284	0	29,622,120	392,431,134	63,163,284	0
2057	392,431,134	0	61,081,175	0	27,183,200	358,533,160	61,081,175	0
2058	358,533,160	0	58,962,029	0	24,718,883	324,290,013	58,962,029	0
2059	324,290,013	0	56,814,960	0	22,229,707	289,704,760	56,814,960	0
2060	289,704,760	0	54,658,876	0	19,715,204	254,761,089	54,658,876	0
2061	254,761,089	0	52,501,082	0	17,173,883	219,433,889	52,501,082	0
2062	219,433,889	0	50,332,840	0	14,604,182	183,705,232	50,332,840	0
2063	183,705,232	0	48,169,012	0	12,004,210	147,540,429	48,169,012	0
2064	147,540,429	0	45,999,623	0	9,371,731	110,912,538	45,999,623	0
2065	110,912,538	0	43,824,681	0	6,704,725	73,792,582	43,824,681	0
2066	73,792,582	0	41,665,497	0	4,000,234	36,127,318	41,665,497	0
2067	36,127,318	0	39,532,685	0	1,253,874	0	36,127,318	3,405,366
2068	0	0	37,426,806	0	0	0	0	37,426,806
2069	0	0	35,350,360	0	0	0	0	35,350,360
2070	0	0	33,307,606	0	0	0	0	33,307,606
2071	0	0	31,300,409	0	0	0	0	31,300,409
2072	0	0	29,330,603	0	0	0	0	29,330,603
2073	0	0	27,400,206	0	0	0	0	27,400,206
2074	0	0	25,511,391	0	0	0	0	25,511,391
2075	0	0	23,666,182	0	0	0	0	23,666,182
2076	0	0	21,867,196	0	0	0	0	21,867,196
2077	0	0	20,117,734	0	0	0	0	20,117,734

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE**

APPENDIX D - DETERMINATION OF DISCOUNT RATE

FYE	Projected Beginning Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expense	Projected Investment Earnings	Projected Ending Fiduciary Net Position	"Funded" Portion of Benefit Payments	"Unfunded" Portion of Benefit Payments
2078	0	0	18,421,461	0	0	0	0	18,421,461
2079	0	0	16,782,316	0	0	0	0	16,782,316
2080	0	0	15,204,647	0	0	0	0	15,204,647
2081	0	0	13,693,217	0	0	0	0	13,693,217
2082	0	0	12,252,822	0	0	0	0	12,252,822
2083	0	0	10,888,737	0	0	0	0	10,888,737
2084	0	0	9,605,960	0	0	0	0	9,605,960
2085	0	0	8,408,768	0	0	0	0	8,408,768
2086	0	0	7,300,704	0	0	0	0	7,300,704
2087	0	0	6,283,882	0	0	0	0	6,283,882
2088	0	0	5,359,212	0	0	0	0	5,359,212
2089	0	0	4,526,308	0	0	0	0	4,526,308
2090	0	0	3,783,290	0	0	0	0	3,783,290
2091	0	0	3,127,189	0	0	0	0	3,127,189
2092	0	0	2,554,076	0	0	0	0	2,554,076
2093	0	0	2,059,264	0	0	0	0	2,059,264
2094	0	0	1,637,489	0	0	0	0	1,637,489
2095	0	0	1,282,859	0	0	0	0	1,282,859
2096	0	0	989,108	0	0	0	0	989,108
2097	0	0	749,720	0	0	0	0	749,720
2098	0	0	558,049	0	0	0	0	558,049
2099	0	0	407,461	0	0	0	0	407,461
2100	0	0	291,505	0	0	0	0	291,505
2101	0	0	204,107	0	0	0	0	204,107
2102	0	0	139,714	0	0	0	0	139,714
2103	0	0	93,410	0	0	0	0	93,410
2104	0	0	60,939	0	0	0	0	60,939
2105	0	0	38,751	0	0	0	0	38,751
2106	0	0	23,994	0	0	0	0	23,994
Discount Rate:							7.50%	4.18%

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2018 MEASUREMENT DATE**

APPENDIX D - DETERMINATION OF DISCOUNT RATE

FYE	Projected Beginning Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expense	Projected Investment Earnings	Projected Ending Fiduciary Net Position	"Funded" Portion of Benefit Payments	"Unfunded" Portion of Benefit Payments
						Present Value:	\$ 1,029,971,234	\$ 40,544,433
						Total Present Value:		\$ 1,070,515,667
						GASB Discount Rate:		7.24%

APPENDIX E - GLOSSARY OF TERMS

1. Actuarially Determined Contribution

A target or recommended contribution for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.

2. Actuarial Valuation Date

The date as of which an actuarial valuation is performed. This date may be up to 24 months prior to the measurement date and up to 30 months prior to the employer's reporting date.

3. Deferred Inflow of Resources

An acquisition of net assets by a government employer that is applicable to a future reporting period. In the context of GASB 68, these are experience gains on the Total Pension Liability, assumption changes reducing the Total Pension Liability, or investment gains that are recognized in future reporting periods.

4. Deferred Outflow of Resources

A consumption of net assets by a government employer that is applicable to a future reporting period. In the context of GASB 68, these are experience losses on the Total Pension Liability, assumption changes increasing the Total Pension Liability, or investment losses that are recognized in future reporting periods.

5. Entry Age Actuarial Cost Method

The actuarial cost method required for GASB 67 and 68 calculations. Under this method, the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages. The portion of this actuarial present value allocated to a valuation year is called the Service Cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future service costs is called the Total Pension Liability.

6. Measurement Date

The date as of which the Total Pension Liability and Plan Fiduciary Net Position are measured. The Total Pension Liability may be projected from the Actuarial Valuation Date to the Measurement Date. The Measurement Date must be the same as the Reporting Date for the plan.

APPENDIX E - GLOSSARY OF TERMS

7. Net Pension Liability

The liability of employers and nonemployer contributing entities to employees for benefits provided through a defined benefit pension plan. It is calculated as the Total Pension Liability less the Plan Fiduciary Net Position.

8. Plan Fiduciary Net Position

The fair or market value of assets.

9. Reporting Date

The last day of the plan or employer's fiscal year.

10. Service Cost

The portion of the actuarial present value of projected benefit payments that is attributed to the current period of employee service in conformity with the requirements of GASB 67 and 68. The Service Cost is the normal cost calculated under the entry age actuarial cost method.

11. Total Pension Liability

The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service in conformity with the requirements of GASB 67 and 68. The Total Pension Liability is the actuarial liability calculated under the entry age actuarial cost method. This measurement generally is not appropriate for estimating the cost to settle the Plan's liabilities.



Classic Values, Innovative Advice