

The Police Retirement System of St. Louis

**GASB 67/68 Report
as of September 30, 2019**

Produced by Cheiron

February 2020

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LETTER OF TRANSMITTAL

February 4, 2020

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, 2019,
- 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, 2019 MEASUREMENT DATE**

SECTION I – BOARD SUMMARY

The purpose of this report is to provide accounting and financial disclosure information under Governmental 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, 2019,
- 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, 2019. Measurements as of the reporting date are based on the fair value of assets as of September 30, 2019, and the Total Pension Liability as of the valuation date, October 1, 2018, updated to September 30, 2019. There has been a change in the blended discount rate since the prior measurement date which increased the Net Pension Liability. Other than the change in blended discount rate, 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.

	Measurement Date	
	September 30, 2019	September 30, 2018
Net Pension Liability	\$ 326,872,294	\$ 214,752,116
Deferred Outflows	(74,311,478)	(1,303,689)
Deferred Inflows	21,477,446	69,459,840
Net Impact on Statement of Net Position	\$ 274,038,262	\$ 282,908,267
Pension Expense (\$ Amount)	\$ 27,100,625	\$ 35,050,823
Pension Expense (% of Payroll)	32.85%	45.69%

THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2019 MEASUREMENT DATE

SECTION I – BOARD SUMMARY

The Net Pension Liability (NPL) increased approximately \$112.1 million since the prior measurement date, primarily due to a decrease in the discount rate assumption and an investment loss. There were also actuarial losses that increased NPL. The investment loss is recognized over five years, and the actuarial loss 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 \$326,872,294, Deferred Inflows of \$21,477,446, and Deferred Outflows of \$74,311,478. Consequently, the net impact on the City's Statement of Net Position due to PRS would be \$274,038,262 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, 2019, the annual pension expense is \$27,100,625 or 32.85% of covered-employee payroll. This amount is not equal to the City's contribution to PRS (\$35,970,630), but instead represents the change in the net impact on the City's Statement of Net Position plus employer contributions ($\$274,038,262 - \$282,908,267 + \$35,970,630$). The pension expense is less 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, 2019 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 the 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, 2018 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, 2018 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 the 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



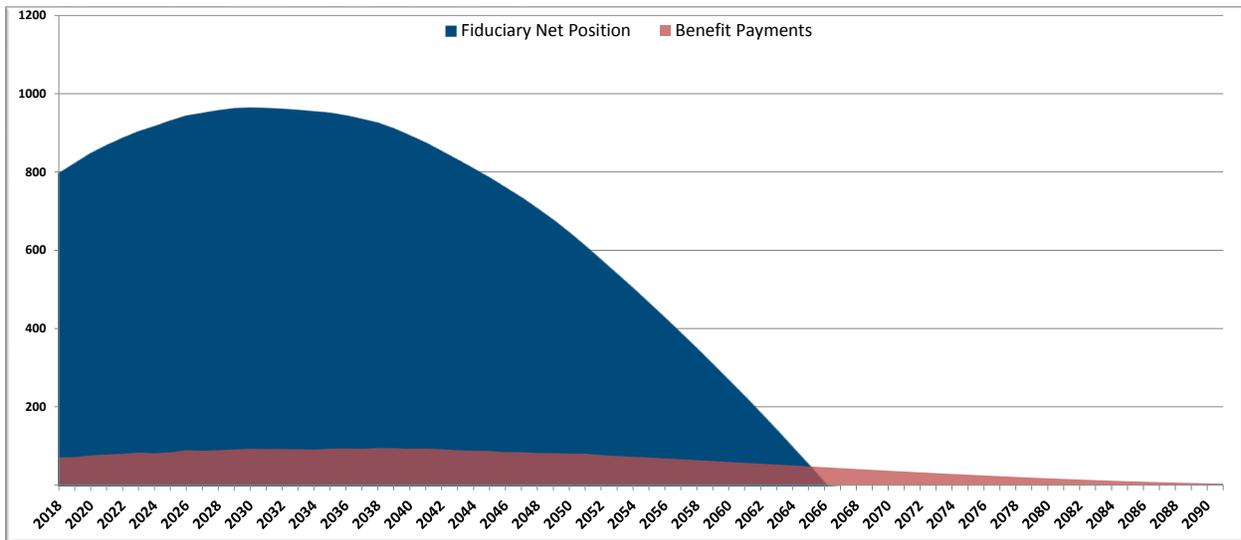
Michael J. Noble, FSA, FCA, EA
Principal Consulting Actuary

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2019 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 6.69% 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 2.66% based on the Bond Buyer GO 20-Year Municipal Bond Index as of September 26, 2019. 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 2067. Therefore the portion of future projected benefit payments after 2067 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, 2018 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 4.18%. This calculation resulted in a blended discount rate of 7.24%.

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, 2018 actuarial valuation.

Appendix D shows the details of this calculation.

**THE POLICE RETIREMENT SYSTEM OF ST. LOUISASB 67 AND 68 REPORTING FOR SEPTEMBER
30, 2019 MEASUREMENT DATE**

SECTION IV – PROJECTION OF TOTAL PENSION LIABILITY

The Total Pension Liability (TPL) at the end of the measurement year, September 30, 2019, is measured as of a valuation date of October 1, 2018 and projected to September 30, 2019. 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, 2017 and projected to September 30, 2018, as well as being determined using different actuarial assumptions, it will not match the amounts measured as of September 30, 2018 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	5.69%	6.69%	7.69%
Valuation Total Pension Liability, September 30, 2018			
Actives	\$ 254,900,212	\$ 215,701,702	\$ 184,680,727
DROP and Re-entered	233,958,158	209,933,388	190,349,337
Retirees	727,299,440	665,649,474	613,152,479
Total	\$ 1,216,157,810	\$ 1,091,284,564	\$ 988,182,543
Service Cost	21,828,003	17,560,165	14,336,314
Benefit Payments	68,548,936	68,548,936	68,548,936
Interest	67,888,557	71,328,973	73,945,366
Total Pension Liability, September 30, 2019	\$ 1,237,325,434	\$ 1,111,624,766	\$ 1,007,915,287

THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
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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, 2018	\$ 1,010,912,526	\$ 796,160,410	\$ 214,752,116
Changes for the year:			
Service cost	15,678,890		15,678,890
Interest	71,309,613		71,309,613
Changes of benefits	0		0
Differences between expected and actual experience	22,854,628		22,854,628
Changes of assumptions	59,418,045		59,418,045
Contributions - employer		35,970,630	(35,970,630)
Contributions - member		5,228,438	(5,228,438)
Net investment income		17,514,881	(17,514,881)
Benefit payments	(68,548,936)	(68,548,936)	0
Administrative expense		(1,572,951)	1,572,951
Net changes	<u>100,712,240</u>	<u>(11,407,938)</u>	<u>112,120,178</u>
Balances at September 30, 2019	<u>\$ 1,111,624,766</u>	<u>\$ 784,752,472</u>	<u>\$ 326,872,294</u>

During the measurement year, the NPL increased by approximately \$112.1 million. The service cost and interest cost increased the NPL by approximately \$87.0 million while contributions and investment returns offset by administrative expenses decreased the NPL by approximately \$57.1 million.

There were no changes in benefits during the year. There were actuarial experience losses during the year of approximately \$22.9 million. Assumption changes increased the NPL by \$59.4 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 on the next page shows the sensitivity of the NPL to the discount rate.

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
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SECTION V – NOTE DISCLOSURES

Sensitivity of Net Pension Liability to Changes in Discount Rate			
	1% Decrease 5.69%	Discount Rate 6.69%	1% Increase 7.69%
Total Pension Liability	\$ 1,237,325,434	\$ 1,111,624,766	\$ 1,007,915,287
Plan Fiduciary Net Position	<u>784,752,472</u>	<u>784,752,472</u>	<u>784,752,472</u>
Net Pension Liability	<u>\$ 452,572,962</u>	<u>\$ 326,872,294</u>	<u>\$ 223,162,815</u>
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	63.4%	70.6%	77.9%

A one percent decrease in the discount rate increases the TPL by approximately 11.3% and increases the NPL by approximately 38.5%. A one percent increase in the discount rate decreases the TPL by approximately 9.3% and decreases the NPL by approximately 31.7%.

THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
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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 six years since implementation.

Schedule of Changes in Net Pension Liability and Related Ratios						
	FYE 2019	FYE 2018	FYE 2017	FYE 2016	FYE 2015	FYE 2014
<u>Total Pension Liability</u>						
Service cost (MOY)	\$ 15,678,890	\$ 16,369,318	\$ 17,988,134	\$ 12,617,971	\$ 12,977,679	\$ 12,991,999
Interest (includes interest on service cost)	71,309,613	68,899,130	66,042,714	67,036,489	66,579,275	65,906,383
Changes of benefit terms	0	0	0	0	0	0
Differences between expected and actual experience	22,854,628	(4,886,531)	3,911,067	(3,684,265)	(2,041,444)	0
Changes of assumptions	59,418,045	(59,545,809)	(55,153,649)	131,846,504	16,248,637	6,650,362
Benefit payments, including refunds of member contributions	(68,548,936)	(68,576,111)	(63,452,580)	(62,637,432)	(69,533,077)	(60,973,465)
Net change in total pension liability	\$ 100,712,240	\$ (47,740,003)	\$ (30,664,314)	\$ 145,179,267	\$ 24,231,070	\$ 24,575,279
Total pension liability - beginning	<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>895,331,227</u>
Total pension liability - ending	<u>\$ 1,111,624,766</u>	<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	\$ 35,970,630	\$ 33,104,561	\$ 33,826,528	\$ 30,778,664	\$ 30,600,069	\$ 32,324,823
Contributions - member	5,228,438	5,129,154	4,653,968	4,376,867	4,487,942	4,438,346
Net investment income	17,514,881	51,089,258	93,520,079	52,927,643	(8,325,611)	48,094,636
Benefit payments, including refunds of member contributions	(68,548,936)	(68,576,111)	(63,452,580)	(62,637,432)	(69,533,077)	(60,973,465)
Administrative expense	(1,572,951)	(1,165,930)	(1,206,161)	(1,102,866)	(1,125,310)	(1,095,653)
Net change in plan fiduciary net position	\$ (11,407,938)	\$ 19,580,932	\$ 67,341,834	\$ 24,342,876	\$ (43,895,987)	\$ 22,788,687
Plan fiduciary net position - beginning	<u>796,160,410</u>	<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>\$ 784,752,472</u>	<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>\$ 326,872,294</u>	<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	70.60%	78.76%	73.36%	65.11%	72.54%	79.25%
Covered payroll	\$ 82,494,022	\$ 76,710,452	\$ 76,141,625	\$ 72,684,487	\$ 72,325,153	\$ 72,151,450
Net pension liability as a percentage of covered payroll	396.24%	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, 2019 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 2020 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 2.88 years. The value rounded to the nearest year and used in this calculation was 3 years.

During the year, there was an experience loss of approximately \$22.9 million. Approximately \$7.6 million of that loss was recognized as an increase 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 outflow of resources as of September 30, 2019 of approximately \$15.2 million. Unrecognized net experience gains from prior periods were approximately \$2.0 million of which \$0.3 million was recognized as a reduction in pension expense in the current year. The combination of unrecognized experience losses this year and unrecognized net experience gains from prior periods results in a deferred outflow of resources as of September 30, 2019 of approximately \$15.2 million and a deferred inflow of resources of \$1.6 million.

Assumption changes since the last measurement date increased the TPL approximately \$59.4 million. Approximately \$19.8 million of that increase was recognized as an increase 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 outflow of resources as of September 30, 2019 of approximately \$39.6 million. Unrecognized amounts due to assumption changes from prior periods were net decreases to the TPL of approximately \$58.1 million of which approximately \$38.2 million was recognized as a reduction 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 outflow of resources as of September 30, 2019 of approximately \$39.6 million and a deferred inflow of resources of \$19.8 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 \$41.1 million. Approximately \$8.2 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 \$8.1 million and the recognition of these prior gains and losses resulted in \$5.3 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 outflow of resources as of September 30, 2019 of approximately \$19.5 million.

THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2019 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	\$ 15,236,419	\$ 1,628,843																		
Changes in assumptions	39,612,030	19,848,603																		
Net difference between projected and actual earnings on pension plan investments	19,463,029	0																		
Total	<u>\$ 74,311,478</u>	<u>\$ 21,477,446</u>																		
<p>Amounts reported as deferred outflows and deferred inflows of resources will be recognized in pension expense as follows:</p> <p style="text-align: center;">Measurement year ended June 30:</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding-right: 20px;">2020</td> <td style="padding-right: 10px;">\$</td> <td style="text-align: right;">6,591,151</td> </tr> <tr> <td>2021</td> <td></td> <td style="text-align: right;">28,591,218</td> </tr> <tr> <td>2022</td> <td></td> <td style="text-align: right;">9,425,231</td> </tr> <tr> <td>2023</td> <td></td> <td style="text-align: right;">8,226,432</td> </tr> <tr> <td>2024</td> <td></td> <td style="text-align: right;">0</td> </tr> <tr> <td>Thereafter</td> <td></td> <td style="text-align: right;">0</td> </tr> </table>			2020	\$	6,591,151	2021		28,591,218	2022		9,425,231	2023		8,226,432	2024		0	Thereafter		0
2020	\$	6,591,151																		
2021		28,591,218																		
2022		9,425,231																		
2023		8,226,432																		
2024		0																		
Thereafter		0																		

The annual pension expense recognized by the City of St. Louis can be calculated in 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, 2019 MEASUREMENT DATE**

SECTION VII – EMPLOYER REPORTING AMOUNTS

Calculation of Pension Expense		
	Measurement Year Ending	
	2019	2018
Change in Net Pension Liability	\$ 112,120,178	\$ (67,320,935)
Change in Deferred Outflows	(73,007,789)	45,252,523
Change in Deferred Inflows	(47,982,394)	24,014,674
Employer Contributions	<u>35,970,630</u>	<u>33,104,561</u>
Pension Expense	\$ 27,100,625	\$ 35,050,823
Pension Expense as % of Payroll	32.85%	45.69%
Operating Expenses		
Service cost	\$ 15,678,890	\$ 16,369,318
Employee contributions	(5,228,438)	(5,129,154)
Administrative expenses	<u>1,572,951</u>	<u>1,165,930</u>
Total	\$ 12,023,403	\$ 12,406,094
Financing Expenses		
Interest cost	\$ 71,309,613	\$ 68,899,130
Expected return on assets	<u>(58,647,033)</u>	<u>(57,083,259)</u>
Total	\$ 12,662,580	\$ 11,815,871
Changes		
Benefit changes	\$ 0	\$ 0
Recognition of assumption changes	(18,427,137)	5,715,681
Recognition of liability gains and losses	7,293,054	(1,553,244)
Recognition of investment gains and losses	<u>13,548,725</u>	<u>6,666,421</u>
Total	\$ 2,414,642	\$ 10,828,858
Pension Expense	\$ 27,100,625	\$ 35,050,823

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 represent 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 less than that of the prior year, decreasing by about \$8.0 million. The recognition of changes decreased by about \$8.4 million, slightly more than the total decrease in pension expense.

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
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APPENDIX A – MEMBERSHIP INFORMATION

Participant Data Reconciliation					
	Actives	DROP	Retirees	Surviving Spouses and Children	Total
Participants as of October 1, 2017	1,120	141	1,433	475	3,169
New Entrants	107				107
Return to Active					0
Nonvested terminations	(54)				(54)
Retired	(30)	(17)	47		0
Entered into DROP	(20)	20			0
Re-Entry from DROP	21	(21)			0
Deaths without beneficiary			(15)	(24)	(39)
Deaths with Beneficiary			(30)	30	0
Disabled	(7)		7		0
Benefits Expired				(5)	(5)
Data Correction	1		(1)	3	3
Net Change	18	(18)	8	4	12
Participants as of October 1, 2018	1,138	123	1,441	479	3,181

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2019 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	66 \$45,796								66 \$45,796
25 – 29	159 \$49,624	10 \$56,923							169 \$50,056
30 – 34	76 \$50,043	88 \$62,185	42 \$66,912						206 \$58,669
35 – 39	20 \$52,291	50 \$63,887	124 \$67,392	36 \$69,145					230 \$65,591
40 – 44	8 \$46,485	16 \$62,848	34 \$66,721	79 \$70,185	11 \$71,615				148 \$67,421
45 – 49	5 \$53,864	3 \$62,913	17 \$66,084	29 \$69,264	55 \$75,175	2 \$75,890			111 \$70,960
50 – 54			2 \$65,666	19 \$69,472	71 \$74,211	26 \$78,790	4 \$73,583		122 \$74,288
55 – 59			1 \$55,518	4 \$72,143	29 \$75,709	27 \$78,432	2 \$91,045		63 \$76,816
60 – 64		1 \$63,577	1 \$65,238	1 \$77,849	2 \$73,201	6 \$73,561	7 \$84,546	5 \$80,950	23 \$77,870
65 +									0
Total	334 \$49,111	168 \$62,463	221 \$67,018	168 \$69,815	168 \$74,603	61 \$78,022	13 \$82,172	5 \$80,950	1,138 \$63,447

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2019 MEASUREMENT DATE**

APPENDIX A – MEMBERSHIP INFORMATION

Statistics for Active Participants

	Count	Average		
		Age	Service	Compensation
As of October 1, 2018				
Continuing	1,031	40.4	13.0	\$ 65,540
New	107	27.6	0.5	43,274
Total	1,138	39.3	11.8	63,447
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

Statistics for DROP Participants

	Count	Average			DROP Account Balance	Monthly Benefit Amount
		Age	Service	Compensation		
As of October 1, 2018	123	51.0	20.6	\$ 73,834	\$ 89,956	\$ 2,329
As of October 1, 2017	141	51.2	20.6	\$ 68,520	\$ 78,113	\$ 2,293

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2019 MEASUREMENT DATE**

APPENDIX A – MEMBERSHIP INFORMATION

Statistics for Inactive Participants

	Count	Total Monthly Benefits	Average Monthly Benefits
As of October 1, 2018			
Service Retirees	1,276	\$ 3,679,665	\$ 2,884
Ordinary Disabilities	22	29,662	1,348
Accidental Disabilities	143	371,855	2,600
Surviving Spouses	431	617,563	1,433
Children	48	28,546	595
Total	1,920	\$ 4,727,291	\$ 2,462
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

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2019 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, 2019 (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, 2018 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 the 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, 2019 MEASUREMENT DATE**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

3. Withdrawal Rates before Retirement:

Service-related rates based on experience; see the 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, 2019 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, 2018 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, 2018 actuarial valuation

None

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2019 MEASUREMENT DATE**

APPENDIX C – SUMMARY OF PLAN PROVISIONS

The plan provisions are the same as those summarized in the October 1, 2018 actuarial valuation report.

THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2019 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
2019	796,160,410	41,199,068	68,548,936	1,572,951	17,514,881	784,752,472	68,548,936	0
2020	784,752,472	39,116,068	71,590,046	1,528,663	57,604,388	808,354,219	71,590,046	0
2021	808,354,219	37,993,791	75,742,075	1,494,454	59,181,568	828,293,049	75,742,075	0
2022	828,293,049	37,121,353	78,256,609	1,486,814	60,552,546	846,223,526	78,256,609	0
2023	846,223,526	36,995,026	80,005,274	1,462,817	61,829,174	863,579,635	80,005,274	0
2024	863,579,635	36,299,295	83,379,561	1,406,468	62,983,091	878,075,993	83,379,561	0
2025	878,075,993	34,798,289	81,286,271	1,356,780	64,093,956	894,325,188	81,286,271	0
2026	894,325,188	33,939,351	83,522,381	1,342,358	65,199,211	908,599,010	83,522,381	0
2027	908,599,010	32,980,174	89,335,350	1,329,498	66,020,857	916,935,193	89,335,350	0
2028	916,935,193	30,945,865	87,897,423	1,246,066	66,627,183	925,364,753	87,897,423	0
2029	925,364,753	29,918,371	89,161,833	1,221,400	67,175,915	932,075,805	89,161,833	0
2030	932,075,805	27,912,083	90,983,331	1,130,870	67,541,631	935,415,318	90,983,331	0
2031	935,415,318	26,235,607	92,805,937	1,067,350	67,665,590	935,443,228	92,805,937	0
2032	935,443,228	24,951,387	92,039,259	1,029,802	67,650,009	934,975,564	92,039,259	0
2033	934,975,564	23,881,207	92,167,861	993,211	67,572,139	933,267,838	92,167,861	0
2034	933,267,838	22,963,113	91,612,734	972,538	67,431,456	931,077,135	91,612,734	0
2035	931,077,135	22,278,952	90,832,460	959,523	67,271,172	928,835,276	90,832,460	0
2036	928,835,276	21,144,888	92,861,416	917,833	66,988,098	923,189,013	92,861,416	0
2037	923,189,013	20,291,676	93,724,696	904,203	66,501,926	915,353,715	93,724,696	0
2038	915,353,715	18,631,940	92,677,615	836,240	65,894,222	906,366,023	92,677,615	0
2039	906,366,023	16,675,940	94,472,859	730,113	65,085,924	892,924,915	94,472,859	0
2040	892,924,915	14,223,471	94,368,210	592,165	63,996,469	876,184,480	94,368,210	0
2041	876,184,480	12,970,625	92,668,038	528,874	62,759,738	858,717,931	92,668,038	0
2042	858,717,931	11,929,658	93,394,226	477,699	61,386,561	838,162,225	93,394,226	0
2043	838,162,225	10,911,995	91,494,221	425,619	59,879,291	817,033,671	91,494,221	0
2044	817,033,671	9,949,746	89,191,509	373,103	58,345,941	795,764,747	89,191,509	0
2045	795,764,747	9,005,891	87,692,837	319,569	56,773,173	773,531,405	87,692,837	0
2046	773,531,405	7,851,640	87,115,957	260,723	55,086,579	749,092,943	87,115,957	0
2047	749,092,943	6,696,912	84,361,812	202,967	53,314,715	724,539,791	84,361,812	0
2048	724,539,791	5,541,976	83,998,385	137,749	51,446,485	697,392,118	83,998,385	0

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2019 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
2049	697,392,118	4,356,256	82,092,924	71,162	49,439,364	669,023,653	82,092,924	0
2050	669,023,653	3,152,742	81,748,110	0	47,282,730	637,711,014	81,748,110	0
2051	637,711,014	2,725,155	80,714,771	0	44,956,587	604,677,985	80,714,771	0
2052	604,677,985	2,300,593	80,383,627	0	42,475,670	569,070,621	80,383,627	0
2053	569,070,621	1,861,313	76,665,895	0	39,925,837	534,191,876	76,665,895	0
2054	534,191,876	1,516,036	74,359,032	0	37,382,161	498,731,041	74,359,032	0
2055	498,731,041	1,188,120	72,361,428	0	34,784,080	462,341,814	72,361,428	0
2056	462,341,814	859,698	70,464,134	0	32,112,657	424,850,035	70,464,134	0
2057	424,850,035	534,262	68,125,697	0	29,374,896	386,633,496	68,125,697	0
2058	386,633,496	226,488	65,959,617	0	26,577,082	347,477,449	65,959,617	0
2059	347,477,449	0	63,760,783	0	23,713,005	307,429,671	63,760,783	0
2060	307,429,671	0	61,529,010	0	20,791,600	266,692,261	61,529,010	0
2061	266,692,261	0	59,289,325	0	17,818,764	225,221,700	59,289,325	0
2062	225,221,700	0	57,034,955	0	14,791,483	182,978,228	57,034,955	0
2063	182,978,228	0	54,778,412	0	11,706,313	139,906,129	54,778,412	0
2064	139,906,129	0	52,510,483	0	8,559,415	95,955,061	52,510,483	0
2065	95,955,061	0	50,232,559	0	5,346,963	51,069,465	50,232,559	0
2066	51,069,465	0	47,938,065	0	2,065,031	5,196,431	47,938,065	0
2067	5,196,431	0	45,658,819	0	0	0	5,196,431	40,462,388
2068	0	0	43,402,352	0	0	0	0	43,402,352
2069	0	0	41,173,260	0	0	0	0	41,173,260
2070	0	0	38,972,222	0	0	0	0	38,972,222
2071	0	0	36,804,539	0	0	0	0	36,804,539
2072	0	0	34,671,574	0	0	0	0	34,671,574
2073	0	0	32,574,942	0	0	0	0	32,574,942
2074	0	0	30,516,287	0	0	0	0	30,516,287
2075	0	0	28,497,054	0	0	0	0	28,497,054
2076	0	0	26,519,275	0	0	0	0	26,519,275
2077	0	0	24,585,778	0	0	0	0	24,585,778
2078	0	0	22,699,831	0	0	0	0	22,699,831

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2019 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
2079	0	0	20,865,045	0	0	0	0	20,865,045
2080	0	0	19,085,649	0	0	0	0	19,085,649
2081	0	0	17,366,527	0	0	0	0	17,366,527
2082	0	0	15,712,748	0	0	0	0	15,712,748
2083	0	0	14,130,130	0	0	0	0	14,130,130
2084	0	0	12,624,597	0	0	0	0	12,624,597
2085	0	0	11,201,628	0	0	0	0	11,201,628
2086	0	0	9,866,257	0	0	0	0	9,866,257
2087	0	0	8,622,408	0	0	0	0	8,622,408
2088	0	0	7,472,927	0	0	0	0	7,472,927
2089	0	0	6,419,593	0	0	0	0	6,419,593
2090	0	0	5,462,744	0	0	0	0	5,462,744
2091	0	0	4,601,211	0	0	0	0	4,601,211
2092	0	0	3,832,848	0	0	0	0	3,832,848
2093	0	0	3,154,768	0	0	0	0	3,154,768
2094	0	0	2,563,172	0	0	0	0	2,563,172
2095	0	0	2,053,434	0	0	0	0	2,053,434
2096	0	0	1,620,148	0	0	0	0	1,620,148
2097	0	0	1,257,329	0	0	0	0	1,257,329
2098	0	0	958,581	0	0	0	0	958,581
2099	0	0	717,080	0	0	0	0	717,080
2100	0	0	525,638	0	0	0	0	525,638
2101	0	0	377,013	0	0	0	0	377,013
2102	0	0	264,231	0	0	0	0	264,231
2103	0	0	180,703	0	0	0	0	180,703
2104	0	0	120,409	0	0	0	0	120,409
2105	0	0	78,042	0	0	0	0	78,042
2106	0	0	49,127	0	0	0	0	49,127
2107	0	0	29,996	0	0	0	0	29,996
Discount Rate:							7.50%	2.66%

**THE POLICE RETIREMENT SYSTEM OF ST. LOUIS
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2019 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:	\$ 1,070,469,334	\$ 127,998,584
						Total Present Value:		\$ 1,198,467,919
						GASB Discount Rate:		6.69%

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 for 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.



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