PUBLIC SCHOOL RETIREMENT SYSTEM
OF THE CITY OF ST. LOUIS

MINUTES OF THE BOARD OF TRUSTEES REGULAR MEETING

June 22, 2020

I. ROLL CALL AND ANNOUNCEMENT OF A QUORUM

The June meeting of the Board of Trustees of the Public School Retirement System of the City of St. Louis (PSRSSTL) was called to order at around 4:40 p.m., Monday, June 22, 2020. The meeting was conducted by video conference through Zoom and a Livestream on YouTube. Louis Cross, Chairman of the Board of Trustees, was the presiding officer.

Roll Call was taken, and Christina Bennett, Darnetta Clinkscale, Louis Cross, Sheila Goodwin, Donna Jones, Bobbie Richardson, Albert Sanders and Justin Stein were present. The Board of Trustees had a quorum at the meeting. Trustee Angela Banks joined the meeting in progress. Trustees Joseph Clark and Yvette Levy were absent.

Executive Director, Andrew Clark, PSRSSTL Attorney Representative, Matt Gierse, PSRSSTL Auditors Jeanne Dee and Brenda Shepherd, and PSRSSTL Actuary, Troy Jaros, were also present.

II. APPROVAL OF MINUTES FROM LAST MEETING(S)

Christina Bennett made a motion, seconded by Bobbie Richardson, to approve the minutes of the Board of Trustees Meetings on February 24, 2020, April 28, 2020, and May 5, 2020. By voice vote, motion carried.

III. READING OF COMMUNICATIONS TO THE BOARD OF TRUSTEES

None

IV. PRESENTATIONS BY INTERESTED PARTIES

None. The Executive Director informed the Trustees that meeting notices contain information for interested parties on “how to” submit presentations prior to a scheduled Board of Trustees Regular Meeting.

V. CONSENT AGENDA

Sheila Goodwin made a motion, seconded by Bobbie Richardson to approve the Retirements and Benefits of March through June 2020. By voice vote, motion carried.

Christina Bennett made a motion, seconded by Bobbie Richardson, to approve the Refunds and Bills of February through May 2020. By voice vote, motion carried.

VI. UNFINISHED BUSINESS

None

VII. REPORT OF THE CHAIRPERSON

None

VIII. REPORT OF THE EXECUTIVE DIRECTOR

The Executive Director reported on COVID-19 procedures for the retirement office that can be found on the website, including office closures, social distancing measures and sanitization methods. There was discussion on the retirement system's liability in the event an employee gets sick. The Attorney was asked to investigate the liability issue.

The Executive Director introduced auditors Jeanne Dee and Brenda Shepherd from the accounting firm, Anders Minkler Huber & Helm LLP, for a presentation on the retirement system's audited financial statements. The auditors presented the audited financial statements for December 31, 2019 and 2018, by reviewing and highlighting important information from the pages of the Financial Statements report. The auditors spent time explaining the firm's opinions and various line items in the financial statements. There was some discussion regarding several components of the financial statements until all questions and issues were addressed to the satisfaction of the Board of Trustees.

An issue came up during the presentation regarding overpayments of pension benefits due to a retiree's death. The Executive Director reviewed the retirement system's procedures for tracking deaths to prevent overpayments. The Actuary offered his firm's assistance with tracking deaths for the retirement system. There was further discussion until it was stated that the issue would continue in the Report of the Actuary.

Overall, the Auditor reported on a good, clean audit, and thanked the Trustees and staff for allowing the firm to conduct the audit. The Trustees thanked the auditors for the presentation.

IX. REPORT OF THE INVESTMENT CONSULTANT

None

X. REPORT OF THE ACTUARY

The Actuary presented the results of the 2020 Actuarial Valuation Report by reviewing a discussion document. The Actuary presented findings on the system's member census information and demographics; the system's assets, liabilities and funding ratios; and the annual required contributions (ARC) for the St. Louis Public Schools Board of Education, PSRSSTL and the Charter Schools. The Actuary reported on the positive market returns in 2019, and the effects these returns and the other findings had on this year's valuation. There was discussion until the Actuary addressed all questions and issues made by the Trustees.

Christina Bennett made a motion, seconded by Bobbie Richardson, to accept the 2020 Actuarial Valuation Report as presented by the Actuary.

A roll call vote was taken.

Angela Banks	Yes	Christina Bennett	Yes	Darnetta Clinkscale	Yes
Louis Cross	Yes	Sheila Goodwin	Yes	Donna Jones	Yes
Bobbie Richardson	Yes	Albert Sanders	Yes	Justin Stein	Yes

With nine yes votes, motion carried.

Discussion continued regarding the benefits of a death audit being performed by the Actuary to help reduce contingent liabilities for the retirement system until it appeared the Trustees reached consensus on “how to” proceed.

Christina Bennett made a motion, seconded by Angela Banks, to have the Actuary perform a death audit to help the retirement system reduce contingent liabilities. By voice vote, motion carried.

XI. REPORTS OF COMMITTEES OF THE BOARD OF TRUSTEES

The Chairman asked for reports from the Committees.

Benefits Committee

None

Trustee Business Committee

Darnetta Clinkscale, Chair of the Trustee Business Committee, informed the Trustees of an upcoming education session on private markets at the next Investment Committee meeting scheduled for August 20, 2020. There was discussion on work schedules for teachers conflicting with the training and whether there would be one or two meetings in August. Further clarification was made that there would be just one meeting.

Investment Committee

Christina Bennett, Chair of the Investment Committee, reported on several money manager items involving transitions and transfers of assets from Progress to Xponance, and from Chicago Equity to Edgar Lomax. The Chair also reiterated the information on the training session to take place at the next committee meeting on August 20, 2020.

Legislative, Rules & Regulations Committee

None. Justin Stein, Chair of the Legislative, Rules & Regulations Committee, commented on several items that should be addressed at a future committee meeting.

Personnel & Professional Contracts Committee

None

The Executive Director asked the Trustees to close the next Personnel & Professional Contracts Committee meeting to discuss the status of the search for a new Executive Director and other personnel items. The Attorney clarified the reason and timing of the request to close the next committee meeting.

Christina Bennett made a motion, seconded by Sheila Goodwin, to close the next Personnel & Professional Contracts Committee meeting, pursuant to R.S.Mo. §§ 610.021 (3) and (13) for the purpose of having a confidential or privileged communication with the Executive Director for the PSRSSTL on personnel matters.

A roll call vote was taken.

Angela Banks	Yes	Christina Bennett	Yes	Darnetta Clinkscale	Yes
Louis Cross	Yes	Sheila Goodwin	Yes	Donna Jones	Yes
Bobbie Richardson	Yes	Albert Sanders	Yes	Justin Stein	Yes

With nine yes votes, motion carried.

XII. NEW BUSINESS

None

XIII. REPORT OF THE ATTORNEY

The Attorney asked the Trustees to close the meeting to discuss legal issues.

Darnetta Clinkscale made a motion, seconded by Justin Stein, to close the meeting, and that all records and votes, to the extent permitted by law, pertaining to and/or resulting from this closed meeting be closed under R.S.Mo. § 610.021(1) for the purpose of having a confidential or privileged communication with the legal counsel for the PSRSSTL on legal matters.

A roll call vote was taken.

Angela Banks	Yes	Christina Bennett	Yes	Darnetta Clinkscale	Yes
Louis Cross	Yes	Sheila Goodwin	Yes	Donna Jones	Yes
Bobbie Richardson	Yes	Albert Sanders	Yes	Justin Stein	Yes

With nine yes votes, motion carried, and the meeting closed around 6:15 p.m.

Sheila Goodwin made a motion, seconded by Justin Stein, to open the meeting and move out of closed session, pursuant to R. S. Mo. §610.021.

A roll call vote was taken.

Angela Banks	Yes	Christina Bennett	Yes	Darnetta Clinkscale	Yes
Louis Cross	Yes	Sheila Goodwin	Yes	Donna Jones	Yes
Bobbie Richardson	Yes	Albert Sanders	Yes	Justin Stein	Yes

With nine yes votes, motion carried, and the meeting opened around 6:30 p.m.

XIV. ADJOURNMENT

Sheila Goodwin made a motion, seconded by Bobbie Richardson, to adjourn the meeting. By voice vote, motion carried, and the meeting adjourned at around 6:30 p.m.

Attachments:

Retirements & Benefits: March, April, May and June 2020
Refunds & Bills: February, March, April and May 2020
December 31, 2019 and 2018 Financial Statements
2020 Actuarial Valuation Report and Results

To be Authorized and Approved
by the Board of Trustees

APPLICATIONS FOR RETIREMENT

NAME \ POSITION	RETIREMENT DATE	RETIREMENT TYPE	CREDITED SERVICE	FINAL AVG SALARY	MONTHLY BENEFIT
Karen Baker-Muhammad Clerk Typist	2/1/2020	Normal	18.6164	$32,912.32	$1,021.18
Chinelo Bandele Teacher	2/1/2020	Early	12.0000	$71,491.26	$1,382.17
Gene Cole Safety Officer	2/1/2020	Normal	20.9693	$40,228.35	$1,405.93
Maggie Dailey Safety Officer I	2/1/2020	Normal	20.5163	$38,064.65	$1,301.57
Kim Fuller-Barnes Speech Language Pathologist	2/1/2020	Normal	30.0000	$90,698.08	$4,534.90
Pearl Jones Safety Officer	2/1/2020	Normal	13.5111	$30,044.74	$676.56
Crissie Kirkendall Spec Ed Instr Care Aide	2/1/2020	Normal	6.1800	$32,534.89	$335.11
Theresa Mallet Positive Behavior Interventionist	2/1/2020	Early	13.5833	$42,898.02	$830.87
Beverly Primus Teacher	2/1/2020	Normal	30.0000	$82,540.68	$4,127.03
Lisa Taylor-Brown Director of School Safety	2/1/2020	Normal	30.0000	$99,091.32	$4,954.57

To be Authorized and Approved
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APPLICATIONS FOR RETIREMENT

NAME \ POSITION	RETIREMENT DATE	TYPE	CREDITED SERVICE	FINAL AVG SALARY	MONTHLY BENEFIT
Cheryl Coleman Secretary II	3/1/2020	Normal	24.7338	$45,808.99	$1,888.39
Angela Hopton Custodian	3/1/2020	Normal	8.6313	$36,888.98	$530.67
Da'Rine Waddell Safety Officer	3/1/2020	Disability	15.6029	$43,415.31	$1,129.01

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APPLICATIONS FOR RETIREMENT

NAME \ POSITION	RETIREMENT DATE	RETIREMENT TYPE	CREDITED SERVICE	FINAL AVG SALARY	MONTHLY BENEFIT
Ruth Banks Principal	4/1/2020	Early	5.1681	$88,919.75	$613.13
Terence Sutherlin Spec Ed Instr Care Aide	4/1/2020	Early	5.9833	$29,964.24	$157.06
Marcia Whitehead Security Officer	4/1/2020	Normal	20.0304	$44,767.12	$1,494.50

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APPLICATIONS FOR RETIREMENT

NAME \ POSITION	RETIREMENT DATE	RETIREMENT TYPE	CREDITED SERVICE	FINAL AVG SALARY	MONTHLY BENEFIT
Dennis Gralike Teacher	5/1/2020	Normal	7.4156	$43,152.37	$333.33
Corlean Harvey Teacher	5/1/2020	Normal	14.4778	$63,019.00	$1,520.63
Michael Menolascino Teacher	5/1/2020	Normal	30.0000	$89,452.01	$3,542.30
Ernestine Stewart Teacher	5/1/2020	Early	16.3672	$40,398.74	$1,028.55

Distributions - February, 2020

CHECK NUMBER	CHECK DATE	LAST NAME	FIRST NAME/MI	GROSS PAY	FEDERAL TAXES W/H	NET PAY	A(ctive) R(etired)	D(eath) S(eparation)	NOTES
076037	12/12/19	AMMONS	MARK	(13,537.79)	(2,707.55)	(10,830.24)	A	S	PREM IAAS VOID AND REISSUE
076239	02/18/20	ANDREWS	MIA E	805.69	161.13	644.56	A	S	CA
076240	02/18/20	BROWN	TIFFANY	27,661.49	5,532.29	22,129.20	A	S	IACA SLPS
076241	02/18/20	EVANS	DENEEN	1,103.72	220.74	882.98	A	S	LFL
076242	02/18/20	GLASPER	JANELLE	744.92	148.98	595.94	A	S	EAGLE
076243	02/18/20	JACK	BUFFY	3,253.09	650.61	2,602.48	A	S	EAGLE NSCS
076244	02/18/20	KENNEL	TAMMY	4,486.92	897.38	3,589.54	A	S	LFL
076245	02/18/20	LUCAS	ADAM	2,233.77		2,233.77	A	S	GSA
076246	02/18/20	SCOTT	ANDREA	12,255.90		12,255.90	A	S	EAGLE SLLIS
076247	02/18/20	SHELTON	BRIANNA S	1,603.65	320.73	1,282.92	A	S	CA
076248	02/18/20	STEWART	ERNESTINE	40,414.83		40,414.83	A	S	CA SLPS
076249	02/18/20	TOOKEY	CHELBY	10,326.20	2,065.24	8,260.96	A	S	KIPP
076250	02/18/20	VAUGHN	RODERICK	2,819.03	563.80	2,255.23	A	S	EAGLE
076251	02/18/20	WHALEN	DOROTHY	2,605.73	521.14	2,084.59	A	S	SLLIS
076252	02/18/20	WINSTON	BRITANEY	5,868.03	1,173.60	4,694.43	A	S	EAGLE KIPP
076253	02/18/20	WOOD	AARON	6,723.96	1,344.79	5,379.17	A	S	LPA SCPA SLPS
076254	02/18/20	AARON	ANDRE	951.19	190.23	760.96	A	S	
076255	02/18/20	BERRA	ELIZABETH	49,671.73		49,671.73	A	S	
076256	02/18/20	BLANTON	NINA	6,603.77	1,320.75	5,283.02	A	S	
076257	02/18/20	CARSON	CLAUDETTE	9,561.12	1,912.22	7,648.90	A	S	
076258	02/18/20	COFER	RACHAEL	4,795.48	959.09	3,836.39	A	S	
076259	02/18/20	GORDON	BRIDGETTE	9,493.19	1,898.63	7,594.56	A	S	
076260	02/18/20	JACKSON	CARLITO	966.75	193.35	773.40	A	S	
076261	02/18/20	JACKSON	TIFFANY	6,794.66	1,358.93	5,435.73	A	S	
076262	02/18/20	SHOOK	CLAIRE	2,705.89	541.17	2,164.72	A	S	
076263	02/18/20	SPAIN	BRENNAN	32,050.79	6,410.15	25,640.64	A	S	
076264	02/18/20	WISEMAN	ROBIN	3,350.09	670.01	2,680.08	A	S	
076265	02/18/20	RYAN JR	TOMMIE	121,567.79	24,313.55	97,254.24	A	D	DEC: J HAZLEY RYAN
076266	02/18/20	BETTS	ASHLEY M	7,038.53	1,407.70	5,630.83	A	D	DEC:Q JACKSON
076267	02/18/20	RODEN JR	CEDRIC	29,450.38	2,945.04	26,505.34	A	D	DEC: T RODEN
076268	02/18/20	DAVIS III	JOHN	29,450.39	2,945.04	26,505.35	A	D	DEC: T RODEN
076269	02/18/20	AMMONS	MARK	13,537.79	2,707.55	10,830.24	A	A	
			TOTAL	**$ 437,358.68**	**$ 60,666.29**	**$ 376,692.39**			

Distributions - March, 2020

CHECK NUMBER	CHECK DATE	LAST NAME	FIRST NAME/MI	GROSS PAY	FEDERAL TAXES W/H	NET PAY	A(ctive) R(etired)	D(eath) S(eparation)	NOTES
076159	01/23/20	HEYDUK	MARGARET	(8,998.94)		(8,998.94)	A	S	VOID AND REISSUE
076310	03/18/20	AUBUCHON	DANIEL	5,136.44	1,027.28	4,109.16	A	S	CAWP
076311	03/18/20	BOSTIC	STEVEN	3,660.19	732.03	2,928.16	A	S	PREC LFL
076312	03/18/20	DAVIS	SPENCER	926.58	185.31	741.27	A	S	LFL
076313	03/18/20	DUNNAVANT-CAULEY	HEATHER	3,520.42	704.08	2,816.34	A	S	HLSG
076314	03/18/20	HEMPHILL	ASHLEY F	11,764.05		11,764.05	A	S	CGMS
076315	03/18/20	HOY	SHEREE	5,689.74	1,137.94	4,551.80	A	S	PREM
076316	03/18/20	HUDSON	TASHA	443.56	88.71	354.85	A	S	LFL
076317	03/18/20	MACHEN	ERIN C	3,577.50		3,577.50	A	S	CA
076318	03/18/20	MCDANIEL	TAYLOR	984.81	196.96	787.85	A	S	LFL
076319	03/18/20	MUKENDI	CHRISTELLE	21,128.18	4,225.63	16,902.55	A	S	SLIS SLPS
076320	03/18/20	SHELTON	VIRGINIA A	5,929.10		5,929.10	A	S	GSA
076321	03/18/20	SMOGORZEWSKI	JESSICA	5,187.38	1,037.48	4,149.90	A	S	CLA
076322	03/18/20	ARVAY	JENNIFER	12,364.84		12,364.84	A	S	
076323	03/18/20	CARTER	ANTANIECE	15,000.00		15,000.00	A	S	
076324	03/18/20	CARTER	ANTANIECE	1,360.25	272.05	1,088.20	A	S	
076325	03/18/20	COVINGTON	THERESA	30,000.00		30,000.00	A	S	
076326	03/18/20	COVINGTON	THERESA	18,807.19	3,761.43	15,045.76	A	S	
076327	03/18/20	GOETTER	ALLISON	6,640.87	1,328.17	5,312.70	A	S	
076328	03/18/20	KERCKHOFF	MIRANDA	8,814.56		8,814.56	A	S	
076329	03/18/20	KRUEL	TORI	42,083.79	8,416.75	33,667.04	A	S	
076330	03/18/20	LOVE	KENYAWNA	14,873.97		14,873.97	A	S	
076331	03/18/20	LOVE	KENYAWNA	20,000.00	4,000.00	16,000.00	A	S	
076332	03/18/20	NGUYEN	LAN	7,391.34		7,391.34	A	S	
076333	03/18/20	PLAIR	CHRISTSEAN	1,057.74	211.54	846.20	A	S	
076334	03/18/20	SHEPA	ZORANA	1,557.26	311.45	1,245.81	A	S	
076335	03/18/20	TURNEY	PAUL	982.02	196.40	785.62	A	S	
076336	03/18/20	WASBOTTEN	RACHEL	1,539.58		1,539.58	A	S	
076337	03/18/20	WASBOTTEN	RACHEL	4,000.00	800.00	3,200.00	A	S	
076338	03/18/20	WALLEY	ANDREW R	11,406.92	2,281.38	9,125.54	R	D	DEC: C WALLEY
076339	03/18/20	ALDRICH-WATSON	DEBORAH	6,153.30	615.33	5,537.97	A	D	DEC: F WATSON
076340	03/18/20	WILLIAMS	AIGNER M	9,622.97	962.30	8,660.67	R	D	DEC: D WILLIAMS
076341	03/18/20	WILLIAMS	ANTHONY D	9,622.97	962.30	8,660.67	R	D	DEC: D WILLIAMS
076342	03/18/20	WILLIAMS	KEITH D	9,622.97	962.30	8,660.67	R	D	DEC: D WILLIAMS
076343	03/18/20	HEYDUK	MARGARET	8,998.94		8,998.94	A	S	VOID AND REISSUE
076344	03/18/20	ALLISON	AARON	1,010.50	202.10	808.40	A	S	
076345	03/18/20	WARD	KELLI	974.34	194.86	779.48	A	S	

Distributions - March, 2020

CHECK NUMBER	CHECK DATE	LAST NAME	FIRST NAME/MI	GROSS PAY	FEDERAL TAXES W/H	NET PAY	A(ctive) R(etired)	D(eath) S(eparation)	NOTES
076346	03/18/20	PRICE	ANTHONY W	24,147.83		24,147.83	A	S	SLPS & PREM
076347	03/18/20	SCHALLOM	MERILEE	10,521.61		10,521.61	A	S	CA
			TOTAL	**$ 337,504.77**	**$ 34,813.78**	**$ 302,690.99**			

Distributions - April, 2020

CHECK NUMBER	CHECK DATE	LAST NAME	FIRST NAME/MI	GROSS PAY	FEDERAL TAXES W/H	NET PAY	A(ctive) R(etired)	D(eath) S(eparation)	NOTES
076389	04/08/20	BRYANT	KHRISTEN D	6,418.36	1,283.67	5,134.69	A	S	KIPP
076390	04/08/20	ETZKORN	CYNTHIA	2,481.13		2,481.13	A	S	CA
076391	04/08/20	HOWE	TAYLOR	7,682.20		7,682.20	A	S	LFL
076392	04/08/20	MOORE	TYRONE	1,080.42	216.08	864.34	A	S	LFL
076393	04/08/20	NGUYEN	TRANG	8,234.00		8,234.00	A	S	SCPA
076394	04/08/20	PORTER	JESSIE	11,340.27	2,268.05	9,072.22	A	S	LFL SLPS
076395	04/08/20	SALL	FATIMA	6,966.08	1,393.21	5,572.87	A	S	KIPP
076396	04/08/20	RAY	JASMINE	4,164.22	832.84	3,331.38	A	S	LFL
076397	04/08/20	SNOWBARGER	VANESSA K	1,699.05		1,699.05	A	S	CA
076398	04/08/20	WALLACE	TAKISHA	2,819.57	563.91	2,255.66	A	S	CA GCAA
076399	04/08/20	WOODS	JASON	8,489.21		8,489.21	A	S	CA LFL
076400	04/08/20	ABBOTT	YVONNE	6,852.04	1,370.40	5,481.64	A	S	
076401	04/08/20	BELL	NICOLE	7,506.36	1,501.27	6,005.09	A	S	
076402	04/08/20	EVANS	KATHY	5,373.39	1,074.67	4,298.72	A	S	
076403	04/08/20	LARDGE	ERIC	5,614.01	1,122.80	4,491.21	A	S	
076404	04/08/20	MILLER	JENNIFER	739.99	147.99	592.00	A	S	
076405	04/08/20	WAHEED	LORETTA	2,352.94		2,352.94	A	D	DEC: J WAHEED
			TOTAL	**$ 89,813.24**	**$ 11,774.89**	**$ 78,038.35**			

Distributions - May, 2020

CHECK NUMBER	CHECK DATE	LAST NAME	FIRST NAME/MI	GROSS PAY	FEDERAL TAXES W/H	NET PAY	A(ctive) R(etired)	D(eath) S(eparation)	NOTES
076452	05/13/20	ANDERSON	ASHLEY C	4,445.88	889.18	3,556.70	A	S	KIPP
076453	05/13/20	BOLDEN	BROOKE	13,655.77	2,731.15	10,924.62	A	S	CA LSMS SLPS
076454	05/13/20	HORCH	MEGAN A	5,321.70	1,064.34	4,257.36	A	S	GSA CA
076455	05/13/20	HUNTER	ALLAN	949.49	189.90	759.59	A	S	GSA
076456	05/13/20	JATCKO	JOSEPHINE	1,219.97	243.99	975.98	A	S	SLLIS EAGLE
076457	05/13/20	PERSON	MONIQUE	3,215.94	643.19	2,572.75	A	S	CLA
076458	05/13/20	POWELL	ANDREA	2,637.14	527.43	2,109.71	A	S	LFL
076459	05/13/20	ROTH	MARY	341.04	68.21	272.83	A	S	EAGLE
076460	05/13/20	SINASKY	CHRISTINE	5,281.29	1,056.26	4,225.03	A	S	LPA
076461	05/13/20	YAKIMOV	ARIEL	3,864.70	772.94	3,091.76	A	S	EAGLE
076462	05/13/20	BAKER	ROBERT	2,451.18	490.24	1,960.94	A	S	
076463	05/13/20	BOYD	LADONNA	2,063.71	412.74	1,650.97	A	S	
076464	05/13/20	CLARK	JENNA	972.20	194.44	777.76	A	S	
076465	05/13/20	CLARK	SUPRINA	2,534.67	506.93	2,027.74	A	S	
076466	05/13/20	DODGE	MONICA	5,832.03		5,832.03	A	S	
076467	05/13/20	GREEN	STANLEY	162.03		162.03	A	S	
076468	05/13/20	HAYES	ANNETTE	23,855.82	4,771.16	19,084.66	A	S	
076469	05/13/20	LINDERS	ANNE	2,695.65		2,695.65	A	S	
076470	05/13/20	MARMARCHI	ZAEMAB	1,938.86	387.77	1,551.09	A	S	
076471	05/13/20	OWINGS	WESLEY	27,554.47		27,554.47	A	S	
076472	05/13/20	SHURN	NIKOLE	13,180.34	2,636.07	10,544.27	A	S	
076473	05/13/20	SPENN	KATHRYN	3,678.86	735.77	2,943.09	A	S	
076474	05/13/20	SUTTON	ALEXIS	1,765.23	353.05	1,412.18	A	S	
076475	05/13/20	WOOTEN	JACOB	12,193.98	2,438.80	9,755.18	A	S	
076476	05/13/20	COTTON	TRAVIS	52,204.82	5,220.48	46,984.34	R	D	DEC: O MCMATH
076477	05/13/20	MITCHELL	SHEILA	3,074.00	614.80	2,459.20	R	D	DEC: R MITCHELL
			TOTAL	**$ 197,090.77**	**$ 26,948.84**	**$ 170,141.93**			

Public School Retirement System of the City of St. Louis
Checks Written During the Month of February, 2020

Payee	Ck. Number	Description	Amount
Date Paid February 5, 2020			
Ameren Missouri	76176	Electric Service	2,279.13
Office Essentials	76177	Office Supplies	41.58
ACC Business	76178	Telephone Fiberoptics	528.08
FreedomVoice	76179	Telephone Service	389.41
Charter Communications	76180	Charter Internet and Voice	204.96
Republic Services #346	76181	Trash Pick-Up	232.56
Microtek Document Imaging Systems, Inc.	76182	Image Hosting & Document Scanning For January	796.55
Clayton Parking	76183	February 2020 Parking - 2 Employees	130.00
The Berwyn Group	76184	Online Death Audit System 1 Year	2,070.00
Jupiter Consulting Services, LLC	76185	Programming Consulting	1,953.00
Tech Electronics, Inc.	76186	Repairs Video Surveillance System	702.15
Shred-It USA	76187	Document Shredding	105.19
Blade Technologies, Inc.	76188	Professional Services	901.50
Specialty Mailing	76189	Postage - 1099R's	2,383.26
Pitney Bowes, Inc.	76190	Postage Supplies	80.74
MAPERS	76191	Plan Sponsor Membership Dues - 2020	100.00
PRISM	76192	PRISM Member Dues 2020	300.00
CBRE - 608844	76193	Engineer Services	254.00
Full Care	76194	Snow and Ice Management	506.25
Causeway Capital Management LLC	76195	4th Quarter 2019 Management Fee	80,058.83
Chicage Equity Partners, LLC	76196	4th Quarter 2019 Management Fee	39,753.39
The Edgar Lomax Company	76197	4th Quarter 2019 Management Fee	42,278.38
INTECH Investment Management LLC	76198	4th Quarter 2019 Management Fee	32,873.03
Manulife Asset Management U.S. LLC	76199	4th Quarter 2019 Management Fee	33,275.76
Mellon Investments Corporation	76200	4th Quarter 2019 Management Fee	30,976.20
Piedmont Investment Advisors, LLC	76201	4th Quarter 2019 Management Fee	9,453.40
Progress Investment Management Co., LLC	76202	4th Quarter 2019 Management Fee	84,399.75
TCW Asset Management Company	76203	4th Quarter 2019 Management Fee	51,054.12
Westfield Capital Management Company, LP	76204	4th Quarter 2019 Management Fee	66,192.40
Board of Education St. Louis Benefits Trust	76205	Office Employees Insurance - Dental	203.81
Board of Education St. Louis Benefits Trust	76206	Office Employees Insurance - Vision	12.78
Board of Education St. Louis Benefits Trust	76207	Office Employees Insurance - Life	138.60
Date Paid February 14, 2020			
Office Payroll	ACH	Office Payroll	10,859.56
AXA Equitable	ACH	457 Contributions	1,860.00
Date Paid February 20, 2020			
Absopure Water Company	76270	Water Cooler Service	116.85
Blade Technologies, Inc.	76271	Professional Services	4,279.84
Crossroads Courier, Inc.	76272	Courier Service	7.49
Hartnett Reyes-Jones, L.L.C.	76273	Legal Fees	14,969.50
Office Essentials	76274	Office Supplies	508.68
Gallagher Benefit Services, Inc.	76275	Group Ins. Consulting Services Monthly Fee	3,320.25
MSD	76276	Sewer Service	48.97
Purchase Power	76277	Postage	500.00
Specialty Mailing	76278	Daily Pickup	180.00
Specialty Mailing	76279	Service - Insurance Letters, Service - 1099R's	1,202.89
Buck Global, LLC	76280	Actuarial & Consulting Services for January 2020	6,066.00
Konika Minolta Business Solutions USA Inc.	76281	Service - Copier C360I, Copier C364E	232.85
BuildingStars STL Operations, Inc.	76282	Janitorial Services	1,386.00
Jupiter Consulting Services, LLC	76283	Programming Consulting	5,103.00
Softchoice Corporation	76284	Software	158.00
Tech Electronics, Inc.	76285	Central Monitoring of Fire Alarm System	360.00
Full Care	76286	Snow and Ice Management	1,670.00

Public School Retirement System of the City of St. Louis
Checks Written During the Month of February, 2020

Payee	Ck. Number	Description	Amount
Grainger	76287	Supplies	44.64
Fidelity Institutional Asset Mgmt Trust Company	76288	4th Quarter 2019 Management Fee	62,948.13
US Bank	76289	4th Quarter 2019 Custodial Fee	26,465.66
Specialty Mailing	76290	Postage - Winter Newsletters	2,231.71
Date Paid February 28, 2020			
Office Payroll	ACH	Office Payroll	10,859.56
AXA Equitable	ACH	457 Contributions	1,860.00
		TOTAL	**$641,868.39**

Public School Retirement System of the City of St. Louis
Checks Written During the Month of March, 2020

Payee	Ck. Number	Description	Amount
Date Paid March 5, 2020			
Ameren Missouri	76291	Electric Service	2,304.17
Office Essentials	76292	Office Supplies	487.01
ACC Business	76293	Telephone Fiberoptics	528.08
FreedomVoice	76294	Telephone Service	389.41
Charter Communications	76295	Charter Internet and Voice	204.96
Republic Services #346	76296	Trash Pick-Up	230.82
Microtek Document Imaging Systems, Inc.	76297	Image Hosting & Document Scanning - February	420.00
Clayton Parking	76298	March 2020 Parking - 2 Employees	130.00
Specialty Mailing	76299	Service - Winter Newsletter	971.44
Minuteman Press	76300	Winter Newsletter	2,053.73
GCI Security, Inc.	76301	Security Guard - 02/24/2020	144.00
CBRE - 608844	76302	Mamagement Fee - February 2020	1,184.68
CBRE - 608844	76303	Engineer Services	508.00
Full Care	76304	Snow and Ice Management	562.50
NEPC, LLC	76305	4th Quarter 2019 Consulting Fee	32,718.30
NEPC, LLC	76306	4th Quarter 2019 Alt. Investment Mgmt. Fee	12,500.00
Board of Education St. Louis Benefits Trust	76307	Office Employees Insurance - Dental	203.81
Board of Education St. Louis Benefits Trust	76308	Office Employees Insurance - Vision	12.78
Board of Education St. Louis Benefits Trust	76309	Office Employees Insurance - Life	138.60
Date Paid March 13, 2020			
Office Payroll	ACH	Office Payroll	10,859.56
AXA Equitable	ACH	457 Contributions	1,860.00
Date Paid March 19, 2020			
Absopure Water Company	76348	Water Cooler Service	74.85
Blade Technologies, Inc.	76349	Laptops	4,133.00
Blade Technologies, Inc.	76350	Professional Services	1,780.84
Crossroads Courier, Inc.	76351	Courier Service	7.49
Hartnett Reyes-Jones, L.L.C.	76352	Legal Fees	23,911.25
Office Essentials	76353	Office Supplies	573.40
Gallagher Benefit Services, Inc.	76354	Group Ins. Consulting Services Monthly Fee	3,320.25
Purchase Power	76355	Postage	500.00
Specialty Mailing	76356	Daily Pickup	160.00
Buck Global, LLC	76357	Actuarial & Consulting Services for February 2020	6,541.00
Konika Minolta Business Solutions USA Inc.	76358	Service - Copier C360I, Copier C364E	232.85
BuildingStars STL Operations, Inc.	76359	Janitorial Services	1,386.00
Tech Electronics, Inc.	76360	Inspection Agreement	496.00
EFL Associates @ 5th 3rd Bank	76361	Search, First Installment	21,250.00
Pitney Bowes Global Financial Services LLC	76362	Lease Charges	1,410.00
Gregory F.X. Daly, Collector of Revenue	76363	Water - City	127.44
Randy Elam	76364	Annual Renewal - Office 365 and Efax	291.99
CBRE - 608844	76365	Engineer Services	412.75
Full Care	76366	Snow and Ice Management	1,685.00
Date Paid March 27, 2020			
Office Payroll	ACH	Office Payroll	10,859.56
AXA Equitable	ACH	457 Contributions	1,860.00
		TOTAL	**$149,425.52**

Public School Retirement System of the City of St. Louis
Checks Written During the Month of April, 2020

Payee	Ck. Number	Description	Amount
Date Paid April 7, 2020			
Ameren Missouri	76367	Electric Service	1,833.19
Office Essentials	76368	Office Supplies	720.77
ACC Business	76369	Telephone Fiberoptics	528.08
FreedomVoice	76370	Telephone Service	389.41
Charter Communications	76371	Charter Internet and Voice	204.96
Republic Services #346	76372	Trash Pick-Up	230.82
Microtek Document Imaging Systems, Inc.	76373	Image Hosting & Document Scanning For March	420.00
Clayton Parking	76374	April 2020 Parking - 2 Employees	130.00
MSD	76375	Sewer Service	68.45
Gregory F.X. Daly, Collector of Revenue	76376	City Earnings Tax - First Quarter 2020	997.39
BuildingStars STL Operations, Inc.	76377	Janitorial Supplies	676.94
Anders CPAs & Advisors	76378	Audit of Financial Statements, QB Consultation	23,100.00
Blade Technologies, Inc.	76379	Professional Services	32.50
Tech Electronics, Inc.	76380	Lenel Onguard PRO, Radionics D9412GV4	645.00
Jerrell Mechanical Contractors	76381	HVAC Inspection	888.00
Jerrell Mechanical Contractors	76382	Thermostat Repair - VA	2,120.29
CBRE - 608844	76383	Mamagement Fee - March 2020	1,184.68
CBRE - 608844	76384	Engineer Services	254.00
Blue Chip Pest Services	76385	Pest Control	135.00
Board of Education St. Louis Benefits Trust	76386	Office Employees Insurance - Dental	203.81
Board of Education St. Louis Benefits Trust	76387	Office Employees Insurance - Vision	12.78
Board of Education St. Louis Benefits Trust	76388	Office Employees Insurance - Life	138.60
Date Paid April 10, 2020			
Office Payroll	ACH	Office Payroll	10,859.56
AXA Equitable	ACH	457 Contributions	1,860.00
Date Paid April 20, 2020			
Absopure Water Company	76406	Water Cooler Service	12.00
Blade Technologies, Inc.	76407	Professional Services	1,782.34
Hartnett Reyes-Jones, L.L.C.	76408	Legal Fees	5,294.90
Gallagher Benefit Services, Inc.	76409	Group Ins. Consulting Services Monthly Fee	3,320.25
Purchase Power	76410	Postage	500.00
Specialty Mailing	76411	Daily Pickup	130.00
Buck Global, LLC	76412	Actuarial & Consulting Services for March 2020	4,066.00
Konika Minolta Business Solutions USA Inc.	76413	Service - Copier C360I, Copier C364E	274.85
BuildingStars STL Operations, Inc.	76414	Janitorial Services and Supplies	1,529.76
MSD	76415	Sewer Service	73.32
AT&T Teleconference Services	76416	Teleconference Services	24.76
Randy Elam	76417	ZOOM Meetings	108.48
CBRE - 608844	76418	Management Fee - January 2020	1,184.68
CBRE - 608844	76419	Engineer Services	279.63
EARNEST Partners, LLC	76420	1st Quarter 2020 Management Fee	7,936.29
Mellon Investment Corporation	76421	1st Quarter 2020 Management Fee	1,910.35
Mellon Investment Corporation	76422	1st Quarter 2020 Management Fee	456.45
Systematic Financial Management, LP	76423	1st Quarter 2020 Management Fee	48,447.50
TCW Asset Management Company	76424	1st Quarter 2020 Management Fee	47,696.45
Date Paid April 24, 2020			
Office Payroll	ACH	Office Payroll	10,859.56
AXA Equitable	ACH	457 Contributions	1,860.00
		TOTAL	**$185,381.80**

Public School Retirement System of the City of St. Louis
Checks Written During the Month of May, 2020

Payee	Ck. Number	Description	Amount
Date Paid May 5, 2020			
Ameren Missouri	76425	Electric Service	1,539.46
ACC Business	76426	Telephone Fiberoptics	528.08
FreedomVoice	76427	Telephone Service	387.60
Charter Communications	76428	Charter Internet and Voice	204.96
Republic Services #346	76429	Trash Pick-Up	230.82
Microtek Document Imaging Systems, Inc.	76430	Image Hosting & Document Scanning For April	420.00
Clayton Parking	76431	May 2020 Parking - 2 Employees	130.00
Anders CPAs & Advisors	76432	Audit of Financial Statements	32,000.00
Blade Technologies, Inc.	76433	Professional Services	91.00
Shred-It USA	76434	Document Shredding	102.26
Nexcess	76435	Web Hosting	143.40
CBRE - 608844	76436	Engineer Services	254.00
Blue Chip Pest Services	76437	Pest Control	45.00
St. Louis Mat & Linen Company	76438	Floor Mats - January thru April 2020	759.00
Causeway Capital Management LLC	76439	1st Quarter 2020 Management Fee	55,838.12
Chicago Equity Partners, LLC	76440	1st Quarter 2020 Management Fee	27,716.50
The Edgar Lomax Company	76441	1st Quarter 2020 Management Fee	29,353.22
Fidelity Institutional Asset Mgmt. Trust Co.	76442	1st Quarter 2020 Management Fee	57,278.14
INTECH Investment Management LLC	76443	1st Quarter 2020 Management Fee	27,247.51
Manulife Asset Management U.S. LLC	76444	1st Quarter 2020 Management Fee	32,669.63
Progress Investment Management Co. LLC	76445	1st Quarter 2020 Management Fee	72,257.97
Westfield Capital Management Company, LP	76446	1st Quarter 2020 Management Fee	51,568.74
Xponance, Inc.	76447	1st Quarter 2020 Management Fee	9,211.15
US Bank	76448	1st Quarter 2020 Custodial Fee	21,175.73
Board of Education St. Louis Benefits Trust	76449	Office Employees Insurance - Dental	203.81
Board of Education St. Louis Benefits Trust	76450	Office Employees Insurance - Vision	12.78
Board of Education St. Louis Benefits Trust	76451	Office Employees Insurance - Life	138.60
Date Paid May 8, 2020			
Office Payroll	ACH	Office Payroll	10,859.56
AXA Equitable	ACH	457 Contributions	1,860.00
Date Paid May 20, 2020			
Absopure Water Company	76478	Water Cooler Service	122.75
Blade Technologies, Inc.	76479	Professional Services	1,782.34
Hartnett Reyes-Jones, L.L.C.	76480	Legal Fees	7,318.25
Gallagher Benefit Services, Inc.	76481	Group Ins. Consulting Services Monthly Fee	3,320.25
Purchase Power	76482	Postage	500.00
Buck Global, LLC	76483	Actuarial & Consulting Services for April 2020	10,466.00
Konika Minolta Business Solutions USA Inc.	76484	Service - Copier C360I, Copier C364E	274.85
BuildingStars STL Operations, Inc.	76485	Janitorial Services	1,386.00
MSD	76486	Sewer Service	73.32
The Berwyn Group	76487	Online Address Search	75.00
Tech Electronics	76488	Central Monitoring of Fire Alarm System	360.00
ActiveTrak	76489	Internet Security	345.60
Tiger Medical	76490	Drop Box/Mail Box	69.99
Krause Key & Lock Service Inc.	76491	Install Electronic Lock	291.42
Mellon Investment Corporation	76492	1st Quarter 2020 Management Fee	26,994.43
NEPC, LLC	76493	1st Quarter 2020 Consulting Fee	31,250.00
NEPC, LLC	76494	1st Quarter 2020 Alt. Investment Mgmt. Fee	12,500.00
Date Paid May 22, 2020			
Office Payroll	ACH	Office Payroll	10,859.56
AXA Equitable	ACH	457 Contributions	1,860.00
Arthur J Gallagher Risk Mgmt. Services, Inc.	76495	Fiduciary Liability & Crime Insurance Premiums	80,413.00
		TOTAL	**$624,489.80**

PUBLIC SCHOOL RETIREMENT SYSTEM OF THE CITY OF ST. LOUIS

FINANCIAL STATEMENTS
WITH REQUIRED SUPPLEMENTARY INFORMATION
AND OTHER SUPPLEMENTARY INFORMATION
AND
INDEPENDENT AUDITORS' REPORT
YEARS ENDED DECEMBER 31, 2019 AND 2018

Contents

ANDERS
CPAs + ADVISORS

Independent Auditors' Report

The Board of Trustees
Public School Retirement System of the City of St. Louis
St. Louis, Missouri

Report on the Financial Statements

We have audited the accompanying financial statements of Public School Retirement System of the City of St. Louis (the "System"), which comprise the statements of fiduciary net position as of December 31, 2019 and 2018, and the related statements of changes in fiduciary net position for the years then ended, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements

The System's management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the System's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the System's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

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We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of Public School Retirement System of the City of St. Louis as of December 31, 2019 and 2018, and the changes in it's fiduciary net position for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that Management's Discussion and Analysis and the other required supplementary information, as listed in the Table of Contents, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the financial statements in an appropriate operational, economic, or historical context.

We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audits of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Supplementary Information

Our audits were conducted for the purpose of forming an opinion on the System's basic financial statements. The other supplementary information on pages 45 - 55 is presented for purposes of additional analysis and is not a required part of the basic financial statements.

The other supplementary information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the financial statements. Such information has been subjected to the auditing procedures applied in the audits of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the other supplementary information is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

Anders Minkler Huber & Helms LLP

April 27, 2020

The Management Discussion and Analysis (“MD&A”) for the Public School Retirement System of the City of St. Louis (“PSRSSTL”) provides an overview of PSRSSTL financial activities for the fiscal year ended December 31, 2019. This MD&A is presented as required supplementary information to the financial statements and should be read in conjunction with the PSRSSTL financial statements, notes to the financial statements, required supplementary information, and other supplementary information.

The basic financial statements contained in this section of the MD&A consist of:

- The Condensed Statements of Fiduciary Net Position illustrate the System's assets, liabilities, and resulting fiduciary net position where Assets - Liabilities = Fiduciary Net Position held in trust for pension benefits available at the end of a fiscal year. These statements are a snapshot of the financial position of the System at specific points in time.
- The Condensed Statements of Changes in Fiduciary Net Position summarize the System's financial transactions throughout a fiscal year where Additions - Deductions = Change in Fiduciary Net Position. These statements support the change from the prior year's net position on the Statements of Fiduciary Net Position.
- The Notes to the Financial Statements are an integral part of these basic financial statements and contain information that helps better understand them.
- The required supplementary Management Discussion and Analysis information, the Required Supplementary Information, and Other Supplementary Information following the Notes to the Financial Statements provide detailed historical information that is useful in evaluating the condition of the retirement plan administered by PSRSSTL.

The System's fiduciary net position was $893,039,689 at December 31, 2019, which represents an increase of $73,589,796 from December 31, 2018. This increase was due to investment returns during the 2019 fiscal year that were far above the System's assumed rate of return. The performance results increased the System's asset values for most investment categories at December 31, 2019.

The System's investment returns were 16.8% in fiscal year 2019, (5.0%) in fiscal year 2018, and 16.2% in fiscal year 2017. The System's investment return in fiscal year 2019, when compared to fiscal year 2018, represents a strong upturn in investment values for most asset categories as experienced by the financial markets during the one-year period. Predicting conditions in the marketplace is always challenging yet the Board of Trustees stands behind a sound Asset Allocation Policy by remaining focused on active monitoring of its money managers and long-term investment objectives. The actuarial assumed rate of return set by the Board of Trustees remained at 7.5% for fiscal year 2019.

Additions to fiduciary net position were $188.6 million, $21.4 million and $178.5 million for fiscal years 2019, 2018 and 2017, respectively. The two highest additions to fiduciary net position in 2019 were net investment income of $126.2 million and employer contributions of $43.9 million. The main additions to fiduciary net position in 2018 were $48.8 million of employer contributions and $14.2 million of member contributions. The key additions to fiduciary net position during 2017 were net investment income of $124.2 million and employer contributions of $41.1 million.

Deductions from fiduciary net position were $115.0 million, $116.0 million and $114.6 million in fiscal years 2019, 2018 and 2017, respectively. Almost 80% of the decrease of $1,043,805 in deductions from fiduciary net position between fiscal years 2019 and 2018 was due to the decrease in operating expenses and contribution refunds paid to terminated or deceased members in fiscal year 2019. More than half of the increase of $1,426,832 in deductions from fiduciary net position between fiscal years 2018 and 2017 was due to the increase in contribution refunds paid to terminated or deceased members in fiscal year 2018.

FINANCIAL STATEMENTS

The PSRSSTL financial report consists of two financial statements, (1) the Statements of Fiduciary Net Position, and (2) the Statements of Changes in Fiduciary Net Position. The Statements of Fiduciary Net Position provide details concerning PSRSSTL assets and liabilities other than long-term benefit obligations. However, PSRSSTL assets are the only source available to the System to pay pension benefits. The Statements of Changes in Fiduciary Net Position provide details regarding PSRSSTL financial activity during fiscal year 2019 that caused the change in fiduciary net position from fiscal year 2018 to fiscal year 2019.

Additionally, the financial report contains notes, supplementary information and actuarial data that provide further information to use while analyzing the System's financial statements.

FINANCIAL ANALYSIS

On December 31, 2019, total assets and deferred outflow of resources of the System were $895,621,204. Total assets consisted of cash, receivables, investments and an office building. When compared to fiscal year 2018, total assets and deferred outflows in fiscal year 2019 increased by 9.0%, or $73,588,669, and can be attributed to higher than expected investment returns.

On December 31, 2019, total liabilities and deferred inflow of resources of the System were $2,581,515. Total liabilities consisted of accounts payable and accrued expenses and net pension liability. Total liabilities and deferred inflows in fiscal year 2019, when compared to fiscal year 2018, decreased by $1,127, primarily because of the decrease in the System's net pension liability as required by GASB Statement No. 68.

On December 31, 2019, the fiduciary net position restricted for pensions was $893,039,689, an increase of 9.0%, or $73,589,796, from fiscal year 2018.

On December 31, 2018, total assets and deferred outflow of resources of the System were $822,032,535. Total assets consisted of cash, receivables, investments and an office building. When compared to fiscal year 2017, total assets and deferred outflows in fiscal year 2018 decreased by 10.2%, or $93,755,800, and can be attributed to lower than expected investment returns.

On December 31, 2018, total liabilities and deferred inflow of resources for the System were $2,582,642. Total liabilities consisted of accounts payable, accrued expenses, and net pension liability. Total liabilities and deferred inflows in fiscal year 2018, when compared to fiscal year 2017, increased by 51.4%, or $876,567, primarily because of the large increase in the System's net pension liability as required by GASB Statement No. 68.

On December 31, 2018, the fiduciary net position restricted for pensions was $819,449,893, a decrease of 10.4%, or $94,632,367, from fiscal year 2017.

Condensed Statements of Fiduciary Net Position

	FY 2019	FY 2018	FY 2017	FY 2019 % Change	FY 2018 % Change
Assets					
Cash	$ 9,803,323	$ 9,850,121	$ 10,108,913	(0.5)%	(2.6)%
Receivables	827,629	847,357	803,961	(2.3)%	5.4 %
Investments	882,624,263	808,635,191	902,745,605	9.1 %	(10.4)%
Property and building,net	1,623,368	1,680,266	1,747,704	(3.4)%	(3.9)%
Total Assets	894,878,583	821,012,935	915,406,183	9.0 %	(10.3)%
Deferred Outflows of Resources					
Deferred outflows of resources	742,621	1,019,600	382,152	(27.2)%	166.8 %
Total Assets and Deferred Outflows of Resources	895,621,204	822,032,535	915,788,335	9.0 %	(10.2)%
Liabilities					
Accounts payable and accrued expenses	728,909	708,970	800,653	2.8 %	(11.5)%
Net pension liability	1,621,273	1,727,361	876,434	(6.1)%	97.1 %
Total Liabilities	2,350,182	2,436,331	1,677,087	(3.5)%	45.3 %
Deferred Inflows of Resources					
Deferred inflows of resources	231,333	146,311	28,988	58.1 %	404.7 %
Total Liabilities and Deferred Inflows of Resources	2,581,515	2,582,642	1,706,075	- %	51.4 %
Fiduciary Net Position	$ 893,039,689	$ 819,449,893	$ 914,082,260	9.0 %	(10.4)%

REVENUES – ADDITIONS TO FIDUCIARY NET POSITION

The assets available to finance PSRSSTL pension benefits are accumulated through receipt of employer and member contributions as well as through earnings on investments. For fiscal year 2019, employer contributions were approximately $43.9 million; member contributions were approximately $17.0 million; and investments gained a net amount of approximately $126.2 million. For fiscal year 2018, employer contributions were approximately $48.8 million; member contributions were approximately $14.2 million; and investments lost a net of approximately $42.1 million.

Employer and member contributions combined decreased by $2.1 million in fiscal year 2019 compared to $9.4 million in fiscal year 2018. These fluctuations in the contribution amounts are primarily due to the increase of the employer contribution rate from 19.10% of covered compensation in fiscal year 2018 to 16.0% in fiscal year 2019, and the increase from 15.73% of covered compensation in fiscal year 2017 to 19.10% in fiscal year 2018.

The PSRSSTL Actuary determines the amount of employer contributions required to maintain actuarial soundness of the System as part of the annual actuarial valuation report. However, through legislation passed in 2017, beginning with plan year 2018, the employer contribution rate was decreased to 16.0% of covered compensation. This rate will decrease by 0.5% in each future plan year until reaching a minimum of 9.0% and remain at 9.0% of covered compensation in all subsequent plan years.

An active member contribution rate of 5.00% of covered compensation was effective from July 1, 1999 through December 31, 2017. In 2018, through legislation passed in 2017, the active member contribution rate was increased to 5.50% of covered compensation for members hired before January 1, 2018. This rate will increase by 0.50% per year until reaching 9.00%. After that, the contribution rate will remain at 9.00% of covered compensation. The legislation requires new active members hired on or after January 1, 2018, to immediately contribute at a rate of 9.00%.

Net investment income was $126.2 million, $(42.0) million and $124.2 million in fiscal years 2019, 2018 and 2017, respectively. These fluctuations in net investment income occurred because the investment earning rates were 16.8%, (5.0)% and 16.2% in fiscal years 2019, 2018 and 2017, respectively. Net investment income or (loss) reflects gross investment income or (loss) less investment expenses, such as investment manager, investment advisor and custodial fees.

EXPENSES – DEDUCTIONS FROM FIDUCIARY NET POSITION

The primary deductions from fiduciary net position were payments of retirement benefits, survivor benefits, disability benefits, retiree healthcare subsidies and refunds to members who have retired or terminated employment. PSRSSTL operating expenses in fiscal year 2019 were approximately .21% of assets, while operating expenses were approximately 0.24% and 0.18% of assets for 2018 and 2017, respectively.

Condensed Statements of Changes in Fiduciary Net Position

	FY 2019	FY 2018	FY 2017	FY 2019 % Change	FY 2018 % Change
Additions					
Employer contributions	$ 43,902,706	$ 48,797,779	$ 41,077,344	(10.0)%	18.8 %
Member contributions	17,019,685	14,248,567	12,591,552	19.4 %	13.2 %
Net investment income (loss)	126,231,937	(42,116,945)	124,169,513	399.7 %	(133.9)%
Rental income	161,263	157,219	153,544	2.6 %	2.4 %
Other income	1,238,033	288,646	473,862	328.9 %	(39.1)%
Total Additions	188,553,624	21,375,266	178,465,815	782.1 %	(88.0)%
Deductions					
Retirement benefits	99,624,865	99,641,973	99,499,140	- %	0.1 %
Survivor benefits	3,043,126	3,082,696	3,056,046	(1.3)%	0.9 %
Disability benefits	3,575,042	3,616,435	3,512,352	(1.1)%	3.0 %
Health care subsidies	2,249,449	2,381,857	2,442,339	(5.6)%	(2.5)%
Operating expenses	1,862,658	1,996,981	1,613,506	(6.7)%	23.8 %
Refunds to members	4,608,688	5,287,691	4,440,594	(12.8)%	19.1 %
Total Deductions	114,963,828	116,007,633	114,563,977	(0.9)%	1.3 %
Change in Fiduciary Net Position	$ 73,589,796	$ (94,632,367)	$ 63,901,838	(177.8)%	(248.1)%

FINANCIAL SUMMARY

For over 23 years, the PSRSSTL Investment Consultant has consistently calculated the System's investment performance; thereby, providing a valid basis on which performance can be compared with other public pension funds. For instance, the System's investments have provided consistent returns with cumulative PSRSSTL investment performance ranking in the top 40% of similar public pension plans for the last 23 years through the period ended December 31, 2019.

The fiduciary net position over this same timeframe has fluctuated from a low of $780 million in fiscal year 1997 to a high of $1.15 billion in fiscal year 2007. At the end of fiscal year 2019, the fiduciary net position was $893.0 million. These fluctuations in the value of the System's fiduciary net position can be attributed to volatile financial market conditions that caused substantial losses of investment returns in several fiscal years followed by large investment gains in other fiscal years.

Until fiscal year 2017, using the Governmental Accounting Standards Board ("GASB") calculation method implemented in 1992, the funded status of PSRSSTL remained stable by fluctuating within the range of 80.5% to 88.6% for 25 fiscal years. The funded ratio of a plan compares its assets to its liabilities; thereby, on an actuarial basis, measuring a plan’s ability to fulfill future financial obligations to its members. The funded ratios of the PSRSSTL for fiscal years 2019, 2018 and 2017 were 78.5%, 78.1%, and 79.5%, respectively. The dip in the System's funded ratio beginning with fiscal year 2017 was primarily due to the change in the System's actuarial assumed rate of return (discount rate) from 8.0% to 7.5%.

The Board of Trustees and the PSRSSTL Actuary assume that the PSRSSTL will continue to be funded on a sound actuarial basis provided required member and employer contributions are made as recommended, a prudent and well-diversified Asset Allocation Policy remains in place, quality investment managers continue to be selected, and the financial markets dodge sustained volatility. However, during fiscal year 2017, the Missouri General Assembly, in cooperation with then Governor Eric Greitens, enacted changes to the System's calculations for the required annual employer and member contributions that jeopardize the System's actuarial soundness. Unless this legislation is overturned or replaced, these changes will have adverse effects on the System and its ability to meet future financial obligations to its members. It is assumed that the Board of Trustees will fulfill its fiduciary duty to the System's membership by continuing to take the appropriate legal action against the legislation.

In the months since the end of the 2019 fiscal year, the financial markets have been ravaged by the effects of the COVID-19 pandemic. As of the date of these financial statements for the 2019 fiscal year, the Board of Trustees continues to closely monitor the System’s assets to minimize the possibility of substantial investment losses through the end of the 2020 fiscal year.

REQUESTS FOR INFORMATION

This report is intended to provide the Board of Trustees, PSRSSTL members, and other interested parties a general overview of PSRSSTL financial matters. If any reader has questions about this report or needs additional financial information, contact the Public School Retirement System of the City of St. Louis.

Public School Retirement System of the City of St. Louis
Statements of Fiduciary Net Position
December 31, 2019 and 2018

Assets

	2019	2018
Cash	$ 9,803,323	$ 9,850,121
Receivables		
Accrued interest and dividends	806,651	824,179
Other receivable	20,978	23,178
Total Receivables	827,629	847,357
Investments, at fair value		
Cash equivalents	50,133,288	36,721,304
Bonds		
U.S. Government and agency issues	32,071,483	28,998,131
Corporate	31,181,568	32,811,378
Foreign investments (bonds and stocks)	86,066,721	73,501,212
Common and preferred stocks	201,795,327	185,412,081
Mutual and co-mingled funds	380,889,694	360,023,724
Real estate partnerships	48,419,609	48,471,908
Limited partnerships	52,066,573	42,695,453
Total Investments	882,624,263	808,635,191
Property and Building, net	1,623,368	1,680,266
Total Assets	894,878,583	821,012,935

Deferred Outflows of Resources

Deferred Outflows of Resources Related to Pensions	742,621	1,019,600

Liabilities

Accounts Payable and Accrued Expenses	728,909	708,970
Net Pension Liability	1,621,273	1,727,361
Total Liabilities	2,350,182	2,436,331

Deferred Inflows of Resources

Deferred Inflows of Resources Related to Pensions	231,333	146,311

Net Position

Net Position Restricted for Pensions	$ 893,039,689	$ 819,449,893

Public School Retirement System of the City of St. Louis
Statements of Changes in Fiduciary Net Position
Years Ended December 31, 2019 and 2018

	2019	2018
Additions		
Employer contributions		
St. Louis Public Schools	$ 31,344,663	$ 37,376,323
Sick leave conversion	192,404	302,222
Charter Schools	12,267,081	11,018,669
Retirement System	98,558	100,565
Plan member contributions		
St. Louis Public Schools	12,306,381	10,282,093
Charter Schools	4,682,712	3,935,567
Retirement System	30,592	30,907
	60,922,391	63,046,346
Investment income (loss)		
Cash equivalents	643,528	459,491
Bonds		
U.S. Government and agency issues	2,783,981	333,930
Corporate	2,768,870	78,150
Foreign investments (bonds and stocks)	17,214,207	(12,802,444)
Common and preferred stock	55,029,943	(12,045,029)
Mutual and co-mingled funds	48,125,629	(23,225,857)
Limited partnerships	3,566,441	6,387,880
Real estate partnerships	356,012	3,603,474
	130,488,611	(37,210,405)
Less investment expenses	4,256,674	4,906,540
Net investment income (loss)	126,231,937	(42,116,945)
Rental income	161,263	157,219
Other miscellaneous income	1,238,033	288,646
Net Additions	188,553,624	21,375,266
Deductions		
Benefits paid		
Retirement benefits	99,624,865	99,641,973
Survivor benefits	3,043,126	3,082,696
Disability benefits	3,575,042	3,616,435
Health care subsidies	2,249,449	2,381,857
	108,492,482	108,722,961
Operating expenses	1,862,658	1,996,981
Contribution refunds due to death or resignation	4,608,688	5,287,691
Total Deductions	114,963,828	116,007,633
Net Increase (Decrease) in Net Position	73,589,796	(94,632,367)
Net Position Restricted for Pensions, Beginning of Year	819,449,893	914,082,260
Net Position Restricted for Pensions, End of Year	$ 893,039,689	$ 819,449,893

1. Description of System

General

The Public School Retirement System of the City of St. Louis (the "System") is the administrator of a cost-sharing multiple-employer defined benefit pension plan existing under provisions of the Revised Statutes of the State of Missouri (the “Statutes”) to provide retirement benefits for all employees of the Board of Education of the City of St. Louis, of the Charter Schools located within the St. Louis School District, and of all employees of the System. The System issues a Comprehensive Annual Financial Report ("CAFR"), a publicly available financial report that can be obtained at www.psrsstl.org.

An eleven member Board of Trustees is responsible for general administration of the System and investing the System's assets. Trustees are appointed by plan members and the Board of Education of the City of St. Louis.

Membership and Eligibility

All persons employed on a full-time basis are members of the System as a condition of employment. Membership statistics, as of the latest actuarial valuations, are as follows:

	January 1, 2019	January 1, 2018
Active members	5,050	5,138
Inactive members	2,886	2,791
Total members not retired	7,936	7,929
Retired members		
Service and survivors	4,255	4,277
Disability	245	249
	4,500	4,526
Total membership	12,436	12,455

Vesting

Full vesting on termination of employment after at least five years of service is provided if contributions remain with the System. The full benefit is payable at age 65 or at a reduced early retirement benefit prior to age 65.

Funding Policy

The funding objective of the System is to meet long-term benefit promises through contributions that remain approximately level from year to year as a percentage of covered payroll.

Benefits

Upon retirement at age 65, or at any age if age plus years of credited service equals or exceeds 80 (Rule of 80), or 85 (Rule of 85) if terminated prior to August 28, 2017. Members receive monthly payments for life of yearly benefits equal to years of credited service multiplied by 2% of average final compensation or 1.75% of average final compensation if hired on or after January 1, 2018, but not to exceed 60% of average final compensation. Early retirement can occur prior to age 65. The service retirement allowance is reduced five ninths of one percent for each month of commencement prior to age 65 or the age at which the Rule of 80 (Rule of 85 if terminated prior to August 28, 2017) would have been satisfied had the employee continued working until that age, if earlier.

In lieu of the benefit paid over the lifetime of the participant, reduced benefit options are available for survivor and beneficiary payments.

Members are eligible, after accumulation of five years of credited service, for disability benefits prior to eligibility of normal retirement. Survivor benefits are available for beneficiaries of members who die after at least 18 months of active membership.

The System pays a portion of health insurance premiums for retirees under Section 169.476 of the Statutes, as an expense of the System.

Benefits are recorded when paid.

Return of Contributions Upon Death

If, after the death of a participant, no further monthly amounts are payable to a beneficiary under an optional form of payment or under the survivor benefit provisions, the participant’s beneficiary shall be paid the excess, if any, of the participant’s accumulated contributions over all payments made to, or on behalf of, the deceased participant.

Contributions by Participants

Active participants hired before January 1, 2018 contributed 6.00% and 5.50% of covered compensation for the years ended December 31, 2019 and 2018, respectively. This rate increases 0.50% per year until it reaches 9.00%. After this, the contribution rate will remain at 9.00% of covered compensation. Active participants hired on or after January 1, 2018 contribute 9.00% of covered compensation.

Accumulated contributions are credited at the rate of interest established by the Board of Trustees. The current crediting rate is 5.00%.

Contributions by Employers

The System's statutory required contribution rate applied to St. Louis Public Schools and the Retirement System for the year ended December 31, 2019 was 16.00% of annual payroll. For Charter School employers, the System's statutory required contribution rate was set at 15.50% of covered payroll for the year ended December 31, 2019. These contribution rates shall be decreased by 0.50% in each subsequent year until reaching 9.00% of covered payroll. After this, the contribution rate will remain at 9.00% of covered payroll.

The System's contractually required contribution rate for the year ended December 31, 2018 was 19.10% of annual payroll, actuarially determined as an amount that, when combined with employee contributions, was expected to finance the costs of benefits earned by employees during the year, with an additional amount to finance any unfunded accrued liability. For Charter School employers, the System's statutory required contribution rate for the year ended December 31, 2018 was 16.00% of annual payroll.

Contributions to the pension plan for System employees were $98,558 and $100,565 for the years ended December 31, 2019 and 2018, respectively.

Expenses

Operating expenses are paid out of investment income.

Investment Policy

The System's policy in regards to the allocation of invested assets is established and may be amended by the System's Board of Trustees. Investments are managed on a total return basis with a long-term objective of maintaining a fully funded status for the benefits provided through the pension plan. The following was the System's adopted asset allocation policy as of February 25, 2019:

Asset Class	Target Allocation	Long-term Expected Real Rate of Return
U.S. Equity	22.0 %	5.6 %
Non-U.S. Equity	22.0 %	7.5 %
Global Equity	5.0 %	6.2 %
Fixed Income	24.0 %	1.5 %
Real Estate	7.0 %	5.0 %
Private Markets	10.0 %	9.0 %
Hedge Funds	5.0 %	3.6 %
Global Asset Allocation	5.0 %	3.5 %
Total/Average	100.0 %	5.2 %

2. Summary of Significant Accounting Policies

Basis of Presentation and Accounting

The financial statements of the System have been prepared in accordance with the criteria established by the Governmental Accounting Standards Board ("GASB"), which is the source of authoritative accounting principles generally accepted in the United States of America ("GAAP"), as applied to governmental units. The System's financial statements are prepared using the accrual basis of accounting.

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect certain reported amounts and disclosures. Accordingly, actual results could differ from those estimates.

Receivables

Receivables consist of pending interest and dividends payable on investments held at the end of the year. Other receivable is an amount due to the System from a member for overpaid benefits.

Investment Valuation and Income Recognition

Investments are reported at fair value. Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. See Note 5 for discussion of fair value measurements. Short-term investments are reported at cost, which approximates fair value. Securities traded on national or international exchanges are valued at the latest reported sales price at current exchange rates.

Limited Partnerships

Fair values of the limited partnership investments are based on valuations of the underlying companies of the limited partnerships as reported by the general partner. Certain limited partnerships reflect values on a quarter lag basis due to the nature of those investments and the time it takes to value them.

Alternative Investments

For alternative investments where no readily ascertainable fair value exists, management, in consultation with their investment advisors, values these investments in good faith based upon audited financial statements, cash flow analysis, purchase and sales of similar investments, other practices used within the industry, or other information provided by the underlying investment advisors. The estimated fair value of these investments may differ significantly from values that would have been used had a ready market existed.

Investment Income

Investment income includes: realized gains (losses), unrealized appreciation (depreciation), dividends, interest, and other investment income. Purchases and sales of securities are recorded on a trade-date basis. Interest income is recorded on the accrual basis. Dividends are recorded on the ex-dividend date.

Investment Expenses

Investment expenses consist of investment manager, investment advisor, limited partnership, and custodial bank fees.

Fair Value Measurements

The System follows guidance issued by the GASB on fair value measurements, which establishes a framework for measuring fair value, clarifies the definition of fair value within that framework, and expands disclosures about the use of fair value measurements. This guidance applies whenever fair value is the applicable measurement. The three general valuation techniques used to measure fair value are the market approach, cost approach, and income approach.

Furniture and Equipment

Acquisitions of furniture and equipment are charged to operating expense when purchased. The value of furniture and equipment owned by the System is deemed to be immaterial in relation to the total assets of the System.

Property and Building

The System records property, building, and related improvements at cost while expenditures for normal repairs and maintenance, which do not extend the useful life of the assets, are charged to operations as incurred. The System uses the straight-line method for the depreciation of the building and improvements over the estimated life of 40 years.

Long-Lived Asset Impairment

The System evaluates the recoverability of the carrying value of long-lived assets whenever events or circumstances indicate the carrying amount may not be recoverable. If a long-lived asset is tested for recoverability and the undiscounted estimated future cash flows expected to result from the use and eventual disposition of the asset are less than the carrying amount of the asset, the asset cost is adjusted to fair value and an impairment loss is recognized as the amount by which the carrying amount of a long-lived asset exceeds its fair value. No asset impairment was recognized during the years ended December 31, 2019 and 2018.

Deferred Outflows and Inflows of Resources

In addition to assets and liabilities, the statements of fiduciary net position will sometimes include separate sections for deferred outflows and inflows of resources. These separate financial statement elements represent the use or acquisition of net position that applies to a future period or periods and will not be recognized as an outflow or inflow of resources until then. The System has deferred outflows and inflows in the statements of fiduciary net position that relate to pension related deferrals required by GASB Statement No. 68.

Pensions

Pension-related expenses, liabilities, deferred outflows of resources, and deferred inflows of resources have been determined on the same basis as they are reported by the System. For this purpose, benefit payments are recognized when due and payable in accordance with the benefit terms.

Recent Accounting Pronouncements

The following GASB Statements are effective for various reporting periods beginning after December 15, 2019.

- GASB Statement No. 87: *Leases*
- GASB Statement No. 89: *Accounting for Interest Cost Incurred before the End of a Construction Period*
- GASB Statement No. 90: *Majority Equity Interest - an amendment of GASB Statements No. 14 and No. 61*
- GASB Statement No. 91: *Conduit Debt Obligations*
- GASB Statement No. 92: *Omnibus 2020*

Based on preliminary analysis, the System does not expect the new guidance to have a significant impact on its financial statements.

3. Adoption of New Accounting Standards

During the year ended December 31, 2019, the System adopted GASB Statement No. 83: *Certain Asset Retirement Obligations.* The primary objective of the Statement is to improve accounting and financial reporting for asset retirement obligations ("AROs") by establishing uniform measurement criteria. The Statement requires an ARO to be measured at the estimated current value of future outlays or the most likely amount to be incurred. The current value should be adjusted annually for general inflation or deflation, or changes in factors used to estimate future outlays. The implementation of GASB Statement No. 83 did not significantly impact the System's financial statements.

During the year ended December 31, 2019, the System adopted GASB Statement No. 84: *Fiduciary Activities*. The primary objective of the Statement is to improve accounting and financial reporting of fiduciary activities by enhancing consistency and comparability. The Statement identifies four fiduciary funds that should be reported, as applicable, in a fiduciary fund in the basic financial statements. Additionally, the Statement addresses instances when a liability may be recognized as a result of the disbursement of fiduciary resources. The implementation of GASB Statement No. 84 did not significantly impact the System's financial statements.

During the year ended December 31, 2019, the System adopted GASB Statement No. 88: *Certain Disclosures related to Debt, including Direct Borrowings and Direct Placements.* The primary objective of the Statement is to improve disclosures surrounding debt. Additional requirements include unused lines of credit, collateral, and debt terms related to events of default, termination, and acceleration. The implementation of GASB Statement No. 88 did not significantly impact the System's financial statements.

4. Investments

At December 31, 2019 and 2018, investments consisted of the following:

	2019	
	Fair Value	Cost
Cash equivalents	$ 50,133,288	$ 50,133,288
Bonds		
U.S. Government and agency issues	32,071,483	31,866,509
Corporate	31,181,568	31,302,211
Foreign investments (bonds and stocks)	86,066,721	78,685,343
Common and preferred stocks	201,795,327	151,824,846
Mutual and co-mingled funds	380,889,694	283,264,849
Real estate partnerships	48,419,609	30,625,054
Limited partnerships	52,066,573	50,954,260
	$882,624,263	$708,656,360

	2018	
	Fair Value	Cost
Cash equivalents	$ 36,721,304	$ 36,721,304
Bonds		
U.S. Government and agency issues	28,998,131	29,592,471
Corporate	32,811,378	34,097,511
Foreign investments (bonds and stocks)	73,501,212	78,763,546
Common and preferred stocks	185,412,081	168,088,999
Mutual and co-mingled funds	360,023,724	288,610,690
Real estate partnerships	48,471,908	32,418,615
Limited partnerships	42,695,453	41,044,416
	$808,635,191	$709,337,552

5. Fair Value Measurements

The framework for measuring fair value establishes a fair value hierarchy which prioritizes the inputs to valuation techniques used to measure fair value into Levels 1, 2, and 3. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). The three levels of the fair value hierarchy are described as follows:

Level 1 Inputs to the valuation methodology are unadjusted quoted prices for identical instruments in active markets.

Level 2 Inputs to the valuation methodology include quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in inactive markets, inputs other than quoted prices that are observable for the instrument, or inputs that are derived principally from or corroborated by observable market data by correlation or other means.

Level 3 Inputs to the valuation methodology are unobservable and significant to the fair value measurement.

Investments that are measured at fair value using the net asset value ("NAV") per share (or its equivalent) as a practical expedient are not classified in the fair value hierarchy.

The fair value amounts presented in the tables are intended to permit reconciliation of the fair value hierarchy to the line items presented in the statements of fiduciary net position. The instrument's fair value measurement level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement. Valuation techniques maximize the use of relevant observable inputs and minimize the use of unobservable inputs.

Carrying amounts of certain financial instruments such as cash, receivables, accounts payable, and accrued expenses approximate fair value due to their short maturities or because the terms are similar to market terms. There have been no changes in the methodologies used at December 31, 2019 and 2018.

Following is a description of the valuation methodologies used for investments measured at fair value.

Level 1 Investments consist of publicly traded common and preferred stocks and mutual funds. These investments are valued using the closing price reported on the active market on which the individual securities are traded.

Level 2 Investments consist of corporate and foreign bonds and stocks, U.S. government securities and agency issues, and cash equivalent accounts. These securities are valued using pricing models maximizing the use of observable inputs for similar securities. This includes basing value on yields currently available on comparable securities of issuers with similar credit ratings.

Level 3 Investments consist of real estate partnerships and limited partnerships. Real estate partnerships are valued at fair value as determined by the general partner. Limited partnerships are valued based on valuations of the underlying companies of the limited partnerships as reported by the general partner.

Investments also consist of co-mingled funds. These securities are valued at the NAV based on shares held by the System at year-end. The NAV is used as a practical expedient to estimate fair value.

The preceding methods described may produce a fair value calculation that may not be indicative of net realizable value or reflective of future fair values. Furthermore, although the System believes its valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

The following table presents the fair value measurements of instruments recognized in the accompanying statements of fiduciary net position measured at fair value on a recurring basis and the level within the fair value hierarchy in which the fair value measurements are categorized at December 31, 2019 and 2018:

	2019			
		Fair Value Measurements		
	Total	Level 1	Level 2	Level 3
Cash equivalents	$ 50,133,288	$ -	$ 50,133,288	$ -
U.S. Government and agency issues	32,071,483	-	32,071,483	-
Corporate bonds	31,181,568	-	31,181,568	-
Foreign investments	86,066,721	-	86,066,721	-
Common and preferred stocks	201,795,327	201,795,327	-	-
Mutual funds	230,056,856	230,056,856	-	-
Real estate partnerships	48,419,609	-	-	48,419,609
Limited partnerships	52,066,573	-	-	52,066,573
Total assets in fair value hierarchy	731,791,425	$431,852,183	$199,453,060	$100,486,182
Investments measured at NAV	150,832,838			
	$882,624,263			

	2018			
		Fair Value Measurements		
	Total	Level 1	Level 2	Level 3
Cash equivalents	$ 36,721,304	$ -	$ 36,721,304	$ -
U.S. Government and agency issues	28,998,131	-	28,998,131	-
Corporate bonds	32,811,378	-	32,811,378	-
Foreign investments	73,501,212	-	73,501,212	-
Common and preferred stocks	185,412,081	185,412,081	-	-
Mutual funds	234,330,113	234,330,113	-	-
Real estate partnerships	48,471,908	-	-	48,471,908
Limited partnerships	42,695,453	-	-	42,695,453
Total assets in fair value hierarchy	682,941,580	$419,742,194	$172,032,025	$ 91,167,361
Investment measured at NAV	125,693,611			
	$808,635,191			

Investments measured at fair value based on NAV per share practical expedient as of December 31, are as follows:

December 31, 2019	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Co-mingled funds	$ 150,832,838	N/A	Daily	30 days

December 31, 2018	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Co-mingled funds	$ 125,693,611	N/A	Daily	30 days

The following table provides a summary of changes in fair value of the System's Level 3 assets for the years ended December 31, 2019 and 2018, as follows:

	Limited Partnerships	Real Estate Partnerships	Total
December 31, 2017	$ 25,708,057	$ 55,324,668	$ 81,032,725
Realized gains	4,178,202	109,066	4,287,268
Unrealized gains	1,167,100	1,296,210	2,463,310
Purchases, sales, issuances, and settlements (net)	10,599,516	(10,000,000)	599,516
Investment income, net	1,042,578	2,198,198	3,240,776
Management fees	-	(456,234)	(456,234)
December 31, 2018	42,695,453	48,471,908	91,167,361
Realized gains (losses)	4,806,768	(38,069)	4,768,699
Unrealized gains (losses)	(899,960)	(1,741,262)	(2,641,222)
Purchases, sales, issuances, and settlements (net)	5,819,284	-	5,819,284
Investment income (loss), net	(354,972)	2,135,343	1,780,371
Management fees	-	(408,311)	(408,311)
December 31, 2019	$ 52,066,573	$ 48,419,609	$ 100,486,182

All assets have been valued using a market approach, except for Level 3 assets. Fair values in Level 2 are calculated using quoted market prices for similar assets in markets that are not active. The following table describes the valuation technique used to calculate fair values for assets in Level 3. Annually, management determines if the current valuation techniques used in the fair value measurements are still appropriate and evaluates and adjusts the unobservable inputs used in the fair value measurements based on third-party information. There were no changes in the valuation techniques during the current year.

December 31, 2019	Fair Value	Valuation Technique	Unobservable Inputs
Limited Partnerships	$ 52,066,573	Basis in LLC	Undistributed Income
Real Estate Partnerships	$ 48,419,609	Basis in LLC	Undistributed Income

December 31, 2018	Fair Value	Valuation Technique	Unobservable Inputs
Limited Partnerships	$ 42,695,453	Basis in LLC	Undistributed Income
Real Estate Partnerships	$ 48,471,908	Basis in LLC	Undistributed Income

The significant unobservable inputs used in the fair value measurement of the System’s investments in limited partnerships are the original cost of the investment in the partnership plus the cumulative net income of the partnership through the end of the most recent fiscal year. Significant increases or decreases in the partnership’s cumulative net income as of December 31, 2019 and 2018 could result in a significantly higher or lower fair value measurement.

6. Risks and Uncertainties

Custodial Credit Risk

Financial instruments that potentially subject the System to concentrations of custodial credit and market risk consist principally of cash and investments. The System places its temporary cash investments with major financial institutions. At December 31, 2019 and 2018, the System had approximately $10,212,000 and $10,061,000, respectively, in cash on deposit at US Bank. These balances were insured by the Federal Deposit Insurance Corporation ("FDIC") for $250,000. The remaining balances are collateralized by US Bank's assets held jointly in the name of US Bank, N.A. and the System, held by the Federal Home Loan Bank of Cincinnati as Trustee. Regulations require that government entities, in case of bank failure, have collateral to cover losses that could exceed the FDIC limit of $250,000. The fair value of the collateralized securities at December 31, 2019 and 2018 was $11,000,000. A significant portion of the System's investments are held in trust by US Bank of St. Louis, N.A.

On December 30, 2019, and December 28, 2018, the System received $31,537,067 and $37,678,545, respectively, from the St. Louis Board of Education for the 2019 and 2018 St. Louis Public Schools' annual regular pension contribution and sick leave conversion contribution and held it in a cash equivalents account until investment allocations were implemented.

The System invests in various investment securities. Investment securities are exposed to various risks such as interest rate, market and credit risks. Due to the level of risk associated with certain investment securities, it is at least reasonably possible that changes in the values of investment securities will occur in the near term and that such change could materially affect the amounts reported in the accompanying statements of fiduciary net position.

Concentration of Credit Risk

At December 31, 2019 and 2018, the System had the following concentrations, defined as investments (other than those issued or guaranteed by the U.S. Government) in any one organization that represent 5% or more of net position held in trust for pension benefits.

2019			
Investments		Fair Value	Percentage of Total Net Position
UBS Realty Investors, LLC	$	48,419,609	5.4%
Causeway	$	47,622,067	5.3%
Fidelity Institutional Asset Mgmt	$	47,035,883	5.3%
Mellon Capital Management	$	45,109,801	5.1%

2018			
Investments		Fair Value	Percentage of Total Net Position
UBS Realty Investors, LLC	$	48,471,908	5.9%
Loomis Sayles Strategic Alpha Trust	$	44,802,896	5.5%

Credit Risk of Debt Securities

The System's debt investments as of December 31, 2019 were rated by Moody's Investor Services ("Moody's") and the ratings are presented using the Moody's rating scale. The System's policy to limit credit risk is that the overall average quality of each high-grade domestic fixed income portfolio shall be AA or better and the average quality rating of securities held in a domestic high-yield portfolio shall be B or better. The overall average quality of each global fixed income portfolio shall be A or better. Non-rated issues are allowed as long as the quality is sufficient to maintain the overall average rating noted.

As of December 31, 2019, the System held the following fixed income investments with respective Moody's quality ratings or equivalent rating. Obligations of the U.S. Government or obligations explicitly guaranteed by the U.S. Government are not considered to have credit risk. Foreign investments not considered to have credit risk such as stocks and cash equivalents are not included in the following:

Quality Rating	Corporate bonds	Foreign government and corporate obligations	U.S. Government and agency issues	Total
Aaa	$ 2,296,753	$ -	$ 12,080,385	$ 14,377,138
Aa1	168,378	-	-	168,378
Aa2	313,093	24,870	-	337,963
Aa3	401,215	64,925	358,060	824,200
A1	656,502	-	90,485	746,987
A2	1,218,582	76,139	-	1,294,721
A3	1,321,606	-	-	1,321,606
Baa1	1,659,077	35,546	-	1,694,623
Baa2	2,497,025	203,222	-	2,700,247
Baa3	5,300,458	696,906	-	5,997,364
Ba1	1,085,387	425,855	-	1,511,242
Ba2	391,052	339,149	-	730,201
Ba3	665,771	-	-	665,771
B1	348,202	68,160	-	416,362
B2	373,508	34,213	-	407,721
B3	774,118	56,110	-	830,228
Caa1	152,053	32,010	-	184,063
Caa2	128,951	128,212	-	257,163
Not rated	11,429,837	1,231,591	19,542,553	32,203,981
Total	$ 31,181,568	$ 3,416,908	$ 32,071,483	$ 66,669,959

As of December 31, 2018, the System held the following fixed income investments with respective Moody's quality ratings or equivalent rating.

Quality Rating	Corporate bonds	Foreign Government and corporate obligations	U.S. Government and agency issues	Total
Aaa	$ 5,496,358	$ 338,360	$ 11,808,055	$ 17,642,773
Aa1	150,740	-	96,251	246,991
Aa2	432,913	-	70,998	503,911
Aa3	396,182	105,853	207,191	709,226
A1	796,864	-	83,683	880,547
A2	732,916	246,476	-	979,392
A3	955,374	-	-	955,374
Baa1	1,580,449	-	-	1,580,449
Baa2	2,769,148	96,355	-	2,865,503
Baa3	4,415,266	895,499	-	5,310,765
Ba1	1,115,843	266,138	-	1,381,981
Ba2	513,248	355,343	-	868,591
Ba3	807,590	-	-	807,590
B1	378,213	24,094	-	402,307
B2	274,890	120,560	-	395,450
B3	529,920	102,900	-	632,820
Caa1	81,315	-	-	81,315
Caa2	194,633	33,950	-	228,583
Not rated	11,189,516	1,973,031	16,731,953	29,894,500
Total	$ 32,811,378	$ 4,558,559	$ 28,998,131	$ 66,368,068

Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely impact the fair value of an investment. The System does not have a formal policy to limit foreign currency risk. The System's exposure to foreign currency risk in U.S. Dollars as of December 31, 2019 is as follows:

Currency	Cash Equivalents	Equities	Total
Australian Dollar	$ -	$ 763,487	$ 763,487
British Pound Sterling	1	17,715,244	17,715,245
Canadian Dollar	342	3,719,271	3,719,613
Danish Krone	-	235,371	235,371
Euro	-	20,284,166	20,284,166
Hong Kong Dollar	-	2,615,290	2,615,290
Israeli New Sheqel	-	79,998	79,998
Japanese Yen	-	10,028,512	10,028,512
Korean Won	-	2,359,050	2,359,050
Norweigan Krone	-	51,138	51,138
Singapore Dollar	-	62,596	62,596
South African Rand	-	47,173	47,173
Swedish Krona	-	67,516	67,516
Swiss Franc	-	4,932,765	4,932,765
Thai Baht	-	44,724	44,724
	$ 343	$ 63,006,301	63,006,644
Foreign investment denominated in U.S. Dollars			23,060,420
			$ 86,067,064

The System's exposure to foreign currency risk in U.S. Dollars as of December 31, 2018 is as follows:

Currency	Cash Equivalents	Equities	Total
Australian Dollar	$ -	$ 319,764	$ 319,764
British Pound Sterling	1	16,172,686	16,172,687
Canadian Dollar	-	4,159,773	4,159,773
Danish Krone	-	208,230	208,230
Euro	-	14,292,430	14,292,430
Hong Kong Dollar	-	2,347,154	2,347,154
Israeli New Sheqel	-	76,132	76,132
Japanese Yen	-	9,678,124	9,678,124
Korean Won	-	1,872,655	1,872,655
Norweigan Krone	-	99,123	99,123
South African Rand	-	16,035	16,035
Swedish Krona	-	63,418	63,418
Swiss Franc	-	4,485,084	4,485,084
Thai Baht	-	82,773	82,773
Turkish Lira	-	150,539	150,539
	$ 1	$ 54,023,920	54,023,921
Foreign investment denominated in U.S. Dollars			19,477,291
			$ 73,501,212

Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. The System's fixed income investments are managed in accordance with policies established by the Board that are specific as to the degree of interest rate risk that can be taken. The System's policies established by the Board manage the interest rate risk within the portfolio using various methods, including effective duration, option adjusted duration, average maturity, and segmented time distribution, which reflects total fair value of investments maturing during a given time period. The System does not have a specific investment policy on interest rate risk. However, domestic bond managers are limited to seven years average duration and global bond managers cannot differ from the passive benchmark by more than two years as a means of managing its exposure to fair value losses arising from increasing interest rates.

The segmented time distribution of the various investment types of the System's debt securities at December 31, 2019 is as follows:

Type	2019 Fair Value	Less than 1 year	1 to 5 years	6 to 10 years	More than 10 years
Corporate bonds	$ 31,181,568	$ 255,331	$ 8,787,327	$ 9,256,456	$ 12,882,454
Foreign government and corporate obligations	3,416,908	-	1,030,359	1,798,680	587,868
U.S. Government and agency issues	32,071,483	-	4,486,057	1,853,196	25,732,230
Total	$ 66,669,959	$ 255,331	$ 14,303,743	$ 12,908,332	$ 39,202,552

The segmented time distribution of the various investment types of the System's debt securities at December 31, 2018 is as follows:

Type	2018 Fair Value	Less than 1 year	1 to 5 years	6 to 10 years	More than 10 years
Corporate bonds	$ 32,811,378	$ 909,070	$ 13,257,837	$ 7,530,246	$ 11,114,225
Foreign government and corporate obligations	4,558,559	26,873	1,386,655	2,013,896	1,131,135
U.S. Government and agency issues	28,998,131	371,779	2,219,744	5,380,334	21,026,274
Total	$ 66,368,068	$ 1,307,722	$ 16,864,236	$ 14,924,476	$ 33,271,634

7. Property and Building

Property and building as of December 31, consists of:

	2019	2018
Land	$ 229,451	$ 229,451
Building	2,065,061	2,065,061
Tenant improvements	158,120	158,120
	2,452,632	2,452,632
Less accumulated depreciation	829,264	772,366
Property and Building, net	$ 1,623,368	$ 1,680,266

Depreciation expense totaled $56,897 and $67,438 for the years ended December 31, 2019 and 2018, respectively.

8. Occupancy

The System occupies offices in a building it owns. Occupancy expenses for the years ended December 31, 2019 and 2018 were $34,857 and $33,392, respectively.

On May 7, 2009, the System entered into an agreement to lease a portion of its building to an unrelated party. The initial lease term was five years with five one-year renewal options with annual rent ranging from $144,047 to $158,821 through May 2019. The lease agreement was renewed during the year ended December 31, 2018, extending the term to May 2021 with annual rent ranging from $162,514 to $166,208. Rental income received for the years ended December 31, 2019 and 2018 totaled $161,263 and $157,219, respectively.

9. Tax Status of Plan

The Internal Revenue Service has determined and informed the System by a letter dated December 15, 2016, that the System and related trust and amendments are designed in accordance with the applicable sections of the Internal Revenue Code ("IRC"). Management believes that the System is designed and is currently being operated in compliance with the applicable requirements of the IRC and therefore believes that the System is qualified and the related trust is tax-exempt.

10. Retirement Plan of the System

Pension Liabilities, Pension Expense, Deferred Outflows and Deferred Inflows of Resources Related to Pensions

At December 31, 2019 and 2018, the System reported a liability of $1,621,273 and $1,727,361, respectively, as its proportionate share of the net pension liability. The net pension liability was measured as of December 31, 2018 and 2017, respectively, and the total pension liability used to calculate the net pension liability was determined by an actuarial valuation as of that date.

The System's proportionate share of the net pension liability was based on the System's actual employer's compensation relative to the actual compensation of all participating employers for the System's plan years ended December 31, 2018 and 2017. At December 31, 2018 and 2017, the System's portion was 0.19% and 0.23%, respectively.

Benefit changes effective as of August 28, 2017, for year ended December 31, 2018:

1. Reduce the "Rule of 85" to "Rule of 80."
2. Change the percent of pay benefit multiplier from 2.00 percent of Average Final Compensation to 1.75 percent of Average Final Compensation for members hired on or after January 1, 2018.

Contribution changes effective as of August 28, 2017, for year ended December 31, 2018:

1. Increase the employee contribution requirement from a flat 5.00 percent of compensation during 2017 to 9.00 percent in 0.50 percent annual increments for employees hired before January 1, 2018.
2. Set employee contribution rate to a flat 9.00 percent for employees hired on or after January 1, 2018.
3. Set the employer contribution rate to a flat 16.00 percent of covered payroll for plan year 2018 with annual decreases of 0.50 percent until reaching 9.00 percent of covered payroll.

Assumption changes effective as of Decemeber 31, 2019 are as follows:

1. Revised blended discount of 4.78 percent to 7.50 percent.

For the year ended December 31, 2019, the System recognized pension expense of $371,203 consisting of the current year contribution, pension liability adjustment, and amortization of deferred outflows and inflows of resources. At December 31, 2019, the System reported deferred outflows and inflows of resources related to pensions from the following sources:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	$ 3,089	$ 39,693
Changes in assumptions	397,711	-
Net difference between projected and actual earnings on pension plan investments	215,095	73,304
Changes in proportion and differences between employer contributions and proportionate share of contributions	28,168	118,336
System contributions subsequent to the measurement date of December 31, 2018	98,558	-
Total	$ 742,621	$ 231,333

For the year ended December 31, 2018, the System recognized pension expense of $431,367 consisting of the current year contribution, pension liability adjustment, and amortization of deferred outflows and inflows of resources. At December 31, 2018, the System reported deferred outflows and inflows of resources related to pensions from the following sources:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	$ 7,274	$ 21,064
Changes in assumptions	746,330	-
Net difference between projected and actual earnings on pension plan investments	119,079	115,090
Changes in proportion and differences between employer contributions and proportionate share of contributions	46,352	10,157
System contributions subsequent to the measurement date of December 31, 2017	100,565	-
Total	$ 1,019,600	$ 146,311

The System's total pension liability in the December 31, 2018 and 2017 actuarial valuation was determined using the actuarial assumptions disclosed in Note 12.

Deferred outflows of resources of $98,558 resulting from the System's contributions subsequent to the measurement date will be recognized as a reduction of the net pension liability in the year ended December 31, 2020. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense in the System's year ending December 31 as follows:

Amortization Schedule

Year	Amount
2020	$ 264,202
2021	154,157
2022	(17,218)
2023	11,589
Total	$ 412,730

Discount Rate

The discount rates used to measure the total pension liability were 7.50 percent and 4.78 percent at December 31, 2019 and 2018, respectively. The projection of cash flows used to determine the discount rate assumed that System contributions will continue to follow the funding policy established prior to the year ended December 31, 2019. Based on those assumptions, the System's contributions will continue to follow the current funding policy.

Sensitivity of the System's proportionate share of the net pension liability to changes in the discount rate

The following presents the System's proportionate share of the net pension liability calculated using the discount rate of 4.78 percent for the years ended December 31, 2019 and 2018, respectively, as well as what the System's proportionate share of the net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate:

System's proportionate share of the net pension liability for the year ended December 31,	1% Decrease (3.78%)	Current Discount Rate (4.78%)	1% Increase (5.78%)
2019	$ 1,973,164	$ 1,621,273	$ 1,279,017

System's proportionate share of the net pension liability for the year ended December 31,	1% Decrease (3.78%)	Current Discount Rate (4.78%)	1% Increase (5.78%)
2018	$ 2,212,568	$ 1,727,361	$ 1,358,300

11. Annual Money-Weighted Rate of Return

The annual money-weighted rate of return was 16.83 percent and (5.09) percent for the years ended December 31, 2019 and 2018, respectively. The annual money-weighted rate of return expresses investment performance, net of investment expense, and adjusted for the changing amounts actually invested.

12. Funding Status

The funded status as of January 1, which is the most recent actuarial date is as follows:

	2019	2018
Actuarial value of assets	$ 886,156,011	$ 899,816,911
Actuarial accrual liability (AAL)	$ 1,129,155,379	$ 1,152,728,218
Unfunded AAL (UAAL)	$ 242,999,368	$ 252,911,307
Funded ratio	78.5 %	78.1 %
Annual covered payroll	$ 263,772,380	$ 265,773,659
UAAL as a percentage of payroll	92.1 %	95.2 %

The funded ratio increased 0.4% from the previous year. The schedule of funding progress, presented as required supplementary information following the notes to the financial statements, presents similar information but uses a multi-year format to show trend information. These trends indicate whether the actuarial value of plan assets are increasing or decreasing over time relative to the actuarial accrued liability for benefits. The trend information was obtained from the annual valuation report of the independent actuary retained by the System.

Additional information regarding assumptions used in the actuarial valuation is as follows:

	January 1, 2019	January 1, 2018
Actuarial cost method	Frozen entry age	Frozen entry age
Rate of investment return	7.50%, net of expenses	7.50%, net of expenses
Participant account interest crediting rate	5.00%	5.00%
Turnover or withdrawal rates	Various by age and year of membership based on actual experience	Various by age and year of membership based on actual experience
Mortality and death rates	a) RP-2014 Combined Healthy Mortality table (rolled back to 2006) for active Members, and deferred vested Members, projected fully generationally using projection scale MP-2015. b) RP-2014 Combined Healthy Mortality Table (rolled back to 2006) for Inactive (In Receipt) Members adjusted by an additional 10% to account for the higher mortality experienced by the Plan, projected fully generationally using projection scale MP-2015.	a) RP-2014 Combined Healthy Mortality table (rolled back to 2006) for active Members, and deferred vested Members, projected fully generationally using projection scale MP-2015. b) RP-2014 Combined Healthy Mortality Table (rolled back to 2006) for Inactive (In Receipt) Members adjusted by an additional 10% to account for the higher mortality experienced by the Plan, projected fully generationally using projection scale MP-2015.
Disability rates	RP-2014 Disability Mortality Table (rolled back to 2006), projected fully generationally using projection scale MP-2015	RP-2014 Disability Mortality Table (rolled back to 2006), projected fully generationally using projection scale MP-2015
Rates of retirement between the ages of 55 and 70	Various based on actual experience of the System	Various based on actual experience of the System
Rate of salary increases	Salaries are assumed to increase at the rate of 5.0% per year for the first 5 years of employment and at the rate of 3.5% per year thereafter	Salaries are assumed to increase at the rate of 5.0% per year for the first 5 years of employment and at the rate of 3.5% per year thereafter
Asset valuation method	The assumed yield method of valuing assets	The assumed yield method of valuing assets

13. Employers' Net Pension Liability

The components of the net pension liability (the retirement system's liability determined in accordance with GASB Statement No. 67 less the fiduciary net position) as of December 31, 2019, are shown in the *Schedule of Net Pension Liability* below.

Actuarial valuation of an ongoing plan involves estimates of the reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include assumptions about future employment mortality and future salary increases. Amounts determined regarding the net pension liability are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future. The last experience study was performed in 2016. The net pension liability as of December 31, 2019 and 2018 is $378,254,650 and $838,901,660, respectively, based on actuarial valuations. The 2019 valuation was performed as of June 2019, with a measurement date of January 1, 2019, rolled forward and updated to December 31, 2019 using generally accepted actuarial procedures. The 2018 valuation was performed as of June 2018, with a measurement date of January 1, 2018, rolled forward and updated to December 31, 2018 using generally accepted actuarial procedures.

Schedule of Net Pension Liability

The components of the net pension liability of all participating employers at December 31, 2019 and 2018, are as follows:

	2019	2018
Total pension liability	$ 1,271,294,339	$ 1,658,351,553
Less: Fiduciary net position	893,039,689	819,449,893
Employers' net pension liability	$ 378,254,650	$ 838,901,660
Plan net position as a percentage of total pension liability	70.25 %	49.41 %

Sensitivity of Net Pension Eligibility to Changes in the Discount Rate

The following presents the net pension liability at December 31, 2019, calculated using the discount rate of 7.50 percent, as well as what the net pension liability would have been if it were calculated using a discount rate that is 1-percentage point lower or 1-percentage-point higher than the current rate:

	1% Decrease (6.50%)	Current Discount Rate (7.50%)	1% Increase (8.50%)
Net pension liability - 2019	$ 501,254,030	$ 378,254,650	$ 273,373,890

The following presents the net pension liability at December 31, 2018, calculated using the discount rate of 4.78 percent, as well as what the net pension liability would have been if it were calculated using a discount rate that is 1-percentage point lower or 1-percentage-point higher than the current rate:

	1% Decrease (3.78%)	Current Discount Rate (4.78%)	1% Increase (5.78%)
Net pension liability - 2018	$ 1,038,507,504	$ 838,901,660	$ 673,166,844

The projection of cash flows used to determine the discount rate assumed that System contributions will continue to follow the current funding policy. Based on those assumptions, the System's contributions will continue to follow the current funding policy. See page 50.

Under GASB Statement No. 68, employers participating in the plan would recognize a proportionate share of total pension expense of $71,428,049 and $192,072,941 for their fiscal years beginning after June 15, 2019 and 2018, respectively.

Required schedules of changes of employer net pension liability for the years ended December 31, 2019 and 2018, are provided on page 36.

A schedule of projected fiduciary net position is provided on page 53.

The System selected the assumptions used for the accounting results on page 36. Management believes that these assumptions are reasonable and comply with the requirements of GASB Statement No. 67 as applicable.

14. Subsequent Events

The System has evaluated subsequent events through April 27, 2020, the date the financial statements were available to be issued.

As of the date of the independent auditors' report, the market value of the investments have decreased as a result of the recent economic decline. The market values of the investments in the accompanying financial statements relate to investments on hand as of December 31, 2019.

Public School Retirement System of the City of St. Louis
Required Supplementary Information
Schedules of Changes of Employer Net Pension Liability
For The Years Ended December 31,

	2019	2018	2017	2016	2015	2014
Total pension liability						
Service cost	$ 40,762,465	$ 41,332,913	$ 19,950,269	$ 19,260,511	$ 19,136,245	$ 18,728,870
Interest	78,546,085	79,257,906	92,276,865	92,358,115	93,242,628	93,305,719
Changes of benefit terms	-	-	18,979,978	-	-	-
Difference between expected and actual experience	(631,432)	(21,350,805)	(8,215,370)	6,392,416	(10,065,347)	-
Changes of assumptions	(392,633,162)	-	397,218,720	70,532,232	-	-
Benefit payments	(113,101,170)	(114,010,652)	(112,950,471)	(113,608,409)	(113,384,329)	(113,082,656)
Net change in total pension liability	(387,057,214)	(14,770,638)	407,259,991	74,934,865	(11,070,803)	(1,048,067)
Total pension liability - beginning	1,658,351,553	1,673,122,191	1,265,862,200	1,190,927,335	1,201,998,138	1,203,046,205
Total pension liability - ending	$ 1,271,294,339	$ 1,658,351,553	$ 1,673,122,191	$ 1,265,862,200	$ 1,190,927,335	$ 1,201,998,138
Plan fiduciary net position						
Employer contributions	$ 43,902,706	$ 48,797,779	$ 41,077,344	$ 39,519,979	$ 40,708,503	$ 41,757,458
Employee contributions	17,019,685	14,248,567	12,591,552	12,652,029	11,664,711	11,887,933
Net investment income	127,614,501	(41,671,079)	124,796,919	44,492,088	(5,342,651)	35,000,792
Benefit payments including refunds of employee contributions	(113,101,170)	(114,010,652)	(112,950,471)	(113,608,409)	(113,384,329)	(113,082,656)
Administrative expense	(1,590,013)	(1,996,982)	(1,613,506)	(1,554,314)	(1,466,261)	(1,350,393)
Other	(255,913)	-	-	-	(431,423)	-
Net change in plan fiduciary net position	73,589,796	(94,632,367)	63,901,838	(18,498,627)	(68,251,450)	(25,786,866)
Plan fiduciary net position - beginning	819,449,893	914,082,260	850,180,422	868,679,049	936,930,499	962,717,365
Plan fiduciary net position - ending	$ 893,039,689	$ 819,449,893	$ 914,082,260	$ 850,180,422	$ 868,679,049	$ 936,930,499
Net pension liability - ending	$ 378,254,650	$ 838,901,660	$ 759,039,931	$ 415,681,778	$ 322,248,286	$ 265,067,639
Total pension liability	$ 1,271,294,339	$ 1,658,351,553	$ 1,673,122,191	$ 1,265,862,200	$ 1,190,927,335	$ 1,201,998,138
Less: Plan fiduciary net position	893,039,689	819,449,893	914,082,260	850,180,422	868,679,049	936,930,499
Employer net pension liability	$ 378,254,650	$ 838,901,660	$ 759,039,931	$ 415,681,778	$ 322,248,286	$ 265,067,639
Plan fiduciary net position as a percentage of the total pension liability	70.25 %	49.41 %	54.63 %	67.16 %	72.94 %	77.95 %
Covered payroll	$ 263,772,380	$ 265,773,659	$ 260,223,066	$ 252,127,288	$ 245,699,583	$ 243,280,015
Employer net pension liability as a percentage of covered payroll	143 %	316 %	292 %	165 %	131 %	109 %

*Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

Schedules of Changes of Employer Net Pension Liability
For The Years Ended December 31, 2019 and 2018

The blended rate was changed from 4.78 percent to 7.50 percent at December 31, 2019.

Changes of Employer Net Pension Liability for the year ended December 31, 2018 were as follows:

Benefit Changes

1. Reduce the "Rule of 85" to "Rule of 80"
2. Change the percent of pay benefit multiplier from 2.0 percent of Average Final Compensation to 1.75 percent of Average Final Compensation for members hired on or after January 1, 2018

Contribution Changes

1. Increase the employee contribution requirement from 5.5 percent to 6.0 percent of compensation during 2019 to 9.00 percent in 0.50 percent annual increments for employees hired before January 1, 2018
2. Set employee contribution rate to a flat 9.00 percent for employees hired on or after January 1, 2018
3. Set the employer contribution rate to a flat 15.50 percent of covered payroll for plan year 2019 with annual decreases of 0.50 percent until reaching 9.00 percent of covered payroll

Assumption Changes

1. Revised investment return assumption of 7.50 percent to a blended discount rate of 4.78 percent. Blended discount rate is a municipal bond rate of 3.16 percent and long-term rate of return of 7.50 percent

Public School Retirement System of the City of St. Louis
Required Supplementary Information
Schedules of the System's Proportionate Share of the Net Pension Liability
For The Years Ended December 31,

	2019	2018	2017	2016	2015	2014
System's proportion of the net pension liability	0.19 %	0.23 %	0.21 %	0.20 %	0.22 %	0.22 %
System's proportionate share of the net pension liability	$ 1,621,273	$ 1,727,361	$ 876,434	$ 649,399	$ 570,232	$ 517,013
System's covered payroll	$ 453,896	$ 535,096	$ 478,280	$ 454,115	$ 472,849	not available
System's proportionate share of the net pension liability as a percentage of its covered payroll	357.19 %	322.81 %	183.25 %	143.00 %	120.59 %	not available
Plan fiduciary net position as a percentage of the total pension liability	49.41 %	54.63 %	67.16 %	72.94 %	77.95 %	72.30 %

* The amounts presented for each fiscal year were determined as of December 31 of the previous year.

The goal is to provide a full 10-year history as the information becomes available.

Public School Retirement System of the City of St. Louis
Required Supplementary Information
Schedules of Annual Money-Weighted Rate of Return on Investments
For The Years Ended December 31,

The System began tracking the annual money-weighted rate of return during the fiscal year ended December 31, 2014. The annual money-weighted rate of return for future years will appear in the following schedule as they occur. The goal is to provide a full 10-year history as the information becomes available.

Year Ended December 31,	2019	2018	2017	2016	2015	2014
Annual money-weighted rate of return, net of investment expense, adjusted for the changing amounts actually invested	16.83 %	(5.09)%	15.55 %	5.52 %	(1.00)%	3.93 %

Public School Retirement System of the City of St. Louis
Required Supplementary Information
Schedules of Employer Contributions
December 31, 2019

Board of Education

Year Ended December 31,	Actuarially Determined Contribution	Contributions Recognized by the Plan	Contributions Deficiency (Excess)		Covered Payroll	Contributions Recognized by the Plan as a Percentage of Covered Payroll
2010	$16,790,176	$ 16,790,176	-		$ 202,943,889	8.27 %
2011	19,933,761	19,933,761	-		198,775,945	10.03 %
2012	20,786,075	20,786,075	-		175,009,885	11.88 %
2013	27,962,472	27,962,472	-		185,606,968	15.07 %
2014	31,555,696	31,555,696	-		191,273,081	16.50 %
2015	31,072,850	31,072,850	-		195,853,519	15.87 %
2016	29,007,501	29,007,501	-		191,534,175	15.14 %
2017	30,459,434	30,459,434	-		193,647,262	15.73 %
2018	37,376,323	37,376,323	-		195,723,057	19.10 %
2019	34,715,003	31,344,663	$ 3,370,340	*	195,904,143	16.00 %

*The Board of Education paid the statutory required contribution that was recognized by the System for the year ended December 31, 2019.

The actuarial determined contribution is determined from the prior year census; therefore the contributions are recognized one year in arrears.

Retirement System

Year Ended December 31,	Actuarially Determined Contribution	Contributions Recognized by the Plan	Contributions Deficiency (Excess)	Covered Payroll	Contributions Recognized by the Plan as a Percentage of Covered Payroll
2010	$ 48,617	$ 48,617	-	$ 587,617	8.27 %
2011	57,964	57,964	-	578,006	10.03 %
2012	73,902	73,902	-	622,220	11.88 %
2013	91,361	91,361	-	606,427	15.07 %
2014	85,590	85,590	-	518,799	16.50 %
2015	83,960	83,960	-	529,203	15.87 %
2016	79,497	79,497	-	524,915	15.14 %
2017	74,644	74,644	-	474,551	15.73 %
2018	100,565	100,565	-	526,616	19.10 %
2019	98,558	98,558	-	556,184	17.72 %

The actuarial determined contribution is determined from the prior year census; therefore the contributions are recognized one year in arrears.

Public School Retirement System of the City of St. Louis
Required Supplementary Information
Schedules of Employer Contributions
December 31, 2019

Charter Schools

Year Ended December 31,	Actuarially Determined Contribution	Contributions Recognized by the Plan	Contributions Deficiency (Excess)*		Covered Payroll	Contributions Recognized by the Plan as a Percentage of Covered Payroll
2010	$ 2,568,929	$ 3,843,486	$ (1,274,557)	*	$31,050,800	12.38 %
2011	4,272,457	4,521,680	(249,223)	*	42,604,182	10.61 %
2012	5,068,681	5,533,481	(464,800)	*	42,676,134	12.97 %
2013	7,313,765	6,765,907	547,858	*	48,546,696	13.94 %
2014	5,625,992	8,527,507	(2,901,515)	*	34,101,634	25.01 %
2015	7,440,420	8,445,676	(1,005,256)	*	46,897,293	18.01 %
2016	8,123,754	9,718,163	(1,594,409)	*	53,640,493	18.12 %
2017	9,123,878	10,130,296	(1,006,418)	*	58,005,475	17.46 %
2018	12,216,701	11,018,669	1,198,032	*	63,973,393	17.22 %
2019	12,282,602	12,267,081	15,521	*	69,313,332	17.70 %

*Charter Schools report and pay employer contributions in the current year as service is credited.

The actuarial determined contribution is determined from the prior year census; therefore the contributions are recognized one year in arrears.

Public School Retirement System of the City of St. Louis
Required Supplementary Information
Schedules of Employer Contributions
December 31, 2019

Employer Contributions

Year Ended December 31,	Annual Required Contribution	Percent Contributed
2010	$ 19,407,722	134.4
2011	24,264,182	118.4
2012	25,928,658	114.0
2013	35,367,598	104.7
2014	37,267,278	109.2
2015	38,597,230	102.4
2016	37,210,752	110.4
2017	39,657,956	123.0
2018	49,693,589	88.3
2019	42,523,785	*

* To be determined at the end of the year

The information presented in the required supplemental schedules was determined as part of the actuarial valuation prepared by Buck Global, LLC (formerly known as Conduent Human Resource Services) as of January 1, 2018.

Additional information related to the actuarial valuation on the previous page follows:

Actuarial cost method:	Frozen entry age
Rate of investment return:	7.5%, which includes a 2.75% allowance for inflation, net of expenses for 2019 and 2018
Participant account interest crediting rate:	5.00% for 2019 and 2018
Turnover or withdrawal rates:	Various by age and year of membership based on actual experience
Mortality and death rates:	Mortality tables issued by the SOA, the RP-2014 Combined Healthy Table (rolled back to 2006), projected fully generationally using projection scale MP-2015 for the 2019 and 2018 plan years. The mortality assumption for inactive participants receiving benefits is increased by an additional 10% to account for the higher mortality experienced by the Plan for the 2019 and 2018 plan years.
Disability rates:	RP-2014 Disabled Mortality Table (rolled back to 2006) projected fully generationally using projection scale MP-2015 for the 2019 and 2018 plan years.
Rates of retirement between the ages of 55 and 70:	Various based on actual experience of the System
Rate of salary increases:	Salaries are assumed to increase at the rate of 5.0% per year for the first 5 years of employment and 3.5% thereafter for the 2019 and 2018 plan years.
Asset valuation method:	The assumed yield method of valuing assets

The UFAAL was originally determined and frozen as of January 1, 1981. Effective January 1, 2006, the UFAAL was re-determined and is being amortized over thirty (30) years.

There were no method or assumption changes made since the prior valuation.

Public School Retirement System of the City of St. Louis
Required Supplementary Information
Schedule of Funding Progress
(in millions)
December 31, 2019

Actuarial Valuation Date January 1,	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) - Frozen Entry Age (b)	Unfunded AAL (UAAL) (b - a)
2010	$ 950.7	$ 1,076.0	$ 125.3
2011	944.4	1,066.3	121.9
2012	925.4	1,090.3	164.9
2013	914.5	1,085.1	170.6
2014	922.9	1,093.4	170.5
2015	926.9	1,093.6	166.7
2016	915.4	1,077.7	162.3
2017	901.1	1,133.6	232.5
2018	899.8	1,152.7	252.9
2019	886.2	1,129.2	243.0

Actuarial Valuation Date January 1,	Funded Ratio (a/b)	Annual Covered Payroll (c)	UAAL as a % of Covered Payroll (b-a)/c)
2010	88.4 %	$ 242.0	51.8 %
2011	88.6	218.3	55.8
2012	84.9	234.8	70.2
2013	84.3	225.9	75.5
2014	84.4	243.3	70.1
2015	84.8	245.7	67.8
2016	84.9	252.1	64.4
2017	79.5	260.2	89.3
2018	78.1	265.8	95.2
2019	78.5	263.8	92.1

Public School Retirement System of the City of St. Louis
Other Supplementary Information
Schedules of Operating Expenses
Years Ended December 31, 2019 and 2018

	2019	2018
Actuarial services	$ 134,575	$ 139,075
Accounting and auditing fees	85,821	69,533
Computer programming and consulting	88,741	107,981
Conventions, conferences, seminars		
Trustees (see below)	24,683	21,636
Depreciation expense	56,897	67,438
Dues and subscriptions	6,198	5,914
Employee benefits	130	3,192
Health insurance consulting	39,843	39,843
Insurance - group health	71,281	67,610
Insurance - casualty and bonding	100,355	92,974
Legal fees and expenses	136,381	128,598
Medical fees	500	700
Miscellaneous expense	(3,705)	20,404
Occupancy expense	34,857	33,392
Office repairs and maintenance	55,128	36,154
Office supplies and expenses	18,387	18,636
Payroll taxes	33,879	38,788
Pension expense	371,203	431,367
Postage	72,074	69,505
Printing and publishing	34,393	32,687
Salaries - administrative and clerical	453,634	524,826
Telephone	16,074	13,962
Utilities	31,329	32,766
Total Operating Expenses	$ 1,862,658	$ 1,996,981

Trustees' Expenses

The Trustees attended conferences and business meetings in connection with business of the System. The Trustees received no salaries but were allowed expenses relating to their attendance at such events as follows:

	2019	2018
Lodging, meals, and miscellaneous	$ 11,922	$ 9,791
Transportation and registration	12,761	11,845
Total Trustees Expenses	$ 24,683	$ 21,636

Public School Retirement System of the City of St. Louis
Other Supplementary Information
Schedules of Investment Expenses
Years Ended December 31, 2019 and 2018

Investment management fees	2019	2018
Ativo Capital Management	$ 90,280	$ 86,353
Arga Investment Management	90,535	92,986
Brown Capital Management	20,510	22,434
Causeway Capital Management	307,270	312,167
Channing Capital Management	17,107	17,495
Chicago Equity Partners	159,787	163,020
Earnest Partners	32,298	30,586
Edgar Lomax Company	174,801	171,119
Entrust Capital Diversified Fund LTD	8,265	256,211
Fidelity Institutional Asset Management	262,075	284,865
Intech Investment Management	134,874	129,963
Lazard Asset Management	224,686	226,965
Loomis Sayles & Company, LP	228,616	224,510
Manulife Asset Management	136,970	128,204
Mellon Capital Management	195,639	261,362
NCM Capital	36,877	34,450
OFI Global Asset Management	227,917	237,374
Strategic Global	110,339	113,537
Systematic Financial Management	287,991	293,730
TCW Asset Management Company	212,735	213,531
UBS Realty Investors LLC	408,311	456,234
US Bank Trust	125,358	114,805
Westfield Capital Management	271,750	267,684
Whitebox Multi-Strategy Fund, L.P.	286,954	282,141
Total Investment Management Fees	4,051,945	4,421,726
NEPC, LLC	179,888	183,362
Limited partnerships initial interest	-	274,883
Banking services	24,841	26,569
Total Investment Expenses	$ 4,256,674	$ 4,906,540

Public School Retirement System of the City of St. Louis
Other Supplementary Information
Schedules of Professional/Consultant Fees
Years Ended December 31, 2019 and 2018

	2019	2018
Actuarial services	$ 134,575	$ 139,075
Accounting and auditing fees	85,821	69,533
Building property management	34,857	33,392
Health insurance consulting	39,843	39,843
Legal expenses	136,381	128,598
Technology consulting	88,741	107,981
Total Fees	$ 520,218	$ 518,422

Public School Retirement System of the City of St. Louis
Other Supplementary Information
Schedules of Limited Partnerships
Years Ended December 31, 2019 and 2018

Partnership Name	Style	Investments at Fair Value as of December 31, 2019
BIG Real Estate Fund I, L.P.	Private Equity & Private Debt	$ 3,428,863
Brightwood Capital Fund IV, L.P.	Private Equity & Private Debt	9,686,290
ElmTree U.S. Net Lease Fund III, L.P.	Private Equity & Private Debt	133,850
Fort Washington Private Equity Investors IX, L.P.	Private Equity & Private Debt	7,183,229
Landmark Equity Partners XIV, L.P.	Private Equity & Private Debt	802,469
Landmark Equity Partners XV, L.P.	Private Equity & Private Debt	3,941,428
Landmark Equity Partners XVI, L.P.	Private Equity & Private Debt	4,151,057
Lighthouse Capital Partners VI, L.P.	Private Equity & Private Debt	115,985
Mesirow Financial Private Equity Partnership Fund III, L.P.	Private Equity & Private Debt	709,735
Monroe Capital Private Credit Fund II L.P.	Private Equity & Private Debt	7,839,969
Monroe Capital Private Credit Fund III L.P.	Private Equity & Private Debt	7,798,536
Pantheon Global Secondary Fund III B, L.P.	Private Equity & Private Debt	822,421
SW Pelham Fund III, L.P.	Private Equity & Private Debt	96,988
Vista Foundation Fund II, L.P.	Private Equity & Private Debt	5,355,753
		$ 52,066,573

Partnership Name	Style	Investments at Fair Value as of December 31, 2018
BIG Real Estate Fund I, L.P.	Private Equity & Private Debt	$ 2,356,420
Brightwood Capital Fund IV, L.P.	Private Equity & Private Debt	4,437,878
ElmTree U.S. Net Lease Fund III, L.P.	Private Equity & Private Debt	6,464,914
Fort Washington Private Equity Investors IX, L.P.	Private Equity & Private Debt	5,454,336
Landmark Equity Partners XIV, L.P.	Private Equity & Private Debt	1,058,754
Landmark Equity Partners XV, L.P.	Private Equity & Private Debt	4,185,944
Landmark Equity Partners XVI, L.P.	Private Equity & Private Debt	426,988
Lighthouse Capital Partners VI, L.P.	Private Equity & Private Debt	131,297
Mesirow Financial Private Equity Partnership Fund III, L.P.	Private Equity & Private Debt	1,021,122
Monroe Capital Private Credit Fund II L.P.	Private Equity & Private Debt	8,394,289
Monroe Capital Private Credit Fund III L.P.	Private Equity & Private Debt	2,770,084
Pantheon Global Secondary Fund III B, L.P.	Private Equity & Private Debt	1,313,060
Siguler Guff Distressed Opportunities Fund II, L.P.	Private Equity & Private Debt	47,886
SW Pelham Fund III, L.P.	Private Equity & Private Debt	173,181
Vista Foundation Fund II, L.P.	Private Equity & Private Debt	4,459,300
		$ 42,695,453

Public School Retirement System of the City of St. Louis
Other Supplementary Information
Schedules of Annual Required Contribution
December 31, 2019 and 2018

As determined by the actuary, the annual required contribution is as follows at January 1, 2019:

	Board of Education	Retirement System	Charter Schools	Total
Normal Cost contribution	$ 17,304,137	$ 36,134	$ 6,331,652	$ 23,671,923
Actuarial accrued liability contribution	18,829,013	39,318	6,889,609	25,757,940
Annual required contribution (ARC)	$ 36,133,150	$ 75,452	$ 13,221,261	$ 49,429,863
Covered payroll	$192,817,182	$ 402,634	$ 70,552,564	$263,772,380
ARC as % of covered payroll	18.74 %	18.74 %	18.74 %	18.74 %
Statutory required contribution rate	15.50 %	15.50 %	15.50 %	15.50 %
Statutory annual required contribution (ARC)	$ 29,886,663	$ 62,408	$ 10,935,647	$ 40,884,719

The actuarial and statutory determined contribution is determined from the prior year census for the Board of Education and Retirement System; therefore the contributions are recognized one year in arrears.

As determined by the actuary, the annual required contribution is as follows at January 1, 2018:

	Board of Education	Retirement System	Charter Schools	Total
Normal Cost contribution	$ 15,508,017	$ 44,028	$ 5,486,930	$ 21,038,975
Actuarial accrued liability contribution	19,206,986	54,530	6,795,672	26,057,188
Annual required contribution (ARC)	$ 34,715,003	$ 98,558	$ 12,282,602	$ 47,096,163
Covered payroll	$195,904,143	$ 556,184	$ 69,313,332	$ 265,773,659
ARC as % of covered payroll	17.72 %	17.72 %	17.72 %	17.72 %
Statutory required contribution rate	16.00 %	16.00 %	16.00 %	16.00 %
Statutory annual required contribution (ARC)	$ 31,344,663	$ 88,989	$ 11,090,133	$ 42,523,785

The actuarial and statutory determined contribution is determined from the prior year census for the Board of Education and Retirement System; therefore the contributions are recognized one year in arrears.

Public School Retirement System of the City of St. Louis
Other Supplementary Information
Schedule of Actuarial Present Values of Projected Benefit Payments
000's omitted
December 31, 2019

		Benefit Payments			Present Value of Benefit Payments		
Fiscal Year Ending 12/31	Beginning Fiduciary Net Position	Benefit Payments	Funded Portion	Unfunded Portion	Funded Portion at 7.50%	Unfunded Portion at 3.26%	Using a Single Discount Rate of 7.50%
2020	$ 893,040	$ 110,101	$ 110,101	$ -	$ 106,191	$ -	$ 106,191
2021	$ 902,359	$ 109,638	$ 109,638	$ -	$ 98,367	$ -	$ 98,367
2022	$ 911,236	$ 108,677	$ 108,677	$ -	$ 90,702	$ -	$ 90,702
2023	$ 920,548	$ 107,697	$ 107,697	$ -	$ 83,613	$ -	$ 83,613
2024	$ 930,570	$ 107,016	$ 107,016	$ -	$ 77,288	$ -	$ 77,288
2025	$ 941,256	$ 106,575	$ 106,575	$ -	$ 71,599	$ -	$ 71,599
2026	$ 952,465	$ 106,162	$ 106,162	$ -	$ 66,346	$ -	$ 66,346
2027	$ 963,463	$ 106,848	$ 106,848	$ -	$ 61,499	$ -	$ 61,499
2028	$ 974,189	$ 105,332	$ 105,332	$ -	$ 56,963	$ -	$ 56,963
2029	$ 984,744	$ 104,877	$ 104,877	$ -	$ 52,759	$ -	$ 52,759
2030	$ 995,128	$ 104,439	$ 104,439	$ -	$ 48,874	$ -	$ 48,874
2031	$ 1,005,314	$ 103,964	$ 103,964	$ -	$ 42,257	$ -	$ 42,257
2032	$ 1,015,300	$ 103,651	$ 103,651	$ -	$ 41,973	$ -	$ 41,973
2033	$ 1,024,857	$ 103,296	$ 103,296	$ -	$ 38,911	$ -	$ 38,911
2034	$ 1,033,978	$ 102,801	$ 102,801	$ -	$ 36,023	$ -	$ 36,023
2035	$ 1,044,418	$ 102,284	$ 102,284	$ -	$ 33,341	$ -	$ 33,341
2036	$ 1,056,342	$ 101,661	$ 101,661	$ -	$ 30,826	$ -	$ 30,826
2037	$ 1,070,037	$ 100,997	$ 100,997	$ -	$ 28,488	$ -	$ 28,488
2038	$ 1,085,737	$ 100,273	$ 100,273	$ -	$ 26,310	$ -	$ 26,310
2039	$ 1,103,677	$ 99,537	$ 99,537	$ -	$ 24,295	$ -	$ 24,295
2040	$ 1,124,108	$ 98,907	$ 98,907	$ -	$ 22,457	$ -	$ 22,457
2041	$ 1,147,130	$ 98,182	$ 98,182	$ -	$ 20,737	$ -	$ 20,737
2042	$ 1,173,092	$ 97,488	$ 97,488	$ -	$ 19,154	$ -	$ 19,154
2043	$ 1,202,240	$ 96,795	$ 96,795	$ -	$ 17,691	$ -	$ 17,691
2044	$ 1,234,863	$ 95,874	$ 95,874	$ -	$ 16,300	$ -	$ 16,300
2045	$ 1,271,532	$ 94,941	$ 94,941	$ -	$ 15,015	$ -	$ 15,015
2046	$ 1,312,650	$ 93,869	$ 93,869	$ -	$ 13,810	$ -	$ 13,810
2047	$ 1,358,731	$ 92,694	$ 92,694	$ -	$ 12,686	$ -	$ 12,686
2048	$ 1,410,342	$ 91,284	$ 91,284	$ -	$ 11,621	$ -	$ 11,621
2049	$ 1,468,223	$ 89,885	$ 89,885	$ -	$ 10,645	$ -	$ 10,645
2050	$ 1,532,897	$ 88,361	$ 88,361	$ -	$ 9,734	$ -	$ 9,734
2051	$ 1,605,077	$ 86,514	$ 86,514	$ -	$ 8,866	$ -	$ 8,866
2052	$ 1,685,720	$ 84,414	$ 84,414	$ -	$ 8,047	$ -	$ 8,047
2053	$ 1,775,781	$ 82,146	$ 82,146	$ -	$ 7,285	$ -	$ 7,285
2054	$ 1,876,204	$ 79,815	$ 79,815	$ -	$ 6,584	$ -	$ 6,584
2055	$ 1,987,889	$ 77,323	$ 77,323	$ -	$ 5,933	$ -	$ 5,933
2056	$ 2,111,905	$ 74,679	$ 74,679	$ -	$ 5,331	$ -	$ 5,331
2057	$ 2,249,386	$ 71,870	$ 71,870	$ -	$ 4,772	$ -	$ 4,772
2058	$ 2,401,553	$ 69,046	$ 69,046	$ -	$ 4,265	$ -	$ 4,265
2059	$ 2,569,586	$ 66,237	$ 66,237	$ -	$ 3,806	$ -	$ 3,806
2060	$ 2,764,699	$ 63,429	$ 63,429	$ -	$ 3,390	$ -	$ 3,390
2061	$ 2,958,224	$ 60,638	$ 60,638	$ -	$ 3,015	$ -	$ 3,015

Public School Retirement System of the City of St. Louis
Other Supplementary Information
Schedule of Actuarial Present Values of Projected Benefit Payments
000's omitted
December 31, 2019

		Benefit Payments			Present Value of Benefit Payments		
Fiscal Year Ending 12/31	Beginning Fiduciary Net Position	Benefit Payments	Funded Portion	Unfunded Portion	Funded Portion at 7.50%	Unfunded Portion at 3.71%	Using a Single Discount Rate of 7.50%
2062	$ 3,181,347	$ 57,864	$ 57,864	$ -	$ 2,676	$ -	$ 2,676
2063	$ 3,426,044	$ 55,107	$ 55,107	$ -	$ 2,371	$ -	$ 2,371
2064	$ 3,693,715	$ 52,370	$ 52,370	$ -	$ 2,096	$ -	$ 2,096
2065	$ 3,986,115	$ 49,657	$ 49,657	$ -	$ 1,849	$ -	$ 1,849
2066	$ 4,305,117	$ 46,973	$ 46,973	$ -	$ 1,627	$ -	$ 1,627
2067	$ 4,652,743	$ 44,320	$ 44,320	$ -	$ 1,428	$ -	$ 1,428
2068	$ 5,031,163	$ 41,704	$ 41,704	$ -	$ 1,250	$ -	$ 1,250
2069	$ 5,442,694	$ 39,128	$ 39,128	$ -	$ 1,091	$ -	$ 1,091
2070	$ 5,889,835	$ 36,601	$ 36,601	$ -	$ 949	$ -	$ 949
2071	$ 6,375,261	$ 34,127	$ 34,127	$ -	$ 823	$ -	$ 823
2072	$ 6,901,846	$ 31,714	$ 31,714	$ -	$ 712	$ -	$ 712
2073	$ 7,472,674	$ 29,366	$ 29,366	$ -	$ 613	$ -	$ 613
2074	$ 8,090,959	$ 27,091	$ 27,091	$ -	$ 526	$ -	$ 526
2075	$ 8,760,456	$ 24,894	$ 24,894	$ -	$ 450	$ -	$ 450
2076	$ 9,484,873	$ 22,779	$ 22,779	$ -	$ 383	$ -	$ 383
2077	$ 10,268,312	$ 20,753	$ 20,753	$ -	$ 324	$ -	$ 324
2078	$ 11,115,184	$ 18,818	$ 18,818	$ -	$ 274	$ -	$ 274
2079	$ 12,030,214	$ 16,977	$ 16,977	$ -	$ 230	$ -	$ 230
2080	$ 13,018,480	$ 15,235	$ 15,235	$ -	$ 192	$ -	$ 192
2081	$ 14,085,454	$ 13,593	$ 13,593	$ -	$ 159	$ -	$ 159
2082	$ 15,237,005	$ 12,053	$ 12,053	$ -	$ 131	$ -	$ 131
2083	$ 16,479,456	$ 10,616	$ 10,616	$ -	$ 108	$ -	$ 108
2084	$ 17,819,591	$ 9,284	$ 9,284	$ -	$ 87	$ -	$ 87
2085	$ 19,264,710	$ 8,056	$ 8,056	$ -	$ 71	$ -	$ 71
2086	$ 20,822,656	$ 6,932	$ 6,932	$ -	$ 57	$ -	$ 57
2087	$ 22,501,877	$ 5,910	$ 5,910	$ -	$ 45	$ -	$ 45
2088	$ 24,311,445	$ 4,988	$ 4,988	$ -	$ 35	$ -	$ 35
2089	$ 26,261,125	$ 4,165	$ 4,165	$ -	$ 27	$ -	$ 27
2090	$ 28,361,415	$ 3,437	$ 3,437	$ -	$ 21	$ -	$ 21
2091	$ 30,623,610	$ 2,800	$ 2,800	$ -	$ 16	$ -	$ 16
2092	$ 33,059,851	$ 2,249	$ 2,249	$ -	$ 12	$ -	$ 12
2093	$ 35,683,087	$ 1,779	$ 1,779	$ -	$ 9	$ -	$ 9
2094	$ 38,507,645	$ 1,385	$ 1,385	$ -	$ 6	$ -	$ 6
2095	$ 41,548,450	$ 1,060	$ 1,060	$ -	$ 5	$ -	$ 5
2096	$ 44,821,798	$ 796	$ 796	$ -	$ 3	$ -	$ 3
2097	$ 48,345,175	$ 586	$ 586	$ -	$ 2	$ -	$ 2
2098	$ 52,137,392	$ 422	$ 422	$ -	$ 1	$ -	$ 1
2099	$ 56,218,679	$ 297	$ 297	$ -	$ 1	$ -	$ 1
2100	$ 60,610,803	$ 204	$ 204	$ -	$ 1	$ -	$ 1
2101	$ 65,337,164	$ 137	$ 137	$ -	$ -	$ -	$ -
2102	$ 70,422,934	$ 89	$ 89	$ -	$ -	$ -	$ -
2103	$ 75,895,176	$ 56	$ 56	$ -	$ -	$ -	$ -
2104	$ 81,782,995	$ 35	$ 35	$ -	$ -	$ -	$ -

Public School Retirement System of the City of St. Louis
Other Supplementary Information
Schedule of Actuarial Present Values of Projected Benefit Payments
000's omitted
December 31, 2019

		Benefit Payments			Present Value of Benefit Payments		
Fiscal Year Ending 12/31	Beginning Fiduciary Net Position	Benefit Payments	Funded Portion	Unfunded Portion	Funded Portion at 8.00%	Unfunded Portion at 3.34%	Using a Single Discount Rate of 8.00%
2105	$ 88,117,687	$ 21	$ 21	$ -	$ -	$ -	$ -
2106	$ 94,932,900	$ 12	$ 12	$ -	$ -	$ -	$ -
2107	$ 102,264,821	$ 7	$ 7	$ -	$ -	$ -	$ -
2108	$ 110,152,340	$ 4	$ 4	$ -	$ -	$ -	$ -
2109	$ 118,637,286	$ 2	$ 2	$ -	$ -	$ -	$ -
2110	$ 127,764,621	$ 1	$ 1	$ -	$ -	$ -	$ -
2111	$ 137,582,681	$ -	$ -	$ -	$ -	$ -	$ -

Public School Retirement System of the City of St. Louis
Other Supplementary Information
Schedule of Projection of Fiduciary Net Position
000's omitted
December 31, 2019

Year	Projected Beginning Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Investment Earnings	Projected Ending Fiduciary Net Position
2020	$ 893,040	$ 55,983	$ 110,101	$ 63,437	$ 902,359
2021	$ 902,359	$ 54,377	$ 109,638	$ 64,138	$ 911,236
2022	$ 911,236	$ 53,158	$ 108,677	$ 64,831	$ 920,548
2023	$ 920,548	$ 52,157	$ 107,697	$ 65,562	$ 930,570
2024	$ 930,570	$ 51,363	$ 107,016	$ 66,339	$ 941,256
2025	$ 941,256	$ 50,626	$ 106,575	$ 67,158	$ 952,465
2026	$ 952,465	$ 49,172	$ 106,162	$ 67,988	$ 963,463
2027	$ 963,463	$ 47,712	$ 105,787	$ 68,801	$ 974,189
2028	$ 974,189	$ 46,288	$ 105,332	$ 69,599	$ 984,744
2029	$ 984,744	$ 44,875	$ 104,877	$ 70,386	$ 995,128
2030	$ 995,128	$ 43,465	$ 104,439	$ 71,160	$ 1,005,314
2031	$ 1,005,314	$ 42,028	$ 103,964	$ 71,922	$ 1,015,300
2032	$ 1,015,300	$ 40,545	$ 103,651	$ 72,663	$ 1,024,857
2033	$ 1,024,857	$ 39,044	$ 103,296	$ 73,373	$ 1,033,978
2034	$ 1,033,978	$ 39,184	$ 102,801	$ 74,057	$ 1,044,418
2035	$ 1,044,418	$ 39,366	$ 102,284	$ 74,842	$ 1,056,342
2036	$ 1,056,342	$ 39,613	$ 101,661	$ 75,743	$ 1,070,037
2037	$ 1,070,037	$ 39,917	$ 100,997	$ 76,780	$ 1,085,737
2038	$ 1,085,737	$ 40,244	$ 100,273	$ 77,969	$ 1,103,677
2039	$ 1,103,677	$ 40,640	$ 99,537	$ 79,328	$ 1,124,108
2040	$ 1,124,108	$ 41,059	$ 98,907	$ 80,870	$ 1,147,130
2041	$ 1,147,130	$ 41,533	$ 98,182	$ 82,611	$ 1,173,092
2042	$ 1,173,092	$ 42,064	$ 97,488	$ 84,572	$ 1,202,240
2043	$ 1,202,240	$ 42,645	$ 96,795	$ 86,773	$ 1,234,863
2044	$ 1,234,863	$ 43,299	$ 95,874	$ 89,244	$ 1,271,532
2045	$ 1,271,532	$ 44,028	$ 94,941	$ 92,031	$ 1,312,650
2046	$ 1,312,650	$ 44,814	$ 93,869	$ 95,136	$ 1,358,731
2047	$ 1,358,731	$ 45,675	$ 92,694	$ 98,630	$ 1,410,342
2048	$ 1,410,342	$ 46,616	$ 91,284	$ 102,549	$ 1,468,223
2049	$ 1,468,223	$ 47,620	$ 89,885	$ 106,939	$ 1,532,897
2050	$ 1,532,897	$ 48,697	$ 88,361	$ 111,844	$ 1,605,077
2051	$ 1,605,077	$ 49,831	$ 86,514	$ 117,326	$ 1,685,720
2052	$ 1,685,720	$ 51,023	$ 84,414	$ 123,452	$ 1,775,781
2053	$ 1,775,781	$ 52,278	$ 82,146	$ 130,291	$ 1,876,204
2054	$ 1,876,204	$ 53,589	$ 79,815	$ 137,911	$ 1,987,889
2055	$ 1,987,889	$ 54,957	$ 77,323	$ 146,382	$ 2,111,905
2056	$ 2,111,905	$ 56,376	$ 74,679	$ 155,784	$ 2,249,386
2057	$ 2,249,386	$ 57,835	$ 71,870	$ 166,202	$ 2,401,553
2058	$ 2,401,553	$ 59,356	$ 69,046	$ 177,723	$ 2,569,586
2059	$ 2,569,586	$ 60,917	$ 66,237	$ 190,433	$ 2,754,699
2060	$ 2,754,699	$ 62,529	$ 63,429	$ 204,425	$ 2,958,224

Public School Retirement System of the City of St. Louis
Other Supplementary Information
Schedule of Projection of Fiduciary Net Position
000's omitted
December 31, 2019

Year	Projected Beginning Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Investment Earnings	Projected Ending Fiduciary Net Position
2061	$ 2,958,224	$ 64,196	$ 60,638	$ 219,565	$ 3,181,347
2062	$ 3,181,347	$ 65,905	$ 57,864	$ 236,656	$ 3,426,044
2063	$ 3,426,044	$ 67,664	$ 55,107	$ 255,114	$ 3,693,715
2064	$ 3,693,715	$ 69,474	$ 52,370	$ 275,296	$ 3,986,115
2065	$ 3,986,115	$ 71,328	$ 49,657	$ 297,331	$ 4,305,117
2066	$ 4,305,117	$ 73,239	$ 46,973	$ 321,360	$ 4,652,743
2067	$ 4,652,743	$ 75,205	$ 44,320	$ 347,535	$ 5,031,163
2068	$ 5,031,163	$ 77,217	$ 41,704	$ 376,018	$ 5,442,694
2069	$ 5,442,694	$ 79,285	$ 39,128	$ 406,984	$ 5,889,835
2070	$ 5,889,835	$ 81,409	$ 36,601	$ 440,618	$ 6,375,261
2071	$ 6,375,261	$ 83,591	$ 34,127	$ 477,121	$ 6,901,846
2072	$ 6,901,846	$ 85,833	$ 31,714	$ 516,709	$ 7,472,674
2073	$ 7,472,674	$ 88,138	$ 29,366	$ 559,513	$ 8,090,959
2074	$ 8,090,959	$ 90,506	$ 27,091	$ 606,082	$ 8,760,456
2075	$ 8,760,456	$ 92,931	$ 24,894	$ 656,380	$ 9,484,873
2076	$ 9,484,873	$ 95,423	$ 22,779	$ 710,795	$ 10,268,312
2077	$ 10,268,312	$ 97,991	$ 20,753	$ 769,634	$ 11,115,184
2078	$ 11,115,184	$ 100,622	$ 18,818	$ 833,226	$ 12,030,214
2079	$ 12,030,214	$ 103,317	$ 16,977	$ 901,926	$ 13,018,480
2080	$ 13,018,480	$ 106,093	$ 15,235	$ 976,116	$ 14,085,454
2081	$ 14,085,454	$ 108,939	$ 13,593	$ 1,056,205	$ 15,237,005
2082	$ 15,237,005	$ 111,870	$ 12,053	$ 1,142,634	$ 16,479,456
2083	$ 16,479,456	$ 114,875	$ 10,616	$ 1,235,876	$ 17,819,591
2084	$ 17,819,591	$ 117,962	$ 9,284	$ 1,336,441	$ 19,264,710
2085	$ 19,264,710	$ 121,126	$ 8,056	$ 1,444,876	$ 20,822,656
2086	$ 20,822,656	$ 124,384	$ 6,932	$ 1,561,769	$ 22,501,877
2087	$ 22,501,877	$ 127,725	$ 5,910	$ 1,687,753	$ 24,311,445
2088	$ 24,311,445	$ 131,157	$ 4,988	$ 1,823,511	$ 26,261,125
2089	$ 26,261,125	$ 134,683	$ 4,165	$ 1,969,772	$ 28,361,415
2090	$ 28,361,415	$ 138,305	$ 3,437	$ 2,127,327	$ 30,623,610
2091	$ 30,623,610	$ 142,021	$ 2,800	$ 2,297,020	$ 33,059,851
2092	$ 33,059,851	$ 145,845	$ 2,249	$ 2,479,640	$ 35,683,087
2093	$ 35,683,087	$ 149,797	$ 1,779	$ 2,676,540	$ 38,507,645
2094	$ 38,507,645	$ 153,791	$ 1,385	$ 2,888,399	$ 41,548,450
2095	$ 41,548,450	$ 157,931	$ 1,060	$ 3,116,477	$ 44,821,798
2096	$ 44,821,798	$ 162,179	$ 796	$ 3,361,994	$ 48,345,175
2097	$ 48,345,175	$ 166,542	$ 586	$ 3,626,261	$ 52,137,392
2098	$ 52,137,392	$ 171,020	$ 422	$ 3,910,689	$ 56,218,679
2099	$ 56,218,679	$ 175,625	$ 297	$ 4,216,796	$ 60,610,803
2100	$ 60,610,803	$ 180,351	$ 204	$ 4,546,214	$ 65,337,164
2101	$ 65,337,164	$ 185,207	$ 137	$ 4,900,700	$ 70,422,934
2102	$ 70,422,934	$ 190,190	$ 89	$ 5,282,141	$ 75,895,176
2103	$ 75,895,176	$ 195,309	$ 56	$ 5,692,566	$ 81,782,995

Public School Retirement System of the City of St. Louis
Other Supplementary Information
Schedule of Projection of Fiduciary Net Position
000's omitted
December 31, 2019

Year	Projected Beginning Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Investment Earnings	Projected Ending Fiduciary Net Position
2104	$ 81,782,995	$ 200,568	$ 35	$ 6,134,159	$ 88,117,687
2105	$ 88,117,687	$ 205,966	$ 21	$ 6,609,268	$ 94,932,900
2106	$ 94,932,900	$ 211,517	$ 12	$ 7,120,416	$ 102,264,821
2107	$ 102,264,821	$ 217,210	$ 7	$ 7,670,316	$ 110,152,340
2108	$ 110,152,340	$ 223,063	$ 4	$ 8,261,887	$ 118,637,286
2109	$ 118,637,286	$ 229,072	$ 2	$ 8,898,265	$ 127,764,621
2110	$ 127,764,621	$ 235,240	$ 1	$ 9,582,821	$ 137,582,681
2111	$ 137,582,681	$ 241,582	$ -	$ 10,319,183	$ 148,143,446

Public School Retirement System of the City of St. Louis, Missouri

Public School Retirement System of the City of St. Louis Retirement Plan

Actuarial Valuation Report

Plan Year January 1, 2020 – December 31, 2020

June 2020

BUCK

231 South Bemiston
Suite 400
Clayton, MO 63105

June 2020

Mr. Andrew Clark
Executive Director
PSRS of the City of St. Louis
3641 Olive Street, Suite 300
St. Louis, MO 63108-3601

Re: Actuarial Certification of January 1, 2020 Valuation

Dear Members of the Public School Retirement System of the City of St. Louis Board:

The annual actuarial valuation required for the Public School Retirement System of the City of St. Louis ("System") has been prepared as of January 1, 2020 by Buck. The purposes of the valuation are to:

(1) determine the required annual contributions from the board of education, the retirement system, and the charter schools; and

(2) present the valuation results of the System as of January 1, 2020.

This report is submitted in accordance with Section 169.450-16 Revised Statutes of Missouri (R.S. Mo.). The required contribution to the System from the board of education, the retirement system, and the charter schools is computed in accordance with Section 169.490 R.S. Mo. The amount of the required contribution is stated in Section 1.3 of this report. Information with respect to financial disclosures under GASB 67 and 68 may be found in a separate report.

In preparing this valuation, we have employed generally accepted actuarial methods and assumptions, in conjunction with employee data and financial information provided to us by the System, to determine a reasonable and sound value for the System liability. The employee data has not been audited, but it has been reviewed and found to be consistent, both internally and with prior years' data. The validity of the valuation results is dependent upon the accuracy of the data and financial information provided.

In my opinion, the actuarial assumptions used are reasonable, taking into account the experience of the System and reasonable long-term expectations, and represent my best estimate of the anticipated long-term experience under the System. The actuary performs an analysis of System experience periodically and recommends changes if, in the opinion of the actuary, assumption changes are needed to more accurately reflect expected future experience. The Experience Study for the period January 1, 2011 to December 31, 2015 was prepared by Buck and approved by the Board for use beginning with the January 1, 2017 actuarial valuation and will remain in effect for valuation purposes until such time as the Board adopts revised assumptions. The next Experience Study will be based on the period from January 1, 2016 to December 31, 2020 and upon approval by the Board will be the basis of valuations performed from January 1, 2022 through January 1, 2026. A summary of all assumptions and methods is presented in Section 3.8 of this report.

Where presented, references to “funded ratio” and “unfunded accrued liability” typically are measured on an actuarial value of assets basis. It should be noted that the same measurements using market value of assets would result in different funded ratios and unfunded accrued liabilities. Moreover, the funded ratio presented is appropriate for evaluating the need and level of future contributions but makes no assessment regarding the funded status of the plan if the plan were to settle (i.e. purchase annuities) for a portion or all of its liabilities.

Future actuarial measurements and contribution requirements may differ from those determined in the valuation because of:

(1) differences between actual experience and anticipated experience based on the assumptions;

(2) changes in actuarial assumptions or methods;

(3) changes in statutory provisions;

(4) differences between actuarially required contributions and actual contributions.

Buck prepared this report for use by the Retirement System and its auditors in reviewing the operation of the System, including the determination of contributions to be made to the System. Use of this report by other parties or for any other purpose may not be appropriate and may result in mistaken conclusions due to failure to understand applicable assumptions, methodologies, or the inapplicability of the report for that purpose. Because of the risk of misinterpretation of actuarial results, Buck recommends requesting its advance review of any statement, document, or filing to be based on information contained in this report. Buck will accept no liability for any such statement, document or filing made without its prior review.

The undersigned meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein, and is available to answer questions regarding this report.

We believe that the assumptions and methods used for funding purposes are individually and in aggregate, reasonable and in combination represent a best estimate of anticipated experience under the plan. We believe that this report conforms with the requirements of the Missouri statutes, and where applicable, other federal and accounting laws, regulations and rules, as well as actuarial principles and practices in accordance with all applicable Actuarial Standards of Practice (ASOPs).

Sincerely,

Troy Jaros, FSA, EA, MAAA, FCA
Director, Retirement Actuary

Matthew Staback, ASA, EA, CERA, MAAA
Consultant, Retirement Actuary

Buck Global, LLC (Buck)

Table of Contents

Report Highlights

This report has been prepared by Buck to:

- Present the results of a valuation of the Public School Retirement System of the City of St. Louis ("System") as of January 1, 2020; and
- Determine the required annual contribution for 2021.

This report is divided into three sections. Section 1 contains the results of the valuation. It includes the experience of the System during the 2019 plan year, the actuarially required costs, and funded levels.

Section 2 contains asset information. It includes market value of assets, the calculation of actuarial value of assets, the contingency reserve, and asset returns.

Section 3 describes the basis of the valuation. It summarizes the System provisions, provides information relating to the System members, and describes the funding methods and actuarial assumptions used in determining liabilities and costs. Also included is historical information about the System.

Experience Gains and Losses

Under the actuarial funding method used to determine the contribution, actuarial gains (or losses) result in a decrease (or increase) in the normal cost rate. Actuarial gains (or losses) result from differences between the actual experience of the System and the expected experience based upon the actuarial assumptions. Annual gains (or losses) should be expected because short-term deviations from expected long-term average experience are common.

For the 2019 plan year, total (net) actuarial losses due to plan experience were $44.1 million. Approximately $6.4 million is a loss attributable to the System's actuarial rate of return on assets which was 6.6%, or 0.9% lower than the assumed rate of return of 7.5% for plan year 2019. By comparison, the rate of return on the market value of assets during plan year 2019 was 16.1%. The difference in these returns is due to the asset smoothing. Market value returns were higher than expected, but these returns are smoothed over 5 years in the actuarial value, rather than realized immediately. As of January 1, 2020, the actuarial value of assets of $888.8 million is above market value of assets (excluding the expense and contingency reserve) by approximately $25.7 million.

An actuarial loss of approximately $37.7 million attributable to demographic experience is included in the above total (net) actuarial loss of $44.1 million.

Assumption Changes

For the 2020 valuation, no assumptions were changed. A detailed description of the assumptions appears in section 3.8.

Plan Changes

For the 2020 valuation, no plan changes were changed.

Normal cost rate

The normal cost is determined annually and equals the product of the normal cost rate times covered payroll. For plan year 2020, the annual normal cost contribution is $23,166,568, as compared to $23,671,923 for plan year 2019. This decrease is primarily due to the legislative changes in future employee contributions, along with the new tier of employees coming into the plan with a 1.75% pension multiplier. The annual normal cost rate decreased from 8.65% to 8.18% due to the legislative changes. Covered payroll increased from $263.8 million to $272.9 million.

Accrued liability amortization

The actuarial accrued liability contribution is determined as the amount necessary to amortize the remaining Unfunded Frozen Actuarial Accrued Liability (UFAAL) over a period of 30 years from January 1, 2006, when the Board of Trustees acted to redetermine the UFAAL. This portion of the contribution only changes to reflect changes in benefits, changes in actuarial assumptions and methods, and variations in the remaining UFAAL due to deviations between actual and expected contributions. Employer contributions for 2019 were $3.2 million lower than the annual required contribution, which increased the UFAAL more than expected. As a result, the net amortization payment increased from $25,757,940 to $26,456,158 while the amortization payment component of the contribution rate decreased from 9.8% to 9.7% of covered payroll.

Required contribution and timing

In 2001, the Board of Education agreed to institute a one-year lag for payments of the annual required contributions due from SLPS for future years. Therefore, this actuarial valuation is used to determine the annual required contribution (ARC) payment from SLPS for plan year 2020, due to the Plan no later than December 31, 2021. Due to legislation passed August 28, 2017, the contribution rate is set as a fixed percentage rather than an actuarially determined percentage. Because of the statutory required contribution rate, the dollar amount of the ARC due from SLPS no later than December 31, 2021, decreased to $29,106,335 for plan year 2020 from $29,884,664 for plan year 2019.

As a percentage of covered payroll in plan year 2020, the contribution rate for plan year 2020 decreased to 15.00% from 15.50% for plan year 2019. Charter Schools pay both employer and employee contributions as they occur shortly after each payroll period; therefore, this actuarial valuation is used to determine the contribution rate of 15.00% that Charter Schools should be paying beginning with payroll periods ending on or after January 1, 2020.

According to the 2020 Actuarial Valuation Results and timing of payments found in this report, it is important to note that on an actuarially determined and sound basis, SLPS and the Charter Schools should be paying an annual contribution rate of 18.18% versus the 15.00% contribution rate for plan year 2020 as required by statute. The effects on the System’s actuarial soundness due to the decreasing statutory required contribution rate schedule will be presented in future annual actuarial valuation reports as they occur.

Summary and Comparison of Principal Valuation Results

Annual Required Contribution

	Board of Education	Retirement System	Charter Schools	Total
2020				
Normal cost contribution	$ 16,467,879	$ 42,945	$ 6,655,744	$ 23,166,568
Actuarial accrued liability contribution	18,806,274	49,043	7,600,841	26,456,158
Actuarially determined contribution (ADC)	$ 35,274,153	$ 91,988	$ 14,256,585	$ 49,622,726
Covered payroll	194,042,234	506,024	78,425,119	272,973,377
ADC as % of covered payroll	18.18%	18.18%	18.18%	18.18%
Statutory required contribution rate	15.00%	15.00%	15.00%	15.00%
Statutory annual required contribution (ARC)	$ 29,106,335	$ 75,904	$ 11,763,768	$ 40,946,007
2019				
Normal cost contribution	$ 17,304,137	$ 36,134	$ 6,331,652	$ 23,671,923
Actuarial accrued liability contribution	18,829,013	39,318	6,889,609	25,757,940
Actuarially determined contribution (ADC)	$ 36,133,150	$ 75,452	$ 13,221,261	$ 49,429,863
Covered payroll	192,817,182	402,634	70,552,564	263,772,380
ADC as % of covered payroll	18.74%	18.74%	18.74%	18.74%
Statutory required contribution rate	15.50%	15.50%	15.50%	15.50%
Statutory annual required contribution (ARC)	$ 29,884,664	$ 64,408	$ 10,935,647	$ 40,884,719

	January 1, 2020	January 1, 2019
System Assets		
Expense and contingency reserve	$ 30,244,590	$ 30,776,068
Market value, excluding expense & contingency reserve	863,051,012	788,673,825
Actuarial value	888,759,194	886,156,011
System liabilities		
Unfunded actuarial accrued liability	$ 241,849,149	$ 242,999,368
Projected Unit Credit (PUC) Actuarial Accrued Liability	$1,241,617,244	$1,238,153,321
Entry Age Normal (EAN) Actuarial Accrued Liability	$1,274,573,564	$1,268,885,279
PUC Funding Ratio		
Actuarial value funding ratio	71.6%	71.6%
Market value funding ratio	69.5%	63.7%
EAN Funding Ratio		
Actuarial value funding ratio	69.7%	69.8%
Market value funding ratio	67.7%	62.2%

Analysis of the Valuation

(1) Investment Experience

Our actuarial calculations were based upon the assumption that the System's assets earn 7.50%. The approximate market value rate of return during 2019 was 16.10%. The approximate actuarial value rate of return was 6.56%.

(2) Demographic Experience

The number of active members increased from 5,050 to 5,108 for the period. The average service of active members decreased slightly, the average age increased slightly, and the average annual salary increased by $1,208 (2.3%). There were small changes in the inactive statistics. The membership statistics are provided in Sections 3.3 through 3.7 of this report.

(3) Salary Increases

The average annual salary increased by 2.3% between January 1, 2019 and January 1, 2020.
Total annual covered payroll increased by 3.5% between January 1, 2019 and January 1, 2020.

(4) Changes in Methods from the Prior Valuation

There have been no changes in methods since the prior valuation.

(5) Changes in Assumptions from the Prior Valuation

There have been no changes in assumptions since the prior valuation.

(6) Changes in Benefit Provisions from the Prior Valuation

There have been no changes in assumptions since the prior valuation.

(7) Other Changes

There have been no other changes since the prior valuation.

(8) Summary

The overall effect of experience during the period resulted in no change in the PUC funding ratio utilizing the actuarial value of assets, which remained at 71.6%. The total actuarially determined contribution rate decreased from 18.74% to 18.18% of covered payroll.

Section 1 - Valuation Results

This section sets forth the results of the actuarial valuation.

Section 1.1	Develops the actuarial accrued liability contribution
Section 1.2	Develops the normal cost contribution
Section 1.3	Develops the required annual contribution
Section 1.4	Actuarial balance sheet as of January 1, 2020
Section 1.5	Projected Unit Credit funding ratios
Section 1.6	Projected Unit Credit funded status
Section 1.7	Prioritized solvency test

Section 1 (continued)

1.1 Determination of the Unfunded Frozen Actuarial Accrued Liability

1.	Unfunded frozen actuarial accrued liability as of January 1, 2019	$ 242,999,368
2.	Normal cost due January 1, 2019	22,816,311
3.	Interest on (1) and (2) at 7.50% to December 31, 2019	19,936,176
4.	Employer contributions in 2019	43,902,706
5.	Interest on (4) at 7.50% to December 31, 2019	0
6.	Supplement for changes in actuarial assumptions or benefits	0
7.	Unfunded frozen actuarial accrued liability as of January 1, 2020, (1) + (2) + (3) – (4) – (5) + (6)	241,849,149
8.	Actuarial accrued liability contribution for 2020 End of year amortization payment of (7) over 16 years	26,456,158

Section 1 (continued)

1.2 Determination of Normal Cost Contribution

1.	Actuarial present value of future benefits		
	a. Active participants		
	i. Retirement benefits	$ 408,759,780	
	ii. Vested withdrawal benefits	53,803,300	
	iii. Refund of contributions	10,530,063	
	iv. Survivor benefits	4,513,975	
	v. Disability benefits	11,256,509	
	Total		$ 488,863,627
	b. Retired participants and beneficiaries		891,935,875
	c. Inactive participants		
	i. Vested participants	31,942,590	
	ii. Nonvested participants	10,987,140	
	Total		42,929,730
	d. Total actuarial present value of future benefits		1,423,729,232
2.	Unfunded frozen actuarial accrued liability as of January 1, 2020		241,849,149
3.	Actuarial value of assets as of January 1, 2020		888,759,194
4.	Actuarial present value of future participant contributions		147,598,649
5.	Actuarial present value of future employer normal costs, (1)(d) – (2) – (3) – (4), not less than $0		145,522,240
6.	Actuarial present value of future covered payroll of current participants		1,779,957,769
7.	Employer normal cost rate, (5) / (6)		8.18%
8.	Total covered payroll		272,973,377
9.	Normal cost for 2020, (7) x (8)		22,329,222
10.	Normal cost contribution due by December 31, 2020, (9) x [1 + (0.075 x 0.5)]		23,166,568

Section 1 (continued)

1.3 Required Annual Contribution

Actuarially Determined Contribution (ADC):

	Board of Education	Retirement System	Charter Schools	Total
Normal cost contribution	$ 16,467,879	$ 42,945	$ 6,655,744	$ 23,166,568
Actuarial accrued liability contribution	18,806,274	49,043	7,600,841	26,456,158
Actuarially determined contribution (ADC)	35,274,153	91,988	14,256,585	$ 49,622,726
Covered payroll	194,042,234	506,024	78,425,119	272,973,377
ADC as % of covered payroll	18.18%	18.18%	18.18%	18.18%

Statutory Annual Required Contribution (ARC):

	Board of Education	Retirement System	Charter Schools	Total
Covered payroll	$ 194,042,234	$ 506,024	$ 78,425,119	$ 272,973,377
ARC as % of covered payroll	15.00%	15.00%	15.00%	15.00%
Statutory annual required contribution (ARC)	29,106,335	75,904	11,763,768	$ 40,946,007

Section 1 (continued)

1.4 Actuarial Balance Sheet as of January 1, 2020

Actuarial assets		
Actuarial value of current assets		$ 888,759,194
Actuarial present value of future participant contributions		147,598,649
Actuarial present value of future employer contributions for:		
Normal costs		145,522,240
Unfunded actuarial accrued liability		241,849,149
Total current and future assets		$ 1,423,729,232
Actuarial liabilities		
Actuarial present value of benefits now payable		$ 891,935,875
Actuarial present value of benefits payable in the future:		
Active participants	$ 488,863,627	
Terminated vested participants	31,942,590	
Terminated non-vested participants	10,987,140	
Total payable in the future		531,793,357
Total liabilities for benefits		$ 1,423,729,232
Surplus / (deficit)		0

Section 1 (continued)

1.5 Projected Unit Credit Funding Ratios

The funding objective of the System is to meet long-term benefit promises through contributions that remain approximately level from year to year as a percentage of covered payroll.

Funding ratios provide a measure of how much progress has been made towards achieving this objective. For this purpose, the System's liabilities are determined using the projected unit credit cost method. Under this method, liabilities are determined for each participant using only service already performed, but anticipating the impact of future salary growth on the benefits attributable to current active participants.

Section 1.6 provides a comparison of this liability measure to the value of assets to produce a snapshot measure of the System's funding ratio.

Another way to check the funding progress of the System is through a prioritized solvency test. Section 1.7 illustrates the history of the System's funding progress under this test.

In a prioritized solvency test, the plan's present assets (cash and investments) are sequentially allocated and compared to three priorities of liabilities as follows:

- Liability 1: Active participant contributions, accumulated with interest;
- Liability 2: The liabilities for future benefits to current inactive participants and beneficiaries; and
- Liability 3: The liabilities for future benefits to current active participants for prior service.

Ideally, progress in funding of these liability groups will normally be exhibited with Liability 1 attaining 100% coverage first, then Liability 2, and finally Liability 3. Note that 100% funding of Liability 3 does not mean that the System has completed its funding of benefits since additional benefits typically are expected to be earned in the future.

Section 1 (continued)

1.6 Projected Unit Credit Funded Status

As of January 1, 2020 the Projected Unit Credit Actuarial Accrued Liability was:

1.	Retired members and beneficiaries currently receiving benefits and terminated members not yet receiving benefits	$ 934,865,605
	a. Current active participants	
	i. Accumulated member contributions, including interest	130,619,480
	ii. Employer-financed benefits	176,132,159
	Total Projected Unit Credit Actuarial Accrued Liability	$ 1,241,617,244

As of January 1, 2020 the Projected Unit Credit AAL was funded as follows:

2.	Net assets available for benefits at actuarial value	$ 888,759,194
3.	Unfunded Projected Unit Credit AAL	352,858,050
4.	Actuarial value funding ratio, (2) / (1)	71.6%
5.	Net assets available for benefits at market value	$ 863,051,012
6.	Unfunded Projected Unit Credit AAL	378,566,232
7.	Market value funding ratio, (5) / (1)	69.5%

Section 1 (continued)

1.7 Prioritized Solvency Test

Valuation date January 1	Active participants' accumulated contributions	Retirees, beneficiaries and inactive participants	Active participants (employer-financed)	Valuation assets	Percent covered by valuation assets		
	(1)	(2)	(3)		(1)	(2)	(3)
1999	130,705,014	276,290,128	303,953,494	694,250,672	100%	100%	95%
2000	129,398,364	353,852,977	288,213,016	770,090,498	100%	100%	100%
2001	127,086,325	414,052,293	269,590,438	828,097,298	100%	100%	100%
2002	116,506,785	476,104,516	372,221,726	861,128,076	100%	100%	72%
2003	115,570,837	492,633,382	361,818,972	873,260,102	100%	100%	73%
2004	106,021,476	528,287,121	364,459,284	901,996,455	100%	100%	73%
2005	89,710,662	518,880,414	368,306,240	935,328,638	100%	100%	89%
2006	90,001,111	661,353,685	319,920,373	983,828,243	100%	100%	73%
2007	96,223,413	712,467,372	305,409,824	1,003,428,983	100%	100%	64%
2008	98,112,123	781,006,957	249,244,208	1,014,923,381	100%	100%	54%
2009	104,576,264	801,995,237	187,035,147	963,851,408	100%	100%	31%
2010	110,054,510	805,831,292	195,185,151	950,709,944	100%	100%	18%
2011	103,178,297	842,643,351	169,510,764	944,356,735	100%	100%	0%
2012	116,268,566	850,498,527	189,084,439	925,389,359	100%	95%	0%
2013	120,355,959	849,412,565	190,553,739	914,494,335	100%	93%	0%
2014	114,092,991	896,477,122	164,014,835	922,922,386	100%	90%	0%
2015	116,755,946	892,626,625	156,682,397	926,905,797	100%	91%	0%
2016	120,507,482	887,757,927	157,501,063	915,391,079	100%	90%	0%
2017	122,746,557	933,916,821	166,666,305	901,076,683	100%	83%	0%
2018	122,241,799	935,005,411	178,661,824	899,816,911	100%	83%	0%
2019	126,636,422	932,068,226	179,448,673	886,156,011	100%	81%	0%
2020	130,619,480	934,865,605	176,132,159	888,759,194	100%	81%	0%

Section 2 - Valuation of the System's Assets

This section of the report shows the development of the actuarial value of the assets of the System and provides information regarding the expense and contingency reserve, investment results and the various assets of the System.

The amount of assets used in the actuarial valuation is known as the "actuarial value of assets." The method is discussed in the summary of methods and assumptions, section 3.8. The development of the actuarial value of assets is shown in section 2.1. An important element in the development of the actuarial value of assets is the expense and contingency reserve. The amount of the reserve is determined pursuant to a policy adopted by the Board of Trustees. The history of the reserve is presented in section 2.2.

As shown in section 2.3, the fund had a rate of return of 6.56% on an actuarial value basis, which is 0.94% below the assumed rate of return of 7.50% for plan year 2019. The rate of return on an actuarial value basis is intended to be a more stable rate of return and fluctuate less than rates of return on a market value basis. Thus, the rate of return on an actuarial basis is not always a fair measure of the annual investment performance of the fund. Another indicator of actual performance during the year is the rate of return on a market value basis which was 16.10% for plan year 2019, also presented in section 2.3.

Section 2 (continued)

2.1 Development of the Actuarial Value of Assets

1.	Actuarial value of assets as of January 1, 2019	$ 886,156,011
2.	Participant contributions	17,019,685
3.	Employer contributions	43,902,706
4.	Benefit payments and expenses	114,691,183
5.	Investment increment at 7.50%, 7.50% x {(1) + .5 x [(2) – (4)]}	62,799,020
6.	Expected actuarial value on January 1, 2020, (1) + (2) + (3) – (4) + (5)	895,186,239
7.	Market value of assets on January 1, 2020	893,295,602
8.	Expense and contingency reserve on January 1, 2020, prior to adjustment	30,244,590
9.	Adjustment to the investment contingency reserve	0
10.	Excess of market value over expected actuarial value, (7) – (6) – (8) – (9)	(32,135,227)
11.	Market value adjustment, 20% x (10)	(6,427,045)
12.	Actuarial value of assets as of January 1, 2020, (6) + (11)	888,759,194

Section 2 (continued)

2.2 The Expense and Contingency Reserve

Effective January 1, 1996, the Board of Trustees revised Rule X, which governs the determination of the amount of the expense and contingency reserve. The expense portion of the reserve is the sum of:

1. The estimated annual operating expenses for the ensuing year:
2. An amount equal to the liability for non-insurance supplements;
3. An amount equal to the liability for insurance supplements for those participants participating in the program on January 1; and
4. The estimated amount of insurance supplements to be paid for participants expected to retire and participate in the program during the ensuing year.

The investment contingency portion of the reserve is intended to help cover significant shortfalls in the actuarial rate of return. When a shortfall of more than 1% occurs, a portion of the reserve is released equal to one half of the amount of the shortfall up to 2% plus any remaining shortfall. When the rate of return exceeds the assumed rate of return by more than 1%, the reserve is increased subject to a maximum reserve of 5% of the market value of the Retirement Fund. The addition equals one half of the amount of the excess up to 2% plus any remaining excess.

The actuarial return on assets was within 1% of 7.50% during plan year 2020; therefore, no adjustments were made to the actuarial value of assets.

Below is a history of the expense and contingency reserve:

January 1	Expense reserve	Investment contingency reserve	Total expense and contingency reserve
1998	$30,891,555	$24,100,041	$54,991,596
1999	22,142,759	45,972,067	68,114,826
2000	27,992,032	50,003,862	77,995,894
2001	29,837,776	50,003,743	79,841,519
2002	23,527,529	50,003,743	73,531,272
2003	24,952,255	37,759,976	62,712,231
2004	26,028,780	37,759,976	63,788,756
2005	27,170,188	45,115,876	72,286,064
2006	32,534,770	45,115,876	77,650,646
2007	29,864,946	50,732,410	80,597,356
2008	31,987,370	57,234,574	89,221,944
2009	30,555,388	0	30,555,388
2010	29,903,107	0	29,903,107
2011	29,480,465	0	29,480,465
2012	29,564,563	0	29,564,563
2013	29,181,897	0	29,181,897
2014	30,439,781	0	30,439,781
2015	29,868,370	0	29,868,370
2016	29,537,454	0	29,537,454
2017	30,921,897	0	30,921,897
2018	30,751,247	0	30,751,247
2019	30,776,068	0	30,776,068
2020	30,244,590	0	30,244,590

Section 2 (continued)

2.3 Investment Performance

There are several different methods of approximating the rates of return on investments of the trust fund. Following is a brief comparison of the actuarial assumed rate of return as compared with rates of return on market and actuarial value bases:

a. Market Value Basis

The rate of return on a market value basis is the ratio of the appreciation (or depreciation) of assets less contributions plus disbursements to the market value at the beginning of the year plus the average of the receipts and disbursements made during the year. This may be approximated as follows:

i.	A = Market value of assets as of January 1, 2019	$ 819,449,893
ii.	B = Market value of assets as of January 1, 2020	893,295,602
iii.	C = Contributions during the period	60,922,391
iv.	D = Disbursements during the period	114,691,183
v.	Rate of return: $\dfrac{B - A + D - C}{A + \frac{1}{2}(C - D)}$	16.10%
vi.	Actuarial assumed rate of return for 2019	7.50%
vii.	Difference between actual and assumed rates of return, (v) – (vi)	8.60%

b. Actuarial Value Basis

The rate of return on an actuarial value basis is approximated using the same method:

i.	A = Actuarial value of assets as of January 1, 2019	$ 886,156,011
ii.	B = Actuarial value of assets as of January 1, 2020	888,759,194
iii.	C = Contributions during the period	60,922,391
iv.	D = Disbursements during the period	114,691,183
v.	Rate of return: $\dfrac{B - A + D - C}{A + \frac{1}{2}(C - D)}$	6.56%
vi.	Actuarial assumed rate of return for 2019	7.50%
vii.	Difference between actual and assumed rates of return, (v) – (vi)	-0.94%

Section 3 - Basis of the Valuation

In this section, the basis of the valuation is presented and described. This information – the provisions of the System and the census of members – is the foundation of the valuation, since these are the present facts upon which benefit payments will depend.

The effects of administering the System's plan provisions have a direct impact on actuarial costs. The System uses the projected unit credit actuarial cost method discussed on page 10 for actuarial funding purposes, and the frozen entry age normal actuarial cost method discussed on page 34 for actuarial financial reporting purposes.

A summary of the System's provisions is provided in Section 3.1, the legislative history of the System is provided in Section 3.2, and member census information is shown in Section 3.3 to Section 3.7.

The valuation is based upon the premise that the System will continue in existence, so that future events must also be considered. These future events are assumed to occur in accordance with the actuarial assumptions and concern such events as the earnings of the fund; the number of members who will retire, die or terminate their services; their ages at such termination and their expected benefits.

The actuarial assumptions and the actuarial cost method, or funding method, which have been adopted to guide the sponsor in funding the System in a reasonable and acceptable manner, are described in Section 3.8.

A guide to actuarial terminology used in this report is included as Section 3.9.

Section 3 (continued)

3.1 Summary of Plan Provisions

Participants

All persons regularly employed by the board of education, charter schools, and employees of the board of trustees are in the System.

Retirement age

Normal

Age 65 or any age if age plus the years of credited service equals or exceeds 80 (Rule of 80).

If the employee terminated prior to August 28, 2017, then Age 65 or any age if age plus the years of credited service equals or exceeds 85 (Rule of 85).

Early

Age 60 with 5 years of service

Service retirement allowance

a. 2.00% (1.25% if terminated prior to July 1, 1999 or 1.75% if hired on or after January 1, 2018) times years of credited service, subject to a maximum of 60%
b. Times average final compensation (AFC)
c. Subject to a maximum of 60% of AFC.
   i. AFC is the highest average compensation for any three consecutive years of the last 10 years of service.
   ii. Compensation is the regular wages plus what the employer pays towards the participant’s health and welfare benefits.
   iii. Minimum monthly benefit is $10.00 for each year of credited service, up to 15 years, retirement age 65 and over.
   iv. Unused sick leave is added to a participant's credited service and age.

Early retirement benefit

Service retirement allowance reduced five-ninths of one percent for each month of commencement prior to age 65 or the age at which the Rule of 80 (Rule of 85 if terminated prior to August 28, 2017) would have been satisfied had the employee continued working until that age, if earlier.

Disability benefit

Service retirement allowance using actual service, or 25% of AFC if larger, provided that in no case will the benefit exceed that payable if service had continued to age 65.

a. Disability must be incurred while an employee as determined by the medical board and approved by the board of trustees.
b. The participant must have a minimum of five years of credited service and not be eligible for normal retirement.

Continued disability is subject to routine verification.

Withdrawal benefit

Accumulated contributions of participant with interest credited to the participant's account.

Section 3 (continued)

3.1 Summary of Plan Provisions

Vested benefit

Full vesting on termination of employment after at least five years of service is provided if contributions are left with the System. The full accrued benefit is payable at age 65 or a reduced early retirement benefit prior to age 65.

Retirement options

In lieu of the benefit paid only over the lifetime of the participant, a reduced benefit payable for life of participant with:

Option 1	Same retirement allowance continued after death to the beneficiary.
Option 2	One-half of the retirement allowance continued after death to the beneficiary.
Option 3	Same retirement allowance continued after death to the beneficiary. If the beneficiary predeceases the participant, the retirement allowance is adjusted back to the unreduced allowance.
Option 4	One-half of retirement allowance continued after death to the beneficiary. If the beneficiary predeceases the participant, the retirement allowance is adjusted back to the unreduced allowance.
Option 5	Increased retirement allowance is provided up to age 62, such that benefit provided prior to age 62 is approximately equal to the sum of the reduced retirement allowance paid after age 62 and Social Security.
Option 6	Options 1 and 5 combined.
Option 7	Options 2 and 5 combined.

Survivor benefits

If an active participant dies after completing 18 months of service, leaving a surviving spouse or other dependent beneficiaries, survivor benefits are payable. The widow or dependent beneficiary may elect to receive either a refund of accumulated contributions, or:

a. A survivor who is the widow at least age 62 and married to a participant for at least one year receives $60 per month.

b. A widow with dependent, unmarried children under age 22 receives $60 per month plus $60 per dependent child, not to exceed $180 per month. The benefit ceases when youngest child is age 22 and resumes again under (a) at age 62.

c. If no benefits are payable under (a) or (b), minor children may receive a benefit of $60 per child or $180 divided among them if more than three children.

d. If no benefits are payable under (a), (b) or (c), a dependent parent or parents may receive or share $60 per month upon attaining age 62.

If an active participant dies after completing 5 years of service, the widow or dependent beneficiary may elect to receive either a refund of accumulated contributions or:

a. If the survivor is the widow, a survivor benefit calculated as if the participant had been age 60 at death and elected Option 1, plus $60 per dependent child not to exceed $180 per month.

b. If there is no widow, a survivor benefit calculated as if the participant had been age 60 at death and elected Option 1.

Section 3 (continued)

3.1 Summary of Plan Provisions

Return of contributions upon death

If after the death of a participant, no further monthly are payable to a beneficiary under an optional form of payment, or under the survivor benefit provisions, the participant's beneficiary shall be paid the excess, if any, of the participant's accumulated contributions over all payments made to or on behalf of the deceased participant.

DROP

Effective July 1, 2001, active participants may elect to enter the deferred retirement option plan (DROP) for up to four years. Upon entering the DROP, the participant's retirement benefit is frozen and credited to the participant's DROP account. At the end of the DROP, or upon earlier termination of employment, the DROP account is paid in a lump sum or installments, at the participant's option. During the DROP, the participant continues as an active participant, but does not pay contributions. To enter the DROP the participant must be age 65 or meet the Rule of 85. The DROP program is no longer available, ending June 30, 2008.

Contributions by participants

Participants hired before January 1, 2018 contribute 5.50% of compensation in 2018. This rate increases 0.50% per year until it reaches 9.00%. After this, the contribution rate will remain at 9.00% of compensation.

Participants hired on or after January 1, 2018 contribute 9.00% of compensation.

Accumulated contributions are credited at the rate of interest established by the board of trustees. The current crediting rate is 5% per year.

Contributions by employers

The employer contribution rate will be set at a flat 16.00% of covered payroll for Plan year 2018. This contribution rate shall be decreased by 0.50% in each subsequent Plan year until reaching 9.00% of covered payroll. After this, the employer contribution rate will remain at 9.00% of covered payroll.

Expenses

Administrative expenses are paid out of investment income.

Section 3 (continued)

3.2 Legislative History of the Retirement System

On and after January 1, 1944, all persons employed by the board of education on a full-time permanent basis are participants of the System as a condition of employment. In 1961, provisions regarding benefits and employee contribution levels were revised for all future employees of the board of education. Participants of the System at that time were granted the right to remain under the "old plan" and have their membership governed by the provisions of the law in effect prior to 1961. These old plan participants have both benefits and contributions based on a $3,000 maximum annual compensation. Old plan participants have been given the option to transfer into the revised plan at various times since 1961.

Effective October 13, 1969, legislation permitted the reinstatement of credited service lost during the years 1944 to 1947 inclusive when the married women teachers rule was in effect.

Effective August 31, 1972, legislation resulted in the following changes:

- Purchase of past service credit by paying contributions for service claimed plus interest.
- Service as extended substitute teacher.
- Service of re-employed participants lost on prior terminations.
- Service out-state Missouri and outside the state of Missouri.
- Service lost by those who elected to stay out of the retirement plan either temporarily or to date.
- Old plan participants who wished to become new plan participants could do so by paying the differential in participant contributions under the new and old plans, plus interest.
- Dependent beneficiary on death of participant before retirement but after age 60 or age 55 with 30 years service may receive option 1 benefit as if participant had retired under such option.
- A participant with five or more years of service and prior to age 65 may be retired with a disability benefit if the medical board certifies that such participant is mentally or physically totally incapacitated for further performance of duty.
- Minimum retirement benefit at age 65 or after 10 years service is $50.00 per month.

On February 10, 1975, the Missouri Supreme Court handed down a decision supporting HB 613 (Section 169.585 of state statutes), which granted increased benefits to retired teachers. The increases apply to those teachers who retired after June 30, 1957, and prior to January 1, 1971. Technically, those retirees are retained as "advisors and supervisor" and receive a "salary" of $5 per month for each year of service, with a maximum of $75. This salary plus the regular retirement benefit cannot exceed $150 per month. To the extent that assets are depleted because of this law, future district contributions will increase. Because these benefits are paid as "salaries," coming out of investment income along with other expenses of operation, there will be less money available for crediting of interest to the various funds at the end of the year.

Section 3 (continued)

3.2 Legislative History of the Retirement System

Effective August 13, 1978 legislation resulted in the following changes:

- The service retirement allowance and projected service retirement allowance was changed to 1-1/4% of average final compensation per year of credited service. The participant's allowance plus his Social Security primary insurance amount could not exceed 80% of his average final compensation. Participants born before 1917 receive the larger of the allowances calculated under the new formula and the formula in effect immediately before it.
- Credited service no longer limited to a maximum of 35 years.
- Two new joint and survivor optional forms of payment were added which provide for the participant's pension to be adjusted back to his unreduced pension in the event his spouse predeceases him.
- Contributions from participants shall be 3% of compensation.
- End of period for purchasing prior service or outside service extended from December 31, 1973 to December 31, 1980. Deleted requirement of electing to purchase out-state or outside the state of Missouri service within one year of completing five years of credited service.
- Gives board of trustees the power to establish regulations, methods and factors that may be needed to calculate primary Social Security benefits.
- Dependent beneficiary on death of participant before retirement with five or more years of credited service may receive option 1 benefit as if the participant had retired under that option as of the date of his death.
- Allow retired educational secretaries to serve as part-time or temporary substitute educational secretary up to a maximum of 360 hours per school year without a reduction in the retired employee's retirement allowance or requiring the retired employees to contribute to the retirement system.

Effective September 28, 1979, legislation resulted in the following changes:

- Accumulated and unused days of sick leave shall be included in computing a participant's age and credited service at retirement.
- Participants who have attained age 62 and who have 30 or more years of credited service may retire and receive a service retirement allowance without reduction for early retirement. The early retirement reduction for participants who retire with 30 or more years of credited service but who have not attained age 62 on their retirement date shall be determined on the basis of the number of months by which their age at retirement is less than age 62.
- Benefits to survivors of a participant who dies while an employee and after having at least 18 months of credited service are as follows:
  - (a) Surviving spouse age 62 or over: $60 per month.
  - (b) Surviving spouse with unmarried dependent children under age 22: $60 per month, plus $30 per month for each eligible child, with a maximum of $150 per month.
  - (c) Unmarried dependent children under age 22: $60 per month for each eligible child, with a maximum of $120 per month. This benefit is payable if the benefit in (b) is not payable.
  - (d) Dependent parent(s): $60 per month, provided no benefits are payable under (a), (b) or (c) above.

Section 3 (continued)

3.2 Legislative History of the Retirement System

Effective September 28, 1981, legislation resulted in the following changes:

- The provision limiting service retirement and projected service retirement allowances to 80% of average final compensation less Social Security was removed for future retirees.
- The minimum monthly benefit payable to participants retiring on or after age 65 with 10 or more years of service was increased to $75.
- Old plan participants were extended the option to transfer into the current System by paying the difference in participant contributions plus interest. Such election to be made on or before December 31, 1984. Retired participants who retired prior to January 1, 1955, may be consultants" at a "salary" equal to $4 for each year of retirement prior to January 1, 1982. Total "salaries" as a "school consultant" and "special school advisor and supervisor" are limited to $250 per month.
- The retirement system may contribute as part of its administrative expenses toward health, life and similar insurance for retirees.
- The actuarial cost method was changed from the "entry age cost method" to the "frozen entry age cost method." The period for amortizing "supplements" to the unfunded actuarial accrued liability was set at 50 years from the time the "supplement" is created.
- Several changes were made dealing with the administration and operation of the System.
- Investment powers were broadened.

Effective September 28, 1984, legislation resulted in the following changes:

- Dependent beneficiary on death of employed, active participant before retirement with five or more years of service may receive option 1 benefit as if the participant had attained age 55 (if less than 55 at his death) and had retired under option 1 as of the date of his death.
- In addition to the option 1 death benefit, a surviving spouse may receive $30 per month for each unmarried dependent child, provided that the total benefit does not exceed the greater of $150 or the option 1 benefit.
- Surviving spouse benefits do not cease on remarriage.
- Dependent children's benefits do not require that the child remain a full-time student.
- Participants retired on disability may elect to receive an actuarial equivalent benefit under options 1 through 4.
- Retired participants who retired on or after January 1, 1976, may be employed as school consultants and receive a salary and insurance benefits provided other retirants.

Section 3 (continued)

3.2 Legislative History of the Retirement System

Effective August 13, 1986, legislation resulted in the following changes:

- A participant with 30 years of credited service who is between the ages of 55 and 62, upon certification by the board of education, is eligible for a supplemental early retirement benefit payable to age 62. This provision remains in effect until December 31, 1991.
- Benefits to a surviving spouse for dependent children are increased from $30 to $60 per month, with a maximum of $240 per month, including the $60 for the surviving spouse.
- Supplemental pay to retired participants employed as "school consultants" is increased by $2 per month for each year between the participant's date of retirement and December 31, 1986

Effective June 19, 1987, legislation resulted in the following changes:

- Reinstated the option for "old plan" participants to elect "new plan" membership by paying the difference in contributions accumulated with interest.
- Increased the minimum benefit for participants retiring on or after age 65 to $10 per month for each year of credited service, up to a maximum of 15 years.
- Several changes were made dealing with the accounting, administration, and operation of the System.

Effective August 13, 1988, legislation resulted in the following changes:

- Made provisions for children's benefits uniform, providing $60 per month per child, up to a maximum of $180 per month, under both subsections 169.460(13) and (15) survivor benefits.
- Supplemental pay to retired participants of $2 per month for each year of retirement up to December 31, 1988.

Effective June 14, 1989, legislation resulted in the following changes:

- The maximum on compensation was removed.
- Average final compensation is based on the highest three consecutive years, rather than the highest five consecutive years.
- Participants may retire with unreduced benefits at any age, if their age plus credited service equals or exceeds 85 (the "Rule of 85").

Effective May 31, 1990, legislation resulted in the following change:

- Supplemental pay of $2 per month for each year of retirement up to December 31, 1990.

Effective August 28, 1993, legislation resulted in the following change:

- Supplemental pay of $3 per month for each year of retirement up to December 31, 1993.

Section 3 (continued)

3.2 Legislative History of the Retirement System

Effective August 28, 1996, legislation resulted in the following changes:

- Provision was added for the purchase of service for certain periods of layoff.
- The investment trustee position was eliminated and the position of school administrator trustee was added.
- Cost-of-living increases for participants who retired prior to August 28, 1996, with at least 15 years of credited service. The cost-of-living increases are up to 3% in one year, with a cumulative maximum of 10%.
- The board of education is authorized to increase retirement benefits and the participant contribution rate, subject to several conditions.

Effective August 28, 1997, legislation resulted in the following change:

- Cost-of-living increases extended to participants who retired prior to August 28, 1997, with at least 15 years of credited service. The cost-of-living increases are up to 3% in one year, with a cumulative maximum of 10%.

In accordance with the statutory authority granted the board of education in 1996, the board of education made the following changes:

- Participant contributions were increased to 4.5%, effective July 1, 1998; to 5.0%, effective July 1, 1999; and, if necessary to 5.5%, effective July 1, 2000.
- The service retirement allowance was changed to 2.00% of average final compensation per year of credited service, subject to a maximum of 60% of average final compensation, effective for participants who retired after June 29, 1999.
- A "catch-up" cost-of-living adjustment (COLA) is provided for participants who retired prior to June 30, 1999, and survivors of participants who retired or died prior to June 30, 1999. The amount of the "catch-up" COLA is equal to 65% of the amount by which the participant's original benefit would have increased due to increases in the CPI, in excess of any supplements or COLA increases being received by the participant. The "catch-up" COLA is effective July 1, 2000.
- The board of education agreed to contribute 8.03% of covered payroll for 1998, 1999, and 2000, in order to fund the benefit increase and the "catch-up" COLA.

In accordance with the statutory authority granted the board of education in 1996, the board of education made the following changes:

- Effective January 1, 2001, all participants who retired prior to January 1, 2000, received a 3% cost-of-living increase.
- Effective July 1, 2001, a DROP was made available until June 30, 2005, at which time the program will be evaluated to determine whether or not it should be extended. Eligible participants may elect to enter the DROP for up to four years.
- In conjunction with the DROP, employers will contribute at 8.00% of covered payroll for 2001. The contribution rate for subsequent years will be based on the rate determined by the actuarial valuation for the January 1 of the year preceding the year the contribution is due.

Section 3 (continued)

3.2 Legislative History of the Retirement System

Effective August 28, 2002, legislation resulted in the following changes:

- Purchase of service rules were updated.
- The System may accept qualified transfers of funds for the purchase of service.
- Clarified provisions relating to charter school participation in the System.
- Option 5, the level income option is added.
- Replaced the specific actuarial cost method in the statutes with a provision that the method adopted by the board of trustees may be any method in accordance with generally accepted actuarial standards. The amortization period for the UAAL may not exceed 30 years.

Effective August 28, 2017, legislation resulted in the following changes:

- Replaced the normal pension eligibility requirement where a member's age plus credited service equals not less than eighty-five (the "Rule of 85") with not less than eighty (the "Rule of 80").
- For members hired for the first time on or after January 1, 2018, the multiplier in the annual pension benefit formula (credited service x pension multiplier x average final compensation) was reduced from two percent (2%) to one and three-fourths percent (1.75%).
- Beginning January 1, 2018, the employee contribution rate of five percent (5%) of compensation shall increase by one-half of one percent (0.5%) annually until such time as the percentage equals nine percent (9%).
- For member's hired for the first time on or after January 1, 2018, the employee contribution rate shall be nine percent (9%) of compensation.
- For calendar year 2018, the actuarially determined annual employer contribution rate shall be replaced with sixteen percent (16%) of total employee compensation for each employer which, for each calendar year thereafter, shall decrease by one-half of one percent (0.5%) until calendar year 2032, when the annual employer contribution rate shall equal nine percent (9%) of total employee compensation for each employer for that year and all subsequent years.

Section 3 (continued)

3.3 Changes in System Participation

	Active	Retirees	Beneficiaries	Disabled	Total In Pay Status	Deferred Vested	Nonvested with Balance	Total Terminated Records	Total
Total as of January 1, 2019	**5,050**	3,955	300	245	**4,500**	566	2,320	**2,886**	12,436
New Entrants	**909**						133	**133**	1,042
Rehires/Transfers	**39**					(8)	(31)	**(39)**	0
Retirements	**(125)**	148			**148**	(22)	(1)	**(23)**	0
Disablements	**(6)**			6	**6**				0
Beneficiaries			10		**10**				10
Deaths	**(12)**	(150)	(22)	(11)	**(183)**	(9)	(2)	**(11)**	(206)
Deferred Vested	**(143)**					133		**133**	(10)
Nonvested Terminations - Account Balance	**(411)**						313	**313**	(98)
Refunds Paid in 2019	**(185)**		(1)		**(1)**	(14)	(94)	**(108)**	(294)
Nonvested Termination	**(8)**						(9)	**(9)**	(17)
Data Adjustments		(1)	(2)		**(3)**	1	(2)	**(1)**	(4)
Total as of January 1, 2020	**5,108**	3,952	285	240	**4,477**	647	2,627	**3,274**	12,859

Section 3 (continued)

3.4 Member Census Information

As of January 1	2019	2020
Active Members		
Number	5,050	5,108
Average Age	43.53	43.57
Average Service	7.71	7.47
Average Annual Base Pay	$ 52,232	$ 53,440
Vested Terminated Members		
Number	566	647
Average Account Balance	$ 32,522	$ 32,914
Non-vested Terminated Members		
Number	2,320	2,627
Average Account Balance	$ 4,085	$ 4,182
Benefit Recipients		
Number	4,500	4,477
Average Age	74.51	74.74
Average Monthly Benefit	$ 1,963	$ 1,978

Section 3 (continued)

3.5 Distributions of Active Members

Years of Service By Age
Charter Schools

	Years of Service									
Age	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40+	Total
Under 25	76	0	0	0	0	0	0	0	0	76
25 - 29	305	26	0	0	0	0	0	0	0	331
30 - 34	223	84	9	0	0	0	0	0	0	316
35 - 39	120	57	22	2	0	0	0	0	0	201
40 - 44	93	33	22	16	2	0	0	0	0	166
45 - 49	77	38	13	6	0	0	0	0	0	134
50 - 54	59	30	8	0	1	2	0	0	0	100
55 - 59	48	18	10	4	2	0	0	0	0	82
60 - 64	30	14	12	4	0	0	0	0	0	60
65 - 69	11	5	3	1	0	0	0	0	0	20
70 & Up	0	1	0	0	0	0	0	0	0	1
Total	1,042	306	99	33	5	2	0	0	0	1,487

Years of Service By Age
School District

	Years of Service									
Age	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40+	Total
Under 25	147	0	0	0	0	0	0	0	0	147
25 - 29	358	25	0	0	0	0	0	0	0	383
30 - 34	279	114	9	0	0	0	0	0	0	402
35 - 39	217	116	58	6	1	0	0	0	0	398
40 - 44	180	86	61	57	13	1	0	0	0	398
45 - 49	151	84	61	72	74	8	0	0	0	450
50 - 54	128	79	50	70	55	24	2	0	0	408
55 - 59	109	90	58	61	53	23	28	1	0	423
60 - 64	92	81	38	59	47	25	33	21	6	402
65 - 69	24	33	19	18	20	13	9	8	9	153
70 & Up	12	7	6	11	5	3	2	3	1	50
Total	1,697	715	360	354	268	97	74	33	16	3,614

Section 3 (continued)

3.5 Distributions of Active Members

Years of Service By Age
Total

	Years of Service									
Age	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40+	Total
Under 25	223	0	0	0	0	0	0	0	0	223
25 - 29	663	51	0	0	0	0	0	0	0	714
30 - 34	502	198	18	0	0	0	0	0	0	718
35 - 39	337	173	80	8	1	0	0	0	0	599
40 - 44	273	119	83	73	15	1	0	0	0	564
45 - 49	228	122	74	78	74	8	0	0	0	584
50 - 54	188	109	58	70	56	26	2	0	0	509
55 - 59	158	108	70	65	55	23	28	1	0	508
60 - 64	123	96	51	63	47	25	33	21	6	465
65 - 69	35	38	22	19	20	13	9	8	9	173
70 & Up	12	8	6	11	5	3	2	3	1	51
Total	2,742	1,022	462	387	273	99	74	33	16	5,108

Section 3 (continued)

3.6 Distributions of Inactive Members

Deferred Vested and Nonvested

Account Balance	Vested	Non-Vested	Total
0-1,000	17	584	601
1,000-5,000	6	1,238	1,244
5,000-10,000	12	565	577
10,000-25,000	251	222	473
25,000-50,000	244	16	260
50,000-75,000	86	2	88
75,000-100,000	25	0	25
100,000+	6	0	6
Total	647	2,627	3,274

Retirees, Beneficiaries and Disabled

Option	Service benefit	Disability benefit	Survivor benefit	All
0	3,338	192	285	3,815
1	134	14	0	148
2	80	5	0	85
3	186	17	0	203
4	176	6	0	182
5	22	1	0	23
6	13	5	0	18
7	3	0	0	3
Total	3,952	240	285	4,477

Annual Benefit

Option	Service benefit	Disability benefit	Survivor benefit	All
0	85,407,357	$ 2,877,817	$ 3,482,422	$ 91,767,596
1	2,411,304	184,112	0	2,595,416
2	1,894,243	117,333	0	2,011,576
3	3,922,696	238,317	0	4,161,013
4	4,653,421	133,370	0	4,786,791
5	543,686	9,911	0	553,597
6	262,947	48,317	0	311,264
7	72,357	0	0	72,357
Total	$ 99,168,011	$ 3,609,177	$ 3,482,422	$106,259,610

Section 3 (continued)

3.7 Schedule of Retirees and Beneficiaries Added/Removed From Rolls

	Added to Payroll		Removed from Payroll		Payroll Year-End			
Plan Year	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances	% Increase in Annual Allowances	Average Annual Allowance
2009	N/A		N/A		N/A		N/A	N/A
2010	N/A		N/A		4,370		N/A	N/A
2011	373		156		4,587	$ 98,927,501	N/A	$ 21,567
2012	135	$ 2,606,505	182	$ 2,793,752	4,540	$ 98,768,933	-0.16%	$ 21,755
2013	164	$ 3,544,756	188	$ 2,699,920	4,516	$ 99,629,314	0.87%	$ 22,061
2014	313	$ 7,711,256	140	$ 2,288,004	4,689	$ 105,061,832	5.45%	$ 22,406
2015	163	$ 3,774,578	228	$ 3,783,237	4,624	$ 105,066,268	0.00%	$ 22,722
2016	151	$ 3,279,162	188	$ 3,058,449	4,587	$ 105,295,884	0.22%	$ 22,955
2017	145	$ 3,114,108	171	$ 2,978,925	4,561	$ 105,434,220	0.13%	$ 23,116
2018	158	$ 4,044,180	193	$ 3,526,969	4,526	$ 105,976,561	0.51%	$ 23,415
2019	162	$ 3,400,180	188	$ 3,450,225	4,500	$ 105,995,116	0.02%	$ 23,554
2020	161	$ 3,739,591	184	$ 2,728,795	4,477	$ 106,259,608	0.25%	$ 23,735

Section 3 (continued)

3.8 Summary of Methods and Assumptions

Interest

7.5% per annum, which includes a 2.75% allowance for inflation.

Participant account interest crediting rate

5.0% per annum.

Expenses

The rate of interest assumed is net of expenses.

Mortality – Healthy Lives

Mortality tables issued by the SOA, the RP-2014 Combined Healthy Mortality Table (rolled back to 2006), projected fully generationally using projection scale MP-2015. The mortality assumption for Inactive participants receiving benefits is increased by 10% to account for the higher mortality experienced by the Plan. Rates are shown for pre-commencement in Table 1 and post-commencement in Table 2.

Disability Mortality

RP-2014 Disabled Mortality Table (rolled back to 2006) for disabled retired Members, projected fully generationally using projection scale MP-2015. Rates are shown in Table 6.

Withdrawal

Withdrawals are assumed to occur at rates based on actual experience of the retirement system. During the first five years of membership, withdrawals are assumed to occur at the following rates:

Year of Membership	Non-charter school employees	Charter school employees
1st	25.0%	35.0%
2nd	20.0%	35.0%
3rd	20.0%	35.0%
4th	20.0%	25.0%
5th	15.0%	15.0%

The rates used after the first five years of membership are shown in Table 3.

Salary scale

Salaries are assumed to increase at the rate of 5.0% per year for the first 5 years of employment and 3.50% thereafter.

Disability

Disabilities are assumed to occur at rates based on the actual experience of the retirement system. The rates used are shown in Table 5.

Section 3 (continued)

3.8 Summary of Methods and Assumptions

Retirement

Retirements occur at rates based on the actual experience of the retirement system. The age-related rates used are shown in Table 4. The rates are different for those eligible to retire under the Rule of 80 and those not eligible to retire under the Rule of 80.

Family Structure

The probability of a participant being married and the probable number of children are based on a table constructed by the Social Security Administration, modified to reflect the experience of the retirement system. The rates used are shown in Table 7. For married participants, husbands are assumed to be 3 years older than their wives.

Gender

Members with no gender provided in the employee data by the System are assumed to be female.

Usage of Cash-out Option

Participants terminating in vested status are given the option of taking a refund of their accumulated participant contributions instead of a deferred retirement benefit. Active members who terminate in the future with a vested benefit are assumed to take a deferred vested annuity, unless a refund of contributions and interest is greater than the actuarial present value of their vested deferred benefit.

Future Benefit Increases or Additional Benefits

When funding is adequate, the Board may authorize cost of living adjustments (COLAs), as noted in the summary of plan provisions. This valuation assumes that no future COLAs will be awarded.

Actuarial Method – Frozen Entry Age

The actuarial cost method used by the System is the "frozen entry age actuarial cost method." Under this method, on the initial actuarial valuation date for which the cost method is used, the annual cost accruals (individual normal costs for each participant) are determined as a level percentage of pay for each year from entry age until retirement or termination. The initial Unfunded Frozen Actuarial Accrued Liability (UFAAL) was originally determined as of January 1, 1981. Entry age is determined at the date each participant would have entered the System. The sum of these individual normal costs for all active participants whose attained ages are under the assumed retirement age is the normal cost for the initial plan year. The excess of all normal costs falling due prior to the initial actuarial valuation date, accumulated with interest, over the plan assets establishes the UFAAL.

The UFAAL is only frozen in that it is not adjusted due to experience gains and losses. Instead, gains and losses are reflected through changes in the normal cost accrual rate. The UFAAL does change, increasing due to interest and additional normal costs, and decreasing due to contributions. Any changes to plan provisions or actuarial assumptions results in a change to the UFAAL. The amount of the change is determined by computing the impact in the actuarial accrued liability as of the valuation date coincident with or next following the change.

Section 3 (continued)

3.8 Summary of Methods and Assumptions

Normal costs are calculated as the level percentage of pay required to fund the excess of the actuarial present value of future benefits over the sum of the actuarial value of current assets and the remaining UFAAL.

Effective January 1, 2006, UFAAL was reestablished to better reflect an appropriate relationship between the normal cost and the actuarial accrued liability.

The funding requirement for each plan year is the sum of the "normal cost contribution" (equal to the normal cost for that year), plus the "actuarial accrued liability contribution." The "actuarial accrued liability contribution" is the payment required to amortize the UFAAL over 30 years, from January 1, 2006, the date that it was reestablished.

Valuation of Assets

The actuarial value of assets is determined using the assumed yield method of valuing assets. Under the assumed yield asset valuation method, the prior year's actuarial value is increased at the assumed rate of return with appropriate adjustments for contributions and disbursements to produce an expected actuarial value of assets at the end of the year. The expected actuarial value is compared to the market value of assets less the expense and contingency reserve, and 20% of the difference is added to the expected actuarial value. The actuarial value of assets was "fresh-started" as of January 1, 2006 and set equal to the market value of assets as of that date.

Changes in Methods and Assumptions from the Prior Valuation

There were no method or assumption changes made since the prior valuation.

Effective August 28, 2017, legislation passed by the Missouri General Assembly and signed into law by then Governor Eric Greitens changed several of the System's Plan Provisions. A detailed description of these changes appears at the end of Section 3.2.

3.8 Summary of Methods and Assumptions

Table 1
Mortality Rates for Pre-Commencement
Annual Rates Per 1,000 Members

	Rate			Rate	
Age	Male	Female	Age	Male	Female
20	0.190	0.116	60	2.959	3.365
21	0.203	0.113	61	3.369	3.668
22	0.215	0.114	62	3.704	3.986
23	0.233	0.119	63	4.180	4.314
24	0.251	0.126	64	4.540	4.648
25	0.275	0.134	65	4.892	4.983
26	0.314	0.147	66	5.398	5.314
27	0.327	0.153	67	5.731	5.636
28	0.336	0.162	68	5.858	5.945
29	0.353	0.171	69	6.143	6.240
30	0.380	0.193	70	6.210	6.517
31	0.427	0.239	71	7.026	7.108
32	0.481	0.273	72	8.658	8.290
33	0.540	0.298	73	11.106	10.064
34	0.601	0.319	74	14.369	12.429
35	0.662	0.337	75	18.448	15.385
36	0.720	0.354	76	23.343	18.932
37	0.774	0.369	77	29.054	23.071
38	0.800	0.386	78	35.581	27.801
39	0.821	0.406	79	42.924	33.122
40	0.841	0.442	80	51.083	39.034
41	0.863	0.484	81	58.516	43.204
42	0.890	0.533	82	66.910	47.896
43	0.922	0.586	83	74.584	53.181
44	0.961	0.644	84	84.893	59.146
45	1.005	0.682	85	94.233	67.435
46	1.044	0.719	86	104.477	76.970
47	1.085	0.755	87	118.458	87.853
48	1.128	0.817	88	134.192	97.854
49	1.172	0.883	89	148.298	111.198
50	1.217	0.985	90	167.257	122.890
51	1.262	1.100	91	182.177	134.949
52	1.309	1.271	92	202.142	147.094
53	1.401	1.468	93	218.060	162.763
54	1.503	1.700	94	233.954	174.573
55	1.671	1.969	95	255.453	185.756
56	1.883	2.287	96	271.129	196.137
57	2.132	2.577	97	286.358	210.344
58	2.424	2.817	98	308.123	218.852
59	2.677	3.081	99	322.695	226.123

3.8 Summary of Methods and Assumptions

Table 2
Mortality Rates for Post-Commencement
Annual Rates Per 1,000 Members

Age	Rate		Age	Rate	
	Male	Female		Male	Female
20	0.190	0.116	60	5.656	5.525
21	0.203	0.113	61	6.358	6.166
22	0.215	0.114	62	7.004	6.852
23	0.233	0.119	63	7.918	7.582
24	0.251	0.126	64	8.761	8.372
25	0.275	0.134	65	9.703	9.235
26	0.314	0.147	66	11.004	10.170
27	0.327	0.153	67	12.182	11.175
28	0.336	0.162	68	13.160	12.271
29	0.353	0.171	69	14.537	13.503
30	0.380	0.193	70	15.686	14.919
31	0.427	0.239	71	17.356	16.177
32	0.481	0.273	72	19.271	17.994
33	0.540	0.298	73	21.465	19.543
34	0.601	0.319	74	23.946	21.660
35	0.662	0.337	75	27.356	23.365
36	0.720	0.354	76	30.490	25.743
37	0.774	0.369	77	34.715	29.017
38	0.800	0.386	78	39.486	31.986
39	0.821	0.406	79	44.915	35.314
40	0.841	0.442	80	51.083	39.034
41	0.890	0.484	81	58.516	43.204
42	0.987	0.533	82	66.910	47.896
43	1.133	0.586	83	74.584	53.181
44	1.328	0.644	84	84.893	59.146
45	1.572	0.689	85	94.233	67.435
46	1.864	0.778	86	104.477	76.970
47	2.205	0.912	87	118.458	87.853
48	2.595	1.090	88	134.192	97.854
49	3.034	1.313	89	148.298	111.198
50	3.521	1.580	90	167.257	122.890
51	3.556	1.697	91	182.177	134.949
52	3.546	1.914	92	202.142	147.094
53	3.595	2.193	93	218.060	162.763
54	3.643	2.532	94	233.954	174.573
55	3.798	2.935	95	255.453	185.756
56	4.033	3.418	96	271.129	196.137
57	4.344	3.908	97	286.358	210.344
58	4.758	4.385	98	308.123	218.852
59	5.165	4.929	99	322.695	226.123

Section 3 (continued)

3.8 Summary of Methods and Assumptions

Table 3
Withdrawal Rates
Annual Rates Per 1,000 Members

Age	Rate	Age	Rate
20	204.0	45	44.0
21	197.0	46	41.0
22	190.0	47	37.0
23	184.0	48	34.0
24	177.0	49	31.0
25	171.0	50	28.0
26	161.0	51	26.0
27	151.0	52	25.0
28	141.0	53	24.0
29	131.0	54	23.0
30	121.0	55	22.0
31	117.0	56	21.0
32	112.0	57	20.0
33	108.0	58	19.0
34	103.0	59	18.0
35	99.0	60	17.0
36	96.0	61	0.0
37	92.0	62	0.0
38	89.0	63	0.0
39	86.0	64	0.0
40	83.0		
41	75.0		
42	67.0		
43	59.0		
44	52.0		

Section 3 (continued)

3.8 Summary of Methods and Assumptions

Table 4
Retirement Rates
Annual Rates Per 1,000 Members

Age	Rule of 80 Rate	Not Rule of 80 Rate
50-51	200.0	N/A
52-59	150.0	N/A
60	200.0	100.0
61	200.0	100.0
62	250.0	150.0
63	250.0	150.0
64	250.0	200.0
65	300.0	350.0
66	300.0	200.0
67	300.0	200.0
68	300.0	200.0
69	300.0	200.0
70 - 71	300.0	300.0
72	1,000.0	1,000.0

Section 3 (continued)

3.8 Summary of Methods and Assumptions

Table 5
Disability Rates
Annual Rates Per 1,000 Members

	Rate			Rate	
Age	Males	Females	Age	Males	Females
20	0.00	0.00	45	1.50	1.00
21	0.00	0.00	46	1.60	1.10
22	0.00	0.00	47	1.70	1.20
23	0.00	0.00	48	1.80	1.30
24	0.00	0.00	49	1.90	1.40
25	0.00	0.00	50	2.00	1.50
26	0.00	0.00	51	2.50	1.70
27	0.00	0.00	52	3.00	1.90
28	0.00	0.00	53	3.50	2.10
29	0.00	0.00	54	4.00	2.30
30	0.40	0.40	55	4.50	2.50
31	0.40	0.40	56	4.70	2.60
32	0.40	0.40	57	4.90	2.75
33	0.40	0.40	58	5.10	2.85
34	0.40	0.40	59	5.30	3.00
35	0.40	0.40	60	5.50	3.25
36	0.45	0.45	61	6.00	3.50
37	0.50	0.50	62	6.50	3.50
38	0.60	0.60	63	7.00	3.50
39	0.70	0.70	64	7.50	3.50
40	0.80	0.75	65	0.00	0.00
41	0.95	0.80			
42	1.10	0.85			
43	1.25	0.90			
44	1.40	0.95			

3.8 Summary of Methods and Assumptions

Table 6
Post-Disability Mortality Rates
Annual Rates Per 1,000 Members

	Rate			Rate	
Age	Male	Female	Age	Male	Female
20	0.000	0.000	60	42.042	21.839
21	22.571	7.450	61	43.474	22.936
22	22.571	7.450	62	44.981	24.080
23	22.571	7.450	63	46.584	25.293
24	22.571	7.450	64	48.307	26.600
25	22.571	7.450	65	50.174	28.026
26	22.571	7.450	66	52.213	29.594
27	22.571	7.450	67	54.450	31.325
28	22.571	7.450	68	56.909	33.234
29	22.571	7.450	69	59.613	35.335
30	22.571	7.450	70	62.583	37.635
31	22.571	7.450	71	65.841	40.140
32	22.571	7.450	72	69.405	42.851
33	22.571	7.450	73	73.292	45.769
34	22.571	7.450	74	77.512	48.895
35	22.571	7.450	75	82.067	52.230
36	22.571	7.450	76	86.951	55.777
37	22.571	7.450	77	92.149	59.545
38	22.571	7.450	78	97.640	63.545
39	22.571	7.450	79	103.392	67.793
40	22.571	7.450	80	109.372	72.312
41	22.571	7.450	81	115.544	77.135
42	22.571	7.450	82	121.877	82.298
43	22.571	7.450	83	128.343	87.838
44	22.571	7.450	84	134.923	93.794
45	22.571	7.450	85	141.603	100.203
46	23.847	8.184	86	148.374	107.099
47	25.124	8.959	87	155.235	114.512
48	26.404	9.775	88	162.186	122.464
49	27.687	10.634	89	169.233	130.972
50	28.975	11.535	90	183.408	140.049
51	30.268	12.477	91	199.769	149.698
52	31.563	13.456	92	216.605	159.924
53	32.859	14.465	93	233.662	170.433
54	34.152	15.497	94	250.693	182.799
55	35.442	16.544	95	267.491	194.509
56	36.732	17.598	96	283.905	205.379
57	38.026	18.654	97	299.852	215.240
58	39.334	19.710	98	315.296	223.941
59	40.668	20.768	99	330.207	231.387

3.8 Summary of Methods and Assumptions

Table 7
Family Structure

Age: Male	Age: Female	Age of youngest child	Average number of children	Probability of being married	Probability of children if married
20	17	2	.90	.30	.50
21	18	2	.90	.35	.50
22	19	2	.98	.40	.50
23	20	2	.98	.46	.53
24	21	3	1.05	.53	.56
25	22	3	1.13	.60	.59
26	23	4	1.20	.67	.62
27	24	4	1.28	.74	.65
28	25	4	1.35	.76	.67
29	26	5	1.43	.78	.69
30	27	5	1.50	.80	.71
31	28	6	1.58	.82	.73
32	29	6	1.65	.84	.75
33	30	7	1.80	.85	.76
34	31	7	1.95	.86	.77
35	32	8	2.10	.87	.78
36	33	8	2.10	.87	.79
37	34	9	2.10	.87	.80
38	35	9	2.30	.87	.79
39	36	10	1.95	.87	.78
40	37	10	1.88	.87	.77
41	38	11	1.80	.87	.76
42	39	11	1.73	.87	.75
43	40	11	1.73	.87	.72
44	41	12	1.65	.87	.69
45	42	12	1.65	.86	.66
46	43	12	1.58	.86	.63
47	44	12	1.58	.86	.60
48	45	12	1.50	.85	.56
49	46	12	1.43	.85	.52
50	47	13	1.43	.85	.48
51	48	13	1.35	.85	.44
52	49	13	1.35	.85	.40
53	50	13	1.35	.85	.37
54	51	13	1.35	.84	.34

Section 3 (continued)

3.8 Summary of Methods and Assumptions

Table 7
Family Structure
(continued)

Age		Age of youngest child	Average number of children	Probability of being married	Probability of children if married
Male	Female				
55	52	13	1.28	.84	.31
56	53	13	1.28	.83	.28
57	54	13	1.28	.83	.25
58	55	13	1.28	.83	.23
59	56	13	1.20	.82	.21
60	57	13	1.20	.81	.19
61	58	13	1.20	.80	.17
62	59	13	1.20	.79	.15
63	60	13	1.20	.78	.13
64	61	13	1.20	.77	.11
65	62	13	1.13	.76	.09
66	63	13	1.13	.75	.07
67	64	13	1.13	.74	.05
68	65	13	1.13	.73	.04
69	66	13	1.05	.72	.03
70	67	13	1.05	.71	.02
71	68	13	1.05	.70	.01

Section 3 (continued)

3.9 Definition of Actuarial Terms

Accrued benefit

The benefit earned by a participant as of the date at which the determination is made payable in the form of an annual benefit commencing at normal retirement age. The accrued benefit is payable for the member's lifetime only, however if the total monthly payments at the member's death are less than contributions accumulated with interest, the remaining employee contribution balance will be paid to the member's beneficiary.

Accumulated plan benefits

The accrued benefits and any other benefits, whether vested or not, that have been earned by the participants covered by the plan as of the date at which the determination is made. These other benefits include any death, early retirement or disability benefits provided under the plan.

Actuarial accrued liability

Equal to the actuarial present value of future benefits less the present value of future annual normal costs.

Actuarial cost method

The method for allocating the actuarial present value of a pension plan's benefits and expenses to various time periods. An actuarial cost method is also referred to as a funding method.

Actuarial gain/(loss)

The difference between the plan's actual experience and that expected based upon a set of actuarial assumptions. A gain occurs when the experience of the plan is more favorable (in terms of cost) than the assumptions projected; a loss occurs when experience is less favorable. May also be referred to as experience gains/(losses).

Actuarial present value

See present value.

Actuarial valuation

The determination, as of a valuation date, of the annual normal cost, actuarial accrued liability, actuarial value of assets and related actuarial present values for a pension plan.

Actuarial value of assets

The value of cash, investments and other property belonging to a pension plan determined by the actuary for the purpose of an actuarial valuation. Actuarial asset methods are generally designed to reduce fluctuations in asset value due to large variations in returns from year to year. Actuarial values are generally a smoothed market value that recognize gains and losses over time.

Amortization

The spreading of a present value or a cost over a period of years. A plan's unfunded actuarial accrued liability is amortized over a period of years.

Section 3 (continued)

3.9 Definition of Actuarial Terms

Fiscal year

The year on which the plan sponsor maintains its financial records.

Funded

Provided by plan assets. A liability is fully funded when assets exceed or equal the liability.

Normal cost

That portion of the actuarial present value of pension plan benefits and expenses which is allocated to a valuation year by the actuarial cost method.

Normal retirement age

An age defined in the plan for purposes of establishing when a terminated participant is entitled to an accrued benefit.

Normal retirement benefit

The benefit payable when it commences at the normal retirement age.

Participant

A person covered by a pension plan in accordance with its terms including active participants, retired participants and beneficiaries, vested terminations and vested transfers.

Plan year

The year on which the plan maintains its financial records.

Present value

The value of an amount or series of amounts payable at various times, determined as of a given date by the application based on a particular set of actuarial assumptions. It is a single sum which reflects the time value of money and the probabilities of payment.

Rate of return

The actual or expected investment income as a percentage of a plan's average assets.

System

Public School Retirement System of the City of St. Louis, Missouri.

Unfunded actuarial accrued liability

The excess of the actuarial accrued liability over the actuarial value of assets.

Vested benefit

A benefit that is not forfeited if the participant terminates employment.

Section 4 – ASOP 51 Disclosures

Funding future retirement benefits prior to when those benefits become due involves assumptions regarding future economic and demographic experience. These assumptions are applied to calculate actuarial liabilities, current contribution requirements and the funded status of the system. However, to the extent future experience deviates from the assumptions used, variations will occur in these calculated values. These variations create risk to the system. Understanding the risks to the funding of the system is important. Therefore, a new Actuarial Standard of Practice (ASOP) has been adopted. Actuarial Standard of Practice No. 51 ("ASOP 51") requires certain disclosures of potential risks to the system and provides useful information for intended users of actuarial reports that determine system contributions or evaluate the adequacy of specified contribution levels to support benefit provisions.

Under ASOP 51, risk is defined as the potential of actual future measurements deviating from expected future measurements resulting from actual future experience deviating from actuarially assumed experience.

It is important to note that not all risk is negative, but all risk should be understood and accepted based on knowledge, judgement and educated decisions. Future measurements may deviate in ways that produce positive or negative financial impacts to the system.

In the actuary's professional judgment, the following risks may reasonably be anticipated to significantly affect the system's future financial condition.

- Investment risk – potential that the investment return will be different than the 7.50% expected in the actuarial valuation
- Longevity risk – potential that participants live longer than expected from the valuation mortality assumptions
- Contribution risk – potential that the contribution will be different than the recommended contribution in the actuarial valuation

The following information is provided to comply with ASOP 51 and furnish beneficial information on potential risks to the system. This list is not all-inclusive; it is an attempt to identify the most significant risks and how those risks might affect the results shown in this report.

Section 4 (continued)

Note that ASOP 51 does not require the actuary to evaluate the ability or willingness of the system sponsor to make contributions to the system when due, or to assess the likelihood or consequences of potential future changes in law. In addition, this valuation report is not intended to provide investment advice or to provide guidance on the management or reduction of risk. Buck welcomes the opportunity to assist in such matters as part of a separate project or projects utilizing the appropriate staff and resources for those objectives.

Investment Risk

System costs are very sensitive to the market return. Any lower than assumed return on assets will increase costs:

- The lower market return will cause the market value of assets to be lower than expected.
- The plan uses an actuarial value of assets that adjusts the value by 20% of the excess of the market value of assets and the expected actuarial value as of the valuation date. This methodology helps to control some of the volatility in costs due to investment risk.
- Historical experience of market returns is shown in Schedule D: Summary of Investment Yield Performance. This historical experience illustrates how returns can vary over time.

Longevity Risk

System costs will be increased as participants are expected to live longer. This is because:

- Benefits are paid over a longer lifetime when life expectancy is expected to increase. The longer duration of payments leads to higher liabilities.
- Health care has been improving which increases the life expectancy of participants. As health care improves, costs to the system will increase.
- The mortality assumption for the System does assume future improvement in mortality. Any improvement in future mortality greater than that expected by the current mortality assumption would lead to increased costs for the System.

Contribution Risk

There is a risk associated with the employer's contribution when the actual amount and recommended amount differ. This is because:

- When the actual contribution is lower than the recommended contribution the System may not be sustainable in the long term.
- Any underpayment of the contribution will increase future contribution amounts to help pay off the additional Unfunded Actuarial Accrued Liability associated with any lower than recommended contribution amounts.
- Because of the legislative changes made to the employer contribution amounts, this is a significant risk to the plan. The actuarially determined contribution in this valuation is 18.17% of covered payroll. However, the annual required contribution due to the changes is only 15.00% of covered payroll.

System Maturity Measures:

There are certain measures that may aid in understanding the significant risks to the system.

Ratio of Retired Liability to Total Liability	January 1, 2018	January 1, 2019	January 1, 2020
1. Retirees and Beneficiaries	901,926,852	897,846,332	891,935,875
2. Total Accrued Liability	1,411,197,070	1,414,382,087	1,423,729,232
3. Ratio [(1) / (2)]	63.9%	63.5%	62.6%

A mature system will often have a ratio above 60 - 65 percent. A higher percentage will generally indicate an increased need for asset / liability matching.

Ratio of Cash Flow to Assets	December 31, 2017	December 31, 2018	December 31, 2019
1. Contributions	53,668,896	63,029,522	60,922,391
2. Benefit Payments	112,950,471	114,010,652	113,101,170
3. Cash Flow [(1) – (2)]	(59,281,575)	(50,981,130)	(52,178,779)
4. Market Value of Assets	914,082,259	819,449,893	893,295,602
5. Ratio [(3) / (4)]	(6.49%)	(6.22%)	(5.84%)

Section 4 (continued)

When this cash flow ratio is negative more cash is being paid out than deposited in the fund. Negative cash flow means the fund needs to rely on investment returns to cover benefit payments and at the same time may need to invest in more liquid assets to cover the benefit payments. More liquid assets may not garner the same returns as less liquid assets and therefore increase the investment risk. However, the low magnitude of the ratio implies there may already be enough liquid assets to cover the benefit payments, less investment return is needed to cover the shortfall, or only a small portion of assets will need to be converted to cash. Therefore, the investment risk is likely not amplified at this time. This maturity measure should be monitored for continual negative trend with greater magnitude.

	Contribution Volatility	January 1, 2018	January 1, 2019	January 1, 2020
1.	Market Value of Assets	914,082,259	819,449,893	893,295,602
2.	Payroll	265,773,659	263,772,380	272,973,377
3.	Asset Volatility Ratio (AVR) [(1) / (2)]	3.44	3.11	3.27
4.	Accrued Liability	1,411,197,070	1,414,382,087	1,423,729,232
5.	Liability Volatility Ratio (LVR) [(4) / (2)]	5.31	5.36	5.22

Systems that have higher asset-to-payroll ratios experience more volatile employer contributions (as a percentage of payroll) due to investment return. For example, a system with an asset-to-payroll ratio of 10 may experience twice the contribution volatility due to investment return volatility than a system with an asset-to-payroll ratio of 5. Systems that have higher liability-to-payroll ratios experience more volatile employer contributions (as a percentage of payroll) due to changes in liability. For example, if an assumption change increases the liability of two systems by the same percent the system with a liability-to-payroll ratio of 10 may experience twice the contribution volatility than a system with a liability-to-payroll ratio of 5.

Public School Retirement System of the City of St. Louis, Missouri

2020 Valuation Results

June 22, 2020

BUCK

Data – Population as of January 1, 2020

	2020	2019	Change
Retirees and Beneficiaries	4,477	4,500	-23
Inactives	3,274	2,886	388
Actives			
School District	3,614	3,679	-65
Charter Schools	1,487	1,365	122
Retirement System	7	6	1
Total Actives	5,108	5,050	58
Total	12,859	12,436	423

Data – Member census information

	As of January 1	
	2020	**2019**
Active Members		
Number	5,108	5,050
Average Age	43.57	43.53
Average Service	7.47	7.71
Average Annual Base Pay	$53,440	$52,232
Vested Terminated Members		
Number	647	566
Average Account Balance	$32,914	$32,522
Non-vested Terminated Members		
Number	2,627	2,320
Average Account Balance	$ 4,182	$ 4,085
Benefit Recipients		
Number	4,477	4,500
Average Age	74.74	74.51
Average Monthly Benefit	$ 1,978	$ 1,963

Valuation results – Summary

	January 1, 2020	January 1, 2019
System Assets		
Expense and contingency reserve	$ 30,244,590	$ 30,776,068
Market value, excluding expense & contingency reserve	863,051,012	788,673,825
Actuarial value	888,759,194	886,156,011
System liabilities		
Unfunded actuarial accrued liability	$ 241,849,149	$ 242,999,368
Projected unit credit liability	$ 1,241,617,244	$ 1,238,153,321
Entry Age Normal liability	$ 1,274,573,564	$ 1,268,885,279
Funding Ratio (PUC)		
Actuarial value funding ratio	71.6%	71.6%
Market value funding ratio	69.5%	63.7%
Funding Ratio (EAN)		
Actuarial value funding ratio	69.7%	69.8%
Market value funding ratio	67.7%	62.2%
Employer Cost		
Actuarially Determined Rate	18.18%	18.74%
Statutory Required Rate	15.00%	15.50%

Valuation results – Annual required contribution

	2020 Valuation	2019 Valuation	Increase / (Decrease)
Normal cost contribution	23,166,568	23,671,923	(505,355)
Actuarial accrued liability contribution	26,456,158	25,757,940	698,218
Actuarially determined contribution (ADC)	49,622,726	49,429,863	192,863
Covered compensation	272,973,377	263,772,380	9,200,997
ADC as % of covered payroll	18.18%	18.74%	(0.56)%
Statutory required contribution rate	15.00%	15.50%	(0.50)%
Statutory annual required contribution (ARC)	40,946,007	40,884,719	61,288

Valuation results – Contribution amounts by employer group

	Board of Education	Retirement System	Charter Schools	Total
Normal cost contribution	$16,467,879	$ 42,945	$6,655,744	23,166,568
Actuarial accrued liability contribution	18,806,274	49,043	7,600,841	26,456,158
Actuarially determined contribution (ADC)	35,274,153	91,988	14,256,585	49,622,726
Covered payroll	194,042,234	506,024	78,425,119	272,973,377
ADC as % of covered compensation	18.18%	18.18%	18.18%	18.18%
Statutory Annual Required contribution:				
Covered payroll	194,042,234	506,024	78,425,119	272,973,377
ARC as % of covered payroll	15.00%	15.00%	15.00%	15.00%
Statutory annual required contribution (ARC)	29,106,335	75,904	11,763,768	40,946,007

Gain/loss – Liability

	Dollar amounts in millions
A. 2019 Entry Age Normal Liability	$1,268.9
B. Expected 2020 Entry Age Normal Liability	$1,271.3
C. Impact of plan changes	$0
D. Actual 2020 Entry Age Normal Liability	$1,274.6
Gain / (Loss): B + C – D	$(3.3)
Gain / (Loss) as a Percent of Expected	(0.3)%

Gain/loss – Assets

	Actuarial Value of Assets ($ in millions)	Market Value of Assets ($ in millions)
A. 2019 Assets	$886.2	$819.4
B. Expected 2020 Assets	$895.2	$823.5
C. Actual 2020 Assets	$888.8	$893.3
D. Gain/(Loss): C – B	$(6.4)	$69.8
E. Expected Return	7.5%	7.5%
F. Actual Return	6.6%	16.1%
G. Gain/(Loss): F - E	(0.9)%	8.6%

Actual return calculation assumes mid-year cash flows

Disclosures

The preliminary valuation results in this presentation were developed for the Public School Retirement System of the City of St. Louis, Missouri (PSRS) by Buck Global, LLC (Buck) using generally accepted actuarial principles and techniques in accordance with all applicable Actuarial Standards of Practice (ASOPs). Note that the 2020 Actuarial Report contains an assessment of risk as required under ASOP 51. That assessment is still appropriate as of the current measurement date.

The assumptions, methods, asset information and data information are presented in the January 1, 2020 actuarial report. The data and asset information have been updated for results contained in this presentation and reflects information provided by the Plan sponsor. All of the statements of reliance, assumptions, descriptions and caveats in the actuarial valuation report are incorporated by reference.

Where presented, references to “funded ratio” and “unfunded accrued liability” typically are measured on an actuarial value of assets basis. It should be noted that the same measurements using market value of assets would result in different funded ratios and unfunded accrued liabilities. Moreover, the funded ratio presented is appropriate for evaluating the need and level of future contributions but makes no assessment regarding the funded status of the plan if the plan were to settle (i.e. purchase annuities) for a portion or all of its liabilities.

Future actuarial measurements may differ significantly from the current measurements shown in this presentation due to plan experience differing from that anticipated by the economic and demographic assumptions, changes expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law or regulations. An analysis of the potential range of such future differences is beyond the scope of the valuation summarized here.

Troy Jaros is a Fellow of the Society of Actuaries, an Enrolled Actuary, and a Member of the American Academy of Actuaries. He meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this presentation. He is available to answer any questions on the material contained in this presentation, or to provide explanations or further details as may be appropriate.

Any final questions on the valuation?

Request board approval of report results

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