



February 21, 2019

Mr. David Eager
Interim Executive Director
Kentucky Retirement Systems
1260 Louisville Road
Frankfort, KY 40601

**Re: Actuarial Analysis of Proposed Pension Reform Legislation HB 268 HCS and its
Financial Impact on the Kentucky Retirement Systems
AA Statement 1 of 1**

Dear Mr. Eager:

We have reviewed the proposed changes in the proposed pension reform legislation HB 268 HCS. The purpose of this letter is to communicate the fiscal analysis of the draft legislation on the KERS Non-Hazardous retirement and insurance funds. We have also included comments and suggested principal based alternative provisions for the General Assembly to consider.

Provisions of Proposed Legislation

In summary, this proposed legislation would provide that the contribution rate for certain quasi-governmental agencies (e.g. Mental Health, Health Districts, Non P1 agencies, and universities) will be 49.47% (41.06% retirement and 8.41% insurance) of pay for fiscal year 2019/2020. This proposed legislation would be another one-year extension of contribution rate relief for these quasi-governmental agencies.

Summary of Cost Impact

HB 265 enacted in the 2018 legislation session provided this contribution rate relief for fiscal year 2018/2019. The cost impact of this provision in HB 265, was \$135 million for fiscal year 2018/2019. If HB 307 (or HB 268) is enacted then the KERS non-hazardous systems will receive \$121 million less in contributions than expected from these entities in fiscal year 2019/2020. Note, the dollar amount of the impact is projected to be smaller for fiscal year 2019/2020 because the covered payroll of these entities has decreased from the prior year.

Please note that if enacted, then we believe this constitutes a pattern and when we perform the July 1, 2019 actuarial valuation, we will assume that these entities will continue to receive similar contribution rate relief each future year. It is necessary to build this assumption into the development of the actuarially determined contribution rate to ensure that the funds are receiving adequate contributions to fund the system over the prescribed funding period. This is expected to increase the contribution rates for non-quasi agencies by 11.8% of pay from 84.0% of pay to 95.8% of pay (84.7% retirement and 11.1% insurance) in fiscal year 2020/2021.

Basis of Calculations

GRS based the calculations and analysis in this letter on the member and financial data provided by KRS for use in performing the actuarial valuation as of June 30, 2018. Except where noted otherwise, the projections assume no actuarial gains or losses will occur in the future, and that members will terminate, retire, become disabled, or die as predicted by the actuarial assumptions documented in the June 30, 2018 actuarial valuation report.

These projections also do not reflect the actual investment experience of the retirement system after the measurement date of June 30, 2018. The projections assume that the number of participating members in the KERS systems (non-hazardous and hazardous) will remain constant each future year and that new members will enter the system to replace current active members who terminate or retire in future years. Further, the Quasi employers affected by this bill reflected approximately 25% of the covered payroll of the KERS Non-Hazardous system at the June 30, 2018 valuation. The projections assume that the Quasi employers will continue to reflect the same percentage of covered payroll for future years.

Our calculations are based upon assumptions regarding future events, which may or may not materialize. Depending on actual plan experience, actual results could deviate significantly from our projections.

Closing

We are not attorneys, and we cannot provide a legal opinion regarding the changes in this proposed legislation. Nothing in this letter should be construed as providing legal, investment or tax advice.

Mr. White is an Enrolled Actuary. Both of the undersigned are members of the American Academy of Actuaries and we meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. In addition, all of the undersigned are experienced in performing valuations for large public retirement systems.

Sincerely,

Daniel J. White, FSA, MAAA, EA

Janie Shaw, ASA, MAAA

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Enclosures

Section 1. Comparison of Fiscal Impact

Section 2. Projected Cost of the Retirement and Insurance Funds – Current Plan

Section 3. Projected Cost of the Retirement and Insurance Funds – Proposed Legislation

Section 4. Projected Cost of the Retirement and Insurance Plan with Projected Population Decrease



Section 1.
Comparison of Fiscal Impact
Current Plan vs. Proposed Changes

Kentucky Retirement Systems
KERS Non-Hazardous Retirement Fund
Exhibit 1-1
Comparison of Fiscal Impact
(\$ in Millions)

Fiscal Year

Non Quasi Agency

Beginning July 1, (1)	Unfunded Actuarial Accrued Liability			Funded Ratio			Quasi Employer Contribution			Non-Quasi Employer Contribution			Total Employer Contribution			Employer Contribution Rate		
	Current (2)	Proposed (3)	Difference (4)	Current (5)	Proposed (6)	Difference (7)	Current (8)	Proposed (9)	Difference (10)	Current (11)	Proposed (12)	Difference (13)	Current (14)	Proposed (15)	Difference (16)	Current (17)	Proposed (18)	Difference (19)
2018	\$ 13,656	\$ 13,656	\$ -	13%	13%	0%	\$ 145	\$ 145	\$ -	\$ 795	\$ 795	\$ -	\$ 940	\$ 940	\$ -	71.0%	71.0%	0.0%
2019	13,571	13,571	-	13%	13%	0%	253	146	(107)	805	805	-	1,058	951	(107)	71.0%	71.0%	0.0%
2020	13,325	13,435	110	15%	14%	-1%	267	149	(118)	849	976	127	1,116	1,125	9	73.7%	84.7%	11.0%
2021	12,967	13,073	106	17%	16%	-1%	272	151	(121)	863	993	130	1,135	1,144	9	73.7%	84.7%	11.0%
2022	12,585	12,689	104	19%	19%	0%	264	154	(110)	840	958	118	1,104	1,112	8	70.5%	80.4%	9.9%
2023	12,222	12,323	101	21%	21%	0%	269	157	(112)	855	975	120	1,124	1,132	8	70.5%	80.4%	9.9%
2024	11,817	11,914	97	23%	23%	0%	261	160	(101)	831	941	110	1,092	1,101	9	67.3%	76.2%	8.9%
2025	11,420	11,514	94	26%	25%	-1%	266	163	(103)	847	958	111	1,113	1,121	8	67.3%	76.2%	8.9%
2026	10,978	11,069	91	28%	27%	-1%	259	166	(93)	823	924	101	1,082	1,090	8	64.2%	72.1%	7.9%
2027	10,542	10,629	87	30%	30%	0%	264	169	(95)	838	942	104	1,102	1,111	9	64.2%	72.1%	7.9%
2028	10,060	10,142	82	33%	32%	-1%	256	172	(84)	814	906	92	1,070	1,078	8	61.1%	68.1%	7.0%
2029	9,583	9,662	79	35%	35%	0%	261	175	(86)	830	924	94	1,091	1,099	8	61.1%	68.1%	7.0%
2030	9,058	9,132	74	38%	38%	0%	253	179	(74)	806	888	82	1,059	1,067	8	58.2%	64.2%	6.0%
2031	8,535	8,605	70	41%	41%	0%	259	183	(76)	822	906	84	1,081	1,089	8	58.2%	64.2%	6.0%
2032	7,960	8,026	66	44%	44%	0%	251	186	(65)	797	870	73	1,048	1,056	8	55.3%	60.3%	5.0%
2033	7,387	7,448	61	48%	47%	-1%	256	190	(66)	815	889	74	1,071	1,079	8	55.3%	60.3%	5.0%
2034	6,760	6,815	55	52%	51%	-1%	248	194	(54)	787	849	62	1,035	1,043	8	52.3%	56.4%	4.1%
2035	6,134	6,185	51	55%	55%	0%	253	199	(54)	805	867	62	1,058	1,066	8	52.3%	56.4%	4.1%
2036	5,451	5,496	45	60%	59%	-1%	245	203	(42)	779	828	49	1,024	1,031	7	49.5%	52.6%	3.1%
2037	4,768	4,807	39	64%	64%	0%	251	208	(43)	798	849	51	1,049	1,057	8	49.5%	52.6%	3.1%
2038	4,022	4,056	34	69%	69%	0%	241	214	(27)	768	802	34	1,009	1,016	7	46.4%	48.5%	2.1%
2039	3,279	3,306	27	75%	74%	-1%	247	219	(28)	787	823	36	1,034	1,042	8	46.4%	48.5%	2.1%
2040	2,471	2,492	21	81%	80%	-1%	235	224	(11)	749	768	19	984	992	8	43.1%	44.2%	1.1%
2041	1,674	1,688	14	87%	87%	0%	241	230	(11)	767	786	19	1,008	1,016	8	43.1%	44.2%	1.1%
2042	810	816	6	93%	93%	0%	220	221	1	699	705	6	919	926	7	38.4%	38.6%	0.2%
2043	-	-	-	100%	100%	0%	19	19	-	59	59	-	78	78	-	3.2%	3.2%	0.0%
2044	-	-	-	100%	100%	0%	19	19	-	60	60	-	79	79	-	3.1%	3.1%	0.0%
2045	-	-	-	100%	100%	0%	19	19	-	60	60	-	79	79	-	3.1%	3.1%	0.0%
2046	-	-	-	100%	100%	0%	19	19	-	61	61	-	80	80	-	3.1%	3.1%	0.0%
2047	-	-	-	100%	100%	0%	19	19	-	62	62	-	81	81	-	3.0%	3.0%	0.0%

Gabriel Roeder Smith & Company

Kentucky Retirement Systems
KERS Non-Hazardous Insurance Fund
Exhibit 1-2
Comparison of Fiscal Impact
(\$ in Millions)

Fiscal Year

Non Quasi Agency

Beginning July 1, (1)	Unfunded Actuarial Accrued Liability			Funded Ratio			Quasi Employer Contribution			Non-Quasi Employer Contribution			Total Employer Contribution			Employer Contribution Rate		
	Current (2)	Proposed (3)	Difference (4)	Current (5)	Proposed (6)	Difference (7)	Current (8)	Proposed (9)	Difference (10)	Current (11)	Proposed (12)	Difference (13)	Current (14)	Proposed (15)	Difference (16)	Current (17)	Proposed (18)	Difference (19)
2018	\$ 1,549	\$ 1,549	\$ -	36%	36%	0%	\$ 29	\$ 29	\$ -	\$ 138	\$ 138	\$ -	\$ 167	\$ 167	\$ -	12.4%	12.4%	0.0%
2019	1,519	1,519	-	39%	39%	0%	44	30	(14)	139	139	-	183	169	(14)	12.4%	12.4%	0.0%
2020	1,461	1,476	15	43%	42%	-1%	37	29	(8)	118	127	9	155	156	1	10.3%	11.1%	0.8%
2021	1,416	1,430	14	46%	45%	-1%	38	30	(8)	119	129	10	157	159	2	10.3%	11.1%	0.8%
2022	1,373	1,386	13	48%	48%	0%	36	30	(6)	114	121	7	150	151	1	9.7%	10.2%	0.5%
2023	1,336	1,350	14	51%	50%	-1%	37	31	(6)	116	123	7	153	154	1	9.7%	10.2%	0.5%
2024	1,293	1,306	13	53%	53%	0%	35	31	(4)	111	116	5	146	147	1	9.1%	9.4%	0.3%
2025	1,252	1,264	12	55%	55%	0%	36	32	(4)	113	118	5	149	150	1	9.1%	9.4%	0.3%
2026	1,204	1,216	12	57%	57%	0%	34	32	(2)	108	111	3	142	143	1	8.5%	8.7%	0.2%
2027	1,159	1,171	12	59%	59%	0%	35	33	(2)	110	113	3	145	146	1	8.5%	8.7%	0.2%
2028	1,107	1,118	11	61%	61%	0%	33	33	-	104	105	1	137	138	1	7.9%	8.0%	0.1%
2029	1,057	1,068	11	63%	63%	0%	33	34	1	107	107	-	140	141	1	7.9%	8.0%	0.1%
2030	1,000	1,010	10	65%	65%	0%	32	32	-	101	102	1	133	134	1	7.4%	7.4%	0.0%
2031	944	954	10	67%	67%	0%	33	33	-	103	104	1	136	137	1	7.4%	7.4%	0.0%
2032	882	891	9	69%	69%	0%	31	31	-	98	99	1	129	130	1	6.9%	6.9%	0.0%
2033	821	829	8	71%	71%	0%	32	32	-	100	101	1	132	133	1	6.9%	6.9%	0.0%
2034	753	761	8	74%	73%	-1%	30	30	-	96	97	1	126	127	1	6.4%	6.5%	0.1%
2035	686	693	7	76%	75%	-1%	31	31	-	97	99	2	128	130	2	6.4%	6.5%	0.1%
2036	612	618	6	78%	78%	0%	29	30	1	94	94	-	123	124	1	6.0%	6.0%	0.0%
2037	537	542	5	81%	81%	0%	30	30	-	96	97	1	126	127	1	6.0%	6.0%	0.0%
2038	455	459	4	84%	84%	0%	29	29	-	92	93	1	121	122	1	5.6%	5.7%	0.1%
2039	372	376	4	87%	87%	0%	30	30	-	94	95	1	124	125	1	5.6%	5.7%	0.1%
2040	282	285	3	90%	90%	0%	28	28	-	90	91	1	118	119	1	5.2%	5.2%	0.0%
2041	192	195	3	93%	93%	0%	29	29	-	92	93	1	121	122	1	5.2%	5.2%	0.0%
2042	93	95	2	97%	97%	0%	26	27	1	84	84	-	110	111	1	4.6%	4.7%	0.1%
2043	-	-	-	100%	100%	0%	3	3	-	10	10	-	13	13	-	0.5%	0.5%	0.0%
2044	-	-	-	100%	100%	0%	3	3	-	10	10	-	13	13	-	0.5%	0.5%	0.0%
2045	-	-	-	100%	100%	0%	3	3	-	10	10	-	13	13	-	0.5%	0.5%	0.0%
2046	-	-	-	100%	100%	0%	3	3	-	10	10	-	13	13	-	0.5%	0.5%	0.0%
2047	-	-	-	100%	100%	0%	3	3	-	10	10	-	13	13	-	0.5%	0.5%	0.0%

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Section 2.
Projected Cost of the Retirement and Insurance
Current Plan

Kentucky Retirement Systems
KERS Non-Hazardous Retirement Fund
Exhibit 2-1
Current Plan
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Quasi Employer Contribution	Non-Quasi Employer Contribution	Total Employer Contribution	Member Contribution	Covered Payroll	Quasi Employer Contribution as % of Covered Payroll	Non-Quasi Employer Contribution as % of Covered Payroll	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2018	\$ 15,675	\$ 2,019	\$ 13,656	13%	\$ 145	\$ 795	\$ 940	\$ 74	\$ 1,471	41.06%	71.03%	63.86%	71.03%
2019	15,677	2,106	13,571	13%	253	805	1,058	74	1,490	71.03%	71.03%	71.03%	74.54%
2020	15,662	2,337	13,325	15%	267	849	1,116	76	1,514	73.71%	73.71%	73.71%	73.71%
2021	15,631	2,664	12,967	17%	272	863	1,135	77	1,540	73.71%	73.71%	73.71%	72.25%
2022	15,584	2,999	12,585	19%	264	840	1,104	78	1,567	70.45%	70.45%	70.45%	70.45%
2023	15,521	3,299	12,222	21%	269	855	1,124	80	1,595	70.45%	70.45%	70.45%	68.91%
2024	15,443	3,626	11,817	23%	261	831	1,092	81	1,624	67.27%	67.27%	67.27%	67.27%
2025	15,350	3,930	11,420	26%	266	847	1,113	83	1,654	67.27%	67.27%	67.27%	65.80%
2026	15,243	4,265	10,978	28%	259	823	1,082	84	1,686	64.18%	64.18%	64.18%	64.18%
2027	15,121	4,579	10,542	30%	264	838	1,102	86	1,718	64.18%	64.18%	64.18%	62.71%
2028	14,984	4,924	10,060	33%	256	814	1,070	88	1,750	61.14%	61.14%	61.14%	61.14%
2029	14,840	5,257	9,583	35%	261	830	1,091	89	1,784	61.14%	61.14%	61.14%	59.75%
2030	14,682	5,624	9,058	38%	253	806	1,059	91	1,820	58.20%	58.20%	58.20%	58.20%
2031	14,512	5,977	8,535	41%	259	822	1,081	93	1,858	58.20%	58.20%	58.20%	56.82%
2032	14,333	6,373	7,960	44%	251	797	1,048	95	1,897	55.25%	55.25%	55.25%	55.25%
2033	14,145	6,758	7,387	48%	256	815	1,071	97	1,938	55.25%	55.25%	55.25%	53.89%
2034	13,950	7,190	6,760	52%	248	787	1,035	99	1,979	52.31%	52.31%	52.31%	52.31%
2035	13,748	7,614	6,134	55%	253	805	1,058	101	2,023	52.31%	52.31%	52.31%	51.00%
2036	13,542	8,091	5,451	60%	245	779	1,024	104	2,070	49.45%	49.45%	49.45%	49.45%
2037	13,339	8,571	4,768	64%	251	798	1,049	106	2,121	49.45%	49.45%	49.45%	48.09%
2038	13,142	9,120	4,022	69%	241	768	1,009	109	2,174	46.39%	46.39%	46.39%	46.39%
2039	12,954	9,675	3,279	75%	247	787	1,034	111	2,229	46.39%	46.39%	46.39%	45.03%
2040	12,777	10,306	2,471	81%	235	749	984	114	2,284	43.10%	43.10%	43.10%	43.10%
2041	12,613	10,939	1,674	87%	241	767	1,008	117	2,340	43.10%	43.10%	43.10%	41.68%
2042	12,461	11,651	810	93%	220	699	919	120	2,396	38.35%	38.35%	38.35%	38.35%
2043	12,321	12,321	-	100%	19	59	78	123	2,452	3.17%	3.17%	3.17%	3.17%
2044	12,195	12,195	-	100%	19	60	79	125	2,509	3.13%	3.13%	3.13%	3.13%
2045	12,082	12,082	-	100%	19	60	79	128	2,567	3.09%	3.09%	3.09%	3.09%
2046	11,983	11,983	-	100%	19	61	80	131	2,626	3.06%	3.06%	3.06%	3.06%
2047	11,898	11,898	-	100%	19	62	81	134	2,686	3.03%	3.03%	3.03%	3.03%

Notes and assumptions:

The projection is based on the results of the June 30, 2018 actuarial valuation and assumes that all actuarial assumptions are realized, including the assumed annual asset return of 5.25%.

New active members are assumed to be hired to replace the current active members as they are assumed to terminate employment or retire.

The total active population is assumed to remain flat through the entire projection.

The contribution rate established in the Commonwealth's biennium budget is based on the calculated actuarial determined contribution rate.

The 63.86% employer contribution rate for FY 2018 is the effective contribution rate after reflecting HB 265 which provided that Regional Mental Health/Mental Retardation

Boards, Local and District Health Departments, State Universities, Community Colleges and any other agency eligible to voluntarily cease participating in the KERS to

contribute a 49.47% of pay contribution rate for FY 2019. Collectively these entities ("Quasi Employers") reflect approximately 25% of the covered payroll in the System, and

are assumed to reflect this same percentage of covered payroll through the entire projection.

Kentucky Retirement Systems
KERS Non-Hazardous Insurance Fund
Exhibit 2-2
Current Plan
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Quasi Employer Contribution	Non-Quasi Employer Contribution	Total Employer Contribution	Member Contribution	Covered Payroll	Quasi Employer Contribution as % of Covered Payroll	Non-Quasi Employer Contribution as % of Covered Payroll	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2018	\$ 2,436	\$ 887	\$ 1,549	36%	\$ 29	\$ 138	\$ 167	\$ 6	\$ 1,461	8.41%	12.40%	11.45%	12.40%
2019	2,497	978	1,519	39%	44	139	183	7	1,480	12.40%	12.40%	12.40%	10.65%
2020	2,558	1,097	1,461	43%	37	118	155	7	1,504	10.28%	10.28%	10.28%	10.28%
2021	2,614	1,198	1,416	46%	38	119	157	8	1,530	10.28%	10.28%	10.28%	10.01%
2022	2,666	1,293	1,373	48%	36	114	150	9	1,556	9.65%	9.65%	9.65%	9.65%
2023	2,714	1,378	1,336	51%	37	116	153	10	1,584	9.65%	9.65%	9.65%	9.36%
2024	2,756	1,463	1,293	53%	35	111	146	10	1,613	9.05%	9.05%	9.05%	9.05%
2025	2,792	1,540	1,252	55%	36	113	149	11	1,644	9.05%	9.05%	9.05%	8.77%
2026	2,823	1,619	1,204	57%	34	108	142	12	1,675	8.47%	8.47%	8.47%	8.47%
2027	2,848	1,689	1,159	59%	35	110	145	13	1,706	8.47%	8.47%	8.47%	8.20%
2028	2,865	1,758	1,107	61%	33	104	137	14	1,739	7.90%	7.90%	7.90%	7.90%
2029	2,875	1,818	1,057	63%	33	107	140	14	1,773	7.90%	7.90%	7.90%	7.63%
2030	2,878	1,878	1,000	65%	32	101	133	15	1,808	7.35%	7.35%	7.35%	7.35%
2031	2,874	1,930	944	67%	33	103	136	16	1,846	7.35%	7.35%	7.35%	7.10%
2032	2,867	1,985	882	69%	31	98	129	17	1,885	6.85%	6.85%	6.85%	6.85%
2033	2,856	2,035	821	71%	32	100	132	18	1,926	6.85%	6.85%	6.85%	6.63%
2034	2,843	2,090	753	74%	30	96	126	18	1,967	6.39%	6.39%	6.39%	6.39%
2035	2,828	2,142	686	76%	31	97	128	19	2,010	6.39%	6.39%	6.39%	6.21%
2036	2,814	2,202	612	78%	29	94	123	20	2,058	5.99%	5.99%	5.99%	5.99%
2037	2,801	2,264	537	81%	30	96	126	21	2,108	5.99%	5.99%	5.99%	5.81%
2038	2,792	2,337	455	84%	29	92	121	21	2,161	5.60%	5.60%	5.60%	5.60%
2039	2,786	2,414	372	87%	30	94	124	22	2,215	5.60%	5.60%	5.60%	5.43%
2040	2,785	2,503	282	90%	28	90	118	23	2,270	5.19%	5.19%	5.19%	5.19%
2041	2,789	2,597	192	93%	29	92	121	23	2,326	5.19%	5.19%	5.19%	5.01%
2042	2,797	2,704	93	97%	26	84	110	24	2,382	4.63%	4.63%	4.63%	4.63%
2043	2,811	2,811	-	100%	3	10	13	24	2,438	0.52%	0.52%	0.52%	0.52%
2044	2,830	2,830	-	100%	3	10	13	25	2,495	0.51%	0.51%	0.51%	0.51%
2045	2,853	2,853	-	100%	3	10	13	25	2,553	0.50%	0.50%	0.50%	0.50%
2046	2,879	2,879	-	100%	3	10	13	26	2,611	0.49%	0.49%	0.49%	0.49%
2047	2,908	2,908	-	100%	3	10	13	27	2,671	0.48%	0.48%	0.48%	0.48%

Notes and assumptions:

The projection is based on the results of the June 30, 2018 actuarial valuation and assumes that all actuarial assumptions are realized, including the assumed annual asset return of 5.25%.

New active members are assumed to be hired to replace the current active members as they are assumed to terminate employment or retire.

The total active population is assumed to remain flat through the entire projection.

The contribution rate established in the Commonwealth's biennium budget is based on the calculated actuarial determined contribution rate.

The 63.86% employer contribution rate for FY 2018 is the effective contribution rate after reflecting HB 265 which provided that Regional Mental Health/Mental Retardation

Boards, Local and District Health Departments, State Universities, Community Colleges and any other agency eligible to voluntarily cease participating in the KERS to contribute a 49.47% of pay contribution rate for FY 2019. Collectively these entities ("Quasi Employers") reflect approximately 25% of the covered payroll in the System, and are assumed to reflect this same percentage of covered payroll through the entire projection.

Section 3.
Projected Cost of the Retirement and Insurance
Proposed Legislation

KERS Non-Hazardous Retirement Fund

Exhibit 3-1

Proposed Plan

(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Quasi Employer Contribution	Non-Quasi Employer Contribution	Total Employer Contribution	Member Contribution	Covered Payroll	Quasi Employer Contribution as % of Covered Payroll	Non-Quasi Employer Contribution as % of Covered Payroll	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2018	\$ 15,675	\$ 2,019	\$ 13,656	13%	\$ 145	\$ 795	\$ 940	\$ 74	\$ 1,471	41.06%	71.03%	63.86%	71.03%
2019	15,677	2,106	13,571	13%	146	805	951	74	1,490	41.06%	71.03%	63.86%	74.54%
2020	15,662	2,227	13,435	14%	149	976	1,125	76	1,514	41.06%	84.71%	74.27%	74.27%
2021	15,631	2,558	13,073	16%	151	993	1,144	77	1,540	41.06%	84.71%	74.27%	72.78%
2022	15,584	2,895	12,689	19%	154	958	1,112	78	1,567	41.06%	80.38%	70.97%	70.97%
2023	15,521	3,198	12,323	21%	157	975	1,132	80	1,595	41.06%	80.38%	70.97%	69.42%
2024	15,443	3,529	11,914	23%	160	941	1,101	81	1,624	41.06%	76.17%	67.77%	67.77%
2025	15,350	3,836	11,514	25%	163	958	1,121	83	1,654	41.06%	76.17%	67.77%	66.29%
2026	15,243	4,174	11,069	27%	166	924	1,090	84	1,686	41.06%	72.09%	64.67%	64.67%
2027	15,121	4,492	10,629	30%	169	942	1,111	86	1,718	41.06%	72.09%	64.67%	63.18%
2028	14,984	4,842	10,142	32%	172	906	1,078	88	1,750	41.06%	68.06%	61.60%	61.60%
2029	14,840	5,178	9,662	35%	175	924	1,099	89	1,784	41.06%	68.06%	61.60%	60.20%
2030	14,682	5,550	9,132	38%	179	888	1,067	91	1,820	41.06%	64.15%	58.63%	58.63%
2031	14,512	5,907	8,605	41%	183	906	1,089	93	1,858	41.06%	64.15%	58.63%	57.25%
2032	14,333	6,307	8,026	44%	186	870	1,056	95	1,897	41.06%	60.28%	55.68%	55.68%
2033	14,145	6,697	7,448	47%	190	889	1,079	97	1,938	41.06%	60.28%	55.68%	54.30%
2034	13,950	7,135	6,815	51%	194	849	1,043	99	1,979	41.06%	56.37%	52.71%	52.71%
2035	13,748	7,563	6,185	55%	199	867	1,066	101	2,023	41.06%	56.37%	52.71%	51.39%
2036	13,542	8,046	5,496	59%	203	828	1,031	104	2,070	41.06%	52.57%	49.82%	49.82%
2037	13,339	8,532	4,807	64%	208	849	1,057	106	2,121	41.06%	52.57%	49.82%	48.46%
2038	13,142	9,086	4,056	69%	214	802	1,016	109	2,174	41.06%	48.53%	46.74%	46.74%
2039	12,954	9,648	3,306	74%	219	823	1,042	111	2,229	41.06%	48.53%	46.74%	45.37%
2040	12,777	10,285	2,492	80%	224	768	992	114	2,284	41.06%	44.18%	43.43%	43.43%
2041	12,613	10,925	1,688	87%	230	786	1,016	117	2,340	41.06%	44.18%	43.43%	42.00%
2042	12,461	11,645	816	93%	221	705	926	120	2,396	38.64%	38.64%	38.64%	38.64%
2043	12,321	12,321	-	100%	19	59	78	123	2,452	3.17%	3.17%	3.17%	3.17%
2044	12,195	12,195	-	100%	19	60	79	125	2,509	3.13%	3.13%	3.13%	3.13%
2045	12,082	12,082	-	100%	19	60	79	128	2,567	3.09%	3.09%	3.09%	3.09%
2046	11,983	11,983	-	100%	19	61	80	131	2,626	3.06%	3.06%	3.06%	3.06%
2047	11,898	11,898	-	100%	19	62	81	134	2,686	3.03%	3.03%	3.03%	3.03%

Notes and assumptions:

Quasis employers are assumed to contribute a maximum contribution of 41.06% of payroll and are assumed to reflect approximately 25% of payroll through the entire projection.

Non-quasi employer contribution rates have been adjusted so that the system receives the biannual actuarially determined employer contribution rate starting in the 2020/2021 fiscal year.

KERS Non-Hazardous Insurance Fund

Exhibit 3-2

Proposed Plan

(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Quasi Employer Contribution	Non-Quasi Employer Contribution	Total Employer Contribution	Member Contribution	Covered Payroll	Quasi Employer Contribution as % of Covered Payroll	Non-Quasi Employer Contribution as % of Covered Payroll	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2018	\$ 2,436	\$ 887	\$ 1,549	36%	\$ 29	\$ 138	\$ 167	\$ 6	\$ 1,461	8.41%	12.40%	11.45%	12.40%
2019	2,497	978	1,519	39%	30	139	169	7	1,480	8.41%	12.40%	11.45%	10.65%
2020	2,558	1,082	1,476	42%	29	127	156	7	1,504	8.10%	11.08%	10.37%	10.37%
2021	2,614	1,184	1,430	45%	30	129	159	8	1,530	8.10%	11.08%	10.37%	10.09%
2022	2,666	1,280	1,386	48%	30	121	151	9	1,556	8.10%	10.23%	9.72%	9.72%
2023	2,714	1,364	1,350	50%	31	123	154	10	1,584	8.10%	10.23%	9.72%	9.43%
2024	2,756	1,450	1,306	53%	31	116	147	10	1,613	8.10%	9.44%	9.12%	9.12%
2025	2,792	1,528	1,264	55%	32	118	150	11	1,644	8.10%	9.44%	9.12%	8.84%
2026	2,823	1,607	1,216	57%	32	111	143	12	1,675	8.10%	8.68%	8.54%	8.54%
2027	2,848	1,677	1,171	59%	33	113	146	13	1,706	8.10%	8.68%	8.54%	8.27%
2028	2,865	1,747	1,118	61%	33	105	138	14	1,739	7.96%	7.96%	7.96%	7.96%
2029	2,875	1,807	1,068	63%	34	107	141	14	1,773	7.96%	7.96%	7.96%	7.70%
2030	2,878	1,868	1,010	65%	32	102	134	15	1,808	7.42%	7.42%	7.42%	7.42%
2031	2,874	1,920	954	67%	33	104	137	16	1,846	7.42%	7.42%	7.42%	7.16%
2032	2,867	1,976	891	69%	31	99	130	17	1,885	6.91%	6.91%	6.91%	6.91%
2033	2,856	2,027	829	71%	32	101	133	18	1,926	6.91%	6.91%	6.91%	6.69%
2034	2,843	2,082	761	73%	30	97	127	18	1,967	6.45%	6.45%	6.45%	6.45%
2035	2,828	2,135	693	75%	31	99	130	19	2,010	6.45%	6.45%	6.45%	6.27%
2036	2,814	2,196	618	78%	30	94	124	20	2,058	6.04%	6.04%	6.04%	6.04%
2037	2,801	2,259	542	81%	30	97	127	21	2,108	6.04%	6.04%	6.04%	5.86%
2038	2,792	2,333	459	84%	29	93	122	21	2,161	5.65%	5.65%	5.65%	5.65%
2039	2,786	2,410	376	87%	30	95	125	22	2,215	5.65%	5.65%	5.65%	5.48%
2040	2,785	2,500	285	90%	28	91	119	23	2,270	5.24%	5.24%	5.24%	5.24%
2041	2,789	2,594	195	93%	29	93	122	23	2,326	5.24%	5.24%	5.24%	5.07%
2042	2,797	2,702	95	97%	27	84	111	24	2,382	4.68%	4.68%	4.68%	4.68%
2043	2,811	2,811	-	100%	3	10	13	24	2,438	0.52%	0.52%	0.52%	0.52%
2044	2,830	2,830	-	100%	3	10	13	25	2,495	0.51%	0.51%	0.51%	0.51%
2045	2,853	2,853	-	100%	3	10	13	25	2,553	0.50%	0.50%	0.50%	0.50%
2046	2,879	2,879	-	100%	3	10	13	26	2,611	0.49%	0.49%	0.49%	0.49%
2047	2,908	2,908	-	100%	3	10	13	27	2,671	0.48%	0.48%	0.48%	0.48%

Notes and assumptions:

Quasis employers are assumed to contribute a maximum contribution of 8.41% of payroll and are assumed to reflect approximately 25% of payroll through the entire projection.

Non-quasi employer contribution rates have been adjusted so that the system receives the biannual actuarially determined employer contribution rate starting in the 2020/2021 fiscal year.

Section 4:

Alternative Scenario for KERS Non-Hazardous

**Projected Cost of the Retirement and Insurance
Current Plan with Projected Population Decrease**

Kentucky Retirement Systems
KERS Non-Hazardous Retirement Fund
Exhibit 4-1 (Alternative Assumptions that Assume a Decreasing Active Membership)
Comparison of Fiscal Impact
(\$ in Millions)

Fiscal Year Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Quasi Employer Contribution			Non-Quasi Employer Contribution			Total Employer Contribution			Blended Employer Contribution Rate		
	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
2018	\$ 13,656	\$ 13,656	\$ -	13%	13%	0%	\$ 145	\$ 145	\$ -	\$ 795	\$ 795	\$ -	\$ 940	\$ 940	\$ -	63.9%	71.0%	7.1%
2019	13,570	13,570	-	13%	13%	0%	250	144	(106)	793	793	-	1,043	937	(106)	71.0%	74.5%	3.5%
2020	13,338	13,446	108	15%	14%	-1%	263	144	(119)	836	963	127	1,099	1,107	8	74.8%	75.4%	0.6%
2021	12,996	13,101	105	17%	16%	-1%	263	144	(119)	836	963	127	1,099	1,107	8	74.8%	75.1%	0.3%
2022	12,650	12,752	102	19%	18%	-1%	260	144	(116)	828	952	124	1,088	1,096	8	74.1%	74.6%	0.5%
2023	12,303	12,402	99	21%	20%	-1%	260	144	(116)	828	952	124	1,088	1,096	8	74.1%	74.3%	0.2%
2024	11,933	12,030	97	23%	22%	-1%	258	144	(114)	821	943	122	1,079	1,087	8	73.4%	74.0%	0.6%
2025	11,549	11,643	94	25%	24%	-1%	258	144	(114)	821	943	122	1,079	1,087	8	73.4%	73.7%	0.3%
2026	11,142	11,233	91	27%	26%	-1%	256	144	(112)	815	935	120	1,071	1,079	8	72.9%	73.4%	0.5%
2027	10,718	10,804	86	29%	28%	-1%	256	144	(112)	814	934	120	1,070	1,078	8	72.9%	73.2%	0.3%
2028	10,269	10,352	83	31%	30%	-1%	254	144	(110)	808	926	118	1,062	1,070	8	72.4%	72.9%	0.5%
2029	9,800	9,880	80	33%	33%	0%	254	144	(110)	807	925	118	1,061	1,069	8	72.4%	72.7%	0.3%
2030	9,303	9,379	76	36%	35%	-1%	252	144	(108)	803	919	116	1,055	1,063	8	71.9%	72.4%	0.5%
2031	8,785	8,857	72	39%	38%	-1%	252	144	(108)	803	920	117	1,055	1,064	9	71.9%	72.2%	0.3%
2032	8,236	8,303	67	42%	41%	-1%	251	144	(107)	797	912	115	1,048	1,056	8	71.4%	71.9%	0.5%
2033	7,662	7,724	62	45%	44%	-1%	251	144	(107)	798	913	115	1,049	1,057	8	71.4%	71.6%	0.2%
2034	7,053	7,111	58	48%	48%	0%	249	145	(104)	792	904	112	1,041	1,049	8	70.8%	71.3%	0.5%
2035	6,419	6,471	52	52%	52%	0%	249	145	(104)	793	905	112	1,042	1,050	8	70.8%	71.0%	0.2%
2036	5,747	5,794	47	56%	56%	0%	248	145	(103)	789	900	111	1,037	1,045	8	70.2%	70.7%	0.5%
2037	5,044	5,085	41	61%	60%	-1%	249	146	(103)	793	904	111	1,042	1,050	8	70.2%	70.3%	0.1%
2038	4,297	4,332	35	66%	66%	0%	247	147	(100)	786	894	108	1,033	1,041	8	69.2%	69.8%	0.6%
2039	3,520	3,549	29	71%	71%	0%	248	147	(101)	790	899	109	1,038	1,046	8	69.2%	69.2%	0.0%
2040	2,694	2,716	22	78%	77%	-1%	245	148	(97)	780	884	104	1,025	1,032	7	68.0%	68.5%	0.5%
2041	1,839	1,854	15	84%	84%	0%	246	149	(97)	783	888	105	1,029	1,037	8	68.0%	68.0%	0.0%
2042	933	941	8	92%	92%	0%	241	149	(92)	767	867	100	1,008	1,016	8	66.4%	66.9%	0.5%
2043	-	-	-	100%	100%	0%	12	12	-	37	37	-	49	49	-	3.2%	3.2%	0.0%
2044	-	-	-	100%	100%	0%	12	12	-	36	36	-	48	48	-	3.1%	3.2%	0.1%
2045	-	-	-	100%	100%	0%	11	11	-	37	37	-	48	48	-	3.1%	3.1%	0.0%
2046	-	-	-	100%	100%	0%	11	11	-	36	36	-	47	47	-	3.1%	3.1%	0.0%
2047	-	-	-	100%	100%	0%	11	11	-	36	36	-	47	47	-	3.0%	3.0%	0.0%

Gabriel Roeder Smith & Company

Kentucky Retirement Systems
KERS Non-Hazardous Retirement Fund
Exhibit 4-2 (Alternative Assumptions that Assume a Decreasing Active Membership)
Current Plan
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Quasi Employer Contribution	Non-Quasi Employer Contribution	Total Employer Contribution	Member Contribution	Covered Payroll	Quasi Employer Contribution as % of Covered Payroll	Non-Quasi Employer Contribution as % of Covered Payroll	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2018	\$ 15,675	\$ 2,019	\$ 13,656	13%	\$ 145	\$ 795	\$ 940	\$ 74	\$ 1,471	41.06%	71.03%	63.86%	71.03%
2019	15,676	2,106	13,570	13%	250	793	1,043	73	1,468	71.03%	71.03%	71.03%	74.54%
2020	15,658	2,320	13,338	15%	263	836	1,099	73	1,468	74.84%	74.84%	74.84%	74.84%
2021	15,623	2,627	12,996	17%	263	836	1,099	73	1,469	74.84%	74.84%	74.84%	74.58%
2022	15,570	2,920	12,650	19%	260	828	1,088	73	1,468	74.09%	74.09%	74.09%	74.09%
2023	15,499	3,196	12,303	21%	260	828	1,088	73	1,469	74.09%	74.09%	74.09%	73.76%
2024	15,411	3,478	11,933	23%	258	821	1,079	73	1,469	73.44%	73.44%	73.44%	73.44%
2025	15,304	3,755	11,549	25%	258	821	1,079	73	1,469	73.44%	73.44%	73.44%	73.18%
2026	15,181	4,039	11,142	27%	256	815	1,071	73	1,469	72.87%	72.87%	72.87%	72.87%
2027	15,039	4,321	10,718	29%	256	814	1,070	73	1,469	72.87%	72.87%	72.87%	72.61%
2028	14,880	4,611	10,269	31%	254	808	1,062	73	1,468	72.35%	72.35%	72.35%	72.35%
2029	14,709	4,909	9,800	33%	254	807	1,061	73	1,467	72.35%	72.35%	72.35%	72.13%
2030	14,520	5,217	9,303	36%	252	803	1,055	73	1,467	71.89%	71.89%	71.89%	71.89%
2031	14,316	5,531	8,785	39%	252	803	1,055	73	1,468	71.89%	71.89%	71.89%	71.66%
2032	14,099	5,863	8,236	42%	251	797	1,048	73	1,469	71.35%	71.35%	71.35%	71.35%
2033	13,868	6,206	7,662	45%	251	798	1,049	74	1,471	71.35%	71.35%	71.35%	71.08%
2034	13,625	6,572	7,053	48%	249	792	1,041	74	1,472	70.75%	70.75%	70.75%	70.75%
2035	13,370	6,951	6,419	52%	249	793	1,042	74	1,473	70.75%	70.75%	70.75%	70.49%
2036	13,107	7,360	5,747	56%	248	789	1,037	74	1,478	70.17%	70.17%	70.17%	70.17%
2037	12,840	7,796	5,044	61%	249	793	1,042	74	1,485	70.17%	70.17%	70.17%	69.78%
2038	12,573	8,276	4,297	66%	247	786	1,033	75	1,492	69.22%	69.22%	69.22%	69.22%
2039	12,310	8,790	3,520	71%	248	790	1,038	75	1,500	69.22%	69.22%	69.22%	68.70%
2040	12,051	9,357	2,694	78%	245	780	1,025	75	1,507	67.98%	67.98%	67.98%	67.98%
2041	11,798	9,959	1,839	84%	246	783	1,029	76	1,513	67.98%	67.98%	67.98%	67.48%
2042	11,550	10,617	933	92%	241	767	1,008	76	1,519	66.39%	66.39%	66.39%	66.39%
2043	11,308	11,308	-	100%	12	37	49	76	1,523	3.17%	3.17%	3.17%	3.17%
2044	11,071	11,071	-	100%	12	36	48	76	1,527	3.13%	3.13%	3.13%	3.13%
2045	10,841	10,841	-	100%	11	37	48	76	1,530	3.09%	3.09%	3.09%	3.09%
2046	10,617	10,617	-	100%	11	36	47	77	1,533	3.06%	3.06%	3.06%	3.06%
2047	10,399	10,399	-	100%	11	36	47	77	1,535	3.03%	3.03%	3.03%	3.03%

Notes and assumptions:

The projection is based on the results of the June 30, 2018 actuarial valuation and assumes that all actuarial assumptions are realized, including the assumed annual asset return of 5.25%.

New active members are assumed to be hired to replace the current active members as they are assumed to terminate employment or retire.

The total active population is assumed to decrease by 2% each year.

The contribution rate established in the Commonwealth's biennium budget is based on the calculated actuarial determined contribution rate.

The 63.86% employer contribution rate for FY 2018 is the effective contribution rate after reflecting HB 265 which provided that Regional Mental Health/Mental Retardation

Boards, Local and District Health Departments, State Universities, Community Colleges and any other agency eligible to voluntarily cease participating in the KERS to

contribute a 49.47% of pay contribution rate for FY 2019. Collectively these entities ("Quasi Employers") reflect approximately 25% of the covered payroll in the System, and

are assumed to reflect this same percentage of covered payroll through the entire projection.

Kentucky Retirement Systems
KERS Non-Hazardous Retirement Fund
Exhibit 4-3 (Alternative Assumptions that Assume a Decreasing Active Membership)
Proposed Plan
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Quasi Employer Contribution	Non-Quasi Employer Contribution	Total Employer Contribution	Member Contribution	Covered Payroll	Quasi Employer Contribution as % of Covered Payroll	Non-Quasi Employer Contribution as % of Covered Payroll	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2018	\$ 15,675	\$ 2,019	\$ 13,656	13%	\$ 145	\$ 795	\$ 940	\$ 74	\$ 1,471	41.06%	71.03%	63.86%	71.03%
2019	15,676	2,106	13,570	13%	144	793	937	73	1,468	41.06%	71.03%	63.86%	74.54%
2020	15,658	2,212	13,446	14%	144	963	1,107	73	1,468	41.06%	86.20%	75.40%	75.40%
2021	15,623	2,522	13,101	16%	144	963	1,107	73	1,469	41.06%	86.20%	75.40%	75.12%
2022	15,570	2,818	12,752	18%	144	952	1,096	73	1,468	41.06%	85.19%	74.63%	74.63%
2023	15,499	3,097	12,402	20%	144	952	1,096	73	1,469	41.06%	85.19%	74.63%	74.30%
2024	15,411	3,381	12,030	22%	144	943	1,087	73	1,469	41.06%	84.33%	73.98%	73.98%
2025	15,304	3,661	11,643	24%	144	943	1,087	73	1,469	41.06%	84.33%	73.98%	73.72%
2026	15,181	3,948	11,233	26%	144	935	1,079	73	1,469	41.06%	83.58%	73.41%	73.41%
2027	15,039	4,235	10,804	28%	144	934	1,078	73	1,469	41.06%	83.58%	73.41%	73.15%
2028	14,880	4,528	10,352	30%	144	926	1,070	73	1,468	41.06%	82.90%	72.89%	72.89%
2029	14,709	4,829	9,880	33%	144	925	1,069	73	1,467	41.06%	82.90%	72.89%	72.68%
2030	14,520	5,141	9,379	35%	144	919	1,063	73	1,467	41.06%	82.31%	72.44%	72.44%
2031	14,316	5,459	8,857	38%	144	920	1,064	73	1,468	41.06%	82.31%	72.44%	72.21%
2032	14,099	5,796	8,303	41%	144	912	1,056	73	1,469	41.06%	81.58%	71.89%	71.89%
2033	13,868	6,144	7,724	44%	144	913	1,057	74	1,471	41.06%	81.58%	71.89%	71.62%
2034	13,625	6,514	7,111	48%	145	904	1,049	74	1,472	41.06%	80.80%	71.29%	71.29%
2035	13,370	6,899	6,471	52%	145	905	1,050	74	1,473	41.06%	80.80%	71.29%	71.03%
2036	13,107	7,313	5,794	56%	145	900	1,045	74	1,478	41.06%	80.03%	70.71%	70.71%
2037	12,840	7,755	5,085	60%	146	904	1,050	74	1,485	41.06%	80.03%	70.71%	70.32%
2038	12,573	8,241	4,332	66%	147	894	1,041	75	1,492	41.06%	78.77%	69.75%	69.75%
2039	12,310	8,761	3,549	71%	147	899	1,046	75	1,500	41.06%	78.77%	69.75%	69.23%
2040	12,051	9,335	2,716	77%	148	884	1,032	75	1,507	41.06%	77.13%	68.50%	68.50%
2041	11,798	9,944	1,854	84%	149	888	1,037	76	1,513	41.06%	77.13%	68.50%	68.00%
2042	11,550	10,609	941	92%	149	867	1,016	76	1,519	41.06%	75.05%	66.92%	66.92%
2043	11,308	11,308	-	100%	12	37	49	76	1,523	3.23%	3.23%	3.23%	3.23%
2044	11,071	11,071	-	100%	12	36	48	76	1,527	3.17%	3.17%	3.17%	3.17%
2045	10,841	10,841	-	100%	11	37	48	76	1,530	3.12%	3.12%	3.12%	3.12%
2046	10,617	10,617	-	100%	11	36	47	77	1,533	3.07%	3.07%	3.07%	3.07%
2047	10,399	10,399	-	100%	11	36	47	77	1,535	3.03%	3.03%	3.03%	3.03%

Notes and assumptions:

Quasis employers are assumed to contribute a maximum contribution of 41.06% of payroll and are assumed to reflect approximately 25% of payroll through the entire projection.

Non-quasi employer contribution rates have been adjusted so that the system receives the biannual actuarially determined employer contribution rate starting in the 2020/2021 fiscal year.