GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

Memorandum

Date: December 23, 2016

To: Ms. Karen Carraher, Executive Director, Ohio Public Employees Retirement System

From: Brian B. Murphy, FSA, EA, MAAA, and Mita D. Drazilov, ASA, MAAA

cc: James Sparks, ASA, MAAA

Re: Alternative Retirement Plan (ARP) Mitigating Rate

We have prepared this document to satisfy the requirements of Ohio Revised Code (ORC) §145.222(B), which requires the Board to engage an actuary to complete an actuarial study to determine the percentage of an electing employee's compensation to be contributed by a public institution of higher education under ORC §3305.06(D) related to ARP participation. We have based our calculations upon the specific provisions of ORC §145.222 as described in amended Substitute House Bill No. 520. The most recently completed annual actuarial valuation under ORC §145.22 available at this time is the December 31, 2015 valuation, which we used for purposes of this study. Please review the methods and figures in this study carefully prior to use, and let us know if you have any questions or if you see any issues with the methods, calculations, or statutory interpretations.

Background: House Bill No. 586 of the 121st General Assembly established the ARPs. It became effective March 31, 1997. Initially, ARPs were only available to "Academic or Administrative Employees" of public institutions of higher education. Statutes were subsequently revised to provide that after August 1, 2005 any eligible employee of a public institution who had less than 5 years of service credit in a state retirement system could also join an ARP.

ORC §3305.06(D) provides that the public institutions of higher education shall contribute a percentage of each ARP employee's pay to OPERS (or STRS or SERS) sufficient to mitigate any negative financial impact of the ARP on the retirement system. The mitigating contribution is to continue until the unfunded actuarial accrued liabilities (UAAL or UAL) for all benefits except health care benefits and liabilities for any benefit increases provided after March 31, 1997 are fully amortized.

We understand the intent of ORC §3305.06 to be to permit OPERS to charge ARP employers for some share of the unfunded liability that existed on or about the time that the ARPs were established. An early interpretation was that once unfunded liabilities were paid off, the ARPs could no longer be charged a mitigating rate. In practice, that did not work well, because unfunded liabilities were paid off at one point and then reemerged subsequently due to investment losses.

Methodology: OPERS prepared Chart 1 on page 2 that develops certain statistics related to ARP contributions. (GRS updated the chart, based upon updated information provided by OPERS Staff, most recently on May 27, 2016.) We have reviewed Chart 1 for general reasonableness, but did not perform an audit of the figures.

Chart 1

Year	ARP Members	ARP Payroll	ARP Payroll Increase %	DB ROA	Mitigating Rate	UAL Funding Rate	Rate Difference	Accum ARP Contribution	Accum UAL Contribution
1998	677	$ 7,142,046		14.35%	4.50%	3.10%	-1.40%	$ 343,937	$ 236,934
1999	3,972	90,218,211	1163.20%	11.94%	6.00%	3.10%	-2.90%	6,115,184	3,225,817
2000	4,623	130,660,437	44.83%	-0.74%	0.00%	1.10%	1.10%	6,069,932	4,633,886
2001	4,844	147,930,195	13.22%	-4.60%	0.00%	1.50%	1.50%	5,790,715	6,588,244
2002	4,554	159,463,202	7.80%	-10.74%	0.00%	1.50%	1.50%	5,168,792	8,141,735
2003	4,619	174,086,517	9.17%	25.39%	0.00%	2.30%	2.30%	6,481,148	14,702,066
2004	4,874	200,802,095	15.35%	12.50%	0.00%	3.50%	3.50%	7,291,292	23,998,531
2005	5,360	219,267,086	9.20%	9.25%	0.00%	3.80%	3.80%	7,965,737	34,930,225
2006	6,497	268,978,233	22.67%	15.05%	0.00%	3.50%	3.50%	9,164,580	50,293,336
2007	7,058	329,086,705	22.35%	8.89%	0.29%	3.70%	3.41%	10,975,481	67,474,172
2008	7,030	345,565,224	5.01%	-27.15%	0.77%	2.40%	1.63%	10,276,241	56,263,308
2009	6,995	361,606,711	4.64%	19.09%	0.77%	3.90%	3.13%	15,280,381	82,413,558
2010	7,049	373,449,661	3.28%	13.98%	0.77%	3.80%	3.03%	20,488,760	109,096,390
2011	7,214	386,836,435	3.58%	0.36%	0.77%	4.80%	4.03%	23,546,518	128,090,689
2012	7,368	400,357,506	3.50%	14.54%	0.77%	4.80%	4.03%	30,271,981	167,297,723
2013	7,638	426,973,836	6.65%	14.38%	0.77%	10.80%	10.03%	38,143,884	240,709,626
2014	7,922	452,212,466	5.91%	6.96%	0.77%	8.90%	8.13%	44,400,550	299,094,813
2015	**8,281**	**479,345,271**	**6.00%**	**0.31%**	**0.77%**	**8.90%**	**8.13%**	**48,234,868**	**342,749,828**

The chart indicates that if the ARP participants had been in OPERS, the accumulated value of UAAL contributions received on behalf of ARP participants would be $342.7 million. This figure can be compared with the accumulated value of contributions actually received which was $48.2 million. The estimated shortfall as of December 31, 2015 is therefore the difference between these two figures or $294.5 million. This is the “Historical liability” described in ORC §145.222(A)(4).

The method outlined in Chart 2 on the next page is intended to reflect the provisions of ORC §145.222. The sum of rows 14 and 15 would approximate the % of payroll contribution that would be required from the ARP employers in order to put OPERS in the financial position it would have been in if the ARPs had never been opened up to actual or potential OPERS participants.

Chart 2 develops the portion of the UAAL that would be the responsibility of the ARP participants. This amount reflects two components. The first is the difference between the accumulated values shown in Chart 1 (i.e., $294.5 million). This may be referred to as the “historical liability.” The second is the portion of the remaining UAAL that would be the responsibility of the ARP participants based on a payroll to payroll ratio. A mitigating contribution rate to amortize the portion of the UAAL that would be the responsibility of the ARP participants is then developed. The market value of assets (MVA) was used as opposed to the actuarial value of assets because it is anticipated that the determined mitigating rate will be fixed for at least 5 years, which is longer than the smoothing period used to determine the funding value of assets. Amortization factors are based the economic assumptions used in the December 31, 2015 annual actuarial valuation.

Chart 2 ARP Mitigating Rate Determination as of December 31, 2015		
1. Traditional Plan UAAL	Based on MVA	$17,321,260,626
2. Accumulated ARP Contributions		48,234,868
3. Accumulated UAAL Contributions		342,749,828
4. Historical Liability: ORC §145.222(A)(4)	**3. - 2.**	**294,514,960**
5. UAAL adjusted for Historical Liability	1. - 4.	17,026,745,666
6. 2015 ARP Payroll		479,345,271
7. 2015 TP Payroll		12,575,447,000
8. Total 2015 ARP +TP Payrolls	6. + 7.	13,054,792,271
9. Compensation Ratio: ORC §145.222(A)(2)	**6. / 8.**	**3.6718%**
10. ARP % of Row 5	5. x 9.	625,188,047
11. Projected 2016 ARP Payroll	1.0375 x 6.	497,320,719
12. Perpetual Amortization Factor		24.4585
13. 30-year Amortization Factor		17.1242
14. Perpetual Amortization of Row 4: ORC §145.222 (C)(1). ***Note that in future studies, this figure is not recomputed.***	**4. / 12. / 11.**	**2.42%**
15. 30-Year Amortization of Row 10: ORC §145.222(C)(2).	**10. / 13. / 11.**	**7.34%**
16. Preliminary Mitigating Rate: ORC §145.222(C)(3)	**(14. + 15.) x 25%**	**2.44%**
17. Maximum Mitigating Rate: ORC §145.222(D)(2)		4.50%
18. Minimum Mitigating Rate: ORC §145.222(D)(2)	14. x 25%	0.61%
19. Final Mitigating Rate: ORC §145.222(D)(2)	**Max(Min(16,17),18)**	**2.44%**

Row 5 is described in ORC §145.222(C)(2)(a) and (b). It represents what the December 31, 2015 UAAL would have been if full UAAL contributions had been received on behalf of ARP participants. Row 10 then develops the ARP share of the remaining December 31, 2015 UAAL with a compensation ratio as described in ORC §145.222(A)(2).

The statute refers to fiscal years in a few places and since we only have calendar year information, we had to use calendar year information. We also used market value of assets rather than actuarial value for purposes of determining the UAAL in row 1. Please verify that this is acceptable. We recognize that there can be more than one way to interpret statutory language and to assemble data for a study such as this. Thus it is possible that the Board’s final determination may differ somewhat from the figure in Row 19 above.

Brian B. Murphy and Mita D. Drazilov are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. This communication shall not be construed to provide tax advice, legal advice or investment advice.