RSA's Response to Pew's February 22, 2016 Recommendations

#	January 14, 2016 Pew Recommendations	February 22, 2016 Pew Recommendations	RSA Position
1	Adopt a **policy** to regularly provide stakeholders with stress test analysis that projects plan costs under different economic and investment return scenarios.	**Modified:** Changed recommendation for policy to codification in RSA statutes, changed stress testing parameters, added stress testing for 80% of employer contributions.	**Opposed:** Recommendation is inappropriate for codification, has not been adopted as an actuarial standard of practice, and has not been adopted/codified by any other state retirement system according to NASRA. See p. 4.
2	Consider shortening phase-in of contribution policy.	**Modified:** Maintain current employer contribution rates even if net actuarial gains decrease such rates to shorten the phase-in of the new funding policy.	**Agreed.**
3	Require actuarial funding of benefit increases.	**Same.**	**Agreed.**
4	Improve transparency in pension investment reporting.	**Modified:** Propose codification in RSA statutes, as opposed to adoption in RSA policy.	**Opposed as to codification**. See p. 7.
5	Provide a life-cycle or target date fund through RSA-1.	**Same.**	**Agreed subject to technical limitations and prevailing industry standards.**
6	Implement default contributions and auto-escalation for existing DC plans to increase worker savings.	**Modified:** Recommended statutory language.	**Agreed subject to legal and technical review of proposed statutory language by RSA staff.**
7	Consider a review of Alabama Deferred Compensation Plan investment choices and fees.	**Same.**	**Not applicable to RSA.**
8	Consider and evaluate new plan design options based on impacts to cost predictability for the state and retirement security for all workers.	**Modified:** Provide additional commentary on the cash balance plan proposed in the January 14, 2016 report and provide new comments on RSA's analysis of the proposed plan.	**Opposed:** Proposed cash balance plan will have comparable employer costs, a smaller benefit for employees under most scenarios, and similar risks of future unfunded liabilities. See p. 9.

#	January 14, 2016 Pew Recommendations	February 22, 2016 Pew Recommendations	RSA Position
9	OPEB: Consider measures to control cost growth.	**Modified:** Proposed specific measures to address cost growth including modifying the sliding scale, capping the employer share of cost growth, limiting the maximum annual premium contribution, raising minimum years of service for eligibility, raising the minimum age to receive retiree health benefits, and modifying dependent coverage.	**RSA needs additional time to analyze the proposed measures with PEEHIP staff and consultants.**
10	OPEB: Consider a more comprehensive policy on pre-funding.	**Same.**	**Agreed.**
11	Build on existing fiduciary law to clarify the primary purpose of the fund and the evaluation of investments with economic benefits: (a) Add language to RSA statutes that states: "a trustee or other fiduciary shall discharge duties with respect to a retirement system solely in the interest of participants and beneficiaries." (b) Establish in statute that RSA fiduciaries "may consider benefits created by an investment in addition to investment return only if that trustee or party determines that the investment providing these collateral benefits would be prudent even without the collateral benefits."	**Same.**	**Opposed:** (a) This exclusive benefit provision is in the Alabama Constitution and therefore it is unnecessary to amend RSA's statutes. See p. 11. (b) The prudent man investment standard applies equally to all RSA investments. This modification would create a standard inconsistent with current Alabama trust law and controlling Alabama Supreme Court decisions. See p. 12.

#	January 14, 2016 Pew Recommendations	February 22, 2016 Pew Recommendations	RSA Position
12	Further study the investment expertise requirements for trustees and investment committee members	**Modified:** Consideration of municipal representation.	**Agreed to modification.** Additionally, RSA did not oppose further study of investment expertise requirements, but merely cautioned against imposing such requirements without any supporting studies indicating that such requirements could provide better investment results.
13		Proposed a resolution for consideration by the Joint Committee on Alabama Public Pensions.	**Opposed as currently drafted.** The resolution contains inaccuracies and unsupported assertions. See p. 14.

Pew Recommendation 1: "Adopt a policy to regularly provide stakeholders with stress test analysis that projects plan costs under different economic and investment return scenarios."

RSA Response to Pew Recommendation 1:

1. Under GASB rules, **RSA already performs and reports stress testing**. RSA offered to perform and report additional GASB-like stress testing of 2% above and below the plans' assumed rates of return and report the results. Pew instead proposed codification of a particular type of stress testing not currently in use elsewhere.

2. The modification of Pew's recommendation from the adoption of a policy to codification is problematic and harmful to the systems because:

    a. The stress testing standards proposed by Pew were based upon the Report of the Blue Ribbon Panel on Public Pension Plan Funding (BRP) and are **not** Actuarial Standards of Practice (ASOP). The Actuarial Standards Board will consider these recommendations in due time and may adopt in whole or part or reject the recommendations or adopt different recommendations.

    a. RSA's actuaries are required to comply with ASOPs. If these recommendations are codified, RSA would still be compelled by law to pay its actuaries for these expensive projections and at the same time have to comply with any new or modified ASOPs or GASB rules, which may differ from the BRP's recommendation.

    b. NASRA is not aware of any public pension plan that has adopted the BRP's stress testing recommendations.

    c. Codification will **require** RSA to pay its actuaries every year to perform calculations that have not been shown to provide useful information. For example, Pew's current recommendation is that the actuaries perform a stress test based upon the employer providing only 80% of required employer contributions for the next 20 years. The Alabama Legislature has always provided 100% of the required employer contribution to RSA, but codification would mean that RSA would nonetheless be required to perform expensive and unnecessary calculations.

d. Although they have not had time to complete a detailed analysis, RSA's actuaries have estimated that the codification of these stress testing standards will **at least double RSA's actuarial expenses**. There may be a higher cost multiple for these calculations for the 880 counties, municipalities and other public entities that belong to ERS. This will increase administrative costs to the employers.

3. Most, if not all, of Pew's proposed stress testing will not provide useful information that is not already available.

a. Pew states that the recommendation is based on the Report of the Blue Ribbon Panel on Public Pension Plan Funding (BRP), but Pew's recommendations differ from those of the BRP in that they don't require stress testing for the equally probable returns of 3% above the assumed rate of return, while requiring them for 3% below the assumed rate of return. This may lead to an unreasonably pessimistic view of the plan.

b. The BRP was composed largely of members from outside the public pension community and included non-actuaries. The Chair of the BRP was an insurance actuary with no public pension experience. The BRP did not seem to consider the views of experts in the public pension field because the BRP's recommendations illustrate an unfamiliarity with the way in which public pensions operate.

c. As pointed out above, Pew's recommendation of testing for the effect of the plan receiving only 80% of its required employer contribution for 20 years is not a useful measure as the Alabama Legislature has always provided 100% of the required employer contribution.

d. Pew's recommendation of testing the effect of earning 3% below the assumed rate of return over 10 and 20 years is testing using assumptions that statistically are unlikely to occur.

Pew Recommendation 4: "Improve transparency in pension investment reporting."

RSA Response to Pew Recommendation 4:

1. In discussing RSA's transparency in reporting, Pew recognized that "many of [RSA's] current [reporting] practices are already in line with our recommendations." RSA is committed to transparency in its operations and **volunteered to report all of the matters originally requested by Pew** except those which were inapplicable or impossible because of the lack of historical data at the asset class level.

2. Instead of accepting RSA's proposal, Pew instead modified its recommendations in this area to **require codification of its recommended reporting requirements**. Codification may be problematic because:

    a. RSA is governed by GASB in reporting returns. Additional statutory reporting requirements could conflict with future reporting requirements and cause confusion. RSA would be unable to modify its reporting policies accordingly.

    b. Although RSA can add the 20 year performance of the overall plan to its reports, it can only report by asset class for the last four years because, consistent with industry standards, its third party custodian did not report its returns by asset class until the Boards requested that it do so in 2012. RSA's third party custodian therefore does not have the historical data to provide the 5, 10 and 20 year measures. RSA's third party custodian has stated that it cannot reconstruct reliable returns by asset class for periods prior to 2012. RSA will be able to provide the 1, 3, and 5 year measures by asset class beginning next year, but Pew's proposal would codify reporting standards that are impossible for RSA to comply with.

    c. Pew also wants to codify the Institutional Limited Partnership Association's Fee Transparency Initiative's proposed fee reporting standards in RSA's statutes and apply them to RSA's private placements and real estate. These standards are applicable to private equity investments. RSA has almost no private equity in its portfolio because it does all investing in-house and these standards are **not** applicable to RSA's other asset classes, which are primarily fixed income and real estate. It would therefore be inappropriate and misleading for RSA to apply these standards to other asset classes.

d. Pew also has asked that RSA publicly report its private placement and real estate valuations and returns. RSA already does so.

Pew Recommendation 8: “Consider and evaluate new plan design options based on impacts to cost predictability for the state and retirement security for all workers.”

RSA Response to Pew Recommendation 8:

1. The cash balance plan included in Pew’s January 14, 2016 report to the Joint Committee on Alabama Public Pensions would have comparable employer costs, a smaller benefit for employees under most scenarios and similar risks of future unfunded liabilities.

    a. RSA’s actuaries ran projections on Pew’s cash balance plan and Tier II assuming the same investment return scenarios as occurred from 2001-2015. The actuaries ran these projections using the actual plan data for each current member. In each scenario, both Tier II and the cash balance plan experienced **similar growth in unfunded liabilities**.

        i. For more detailed analysis of the risk of unfunded liabilities, see Attachment A for projections completed by RSA’s actuaries.

    b. RSA’s actuaries completed estimates of benefits earned for career employees earned under Pew’s cash balance plan and Tier II. In most scenarios, these employees obtained a **higher** salary replacement percentage under Tier II than under the cash balance plan.

        i. For a more detailed analysis of the comparison of benefits under Tier II and the cash balance plan, see Attachment B for benefit comparisons completed by RSA’s actuaries and real life illustrations prepared by RSA staff.

2. There is **<u>no</u>** tested cash balance plan implemented after a traditional defined benefit plan by a state retirement system.

a. Both Kansas and Kentucky only recently switched from a traditional defined benefit plan to a cash balance plans for their state employees. Kentucky implemented its plan in 2014 and Kansas implemented its plan in 2015.

b. This lack of experience is cause for concern as there may be unintended consequences that result from switching to a cash balance plan from a traditional defined benefit plan.

3. Implementation of a new system would be administratively burdensome and costly.

a. RSA is currently upgrading its pension administration systems and is under contract with a vendor at a cost of $36 million. Administration of a cash balance plan would require a costly change order that would greatly delay the upgrade.

b. Administration of a cash balance plan would also require RSA to hire more staff and increase administrative spending to update documentation and communications.

Pew Recommendation 11: "Build on existing fiduciary law to clarify the primary purpose of the fund and the evaluation of investments with economic benefits."

(a) Add language to RSA statutes that states: "a trustee or other fiduciary shall discharge duties with respect to a retirement system solely in the interest of the participants and beneficiaries."

(b) Establish in statute that RSA fiduciaries "may consider benefits created by an investment in addition to investment return only if that trustee or party determines that the investment providing these collateral benefits would be prudent even without the collateral benefits."

RSA Response to Pew Recommendation 11(a):

1. The language proposed by Pew is already found in the Alabama Constitution and in Alabama Supreme Court decisions and there is no benefit in amending its statutes.

a. The Alabama Constitution contains language which mandates the following:

> All of the assets, proceeds or income of the teachers', employees', state police, public and judicial retirement systems of Alabama, or any successor systems thereto, and all contributions and payments made to such systems to provide for retirement and related benefits thereunder, shall be held, invested as authorized by law, or disbursed as **in trust** for the **exclusive purpose of providing for such benefits, refunds and administrative expenses** under the management of the boards of control of the aforementioned retirement systems; and**, none of such assets, proceeds, income, contributions or payments shall be used, loaned, encumbered or diverted to or for any other purpose whatsoever.**

Ala. Const., Art. V § 138.03. (Emphasis supplied.)

b. Decisions by the Alabama Supreme Court have explicitly noted that RSA board members have "a fiduciary duty to hold and invest [RSA] assets in trust for its members," Knutson v. Bronner, 721 So.2d 678, 681 (Ala. 1998), constrained by "a **fiduciary obligation to administer the ERSA and the TRSA solely in the interest of the members of the ERSA and the TRSA**." Ex parte Bronner, 171 So. 3d 614, 625 (Ala. 2014). (Emphasis supplied.)

RSA Response to Pew Recommendation 11(b):

2. Pew's recommendation changes the fiduciary standard applicable to Economically Targeted Investments (those in Alabama businesses and real estate) to make the standard more complex, as well as inconsistent with Alabama trust law and current fiduciary practice.

a. Despite the fact that the Prudent Man investing standard applies to all investments made by RSA, Pew seeks to create a new standard for Alabama investments that would prevent RSA from considering the economic benefits of a potential investment in Alabama—or the attendant economic benefits RSA's members derive therefrom—in determining the prudence of the investment.

b. In a challenge to RSA's Economically Targeted Investment (ETI) policy, the Alabama Supreme Court observed that "[t]he 'prudent-man rule,' or the 'prudent-investor rule,' itself, …, **not only allows, but in fact requires, a trustee to take into consideration many factors other than the direct and immediate rates of return**. As discussed above, those factors include, but are not limited to, general economic conditions, the effects of inflation or deflation, the need for diversification and the role each investment plays within the overall trust portfolio, the need for liquidity, the need for regularity of income, preservation or appreciation of capital, an asset's special relationship or special value to the purposes of the trust, the size of the portfolio, and the purposes and estimated duration of the trust. Furthermore, investments may include real property as well as tangible or intangible personal property." Ex Parte Bronner, 171 So.3d 614, 627 (Ala. 2014).

c. As a fiduciary investing plan assets in trust for members, **RSA should consider indirect economic benefits that members receive from Alabama investments** because of the unique way in which those investments impact RSA member employers and RSA's members.

d. Even under ERISA (which does not apply to RSA), the trend has moved toward acceptance of ETIs. The Department of Labor issued guidance in 2015 to clarify and correct prior standards that had "unduly discouraged fiduciaries from considering ETIs …."

e. RSA's Investment Policy Statements for the TRS and ERS boards reflect sound fiduciary practice. They state that investments in Alabama businesses must "meet the criteria delineated in this [investment] policy statement" and "[a]ny Alabama investment must be forecast to have a return comparable to other like investments in the same asset class."

f. Thus, any change in the fiduciary standard applicable to ETIs will create a confusing standard not currently recognized under Alabama law, be inconsistent with current fiduciary practice, and may engender expensive and disruptive litigation.

Pew Recommendation 13: Adopt a resolution proposed by Pew for the Joint Committee on Alabama Public Pensions.

RSA Response to Pew Recommendation 13:

1. The unfunded liabilities for the state's pension benefits as the latest actuarial calculation (of September 30, 2014) was $12.6 billion, not $15 billion as set forth in the resolution. Pew erroneously includes the unfunded liabilities of the local units, $2.2 billion.

2. The employer contribution for the state's pension benefits for fiscal year 2015 was $923 million, not $1.1 billion as set forth in the resolution. Pew erroneously includes the employer contributions from local units, $225 million.

3. Classifying RSA's investments as 86% in stocks and alternative asset classes is misleading because this classification lumps every asset class (aside from traditional fixed income and cash) into either the classification of alternatives or stocks.

    a. A more accurate description would be that as of September 30, 2015, TRS investments are 49.7% in domestic equity, 12.5% in international equity, 11.6% in traditional fixed income, 11.4% in private placements (mostly debt instruments and loans made directly to companies), 2.7% in cash and 12.1% in alternatives (which includes real estate, preferred stock, and private equity) and ERS investments are 49.1% in domestic equity, 11.5% in international equity, 11.0% in traditional fixed income, 11.6% in private placements (mostly debt instruments and loans made directly to companies), 4.0% in cash and 12.7% in alternatives (which includes real estate, preferred stock, and private equity).

4. RSA is unaware of any data to support the assertion that the majority of the state's employees are saving too little for retirement, much less that this is due to high turnover, the defined benefit vesting period, and low participation in defined contribution plans. Unless support can be provided, this assertion should be removed.

Attachment A

ALABAMA TEACHERS RETIREMENT SYSTEM PROJECTIONS

Tier II DB Plan - Bootstrap Actual 15 Year Returns

Based on Board Funding Policy

Valuation Year 9/30/YYYY	Fiscal Year Ending 9/30/YYYY	Normal Rate		Misc. Admin. Rate	Unfunded Accrued Liab Rate	Total Employer Rate		Unfunded Accrued Liab	Estimated Fiscal Year Payroll	Estimated Required Contributions	Funded Ratio
		Tier I Group	Tier II Group			Tier I Group	Tier II Group				
(1)	(2)	(3)	(4)	(5)	(6)	(7)=(3)+(5)+(6)	(8)=(4)+(5)+(6)	(9)	(10)	(11)	(10)
2014	2017	2.00%	0.81%	0.36%	9.65%	12.01%	10.82%	10,027,958	6,920,095	824,875	67.48%
2015	2018	2.16%	1.08%	0.36%	9.89%	12.41%	11.33%	10,368,555	7,144,998	875,262	67.62%
2016	2019	2.14%	1.13%	0.36%	10.27%	12.77%	11.76%	10,948,548	7,377,210	926,578	66.56%
2017	2020	2.12%	1.16%	0.36%	11.27%	13.75%	12.79%	12,331,581	7,616,969	1,029,053	63.12%
2018	2021	2.11%	1.18%	0.36%	12.38%	14.85%	13.92%	13,871,259	7,864,520	1,145,074	59.35%
2019	2022	2.10%	1.19%	0.36%	13.38%	15.84%	14.93%	15,325,588	8,120,117	1,260,242	56.19%
2020	2023	2.08%	1.20%	0.36%	13.91%	16.35%	15.47%	16,242,321	8,384,021	1,342,282	54.67%
2021	2024	2.07%	1.21%	0.36%	13.87%	16.30%	15.44%	16,437,829	8,656,502	1,378,115	55.18%
2022	2025	2.05%	1.22%	0.36%	13.06%	15.47%	14.64%	15,624,007	8,937,838	1,346,038	58.33%
2023	2026	2.03%	1.22%	0.36%	13.26%	15.65%	14.84%	16,065,350	9,228,318	1,404,550	58.06%
2024	2027	2.01%	1.22%	0.36%	14.25%	16.62%	15.83%	17,586,086	9,528,238	1,540,716	55.01%
2025	2028	1.99%	1.22%	0.36%	15.40%	17.75%	16.98%	19,363,249	9,837,906	1,700,974	51.40%
2026	2029	1.98%	1.21%	0.36%	16.63%	18.97%	18.20%	21,271,175	10,157,638	1,877,132	47.57%
2027	2030	1.96%	1.21%	0.36%	17.85%	20.17%	19.42%	23,206,332	10,487,761	2,061,894	43.77%
2028	2031	1.95%	1.20%	0.36%	18.02%	20.33%	19.58%	23,542,215	10,828,613	2,144,065	43.86%
2029	2032	1.93%	1.19%	0.36%	17.65%	19.94%	19.20%	22,972,101	11,180,543	2,169,025	46.03%
2030	2033	1.92%	1.18%	0.36%	17.46%	19.74%	19.00%	22,618,539	11,543,911	2,212,968	47.68%
2031	2034	1.91%	1.17%	0.36%	17.58%	19.85%	19.11%	22,707,431	11,919,088	2,296,808	48.22%
										27,535,651	

$ amounts in thousands

One-fifteenth of Transistion UAL determined as of 9/30/12 is amortized over a closed 30-year period each year

Gains and Losses after 9/30/12 are amortized over a closed 30 year period in the year they occur

Assumed rate of return for fiscal years beginning with 2016 are assumed to be the same as those returns from 2001-2015.B41

EMPLOYEES' RETIREMENT SYSTEM OF ALABAMA PROJECTIONS

Tier II DB Plan - Bootstrap Actual 15 Year Returns

Based on Board Funding Policy

Valuation Year 9/30/YYYY	Fiscal Year Ending 9/30/YYYY	Normal Rate		Misc. Admin. Rate	Unfunded Accrued Liab Rate	Total Employer Rate		Unfunded Accrued Liab	Estimated Fiscal Year Payroll	Estimated Required Contributions	Funded Ratio
		Tier I Group	Tier II Group			Tier I Group	Tier II Group				
(1)	(2)	(3)	(4)	(5)	(6)	(7)=(3)+(5)+(6)	(8)=(4)+(5)+(6)	(9)	(10)	(11)	(12)
2014	2017	1.01%	0.37%	0.37%	12.51%	13.89%	13.25%	2,560,499	1,322,448	182,939	63.15%
2015	2018	1.09%	0.64%	0.37%	13.25%	14.71%	14.26%	2,705,705	1,365,428	201,747	62.16%
2016	2019	1.18%	0.79%	0.37%	13.82%	15.37%	14.98%	2,833,015	1,409,804	215,972	60.53%
2017	2020	1.29%	0.91%	0.37%	14.98%	16.64%	16.26%	3,134,391	1,455,623	239,532	56.64%
2018	2021	1.34%	0.98%	0.37%	16.28%	17.99%	17.63%	3,472,505	1,502,931	266,440	52.60%
2019	2022	1.22%	0.90%	0.37%	17.50%	19.09%	18.77%	3,796,086	1,551,776	293,873	48.80%
2020	2023	1.19%	0.89%	0.37%	18.24%	19.80%	19.50%	4,014,432	1,602,209	315,090	46.43%
2021	2024	1.17%	0.90%	0.37%	18.34%	19.88%	19.61%	4,087,720	1,654,281	326,737	45.97%
2022	2025	1.16%	0.90%	0.37%	17.62%	19.15%	18.89%	3,958,664	1,708,045	324,848	48.11%
2023	2026	1.15%	0.91%	0.37%	17.81%	19.33%	19.09%	4,043,474	1,763,556	338,581	47.39%
2024	2027	1.14%	0.92%	0.37%	18.73%	20.24%	20.02%	4,312,146	1,820,872	366,084	44.24%
2025	2028	1.12%	0.92%	0.37%	19.79%	21.28%	21.08%	4,623,547	1,880,050	397,670	40.52%
2026	2029	1.11%	0.92%	0.37%	20.88%	22.36%	22.17%	4,944,000	1,941,152	431,553	36.66%
2027	2030	1.10%	0.91%	0.37%	22.01%	23.48%	23.29%	5,275,393	2,004,239	467,897	32.63%
2028	2031	1.09%	0.91%	0.37%	22.22%	23.68%	23.50%	5,347,116	2,069,377	487,276	31.85%
2029	2032	1.06%	0.90%	0.37%	21.90%	23.33%	23.17%	5,254,358	2,136,632	495,903	33.09%
2030	2033	1.05%	0.89%	0.37%	21.77%	23.19%	23.03%	5,201,378	2,206,073	508,829	34.01%
2031	2034	1.05%	0.89%	0.37%	21.86%	23.28%	23.12%	5,199,232	2,277,770	527,276	34.27%
										6,388,248	

$ amounts in thousands

One-fifteenth of Transition UAL determined as of 9/30/12 is amortized over a closed 30-year period each year

Gains and Losses after 9/30/12 are amortized over a closed 30 year period in the year they occur

Assumed rate of return for fiscal years beginning with 2016 are assumed to be the same as those returns from 2001-2015.

Attachment A-2

EMPLOYEES' RETIREMENT SYSTEM OF ALABAMA PROJECTIONS

Cash Balance Plan - Bootstrap Actual 15 Year Returns

Based on Board Funding Policy

Valuation Year 9/30/YYYY	Fiscal Year Ending 9/30/YYYY	Normal Rate		Misc. Admin. Rate	Unfunded Accrued Liab Rate	Total Employer Rate		Unfunded Accrued Liab	Estimated Fiscal Year Payroll	Estimated Required Contributions	Funded Ratio
		Tier I Group	Tier II Group			Tier I Group	Tier II Group				
(1)	(2)	(3)	(4)	(5)	(6)	(7)=(3)+(5)+(6)	(8)=(4)+(5)+(6)	(9)	(10)	(11)	(12)
2014	2017	1.01%	0.37%	0.37%	12.51%	13.89%	13.25%	2,560,499	1,322,448	182,939	63.15%
2015	2018	1.24%	0.88%	0.37%	13.23%	14.84%	14.48%	2,700,250	1,365,428	201,797	62.21%
2016	2019	1.23%	0.88%	0.37%	13.79%	15.39%	15.04%	2,827,519	1,409,804	215,813	60.58%
2017	2020	1.22%	0.87%	0.37%	14.95%	16.54%	16.19%	3,128,722	1,455,623	239,266	56.69%
2018	2021	1.20%	0.87%	0.37%	16.25%	17.82%	17.49%	3,465,420	1,502,931	266,093	52.66%
2019	2022	1.20%	0.87%	0.37%	17.46%	19.03%	18.70%	3,786,844	1,551,776	293,252	48.87%
2020	2023	1.20%	0.86%	0.37%	18.18%	19.75%	19.41%	4,002,161	1,602,209	313,984	46.50%
2021	2024	1.19%	0.84%	0.37%	18.27%	19.83%	19.48%	4,071,413	1,654,281	325,169	46.03%
2022	2025	1.18%	0.82%	0.37%	17.54%	19.09%	18.73%	3,940,599	1,708,045	322,743	48.15%
2023	2026	1.17%	0.81%	0.37%	17.75%	19.29%	18.93%	4,030,535	1,763,556	336,498	47.33%
2024	2027	1.16%	0.80%	0.37%	18.64%	20.17%	19.81%	4,292,504	1,820,872	363,203	44.13%
2025	2028	1.13%	0.79%	0.37%	19.66%	21.16%	20.82%	4,592,375	1,880,050	393,621	40.34%
2026	2029	1.12%	0.78%	0.37%	20.71%	22.20%	21.86%	4,899,151	1,941,152	426,376	36.35%
2027	2030	1.11%	0.78%	0.37%	21.78%	23.26%	22.93%	5,216,147	2,004,239	461,404	32.11%
2028	2031	1.10%	0.78%	0.37%	21.95%	23.42%	23.10%	5,274,165	2,069,377	479,663	31.10%
2029	2032	1.08%	0.78%	0.37%	21.61%	23.06%	22.76%	5,175,634	2,136,632	487,707	32.04%
2030	2033	1.07%	0.79%	0.37%	21.52%	22.96%	22.68%	5,132,903	2,206,073	501,536	32.59%
2031	2034	1.06%	0.79%	0.37%	21.60%	23.03%	22.76%	5,128,674	2,277,770	519,462	32.49%
										6,330,526	

Attachment A-3

$ amounts in thousands

One-fifteenth of Transition UAL determined as of 9/30/12 is amortized over a closed 30-year period each year

Gains and Losses after 9/30/12 are amortized over a closed 30 year period in the year they occur

Assumed rate of return for fiscal years beginning with 2016 are assumed to be the same as those returns from 2001-2015.

EMPLOYEES' RETIREMENT SYSTEM OF ALABAMA PROJECTIONS

Tier II DB Plan - Reverse Bootstrap Actual 15 Year Returns

Based on Board Funding Policy

Valuation Year 9/30/YYYY	Fiscal Year Ending 9/30/YYYY	Normal Rate Tier I Group	Normal Rate Tier II Group	Misc. Admin. Rate	Unfunded Accrued Liab Rate	Total Employer Rate Tier I Group	Total Employer Rate Tier II Group	Unfunded Accrued Liab	Estimated Fiscal Year Payroll	Estimated Required Contributions	Funded Ratio
(1)	(2)	(3)	(4)	(5)	(6)	(7)=(3)+(5)+(6)	(8)=(4)+(5)+(6)	(9)	(10)	(11)	(12)
2014	2017	1.01%	0.37%	0.37%	12.51%	13.89%	13.25%	2,560,499	1,322,448	182,939	63.15%
2015	2018	1.09%	0.64%	0.37%	13.25%	14.71%	14.26%	2,705,705	1,365,428	201,747	62.16%
2016	2019	1.18%	0.79%	0.37%	13.52%	15.07%	14.68%	2,770,266	1,409,804	211,743	61.40%
2017	2020	1.29%	0.91%	0.37%	13.55%	15.21%	14.83%	2,830,444	1,455,623	218,716	60.84%
2018	2021	1.34%	0.98%	0.37%	13.54%	15.25%	14.89%	2,880,045	1,502,931	225,259	60.68%
2019	2022	1.22%	0.90%	0.37%	13.22%	14.81%	14.49%	2,853,794	1,551,776	227,457	61.51%
2020	2023	1.19%	0.89%	0.37%	12.76%	14.32%	14.02%	2,787,828	1,602,209	227,289	62.80%
2021	2024	1.17%	0.90%	0.37%	12.15%	13.69%	13.42%	2,682,408	1,654,281	224,337	64.55%
2022	2025	1.16%	0.90%	0.37%	12.43%	13.96%	13.70%	2,784,787	1,708,045	236,201	63.50%
2023	2026	1.15%	0.91%	0.37%	13.92%	15.44%	15.20%	3,186,489	1,763,556	269,979	58.54%
2024	2027	1.14%	0.92%	0.37%	15.68%	17.19%	16.97%	3,666,963	1,820,872	310,548	52.58%
2025	2028	1.12%	0.92%	0.37%	16.96%	18.45%	18.25%	4,038,162	1,880,050	344,464	48.05%
2026	2029	1.11%	0.92%	0.37%	18.08%	19.56%	19.37%	4,369,331	1,941,152	377,201	44.02%
2027	2030	1.10%	0.91%	0.37%	18.41%	19.88%	19.69%	4,480,862	2,004,239	395,745	42.77%
2028	2031	1.09%	0.91%	0.37%	17.81%	19.27%	19.09%	4,322,596	2,069,377	396,016	44.91%
2029	2032	1.06%	0.90%	0.37%	17.79%	19.22%	19.06%	4,322,390	2,136,632	408,088	44.95%
2030	2033	1.05%	0.89%	0.37%	18.29%	19.71%	19.55%	4,469,507	2,206,073	432,058	43.29%
2031	2034	1.05%	0.89%	0.37%	19.04%	20.46%	20.30%	4,691,319	2,277,770	463,043	40.69%
										5,352,830	

$ amounts in thousands

One-fifteenth of Transition UAL determined as of 9/30/12 is amortized over a closed 30-year period each year

Gains and Losses after 9/30/12 are amortized over a closed 30 year period in the year they occur

Assumed rate of return for fiscal years beginning with 2016 are assumed to be the same as those returns from 2001-2015

EMPLOYEES' RETIREMENT SYSTEM OF ALABAMA PROJECTIONS

Cash Balance Plan - Reverse Bootstrap Actual 15 Year Returns

Based on Board Funding Policy

Valuation Year 9/30/YYYY	Fiscal Year Ending 9/30/YYYY	Normal Rate		Misc. Admin. Rate	Unfunded Accrued Liab Rate	Total Employer Rate		Unfunded Accrued Liab	Estimated Fiscal Year Payroll	Estimated Required Contributions	Funded Ratio
		Tier I Group	Tier II Group			Tier I Group	Tier II Group				
(1)	(2)	(3)	(4)	(5)	(6)	(7)=(3)+(5)+(6)	(8)=(4)+(5)+(6)	(9)	(10)	(11)	(12)
2014	2017	1.01%	0.37%	0.37%	12.51%	13.89%	13.25%	2,560,499	1,322,448	182,939	63.15%
2015	2018	1.24%	0.88%	0.37%	13.23%	14.84%	14.48%	2,700,250	1,365,428	201,797	62.21%
2016	2019	1.23%	0.88%	0.37%	13.49%	15.09%	14.74%	2,764,752	1,409,804	211,584	61.46%
2017	2020	1.22%	0.87%	0.37%	13.52%	15.11%	14.76%	2,824,967	1,455,623	218,450	60.90%
2018	2021	1.20%	0.87%	0.37%	13.51%	15.08%	14.75%	2,874,297	1,502,931	224,913	60.74%
2019	2022	1.20%	0.87%	0.37%	13.19%	14.76%	14.43%	2,847,655	1,551,776	226,991	61.57%
2020	2023	1.20%	0.86%	0.37%	12.73%	14.30%	13.96%	2,781,930	1,602,209	226,664	62.84%
2021	2024	1.19%	0.84%	0.37%	12.12%	13.68%	13.33%	2,677,020	1,654,281	223,430	64.57%
2022	2025	1.18%	0.82%	0.37%	12.42%	13.97%	13.61%	2,781,657	1,708,045	235,291	63.47%
2023	2026	1.17%	0.81%	0.37%	13.89%	15.43%	15.07%	3,178,595	1,763,556	268,424	58.49%
2024	2027	1.16%	0.80%	0.37%	15.60%	17.13%	16.77%	3,649,952	1,820,872	307,848	52.50%
2025	2028	1.13%	0.79%	0.37%	16.85%	18.35%	18.01%	4,010,711	1,880,050	340,791	47.91%
2026	2029	1.12%	0.78%	0.37%	17.93%	19.42%	19.08%	4,330,127	1,941,152	372,412	43.76%
2027	2030	1.11%	0.78%	0.37%	18.21%	19.69%	19.36%	4,428,848	2,004,239	389,852	42.37%
2028	2031	1.10%	0.78%	0.37%	17.59%	19.06%	18.74%	4,264,074	2,069,377	389,438	44.34%
2029	2032	1.08%	0.78%	0.37%	17.62%	19.07%	18.77%	4,277,228	2,136,632	402,456	44.07%
2030	2033	1.07%	0.79%	0.37%	18.07%	19.51%	19.23%	4,409,041	2,206,073	425,426	42.21%
2031	2034	1.06%	0.79%	0.37%	18.71%	20.14%	19.87%	4,595,575	2,277,770	453,635	39.42%
										5,302,344	

$ amounts in thousands

One-fifteenth of Transition UAL determined as of 9/30/12 is amortized over a closed 30-year period each year

Gains and Losses after 9/30/12 are amortized over a closed 30 year period in the year they occur

Assumed rate of return for fiscal years beginning with 2016 are assumed to be the same as those returns from 2001-2015

Attachment A-5

ALABAMA TEACHERS RETIREMENT SYSTEM PROJECTIONS

Cash Balance Plan - Bootstrap Actual 15 Year Returns

Based on Board Funding Policy

Valuation Year 9/30/YYYY	Fiscal Year Ending 9/30/YYYY	Normal Rate		Misc. Admin. Rate	Unfunded Accrued Liab Rate	Total Employer Rate		Unfunded Accrued Liab	Estimated Fiscal Year Payroll	Estimated Required Contributions	Funded Ratio
		Tier I Group	Tier II Group			Tier I Group	Tier II Group				
(1)	(2)	(3)	(4)	(5)	(6)	(7)=(3)+(5)+(6)	(8)=(4)+(5)+(6)	(9)	(10)	(11)	(12)
2014	2017	2.00%	0.81%	0.36%	9.65%	12.01%	10.82%	10,027,958	6,920,095	824,875	67.48%
2015	2018	2.16%	0.57%	0.36%	9.86%	12.38%	10.79%	10,334,894	7,144,998	867,403	67.69%
2016	2019	2.14%	0.55%	0.36%	10.24%	12.74%	11.15%	10,914,390	7,377,210	915,512	66.63%
2017	2020	2.12%	0.54%	0.36%	11.24%	13.72%	12.14%	12,296,161	7,616,969	1,013,819	63.18%
2018	2021	2.11%	0.53%	0.36%	12.34%	14.81%	13.23%	13,830,495	7,864,520	1,126,199	59.38%
2019	2022	2.10%	0.53%	0.36%	13.33%	15.79%	14.22%	15,276,880	8,120,117	1,237,506	56.21%
2020	2023	2.08%	0.51%	0.36%	13.86%	16.30%	14.73%	16,182,518	8,384,021	1,315,453	54.66%
2021	2024	2.07%	0.51%	0.36%	13.80%	16.23%	14.67%	16,364,985	8,656,502	1,345,220	55.14%
2022	2025	2.05%	0.51%	0.36%	13.00%	15.41%	13.87%	15,550,852	8,937,838	1,310,287	58.26%
2023	2026	2.03%	0.49%	0.36%	13.21%	15.60%	14.06%	16,013,928	9,228,318	1,364,868	57.89%
2024	2027	2.01%	0.49%	0.36%	14.18%	16.55%	15.03%	17,498,839	9,528,238	1,494,981	54.80%
2025	2028	1.99%	0.50%	0.36%	15.29%	17.64%	16.15%	19,215,015	9,837,906	1,647,849	51.14%
2026	2029	1.98%	0.50%	0.36%	16.46%	18.80%	17.32%	21,049,308	10,157,638	1,814,154	47.21%
2027	2030	1.96%	0.51%	0.36%	17.64%	19.96%	18.51%	22,907,946	10,487,761	1,990,577	43.24%
2028	2031	1.95%	0.50%	0.36%	17.77%	20.08%	18.63%	23,180,727	10,828,613	2,063,934	43.16%
2029	2032	1.93%	0.50%	0.36%	17.40%	19.69%	18.26%	22,601,331	11,180,543	2,084,053	45.09%
2030	2033	1.92%	0.50%	0.36%	17.25%	19.53%	18.11%	22,305,535	11,543,911	2,128,697	46.42%
2031	2034	1.91%	0.50%	0.36%	17.36%	19.63%	18.22%	22,384,245	11,919,088	2,206,223	46.70%
										26,751,610	

$ amounts in thousands

One-fifteenth of Transistion UAL determined as of 9/30/12 is amortized over a closed 30-year period each year

Gains and Losses after 9/30/12 are amortized over a closed 30 year period in the year they occur

Assumed rate of return for fiscal years beginning with 2016 are assumed to be the same as those returns from 2001-2015.

ALABAMA TEACHERS RETIREMENT SYSTEM PROJECTIONS

Tier II DB Plan - Reverse Bootstrap Actual 15 Year Returns

Based on Board Funding Policy

Valuation Year 9/30/YYYY	Fiscal Year Ending 9/30/YYYY	Normal Rate		Misc. Admin. Rate	Unfunded Accrued Liab Rate	Total Employer Rate		Unfunded Accrued Liab	Estimated Fiscal Year Payroll	Estimated Required Contributions	Funded Ratio
		Tier I Group	Tier II Group			Tier I Group	Tier II Group				
(1)	(2)	(3)	(4)	(5)	(6)	(7)=(3)+(5)+(6)	(8)=(4)+(5)+(6)	(9)	(10)	(11)	(10)
2014	2017	2.00%	0.81%	0.36%	9.65%	12.01%	10.82%	10,027,958	6,920,095	824,875	67.48%
2015	2018	2.16%	1.08%	0.36%	9.89%	12.41%	11.33%	10,368,555	7,144,998	875,262	67.62%
2016	2019	2.14%	1.13%	0.36%	10.00%	12.50%	11.49%	10,651,808	7,377,210	906,659	67.47%
2017	2020	2.12%	1.16%	0.36%	9.97%	12.45%	11.49%	10,885,743	7,616,969	930,032	67.45%
2018	2021	2.11%	1.18%	0.36%	9.87%	12.34%	11.41%	11,024,461	7,864,520	947,675	67.69%
2019	2022	2.10%	1.19%	0.36%	9.45%	11.91%	11.00%	10,750,538	8,120,117	941,122	69.27%
2020	2023	2.08%	1.20%	0.36%	8.93%	11.37%	10.49%	10,326,677	8,384,021	924,758	71.18%
2021	2024	2.07%	1.21%	0.36%	8.32%	10.75%	9.89%	9,732,689	8,656,502	897,679	73.46%
2022	2025	2.05%	1.22%	0.36%	8.55%	10.96%	10.13%	10,177,207	8,937,838	942,942	72.86%
2023	2026	2.03%	1.22%	0.36%	10.04%	12.43%	11.62%	12,303,648	9,228,318	1,107,398	67.88%
2024	2027	2.01%	1.22%	0.36%	11.81%	14.18%	13.39%	14,881,229	9,528,238	1,308,227	61.93%
2025	2028	1.99%	1.22%	0.36%	13.08%	15.43%	14.66%	16,835,222	9,837,906	1,472,735	57.75%
2026	2029	1.98%	1.21%	0.36%	14.16%	16.50%	15.73%	18,552,009	10,157,638	1,626,238	54.27%
2027	2030	1.96%	1.21%	0.36%	14.48%	16.80%	16.05%	19,137,419	10,487,761	1,708,456	53.63%
2028	2031	1.95%	1.20%	0.36%	13.78%	16.09%	15.34%	18,141,705	10,828,613	1,684,932	56.74%
2029	2032	1.93%	1.19%	0.36%	13.79%	16.08%	15.34%	18,171,573	11,180,543	1,737,456	57.31%
2030	2033	1.92%	1.18%	0.36%	14.37%	16.65%	15.91%	19,120,628	11,543,911	1,856,261	55.77%
2031	2034	1.91%	1.17%	0.36%	15.29%	17.56%	16.82%	20,636,833	11,919,088	2,023,861	52.95%
										22,716,568	

$ amounts in thousands

One-fifteenth of Transistion UAL determined as of 9/30/12 is amortized over a closed 30-year period each year

Gains and Losses after 9/30/12 are amortized over a closed 30 year period in the year they occur

Assumed rate of return for fiscal years beginning with 2016 are assumed to be the same as those returns from 2001-2015 in reverse order.

ALABAMA TEACHERS RETIREMENT SYSTEM PROJECTIONS

Cash Balance Plan - Reverse Bootstrap Actual 15 Year Returns

Based on Board Funding Policy

Valuation Year 9/30/YYYY	Fiscal Year Ending 9/30/YYYY	Normal Rate		Misc. Admin. Rate	Unfunded Accrued Liab Rate	Total Employer Rate		Unfunded Accrued Liab	Estimated Fiscal Year Payroll	Estimated Required Contributions	Funded Ratio
		Tier I Group	Tier II Group			Tier I Group	Tier II Group				
(1)	(2)	(3)	(4)	(5)	(6)	(7)=(3)+(5)+(6)	(8)=(4)+(5)+(6)	(9)	(10)	(11)	(12)
2014	2017	2.00%	0.81%	0.36%	9.65%	12.01%	10.82%	10,027,958	6,920,095	824,875	67.48%
2015	2018	2.16%	0.57%	0.36%	9.86%	12.38%	10.79%	10,334,894	7,144,998	867,403	67.69%
2016	2019	2.14%	0.55%	0.36%	9.97%	12.47%	10.88%	10,617,644	7,377,210	895,593	67.53%
2017	2020	2.12%	0.54%	0.36%	9.94%	12.42%	10.84%	10,851,466	7,616,969	914,798	67.50%
2018	2021	2.11%	0.53%	0.36%	9.84%	12.31%	10.73%	10,989,517	7,864,520	929,586	67.73%
2019	2022	2.10%	0.53%	0.36%	9.42%	11.88%	10.31%	10,715,561	8,120,117	920,009	69.29%
2020	2023	2.08%	0.51%	0.36%	8.90%	11.34%	9.77%	10,293,681	8,384,021	899,605	71.18%
2021	2024	2.07%	0.51%	0.36%	8.29%	10.72%	9.16%	9,703,363	8,656,502	868,247	73.43%
2022	2025	2.05%	0.51%	0.36%	8.53%	10.94%	9.40%	10,156,228	8,937,838	910,766	72.78%
2023	2026	2.03%	0.49%	0.36%	10.00%	12.39%	10.85%	12,258,011	9,228,318	1,068,639	67.78%
2024	2027	2.01%	0.49%	0.36%	11.73%	14.10%	12.58%	14,786,833	9,528,238	1,261,539	61.81%
2025	2028	1.99%	0.50%	0.36%	12.97%	15.32%	13.83%	16,687,704	9,837,906	1,419,610	57.57%
2026	2029	1.98%	0.50%	0.36%	14.01%	16.35%	14.87%	18,345,886	10,157,638	1,565,292	54.00%
2027	2030	1.96%	0.51%	0.36%	14.29%	16.61%	15.16%	18,872,000	10,487,761	1,639,237	53.25%
2028	2031	1.95%	0.50%	0.36%	13.59%	15.90%	14.45%	17,857,510	10,828,613	1,611,298	56.25%
2029	2032	1.93%	0.50%	0.36%	13.63%	15.92%	14.49%	17,955,798	11,180,543	1,662,547	56.53%
2030	2033	1.92%	0.50%	0.36%	14.18%	16.46%	15.04%	18,834,580	11,543,911	1,774,299	54.84%
2031	2034	1.91%	0.50%	0.36%	15.00%	17.27%	15.86%	20,173,894	11,919,088	1,924,933	51.92%
										21,958,276	

$ amounts in thousands

One-fifteenth of Transistion UAL determined as of 9/30/12 is amortized over a closed 30-year period each year

Gains and Losses after 9/30/12 are amortized over a closed 30 year period in the year they occur

Assumed rate of return for fiscal years beginning with 2016 are assumed to be the same as those returns from 2001-2015
in reverse order.

Attachment A-8

Attachment B

ERS and TRS Cash Balance Plan Benefit Replacement Ratios

Benefit Payable at first eligibility at age 62

6% Member	Member is credited with 4% plus 75% of the difference between
1.5% Employer	5-year actual geometric mean return on assets and 4%
	Assumes annuitization at 8%

Fund Earns Exactly 8% each year

	Tier II	Cash Balance	CB as a % of DB
Hire age = 22	62.0%	67.8%	109.4%
Hire age = 27	54.2%	53.4%	98.4%
Hire age = 40	34.1%	26.0%	76.2%

Fund Earns Prior 15 Year Returns over next 15 year period and 8% thereafter

	Tier II	Cash Balance	CB as a % of DB
Hire age = 22	62.0%	65.1%	105.0%
Hire age = 27	54.2%	51.1%	94.3%
Hire age = 40	34.1%	24.6%	72.1%

Fund Earns Prior 15 Year Returns over next 15 year period in reverse order and 8% thereafter

	Tier II	Cash Balance	CB as a % of DB
Hire age = 22	62.0%	61.3%	98.9%
Hire age = 27	54.2%	47.9%	88.4%
Hire age = 40	34.1%	22.6%	66.2%

Alternative Annuitization Rates

6% Member	Member is credited with 4% plus 75% of the difference between
1.5% Employer	5-year actual geometric mean return on assets and 4%
	Assumes annuitization at 6% within plan (plan mortality assumption)
	Fund Earns Exactly 8% each year

	Tier II	Cash Balance	CB as a % of DB
Hire age = 27	54.2%	48.5%	89.4%

6% Member	Member is credited with 4% plus 75% of the difference between
1.5% Employer	5-year actual geometric mean return on assets and 4%
	Assumes annuitization at 3% outside plan (fully generational mortality assumption)
	Fund Earns Exactly 8% each year

	Tier II	Cash Balance	CB as a % of DB
Hire age = 27	54.2%	35.0%	64.5%

Comparison of ERS and TRS Cash Balance Plan Annuity To Tier I and Tier II Defined Benefit Annuities

Benefit Payable at first eligibility at age **62**

Assumes annuitization at **8%**

Example employee: Teacher with final average salary of $50,000 and beneficiary with same life expectancy. Resulting benefit are annual.

<u>Fund Earns Exactly 8% each year</u>

Hire Age 22: (40 years service)

Estimated Tier I DB benefits:	$50,000 x 2.0125% x 40 = **$40,250**
Estimated Tier II DB benefits:	$50,000 x 1.65% x 40 = **$33,000**
Estimated Cash Balance benefits:	$33,000 x 109.4% = **$36,102**

Hire Age 27: (35 years service)

Estimated Tier I DB benefits:	$50,000 x 2.0125% x 35 = **$35,219**
Estimated Tier II DB benefits:	$50,000 x 1.65% x 35 = **$28,875**
Estimated Cash Balance benefits:	$28,875 x 98.4% = **$28,413**

Hire Age 40: (22 years service)

Estimated Tier I DB benefits:	$50,000 x 2.0125% x 22 = **$22,138**
Estimated Tier II DB benefits:	$50,000 x 1.65% x 22 = **$18,150**
Estimated Cash Balance benefits:	$18,150 x 76.2% = **$13,830**

<u>Fund Earns Prior 15 Year Returns over next 15 year period and 8% thereafter</u>

Hire Age 22: (40 years service)

Estimated Tier I DB benefits:	$50,000 x 2.0125% x 40 = **$40,250**
Estimated Tier II DB benefits:	$50,000 x 1.65% x 40 = **$33,000**
Estimated Cash Balance benefits:	$33,000 x 105% = **$34,650**

Hire Age 27: (35 years service)

Estimated Tier I benefits:	$50,000 x 2.0125% x 35 = **$35,219**
Estimated Tier II DB benefits:	$50,000 x 1.65% x 35 = **$28,875**
Estimated Cash Balance benefits:	$28,875 x 94.3% = **$27,229**

Hire Age 40: (22 years service)

Estimated Tier I DB benefits:	$50,000 x 2.0125% x 22 = **$22,138**
Estimated Tier II DB benefits:	$50,000 x 1.65% x 22 = **$18,150**
Estimated Cash Balance benefits:	$18,150 x 72.1% = **$13,086**

<u>Fund Earns Prior 15 Year Returns over next 15 year period in reverse order and 8% thereafter</u>

Hire Age 22: (40 years service)

Estimated Tier I DB benefits:	$50,000 x 2.0125% x 40 = **$40,250**
Estimated Tier II DB benefits:	$50,000 x 1.65% x 40 = **$33,000**
Estimated Cash Balance benefits:	$33,000 x 98.9% = **$32,637**

Hire Age 27: (35 years service)

Estimated Tier I DB benefits:	$50,000 x 2.0125% x 35 = **$35,219**
Estimated Tier II DB benefits:	$50,000 x 1.65% x 35 = **$28,875**
Estimated Cash Balance benefits:	$28,875 x 88.4% = **$25,525**

Hire Age 40: (22 years service)

Estimated Tier I DB benefits:	$50,000 x 2.0125% x 22 = **$22,138**
Estimated DB benefits:	$50,000 x 1.65% x 22 = **$18,150**
Estimated Cash Balance benefits:	$18,150 x 66.2% = **$12,015**

Alternative Annuitization Rates

Assumes annuitization at 6% within plan (plan mortality assumption)

Fund earns exactly 8% per year:

Hire Age 27: (35 years service)

Estimated Tier I DB benefits:	$50,000 x 2.0125% x 35 = **$35,219**
Estimated Tier II DB benefits:	$50,000 x 1.65% x 35 = **$28,875**
Estimated Cash Balance benefits:	$28,875 x 89.4% = **$25,814**

Assumes annuitization at 3% outside plan (fully generational mortality assumption)

Fund earns exactly 8% per year:

Hire Age 27: (35 years service)

Estimated Tier I DB benefits:	$50,000 x 2.0125% x 35 = **$35,219**
Estimated DB benefits:	$50,000 x 1.65% x 35 = **$28,875**
Estimated Cash Balance benefits:	$28,875 x 64.5% = **$18,624**