

**MISSISSIPPI PREPAID AFFORDABLE COLLEGE TUITION  
PROGRAM**

**ACTUARIAL VALUATION  
AND REPORT**

**JUNE 30, 2010**





Bryan, Pendleton, Swats & McAllister, LLC  
A Wells Fargo Company

September 14, 2010

Board of Directors  
Mississippi Prepaid Affordable College Tuition Program  
State Treasury Department  
501 North West Street, Suite 1101A  
Jackson, MS 39201

To the Board:

The attached report summarizes the actuarial valuation of the Mississippi Prepaid Affordable College Tuition Program ("the Program") as of June 30, 2010. The valuation compares the value of the assets of the prepaid program to the value of expected future tuition payments to beneficiaries. The following pages summarize the actuarial valuation of the trust fund as of June 30, 2010.

A comparison of the assets and liabilities of the trust fund shows that as of June 30, 2010 there remains a deficit of about \$84.7 million.

Our calculations were based on data furnished by InTuition Solutions, Inc. We have not audited the data and we cannot certify as to the accuracy or completeness of the data supplied. Our calculations are based on the actuarial valuation assumptions, chosen by the Board, as presented in this report.

The actuarial valuation summarized in this report has been performed using generally accepted actuarial principles and is based on actuarial assumptions, each of which we consider to be reasonable (taking into account the experience of the plan and reasonable future expectations). It is our opinion that the results fully and fairly disclose the actuarial position of the plan as of the valuation date. The undersigned is an actuary at BPS&M, a member of the American Academy of Actuaries, and has met the Qualification Standards of the American Academy of Actuaries to render actuarial opinions herein.

Sincerely,

Michael E. Brister  
Fellow, Society of Actuaries  
Principal

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### **Valuation Results**

As of June 30, 2010 the Program has an unfunded liability of about \$84.7 million. In other words, the value of expected liabilities of the trust exceeds the value of assets, including the value of future payments by contract purchasers, by \$84.7 million. The liability amounts are based on actuarial assumptions chosen by the Board. The Program's records administrator, InTuition Solutions, Inc., provided us with information relating to contracts in place as of June 30, 2010. Program staff provided us with information relating to assets and investment returns.

As shown in Appendix A, on a funded percentage basis, the plan is 75.4% funded. This compares to a funded percentage of 72.7% as of June 30, 2009. This increase in the funded percentage is due to higher than assumed return on assets. The return on assets was 11.5% (higher than the assumed 7.8%). The actuarial gain from higher than expected investment returns was offset by higher than expected tuition inflation. The increase in weighted average tuition for four-year universities and colleges was 6.9% (above the assumed 6.5%). The increase in weighted average tuition for junior and community colleges was 15.7% (above the assumed 6.0%).

### **Future Cash Flows**

We have analyzed the projected cash flows from the contracts in the plan as of June 30, 2010. Based on the assumed rate of investment return of 7.8% and the assumed rate of tuition inflation (6.5% for universities and colleges, 6.0% for junior and community colleges), we estimate that the required payments from the trust fund for existing contracts will exceed the asset balance, creating a cash deficit, beginning in the fiscal year ending June 30, 2024. A table summarizing our projected results is shown in Appendix B.

### **Contract Sales**

As of June 30, 2010 there were 21,257 participants enrolled in the Program. This compares to 21,729 participants in the Program as of June 30, 2009.

The majority of the current contracts are for four-year university (11,788 contracts or 55%). There were also 4,438 two-year junior college plus two-year university contracts (21% of the total) and 1,227 two-year junior college contracts (6% of the total). The other 3,804, or 18% of the contracts, are dispersed across the remaining contract types.

### **Weighted Average Tuition**

The Weighted Average Tuition ("WAT") is the average of tuition and fees for in-state residency at Mississippi colleges and universities weighted in proportion to the number of Mississippi resident students attending each of the schools.

WAT for four-year universities is \$5,288 for the fall of 2010, an increase of 6.9% over the WAT of \$4,947 in the fall of 2009.

WAT for junior colleges is \$2,111 for the fall of 2010, an increase of 15.7% over the WAT of \$1,824 in the fall of 2009.

### **Actuarial Assumptions**

Tuition increases are assumed to be 6.5% per year for all future years at universities, and 6.0% per year for all future years at junior colleges. Investments are assumed to return 7.8% per year for all future years. These assumptions, the other assumptions and the methodology are described more fully in the body of this report.

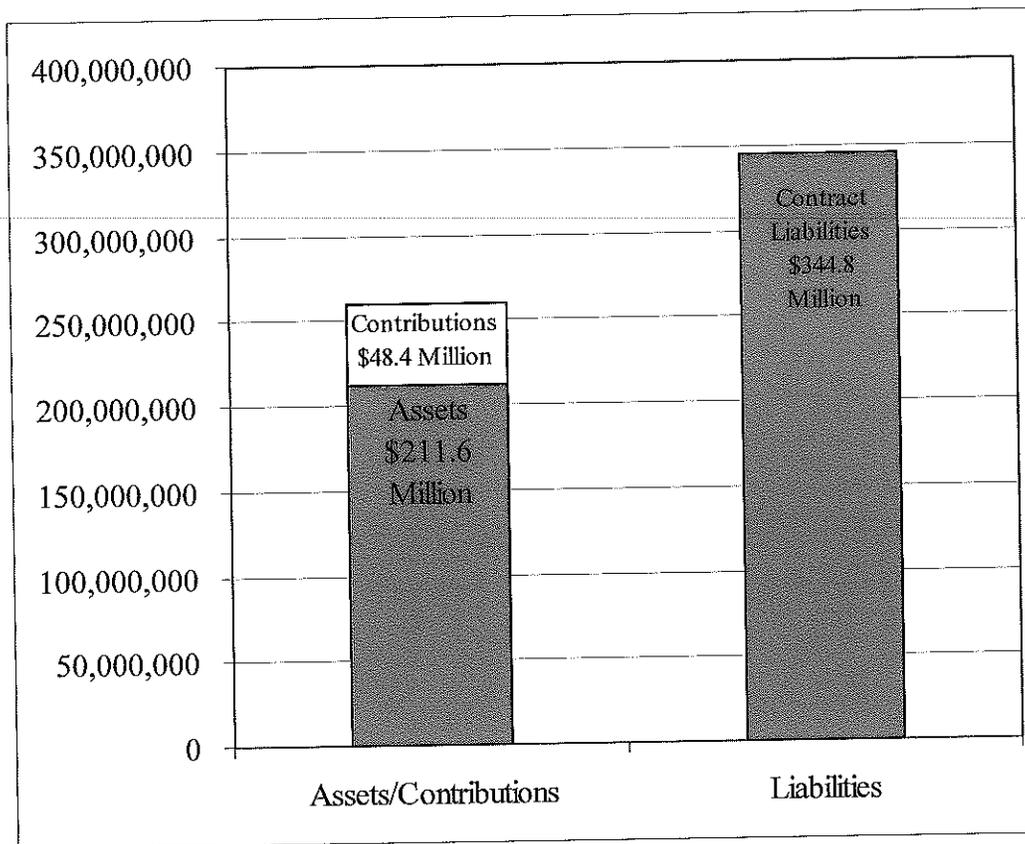
**Yearly Comparison of Selected Plan Year Information**

	Plan Year		
	06/30/2008	06/30/2009	06/30/2010
Number of Contracts	20,416	21,729	21,257
Present Value of Contract Liabilities	\$ 310,489,969	\$ 317,437,303	\$ 344,788,063
Present Value of Future Contributions	44,778,901	46,653,345	48,407,172
Market Value of Assets	217,033,205	183,977,882	211,641,934
Funded Ratio	84.3%	72.7%	75.4%
Surplus/(Deficit)	\$ (48,677,862)	\$ (86,806,076)	\$ (84,738,956)

## Funded Status

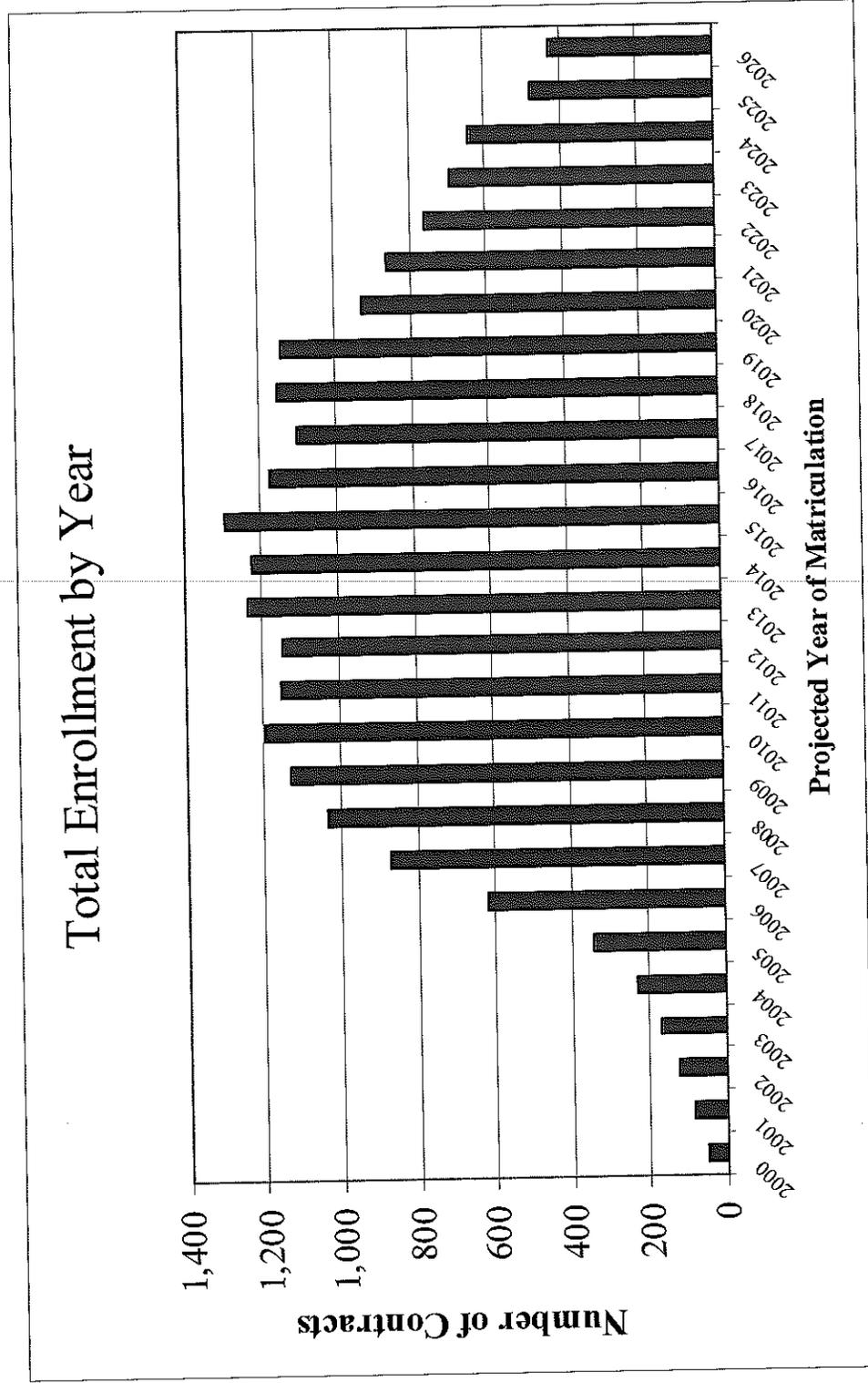
As of June 30, 2010 the expected liabilities of the Program exceeds the value of the assets of the Program (including the value of future payments by contract purchasers) by \$84.7 million. The funded ratio, assets divided by liabilities, is 75.4%, compared to 72.7% a year ago. The assumptions used to perform the actuarial valuation of the fund are described later in this report. The primary assumptions are:

Tuition increases	6.5% per year for four-year universities 6.0% per year for junior colleges
Investment return	7.8% per year

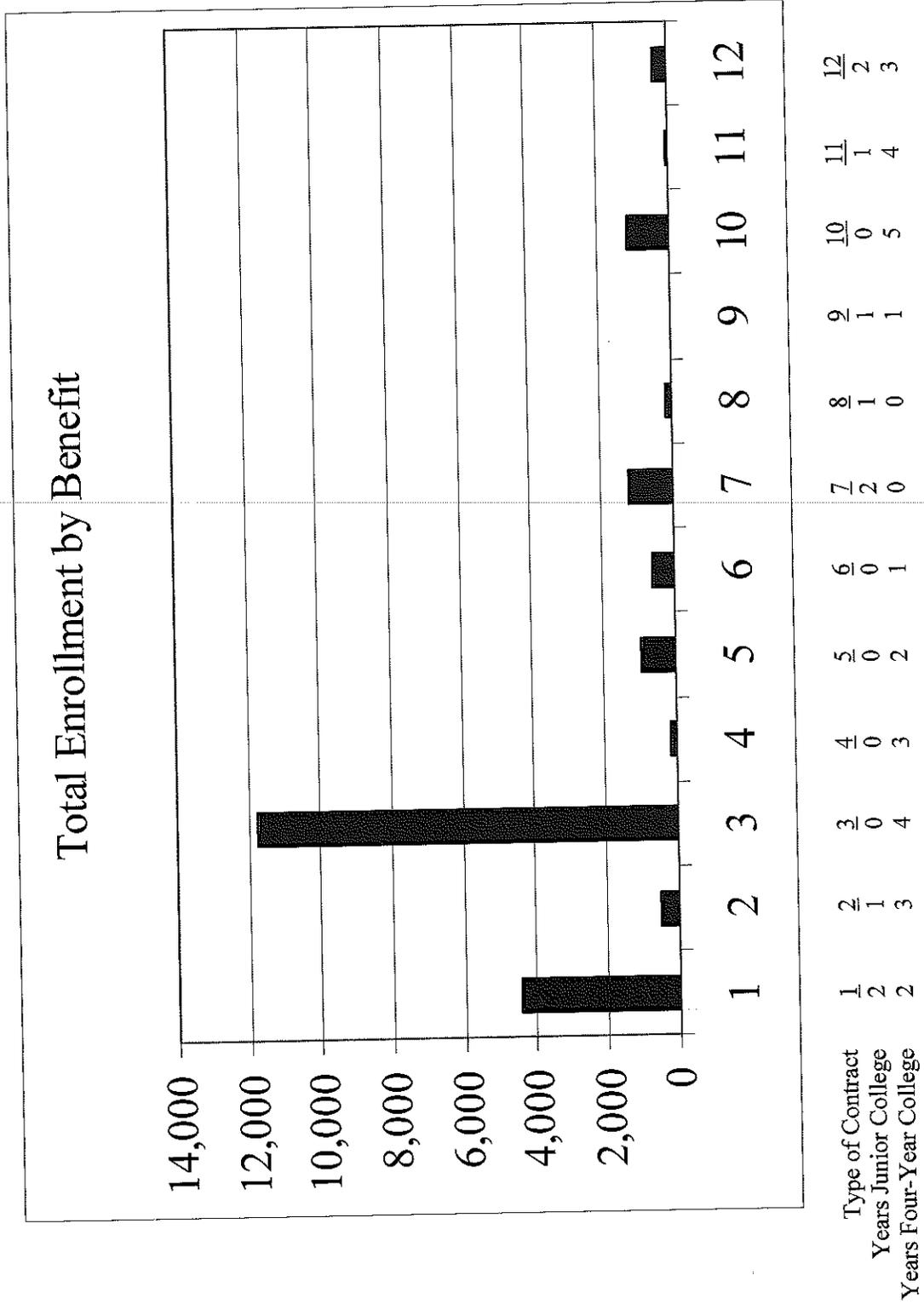


### Contract Sales

Contracts can be purchased for a wide range of ages from newborn through high school senior. The chart below illustrates, based on current participation, the total number of active contracts by expected year of college or university matriculation.



Contracts can be purchased for a variety of plans, from one year to five years of tuition and for junior college, four-year university, or various combinations thereof. The chart below illustrates the total number of current enrollees by type of contract.



## Historic Tuition/Fee Increases

The average tuition for four-year universities is assumed to increase 6.5% per year. The average tuition for junior and community colleges is 6.0% per year. The chart below illustrates the actual increases over the last twenty years compared to that assumption.

Four Year Colleges and Universities				Junior and Community Colleges			
Fiscal Year Ending	Average Tuition/Fees	Annual Increase	Weighted Average Tuition	Average Tuition/Fees	Annual Increase	Weighted Average Tuition	Annual Increase
1992	2,083	9.17%		728	6.12%		
1993	2,314	11.09%		818	12.36%		
1994	2,317	0.13%		942	15.16%		
1995	2,371	2.33%		938	-0.42%		
1996	2,399	1.18%		938	0.00%		
1997	2,426	1.13%		953	1.60%		
1998	2,513	3.59%	2,501	960	0.73%		
1999	2,764	9.99%	2,570	971	1.15%		
2000	2,764	0.00%	2,862	1,015	4.53%		
2001	2,864	3.62%	2,962	1,083	6.70%		
2002	3,294	15.01%	3,408	1,283	18.47%	1,392	
2003	3,578	8.62%	3,716	1,395	8.73%	1,417	1.80%
2004	3,599	0.59%	3,747	1,411	1.15%	1,571	10.87%
2005	3,850	6.97%	3,988	1,561	10.63%	1,677	6.75%
2006	4,037	4.86%	4,179	1,692	8.39%	1,696	1.13%
2007	4,295	6.39%	4,445	1,712	1.18%	1,712	0.94%
2008	4,563	6.24%	4,758	1,726	0.82%	1,757	2.63%
2009	4,742	3.92%	4,936	1,766	3.74%	1,824	3.81%
2010	4,742	0.00%	4,947	1,835	0.22%	1,824	15.73%
2011	5,067	6.85%	5,288	2,114	6.89%	2,111	
<b>Compound Annual Increase</b>				<b>Compound Annual Increase</b>			
20 Years		5.00%			5.79%		
15 Years		5.11%			5.57%		
10 Years		5.87%			6.92%		4.71%
5 Years		4.65%			4.55%		

## **Sensitivity of Results to Variations in Experience**

The table below was prepared to illustrate how variations in future experience will affect the current surplus/ (deficit) of the Program. The Program surplus/ (deficit) as of June 30, 2010 is (\$84.7) million under the base set of assumptions as stated in this report.

### **Variations in Tuition**

Baseline Assumptions	Surplus/(Deficit):	(\$84.7) million
University tuition inflation higher all years by 25 basis points	Surplus/(Deficit):	(\$90.8) million
University tuition lower in all years by 25 basis points	Surplus/(Deficit):	(\$78.8) million
Bias Load is 4% rather than 3%	Surplus/(Deficit):	(\$88.1) million
Bias Load is 2% rather than 3%	Surplus/(Deficit):	(\$81.4) million

### **Variations in Investment Income**

Investment income rate lower in all years by 25 basis points	Surplus/(Deficit):	(\$90.7) million
Investment income rate higher in all years by 25 basis points	Surplus/(Deficit):	(\$78.9) million

### **Break Even Interest Rate**

An investment earnings rate of 12.33% is required for the Program to satisfy all future benefits and expenses in the projection period if other experience is consistent with the actuarial assumptions. This rate is less than last year's result of 12.87%.

### **Break Even Inflation Rates**

Maintaining the current relationship that the university inflation rate is 50 basis points greater than the junior college inflation rate, a 2.21% university inflation rate and a 1.71% junior college inflation rate are required for the Program to satisfy all future benefits and expenses in the projection period if other experience is consistent with the actuarial assumptions. These equivalent rates are greater than last year's results.

**VALUATION ASSUMPTIONS AND METHODS**

**Actuarial Assumptions**

The assumptions used in the actuarial valuation of the Program are described below. These assumptions were developed by the Board.

**Tuition Increases:** The Weighted Average Tuition for four-year universities is assumed to increase at 6.5% per year. The Weighted Average Tuition for junior colleges is assumed to increase at 6.0% per year.

**Investment Return:** Invested assets are assumed to earn 7.8% per year. The Program is exempt from Federal Income Tax.

**Expenses:** Expenses net of fees collected assumed to be 5% of tuition payments.

**Enrollment of MPACT Beneficiaries:** Beneficiaries are assumed to attend college or university full time commencing with the expected matriculation date (the Fall following high school graduation). Further, it is assumed that the contract beneficiaries will not attend the available colleges and universities in the same proportion as the headcount information that was used to determine the 2010/2011 Weighted Average Tuition, but rather attend on average more expensive schools than those included in the aforementioned information. Accordingly, a 3% "bias load" was added to the university Weighted Average Tuition to allow for anti-selection toward matriculation at schools with higher tuition.

**Contract Cancellations:** It was assumed that there would be no contract cancellations.

**Deaths and Disability:** Mortality and disability decrements were not used.

**Actuarial Methods**

The actuarial valuation of the Program is based on projections of tuition and required fees expected to be paid on behalf of Program beneficiaries, and on amounts paid into the Program from contract installment payments. This actuarial valuation is based on the data described and corresponding sources of data described below.

<u>Data</u>	<u>Source</u>
Tuition & required fees at four-year universities	Mississippi Institutions of Higher Learning
Headcount at four-year universities	Mississippi Institutions of Higher Learning
MPACT active contract inventory	InTuition Solutions, Inc.
Tuition & required fees at junior colleges	State Board of Community & Junior Colleges
Headcount at junior colleges	State Board of Community & Junior Colleges

**MPACT Beneficiaries (Appendix C):** The future payments expected to be made to and from the trust fund have been determined based on the number of contracts shown in Appendix C. This information is based on actual enrollment in the program as provided by the above sources.

**Weighted Average Tuition: Four-Year Universities (Appendix D):** The Weighted Average Tuition for public four-year universities in Mississippi is the average of tuition and required fees at each of the four-year universities, weighted by full-time equivalent resident enrollment headcount at each university.

Resident enrollment headcount is the number of undergraduate students eligible to pay in-state tuition at Mississippi four-year universities. The full-time headcounts as of Fall 2009 were used to determine the Weighted Average Tuition.

## VALUATION ASSUMPTIONS AND METHODS

**Weighted Average Tuition: Junior and Community Colleges (Appendix E):** The Weighted Average Tuition for junior and community colleges was determined using the same methodology as for four-year universities, except the weighting was based on the average full-time headcounts at each college for the Fall 2008 and Fall 2009 semesters.

**Annual Increases in Weighted Average Tuition (Appendix F):** The one-year increase in Weighted Average Tuition is shown along with the actual required tuition and fees for all applicable schools. The Weighted Average Tuition rates are used to calculate the prices charged to new contracts for the upcoming year.

## Appendix A

## Funded Status

Market Value of Assets	211,641,934
Actuarial Present Value of future contract installment payments	48,407,172
Subtotal	260,049,106
Actuarial present value of future payments of tuition and fees	344,788,063
Surplus/(Deficit)	(84,738,956)
Funded Status	75.42%

## Appendix B

## Projected Future Cash Flows

Plan Year Beginning	Market Value BOY	Projected Tuition Payments	Projected Contract Payments	Investment Income	Market Value EOY
2010	211,641,934	(18,812,396)	12,229,163	16,251,325	221,310,026
2011	221,310,026	(24,235,914)	11,076,104	16,748,949	224,899,165
2012	224,899,165	(38,048,099)	9,475,214	16,427,792	212,754,073
2013	212,754,073	(38,065,842)	7,957,298	15,420,584	198,066,113
2014	198,066,113	(30,703,190)	6,420,762	14,502,142	188,285,827
2015	188,285,827	(30,286,017)	4,435,089	13,678,108	176,113,007
2016	176,113,007	(31,587,648)	3,783,160	12,652,440	160,960,959
2017	160,960,959	(33,712,360)	3,212,051	11,365,443	141,826,093
2018	141,826,093	(34,425,600)	2,569,267	9,820,038	119,789,798
2019	119,789,798	(35,068,320)	1,887,092	8,049,536	94,658,106
2020	94,658,106	(35,617,919)	1,330,842	6,046,136	66,417,165
2021	66,417,165	(34,903,960)	1,049,438	3,860,213	36,422,856
2022	36,422,856	(33,098,000)	786,828	1,580,847	5,692,531
2023	5,692,531	(31,817,107)	604,381	(773,279)	(26,293,474)
2024	(26,293,474)	(29,977,120)	441,778	(3,202,769)	(59,031,586)
2025	(59,031,586)	(27,836,988)	288,722	(5,678,846)	(92,258,698)
2026	(92,258,698)	(24,912,384)	134,616	(8,162,511)	(125,198,977)
2027	(125,198,977)	(18,291,601)	12,075	(10,478,422)	(153,956,925)
2028	(153,956,925)	(12,413,322)	-	(12,492,760)	(178,863,006)
2029	(178,863,006)	(6,199,016)	-	(14,193,076)	(199,255,099)
2030	(199,255,099)	(654,080)	-	(15,567,407)	(215,476,585)
2031	(215,476,585)	-	-	(16,807,174)	(232,283,759)

Mississippi Prepaid Affordable College Tuition Program

APPENDICES

Appendix C

Projected Enrollment Year	Type of Contract											Total Enrollment by Yr	Percent of Total	
	2 + 2	1 + 3	4 Yr Univ	3 Yr Univ	2 Yr Univ	1 Yr Univ	2 Yr Jr Coll	1 Yr Jr Coll	1 + 1	5 Yr Univ	1 + 4			2 + 3
1999	-	-	1	-	-	-	-	-	-	-	-	-	1	0.00%
2000	12	3	30	-	1	1	1	-	-	1	-	-	49	0.24%
2001	19	3	50	1	3	-	4	1	-	1	-	-	82	0.40%
2002	28	5	70	-	4	2	12	2	-	-	-	-	123	0.60%
2003	33	4	108	1	3	1	10	-	2	1	1	1	166	0.82%
2004	42	6	144	3	7	6	13	-	-	5	3	3	229	1.13%
2005	67	8	213	2	11	6	19	1	-	9	5	5	344	1.69%
2006	119	22	389	3	17	17	28	1	-	18	6	6	620	3.05%
2007	168	20	555	5	20	22	34	3	-	31	4	10	872	4.28%
2008	217	20	651	4	34	17	57	2	-	22	2	8	1,034	5.08%
2009	218	33	652	10	54	45	71	6	-	30	1	8	1,128	5.54%
2010	250	30	670	9	52	40	88	1	-	42	4	12	1,198	5.89%
2011	234	26	659	3	55	44	66	8	-	43	-	14	1,152	5.66%
2012	269	26	616	10	59	35	59	10	-	45	1	15	1,145	5.63%
2013	293	36	648	6	76	28	82	9	-	45	1	14	1,238	6.08%
2014	257	32	664	7	56	38	90	9	-	52	1	21	1,227	6.03%
2015	287	39	736	4	52	35	73	6	-	47	1	15	1,295	6.36%
2016	246	21	659	6	57	33	69	10	-	48	2	25	1,176	5.78%
2017	236	27	565	5	57	20	70	9	-	78	4	32	1,103	5.42%
2018	230	23	611	8	40	38	64	7	-	101	5	24	1,151	5.66%
2019	229	26	608	7	55	23	63	6	-	94	3	27	1,141	5.61%
2020	214	10	481	4	47	24	40	7	-	62	5	36	930	4.57%
2021	213	10	397	3	46	31	49	4	-	83	2	22	860	4.23%
2022	150	8	416	2	47	19	36	2	-	59	1	20	760	3.73%
2023	125	10	382	2	31	18	47	3	-	56	-	15	689	3.39%
2024	122	4	353	4	23	12	29	6	-	63	1	23	640	3.14%
2025	84	6	247	7	24	17	23	3	-	47	-	21	479	2.43%
2026	76	6	213	4	17	13	30	3	-	51	-	12	425	2.16%
	4,438	464	11,788	120	948	585	1,227	119	2	1,135	42	389	21,257	
	20.88%	2.18%	55.45%	0.56%	4.46%	2.75%	5.77%	0.56%	0.01%	5.34%	0.20%	1.83%	100.00%	

## Appendix D

## Weighted Average Tuition Calculation – Four Year Universities

Institution	Full-Time Equivalent Enrollment Fall 2009	Percentage of Total	Tuition and Required Fees 2011 Fiscal Year
Alcorn State University	2,548	4.81%	4,858
Delta State University	2,699	5.10%	4,851
Jackson State University	6,184	11.69%	5,051
Mississippi State University	13,401	25.32%	5,461
Mississippi University for Women	1,912	3.61%	4,644
Mississippi Valley State University	2,216	4.19%	4,781
University of Mississippi	12,705	24.01%	5,439
University of Southern Mississippi	11,254	21.27%	5,453
Total	<u>52,919</u>		
	Weighted Average		5,288.00
	Semester Hour		165.25
	Quarter Hour		110.17

## Appendix E

## Weighted Average Tuition Calculation – Junior and Community Colleges

	Resident Enrollment Fall 2008	Resident Enrollment Fall 2009	Average Resident Enrollment	Tuition and Required Fees 2011 Fiscal Yr.
Coahoma Community College	2,060	2,453	2,257	2,100
Copiah-Lincoln Community College	3,260	3,630	3,445	2,100
East Central Community College	2,342	2,579	2,461	2,020
East Mississippi Community College	4,168	4,988	4,578	2,350
Hinds Community College	9,970	11,693	10,832	2,060
Homes Community College	5,611	6,462	6,037	1,938
Itawamba Community College	6,550	7,596	7,073	1,660
Jones Community College	4,677	5,287	4,982	2,320
Meridian Community College	3,614	3,955	3,785	2,220
Mississippi Delta Community College	2,898	3,211	3,055	2,220
Mississippi Gulf Community College	9,107	10,051	9,579	2,472
Northeast Mississippi Community College	3,190	3,618	3,404	2,100
Northwest Mississippi Community College	6,786	7,972	7,379	1,950
Pearl River Community College	4,244	4,883	4,564	2,106
Southwest Mississippi Community College	1,983	2,172	2,078	2,090
Total	70,460	80,550	75,505	
		Weighted Average	2,111.00	
		Semester Hour	65.97	
		Quarter Hour	43.98	

Appendix F

Weighted Average Tuition	Annual Increase in Weighted Average Tuition		Increase	% Change
	2009-2010	2010-2011		
<b>Universities</b>				
1 Year	4,947.00	5,288.00	341.00	6.89%
4 Year	19,788.00	21,152.00	1,364.00	6.89%
Per Semester Hour	154.59	165.25	10.66	6.90%
Per Quarter Hour	103.06	110.17	7.11	6.90%
Lump Sum Payment One Year	5,269.00	5,632.00	363.00	6.89%
<b>Community Colleges</b>				
1 Year	1,824.00	2,111.00	287.00	15.73%
4 Year	3,648.00	4,222.00	574.00	15.73%
Per Semester Hour	57.00	65.97	8.97	15.74%
Per Quarter Hour	38.00	43.98	5.98	15.74%
Lump Sum Payment One Year	1,933.00	2,238.00	305.00	15.78%

**Tuition and Required Fees Fiscal 2010**

	1 Year	4 Year
Alcorn State University	4,858	19,432
Delta State University	4,851	19,404
Jackson State University	5,051	20,204
Mississippi State University	5,461	21,844
Mississippi University for Women	4,644	18,576
Mississippi Valley State University	4,781	19,124
University of Mississippi	5,439	21,756
University of Southern Mississippi	5,453	21,812
	1 Year	2 Year
Coahoma Community College	2,100	4,200
Copiah-Lincoln Community College	2,100	4,200
East Central Community College	2,020	4,040
East Mississippi Community College	2,350	4,700
Hinds Community College	2,060	4,120
Homes Community College	1,938	3,876
Itawamba Community College	1,660	3,320
Jones Community College	2,320	4,640
Meridian Community College	2,220	4,440
Mississippi Delta Community College	2,220	4,440
Mississippi Gulf Community College	2,472	4,944
Northeast Mississippi Community College	2,100	4,200
Northwest Mississippi Community College	1,950	3,900
Pearl River Community College	2,106	4,212
Southwest Mississippi Community College	2,090	4,180