

# **WEST VIRGINIA COLLEGE PREPAID TUITION AND SAVINGS PROGRAM**

## **ACTUARY'S REPORT ON THE SOUNDNESS OF THE WEST VIRGINIA PREPAID TUITION TRUST FUND**

**JUNE 30, 2011**

November 2011

# **West Virginia College Prepaid Tuition and Savings Program**

## **Actuary's Report on the Soundness of the West Virginia Prepaid Tuition Trust Fund June 30, 2011**

### **Contents**

	Page
Section I Executive Summary	1
Section II Summary of Current Assets	3
Section III Plan Description	4
Section IV Actuarial Methods and Assumptions	5
Section V Soundness of the Fund as of June 30, 2011	8
Section VI Sensitivity Testing	13
Section VII Changes in Surplus	14
Appendix A Active Contract Counts	16

## ***Section I – Executive Summary***

### ***Adequacy of the Fund***

As of June 30, 2011, the West Virginia Prepaid Tuition Trust Fund (the “Fund”) had an unfunded liability of \$11,863,088. The unfunded liability represents the difference between the sum of the present value of the expected future tuition and required fees, refunds and the sum of the market value of the assets and the present value of the expected future contract payments. The unfunded liability represents an \$11,293,518 improvement over last year’s unfunded liability of \$23,156,606, and a \$12,952,318 improvement over the expected deficit of \$24,815,406. The primary sources of change are:

- a) Investment asset performance of 19.7% compared to the assumed investment return of 7.1%. The result was an asset gain of \$9.1 million. This estimate may vary from the actual asset performance as determined by the investment consultant.
- b) Assumption changes generated a loss of \$1.6 million.
- c) Tuition increases during the year only increased 4.9% compared to the assumed 9.5%, resulting in a tuition gain of \$4.3 million.

The table below summarizes current balances:

Assets	
Cash and Investments	\$ 86,027,267
Future Contract Collections	<u>1,607,660</u>
Total Assets	\$ 87,634,927
Liabilities and Surplus	
Future Contract Benefits	\$ 99,498,015
Surplus Assets over Liabilities	<u>(11,863,088)</u>
Total Liabilities and Surplus (Deficit)	\$ 87,634,927

The Fund’s funded ratio is 88.1%.

The assumptions used to measure the adequacy of the Fund, which were approved by the Board, are stated in Section IV. The most important assumptions are:

- The investment yield and;
- The rate of increase in tuition/fees.

An Escrow Account is available to the Fund to cover benefit costs should the Fund become depleted. As of June 30, 2011, the account balance was \$13,984,878. If combined with the Trust Fund Assets, the Fund would have a surplus of \$2,121,790 and have a Funded Ratio of 102.1%

### ***Investment Yield***

The investment yield is the expected long-term net earnings rate of return on the assets.

The actuarial valuation of the Fund was determined using the schedule of interest rates found in Section IV. We also assumed the Fund is exempt from federal income tax. It is important to highlight the sensitivity of this analysis to this assumption. As pointed out subsequently, a 25-basis points shortfall in such a goal would place the Fund in a much less favorable position.

Additionally, the nature of this type of program involves payment of benefits at fixed future points in time, subjecting the Fund to greater than average investment risk due to short-term fluctuation and in matching investment maturities with expected outlays.

***Rate of Increase in Tuition/Fees***

The Board did not change the tuition and fee increase assumptions from last year. The assumed annual increases are shown in Section IV.

***Use of Report***

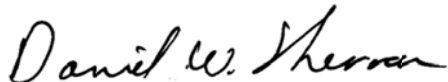
This report is prepared solely to assist the Board of the West Virginia College Prepaid Tuition and Savings Program in evaluating the actuarial soundness of the Fund each year. The report is not intended and is not suitable for any other purpose. Accordingly, Buck Consultants does not intend this report or the data contained therein to be used as personal financial advice. Other readers of this report should consult with their own financial advisors regarding the application of this report to their particular circumstances.

***Qualifications***

Daniel Sherman is an Associate of the Society of Actuaries, and a Member of the American Academy of Actuaries. He is the new actuary for the West Virginia prepaid tuition plan, and is the current actuary for the Alabama, Texas, and Nevada prepaid tuition plans. He meets the Qualification Standards of the Academy to render the actuarial opinions contained herein. This report has been prepared in accordance with all applicable Actuarial Standards of Practice, and we are available to answer questions concerning it.

All assumptions were chosen by the Board. In my opinion the actuarial assumptions selected by the Board are reasonable. The Board provided the contract data and asset information.

BUCK CONSULTANTS, LLC



Daniel Sherman, ASA, MAAA, EA  
Director and Consulting Actuary

## ***SECTION II – Summary of Current Assets***

### ***Current Assets***

The assets are administered by the State Treasurer's Office and invested by external managers. The value of the assets as of June 30, 2011 is \$86,027,267. Asset totals shown below do not include securities lending collateral, investment transfers receivable, tuition contracts receivable or the related obligations for those assets.

Assets held as of June 30, 2011:

U.S. Equities	\$28,459,598
International Equities	15,241,657
Fixed Income	41,089,496
Cash and Cash Equivalents held by Hartford	<u>1,236,516</u>
Total	\$86,027,267

It is assumed that this mix will produce a net annual investment return of 6.4% in fiscal year 2012.

### ***Investment Strategy***

The goal of the investment strategy is to maximize the investment return given the short time horizon for the Fund and the need to avoid investment risk. The Board has determined that the protection of capital is critical and is the best approach for maximizing the Fund's ability to fulfill its contractual obligations to beneficiaries when they matriculate.

Because the Fund is in wind-down, the Fund plans to increase the Fixed Income allocation by 3% each year. The table below shows the target allocations by fiscal year for the current and next five fiscal years:

	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>
Broad Domestic Equity	34%	32%	30%	28%	26%	24%
Global (ex-US) Equity	18%	17%	16%	15%	14%	13%
Domestic Fixed	48%	51%	54%	57%	60%	63%
Total	100%	100%	100%	100%	100%	100%

## ***SECTION III – Plan Description***

### ***Overview***

The West Virginia College Prepaid Tuition Plan (“Plan”) is an Internal Revenue Code Section 529 prepaid tuition plan. It allows the contract holder to lock in the cost of undergraduate college tuition and required fees, thus providing protection against future tuition inflation. The Plan was closed to new contracts in 2003.

In 2003 the Legislature created the Prepaid Tuition Trust Escrow Account to guarantee payment of Prepaid Tuition Plan contracts. The Escrow Account will receive transfers of up to \$1,000,000 from the State Unclaimed Property Trust Fund each year there is an actuarially determined unfunded liability of the Prepaid Tuition Plan. If the Prepaid Tuition Plan is unable to pay current tuition benefits, funds may be withdrawn from the Escrow Account to meet those payments. At June 30, 2011, there was \$13,984,878 in the Escrow Account.

### ***Contract Units***

The contract holder bought units of tuition where one unit is worth one semester of undergraduate tuition plus mandatory fees.

When the beneficiary is ready for college, all of the tuition and required fees will be covered at all four- or two-year public colleges and universities in West Virginia.

The contract can also be used to help pay for tuition at all private colleges in West Virginia and out-of-state institutions. In this case, the participant will receive a benefit that is equal to the Current Tuition Value, which is the average tuition, weighted by enrollment, of all eligible West Virginia Public postsecondary institutions, but excluding those under the purview of the West Virginia Council for Community and Technical Education.

### ***Refunds***

For cancellations other than death, disability, or receipt of a scholarship, the purchaser may receive a refund of payments accumulated at the lesser of 1.5% per year less administrative expenses, or the actual investment return of the Trust Fund less administrative expenses.

## ***SECTION IV – Actuarial Methods and Assumptions***

### ***Actuarial Methods***

The actuarial method projects the expected future cash flows from contract payments, tuition and refund benefits. These projected future cash flows are discounted to the present and compared to the market value of the assets to indicate the soundness of the Fund. The discount rate is equal to the assumed investment yield.

The development of the measurement of soundness has six stages:

Develop base line average tuition and required fees from data provided by the Fund;

Project average tuition and required fees through the expected term of the contracts, based on assumptions as to future tuition increases;

Determine the nominal cost of expected future tuition and required fees, based on the contract inventory and assumptions as to mortality, disability and utilization of benefits;

Project future contract payments based on the contracts and assumptions as to mortality, disability and voluntary surrender;

Determine the present value of expected future benefits and contract payments, based on the discount rate assumption;

As the indication of soundness, measure the surplus or deficit, which is the difference between the sum of the market value of the assets and the present value of the expected future contract payments and the sum of the present values of the expected future tuition and required fees, and refunds.

### ***Actuarial Assumptions***

Necessary adjustments to reflect new information were made to this year's assumptions. The assumptions were approved by either the Board, or the staff of the State Treasurer's Office. The revisions to the assumptions, if any, are noted herein.

### ***Bias Load***

A bias load of 8.5% was assumed to account for beneficiaries electing more expensive West Virginia Public schools. It is also assumed that the 75% of beneficiaries will attend a West Virginia Public school. The other 25% of beneficiaries are assumed to attend a Private or out-of-State school.

The prior valuation assumed a bias load of 9.0% for all beneficiaries. There was no explicit assumption of the percentage of beneficiaries that will attend a Private or Out-of-State school.

### ***Investment Yield***

The assumed annual net investment yield is shown below. Callan Associates provided the expected returns by fiscal year. Note that these returns reflect an assumption that each year, the Fund will shift 3% of assets into Fixed Income. These changes in asset allocation over time reduce the expected investment yield decreases each year until reaching 5.20% in fiscal year 2020.

<u>Fiscal Year</u>	<u>New Assumptions</u>	<u>Prior Assumptions</u>
2012	6.40%	6.90%
2013	6.20%	6.80%
2014	6.10%	6.70%
2015	6.00%	6.50%
2016	5.80%	6.40%
2017	5.70%	6.30%
2018	5.50%	6.10%
2019	5.40%	6.00%
2020	5.20%	5.80%
2021	5.20%	5.70%
2022	5.20%	5.50%
2023	5.20%	5.50%
2024+	5.20%	5.50%

### ***Tuition/Fee Increase***

Assumed annual increases in future tuition and required fees are shown in the following table. There was no change from the prior valuation.

Fiscal Year	Increase
2012	9.50%
2013	9.50%
2014+	7.00%

### ***Utilization of Credits***

Utilization of credits is assumed to follow the table below. There was no change in this assumption from the previous valuation.

Years Purchased	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
1	85%	10%	5%							
2	45%	30%	15%	5%	5%					
3	33%	25%	18%	12%	7%	3%	2%			
4	24%	24%	20%	18%	7%	3%	2%	1%	1%	
5	19%	19%	16%	14%	13%	7%	5%	3%	2%	2%



### ***WAT/CTV***

Beneficiaries who matriculate at a non-Private in-State school are assumed to receive the Weighted Average Tuition (WAT) for actuarial valuation purposes. Beneficiaries who matriculate at a Private or Out-of-State school receive the Current Tuition Value (CTV). The WAT and CTV for the current and prior valuation are shown in the table below.

<u>School Year</u>	<u>WAT per semester</u>	<u>CTV per semester</u>
2010-2011	\$2,297	\$2,546
2011-2012	\$2,409	\$2,691

### ***Expenses***

The prior valuation included an expense provision for records administration charges and for general expense. Expenses are no longer paid from the Fund, therefore, no provisions for expenses are included in this actuarial valuation.

The prior valuation also assumed 0.1% in investment expenses. Since these expenses are not paid out of the Trust Fund, it was determined that they should not be reflected in the valuation.

### ***Mortality and Disability***

Due to the transferability of the contract, there are no mortality or disability assumptions. This is a change from the prior valuation which did not assume any disability decrements but did assume deaths would follow the 1980 U.S. Life Table.

### ***Early Voluntary Surrender of Contract***

No early voluntary surrenders of contracts were assumed.

### ***Matriculation Percent***

We assumed the beneficiary of a contract, not voluntarily surrendered, matriculates at the date specified in the contract.

### ***Federal Income Tax***

We assume the income of the Fund is exempt from Federal Income Tax.

### ***Timing of Tuition Payments***

We assume 45% of tuition payments are made on September 1st, 45% on February 1st and 10% on July 1st. The prior valuation assumed 50% on September 1st, 50% on February 1st and 0% on July 1st.

## ***SECTION V – Soundness of the Fund as of June 30, 2011***

As a measure of the soundness of the Fund as of June 30, 2011, we determined the difference between the value of the assets and the actuarial present value of the future contract payments and the actuarial present value of future benefits. This measurement of soundness is summarized on the following pages.

A projection of the status of the Fund at each future anniversary date through the life of these contracts is presented on page 11, labeled Present Value of Assets and Liabilities.

The projections of future benefits and contract payments are presented on page 12, labeled Expected Cash Flows.

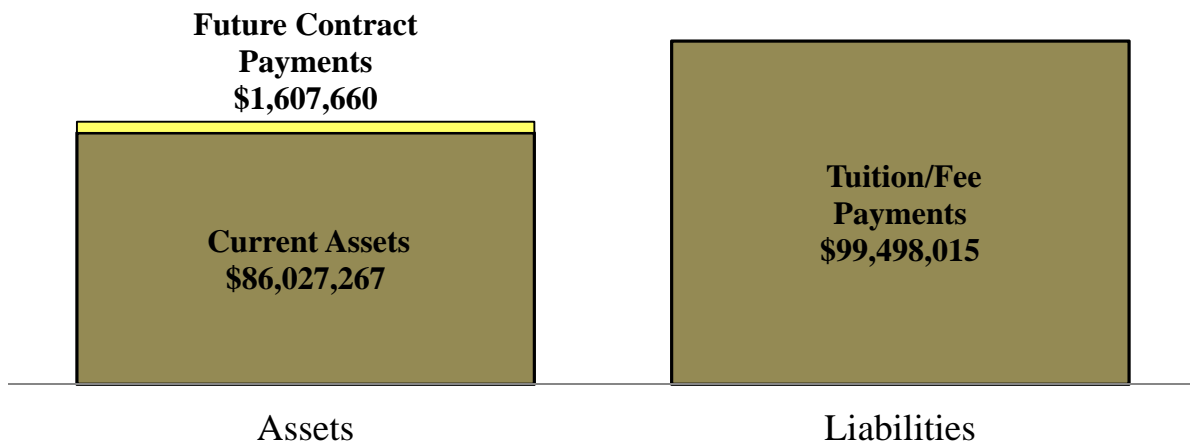
Our measurement of the present value and projection are based on asset and contract information provided and on the assumptions chosen by the Board.

# Funded Status

As of June 30, 2011, the value of the liabilities of the trust fund exceeds the assets (including the value of future payments by contract purchasers) by \$11,863,088. The funded ratio, assets divided by liabilities, is equal to 88.1%. Asset totals shown below do not include securities lending collateral, investment transfers receivable or the related obligations for those assets. The assumptions used to perform the actuarial valuation of the fund were approved by the Board and are described in Section III.

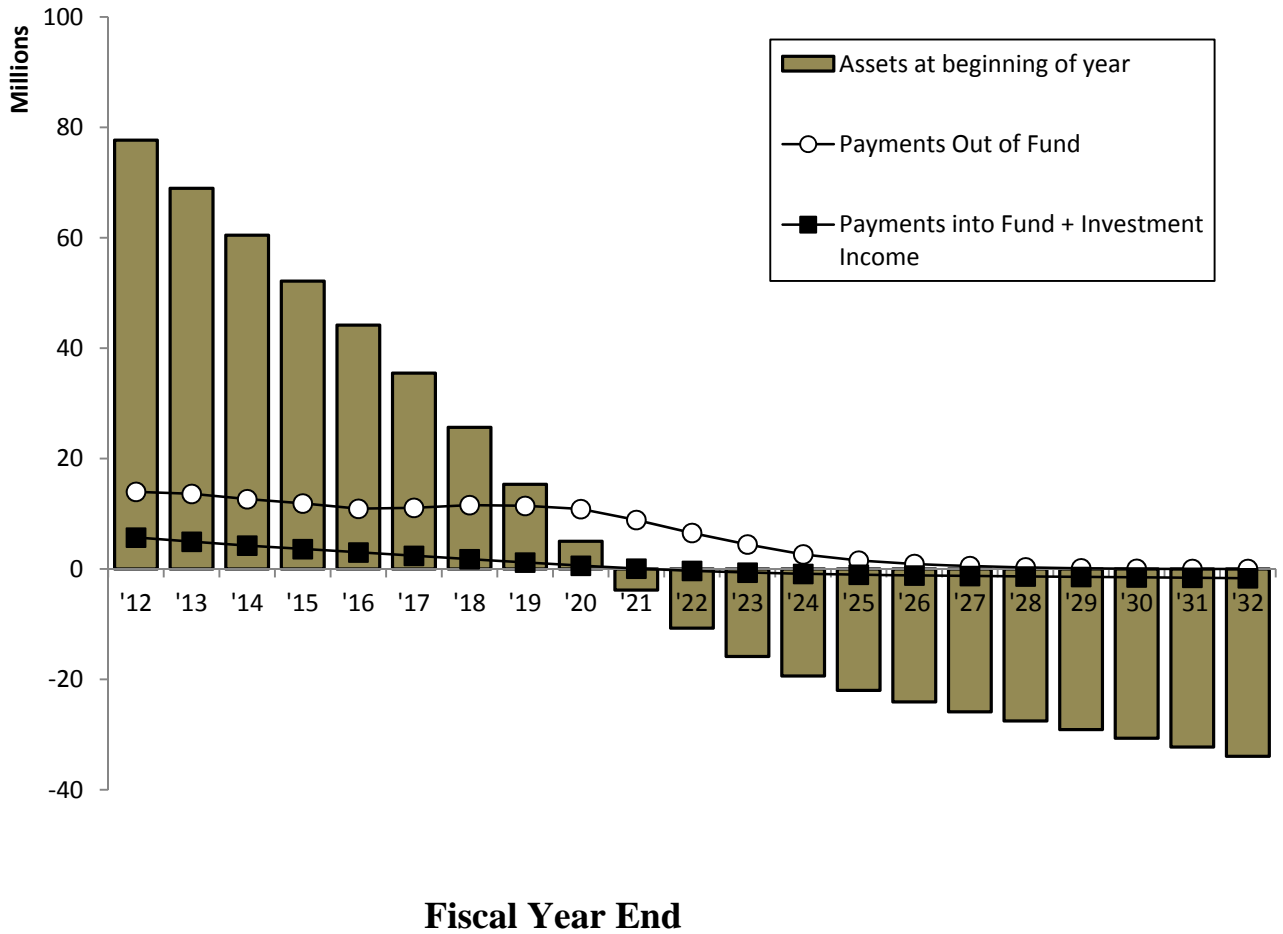
**Total:**  
**\$87,634,927**

**Total:**  
**\$99,498,015**



# Cash Flow Projection

The expected income and disbursements of the trust fund, based on the assumptions used in the actuarial valuation, and the current group of contract beneficiaries, are shown below. These amounts are cash amounts, not present value amounts.



### *Present Value of Assets and Liabilities*

6/30 of Year	Present Value of Future Benefits	Value of Assets and Present Value of Future Collections	Surplus of Assets Over Liabilities
2011	99,498,014	87,634,927	(11,863,088)
2012	91,365,140	78,906,803	(12,458,337)
2013	82,926,523	69,850,451	(13,076,072)
2014	74,866,107	61,134,040	(13,732,067)
2015	67,068,704	52,643,299	(14,425,405)
2016	59,666,728	44,520,769	(15,145,960)
2017	51,624,106	35,730,541	(15,893,565)
2018	42,523,306	25,872,226	(16,651,080)
2019	33,022,703	15,585,664	(17,437,039)
2020	23,549,191	5,308,949	(18,240,242)
2021	15,632,499	(3,471,671)	(19,104,171)
2022	9,711,108	(10,324,182)	(20,035,290)
2023	5,633,955	(15,400,782)	(21,034,737)
2024	3,207,746	(18,895,642)	(22,103,388)
2025	1,793,613	(21,444,527)	(23,238,140)
2026	950,358	(23,487,501)	(24,437,859)
2027	454,252	(25,249,329)	(25,703,581)
2028	166,974	(26,870,317)	(27,037,292)
2029	56,272	(28,385,854)	(28,442,126)
2030	16,169	(29,904,550)	(29,920,719)
2031	5,911	(31,470,583)	(31,476,494)
2032	2,700	(33,110,539)	(33,113,239)

### *Expected Annual Cash Flows*

Fiscal Year Ending	Benefit Payments	Contract Payment Receipts	Annual Cash Flow
2012	13,977,018	508,710	(13,468,308)
2013	13,609,091	392,853	(13,216,238)
2014	12,666,346	302,931	(12,363,415)
2015	11,872,051	240,780	(11,631,271)
2016	10,920,758	180,492	(10,740,266)
2017	11,073,656	115,953	(10,957,703)
2018	11,567,109	69,073	(11,498,036)
2019	11,434,759	37,021	(11,397,738)
2020	10,859,438	12,217	(10,847,221)
2021	8,870,661	0	(8,870,661)
2022	6,534,941	0	(6,534,941)
2023	4,446,495	0	(4,446,495)
2024	2,638,685	0	(2,638,685)
2025	1,534,139	0	(1,534,139)
2026	908,801	0	(908,801)
2027	529,377	0	(529,377)
2028	301,696	0	(301,696)
2029	115,851	0	(115,851)
2030	41,755	0	(41,755)
2031	10,771	0	(10,771)
2032	3,415	0	(3,415)

Note: The amounts shown above are annual expected amounts for the year corresponding to the “Fiscal Year Ending” column. They are not cumulative amounts. In addition, Payment Receipts are frontloaded.

## ***SECTION VI – Sensitivity Testing***

The Program operates under conditions of risk and uncertainty. For example, while it is assumed the assets of the fund will earn the annual net rate found in Section IV, we also expect actual returns to vary from year to year. To accept the reasonableness of the basis for the measurement of the soundness, it is useful to know how the status of the fund may be affected by the vagaries of the markets and other factors. We have rerun the valuation under the following alternative scenarios, and the surplus as of June 30, 2011 under each of these scenarios is presented in the following table:

<b>Scenarios</b>	<b>Surplus</b>
Baseline	(11,863,088)
Tuition increases are 25 basis points higher in each future year than assumed	(12,887,280)
The investment return is 25 basis points lower than assumed	(12,996,355)
Tuition increases are 25 basis points higher in each future year and the investment return is 25 basis points lower than assumed	(14,039,123)
Tuition increases are 25 basis points lower in each future year than assumed	(10,853,470)
Tuition increases are 25 basis points lower in each future year and the investment return is 25 basis points lower than assumed	(11,968,482)
The investment return is 50 basis points lower than assumed	(14,152,384)
The investment return is 75 basis points lower than assumed	(15,331,763)
The investment return is 100 basis points lower than assumed	(16,535,095)
Tuition increases are 50 basis points higher in each future year than assumed	(13,926,279)
Tuition increases are 75 basis points higher in each future year than assumed	(14,980,324)
Tuition increases are 100 basis points higher in each future year than assumed	(16,049,654)

## ***SECTION VII – Changes in Surplus***

### ***Adequacy of the Fund***

As of June 30, 2011, the Fund had an unfunded liability of \$11,863,088. The unfunded liability represents the difference between the sum of the present value of the expected future tuition and required fees, refunds and the sum of the market value of the assets and the present value of the expected future contract payments. The unfunded liability represents an \$11,293,518 improvement over last year's unfunded liability of \$23,156,606, and a \$12,952,318 improvement over the expected deficit of \$24,815,406.

Following is a comparison of the assumed and the actual results for the year ended June 30, 2011.

### ***Investment Return***

Assets performed better than expected during the 2011 fiscal year, returning 19.7% versus the prior year assumption of 7.1%. The result was an asset gain of \$9.1 million.

### ***Tuition and Required Fee Increase***

The Weighted Average Tuition increased from \$2,297 per semester to \$2,409, an increase of 4.9% which is lower than the assumed 9.5% increase. This generated a \$4.3 million gain.

### ***Assumption Changes***

In aggregate, assumption changes generated a \$1.6 million loss.

The change in discount rates generated a \$2.8 million loss.

In addition, the expenses included in the prior valuation were removed for the current valuation since the expenses are not payable from the Trust. This generated a \$1.0 million gain.

Finally, the current valuation assumes that 45% of the tuition payments are paid on September 1st, 45% on February 1st, and 10% on July 1st. The prior valuation assumed that 50% of the tuition payments are paid on September 1st and 50% are paid on February 1st. This change in assumption produced a \$0.2 gain since some payments are now assumed to be deferred several months. The bias and school election assumption changes, and the mortality table change had an insignificant affect.



***Change in Surplus Summary***

During the last year, the Fund's deficit decreased from a \$23.2 million to an \$11.9 million. The sources of change are as follows (in millions):

Surplus / (Deficit) as of 6/30/2010		\$(23.2)
Expected increase in deficit		(1.6)
Asset Gain (19.7% return)	9.1	
Tuition Gain	4.3	
Other actuarial gain	1.1	
Total actuarial gain		14.5
Change in discount rates	(2.8)	
Exclude expenses	1.0	
Change tuition payment timing	0.2	
Change in assumptions		<u>(1.6)</u>
Surplus / (Deficit) as of 6/30/2011		\$(11.9)

**APPENDIX A – Active Contract Units**

<b>Matriculation</b>	<b>Purchase Year</b>					<b>Total</b>	<b>% of Total</b>
	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>		
<b>Year</b>							
2001	8					8	0.0%
2002	1,886					1,886	3.4%
2003	1,690	427				2,117	3.9%
2004	2,185	506	418			3,109	5.7%
2005	2,158	564	382	105		3,209	5.9%
2006	2,228	654	525	134	28	3,570	6.5%
2007	2,065	768	459	183	88	3,562	6.5%
2008	2,270	687	524	134	110	3,724	6.8%
2009	2,058	745	573	196	122	3,694	6.8%
2010	2,253	702	571	162	76	3,764	6.9%
2011	2,017	785	620	222	77	3,720	6.8%
2012	1,798	786	594	203	42	3,423	6.3%
2013	1,508	592	610	213	117	3,041	5.6%
2014	1,596	639	555	231	95	3,115	5.7%
2015	1,633	527	530	183	169	3,042	5.6%
2016	1,461	578	488	140	101	2,769	5.1%
2017	782	1,006	468	191	74	2,522	4.6%
2018		916	823	242	123	2,105	3.8%
2019	8		1,142	382	101	1,633	3.0%
2020				198	327	525	1.0%
2021		8			118	126	0.2%
2023	8					8	0.0%
2024		8				8	0.0%
2025		8				8	0.0%
<b>Total</b>	<b>29,613</b>	<b>10,905</b>	<b>9,281</b>	<b>3,120</b>	<b>1,768</b>	<b>54,688</b>	<b>100.0%</b>
<b>% of Total</b>	<b>54.1%</b>	<b>19.9%</b>	<b>17.0%</b>	<b>5.7%</b>	<b>3.2%</b>	<b>100.0%</b>	