



4080 McGinnis Ferry Road, Suite 901 • Alpharetta, GA 30005  
PH: (770) 752 - 5656 • FAX: (770) 752 - 5650

September 3, 2010

The Honorable Converse A. Chellis, III  
Treasurer, State of South Carolina  
118 Wade Hampton Building  
Columbia, SC 29201

Dear Treasurer Chellis:

We have completed our actuarial analysis of the Fund ("the Fund") for the South Carolina Tuition Prepayment Program ("SCTPP" or "the Program") as of June 30, 2010. This report presents our findings with respect to the Fund's expected cash flows and the surplus/deficit position of the Fund. The analyses have been prepared in accordance with generally accepted actuarial principles and practices commonly applicable to similar types of arrangements.

Currently the expected value of liabilities is \$179,144,744 and the value of assets is \$126,190,054, for a difference of \$52,954,690. The funded ratio is 70.4% of liabilities. For comparison purposes, in 2009 the deficit was \$64,373,848 and the funded ratio was 66.1%. You should note that **the Fund is projected to run out of assets in Fiscal Year 2018** unless remedial actions are taken.

In making our projections, we have included the effects of the statutory limitation on benefits to Program participants to a maximum of seven percent annual increase. You should also note that we have not assumed any further sales of prepaid tuition contracts.

The results above are based on assumptions approved by SCTPP personnel after consultation with us.

\* \* \* \* \*

We appreciate the opportunity to serve the State of South Carolina. Any questions about the report should be directed to me at (770) 752-5656.

Very truly yours,

Robert B. Crompton, FSA, MAAA  
Vice President  
Actuarial Resources Corporation

## TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
I.	Executive Summary	1
II.	Reliances & Actuarial Standards	5
III.	Description of the Program	6
IV.	Summary of Contract Data and Current Assets	8
V.	Actuarial Methods and Assumptions	11
VI.	Adequacy of the Fund as of June 30, 2010	16
VII.	Stochastic Analysis	18
VIII.	Break-Even Rates & Sensitivity Testing	20
IX.	Change in Actuarial Assumptions	21
X.	Expected Use of Funds	22

## I. EXECUTIVE SUMMARY

The following are the key findings of our analysis.

### *Adequacy of the Fund*

The Fund's liabilities exceed its assets by \$52,954,690. The key results are shown below.

Value as of June 30, 2010	Assets and Liabilities
Assets	
Investments	\$117,684,364
Future Contract Payments	<u>8,505,690</u>
Total Assets	<u>\$126,190,054</u>
Liabilities and Surplus	
Future Contract Benefits	\$179,144,744
Other Liabilities	<u>0</u>
Total Liabilities	<u>\$179,144,744</u>
Surplus	<u>(\$52,954,690)</u>
Total Liabilities and Surplus	<u>\$126,190,054</u>
Funded Ratio	70.4%

### *From Last Year to This Year*

The table below summarizes the change in the deficit from June 30, 2009 to June 30, 2010.

Progression of Surplus/(Deficit)	
Surplus at June 30, 2009	(\$ 64,373,848)
Projected Change to June 30, 2010	(4,667,104)
Gain From Favorable Investment Experience	5,116,512
Change Due to Additional Contract Sales	N/A
All Other Experience Items	10,969,750
Surplus at June 30, 2010	(\$ 52,954,690)

## *Implications of the Deficit*

The existing deficit is an indicator that existing assets combined with future cash flows are insufficient to pay all contract owners their benefits. We project that assets will be depleted in Fiscal Year 2018. Unless remedial action is taken, the Program will be unable to pay benefits.

Remedial actions may include, but are not limited to the following:

1. Shut down the Program. This will require the refund of unused contributions accumulated at 4%. As of June 30, 2010 this liability was \$118.2 million. If the Program is shut down at June 30, 2011, we project that the liability will be \$122.2 million. We project assets to be \$111.0 million, so that we are projecting that the State would need to refund \$11.2 million from the General Fund.
2. Shut down the Program on February 28, 2018 when the Program is projected to run out of assets. This would require the refund of unused contributions accumulated at 4%, which we project to be \$41.9 million. This would require that the entire amount be paid from the General Fund.
3. Provide additional appropriations annually beginning at the time of asset depletion to pay the contractual benefit. The estimated total cost to pay these benefits is \$12.1 million annually beginning in December, 2017 (immediately before asset depletion) continuing until all benefits are projected to be paid. Total additional appropriations would be \$121,100,000.
4. Scenario 3, immediately above, allows for assets to be depleted at interim dates since cash out-flows are greater than \$12.1 million dollars in the early years. A similar scenario that provides non-level appropriations such that assets are projected never to be depleted is shown immediately below. The total appropriations for this scenario are \$108,760,000.
  - December 2017: \$16.61 million
  - December 2018: \$18.54 million
  - December 2019: \$16.77 million
  - December 2020: \$15.37 million
  - December 2021: \$13.52 million
  - December 2022: \$11.01 million
  - December 2023: \$ 8.48 million
  - December 2024: \$ 5.35 million
  - December 2025: \$ 2.46 million
  - December 2026: \$ 0.65 million
5. Provide an additional appropriation now to offset the deficit. We are projecting that a lump-sum appropriation of \$58.8 million in December, 2011 would offset the deficit, if all actuarial assumptions are realized.

6. Provide an additional appropriation at the time of asset depletion to offset the deficit. We are projecting that a lump-sum appropriation of \$89.5 million in January, 2018 would offset the deficit if all actuarial assumptions are realized.
7. Provide a series of annual appropriations until asset depletion. We project that annual appropriations of \$10.28 million beginning December, 2011 and ending December 2017 would offset the deficit if all actuarial assumptions are realized. This is a total appropriation of \$71,960,000.
8. Provide a series of annual appropriations until all liabilities are mature in February 2027. We project that these amounts would be:
  - o \$5.91 million, if begun at December, 2011 for a total of \$94,560,000;
  - o \$6.57 million, if begun at December 2012 for a total of \$98,550,000;
  - o \$7.33 million, if begun at December 2013 for a total of \$102,620,000

### *Adequacy Methodology*

In making our projections of the surplus in the table immediately above, we assume that the Program will not sell any additional prepaid tuition contracts. This is a conservative limitation that provides a static “snapshot view” of the Program as of June 30, 2010.

### *Investment Strategy*

Based on discussions with Program personnel, the investment strategy of SCTPP is anticipated to be 45% domestic equities and 15% International Equity Index fund (total 60% equities) and 40% domestic fixed income. The State Treasurer’s Office has adopted this strategy based on their discussions with their investment advisors at Jamison, Eaton, & Wood, Inc.

The objective of the increase in overall equities and the investment in international equities is to provide diversification and higher portfolio returns than would be available from a portfolio consisting mainly of fixed income investments. The assumption for investment returns is based on the recommendation of South Carolina State Treasurer’s Office personnel and the advice of Jamison, Eaton, & Wood, Inc. We have not reviewed the strategy nor are we expressing an opinion on the strategy.

Key economic assumptions are listed below.

<b>Key Assumptions</b>	
<b>Yield on Investments</b>	
All future years	7.25%
<b>Asset Allocation</b>	
Cash & fixed income	40%
Equities	60%
<b>Tuition Inflation</b>	
For those attending SC public universities	7.0%
All others	8.0%
<b>Bias Load</b>	
All years	3.0%

The assumption for investment returns is based on the recommendation of South Carolina State Treasurer’s Office investment personnel, who considered the likely returns of a 40% fixed income, 60% equity portfolio.

## II. RELIANCES & ACTUARIAL STANDARDS

In making the projections on which this report is based, we relied on the following information supplied to us as indicated below.

- Tuition and fee amounts at South Carolina public institutions of post-secondary education, supplied by the Office of the State Treasurer;
- Headcount at South Carolina public institutions of post-secondary education, supplied by the Office of the State Treasurer;
- Market value of assets of the Program's trust fund, supplied by the Office of the State Treasurer;
- Inventory of Program contracts, supplied by InTuition Solutions, Inc., the Program's records administrator; and
- Assumptions regarding future investment returns on the Program's trust fund, supplied by the Office of the State Treasurer, after consultation with me regarding reasonableness and comparability to assumptions at other programs with similar investment profiles.

There are no actuarial standards of practice that apply specifically to prepaid tuition plans. However, there are two general standards that we believe apply:

- Actuarial Standard of Practice #23 "Data Quality". This standard sets guidelines on review of data supplied by a third party. We have performed reasonableness and consistency checks on the data supplied to us by personnel of the Program and by the records administrator, and are in compliance with this standard. Our review of the data was not an audit of the data.
- Actuarial Standard of Practice #41 "Actuarial Communications". This standard sets general guidelines for actuarial communications. This report is in compliance with this standard.



### III. DESCRIPTION OF THE PROGRAM

The Program was created in 1997 by the South Carolina Legislature to "...assist the citizens of South Carolina with the expense of college by providing an advanced payment program for tuition at a fixed and guaranteed level for public colleges and universities." The Office of the South Carolina State Treasurer administers the Program. The Program is summarized below. This summary is provided for explanation purposes only, and the Program will be governed by the provisions of the enabling legislation and State Treasurer's Office procedures.

#### *Types of Contracts*

Existing contracts are comprised of two types. Both types provide for tuition and mandatory fees imposed by public higher education institutions in the State of South Carolina.

The four-year college/university contract provides for up to eight semesters of tuition and fees at any accredited senior higher education institution. The benefits provided for under this contract may also be used to provide for junior college tuition and fees or a combination of junior and senior college tuition and fees.

The two-year college/university contract provides for up to four semesters of tuition and fees at any accredited senior higher education institution. The benefits provided for under this contract may also be used to provide for junior college tuition and fees or a combination of junior and senior college tuition and fees.

#### *Types of Contract Payment Options*

There are three payment options for existing contracts:

- Lump-sum payments;
- 48 monthly installment payments; and
- Extended payments, which are monthly installment payments that run until the year of anticipated matriculation of the beneficiary.

### ***Refunds***

If the beneficiary dies or becomes disabled, then the purchaser will receive a refund equal to the lesser of the current Weighted Average Tuition or payments accumulated with interest. Applicable interest is determined by the State Treasurer's Office on a year-to-year basis.

If the beneficiary is awarded a scholarship, the contract owner may obtain a refund equal to the lesser of the current Weighted Average Tuition or payments accumulated with interest. This refund is available only after the beneficiary has reached his projected enrollment year.

Rollovers to the South Carolina Future Scholar 529 College Savings Plan receive a refund equal to contract payments accumulated at 2% interest per year.

Voluntary terminations receive a refund equal to contract payments accumulated at 2% interest per year, less a deduction of the lesser of \$150 or 50% of the sum of all payments.

Involuntary terminations receive a refund equal to contract payments accumulated at 2% interest per year, less a deduction of the lesser of \$150 or 50% of the sum of all payments.

### ***Change of Beneficiary***

Generally, a contract owner can change the beneficiary at any time provided that the new beneficiary is the same age or younger than the original beneficiary, and is a member of the current beneficiary's immediate family.

### ***Age Limit on Benefits***

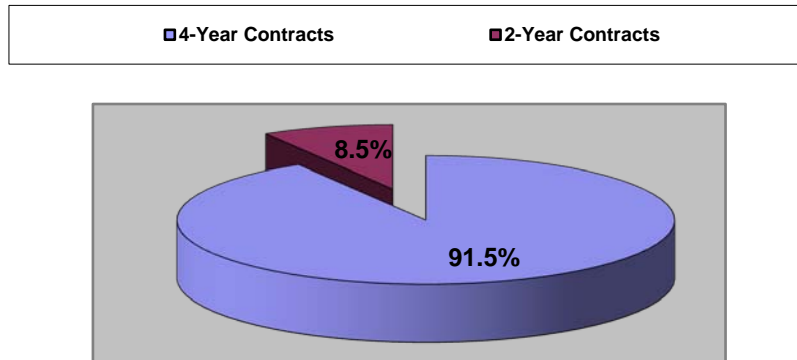
Benefits are available until the beneficiary is age 30. This limit may be extended to age 34 if the beneficiary has military service.

## IV. SUMMARY OF CONTRACT DATA AND CURRENT ASSETS

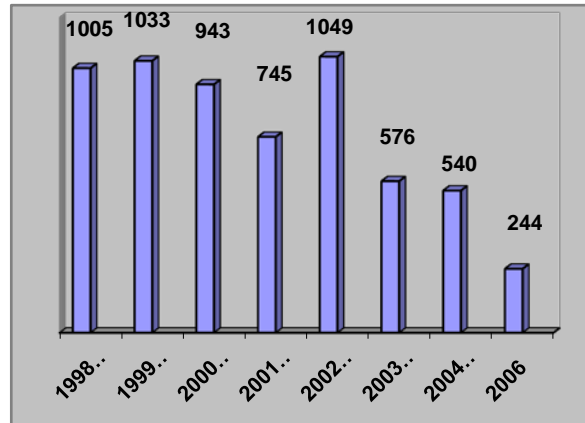
### *Contract Data*

Data on the number of outstanding contracts and contributions were provided by InTuition, Inc., the Program's records administrator. The graphs below summarize the data provided concerning these contracts.

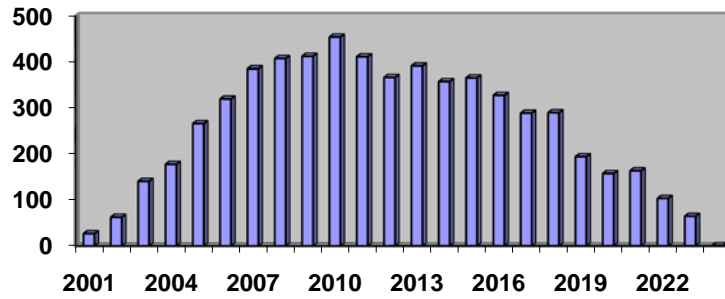
**Distribution of Contracts by Contract Type**



**Distribution of Contracts by Enrollment Year**

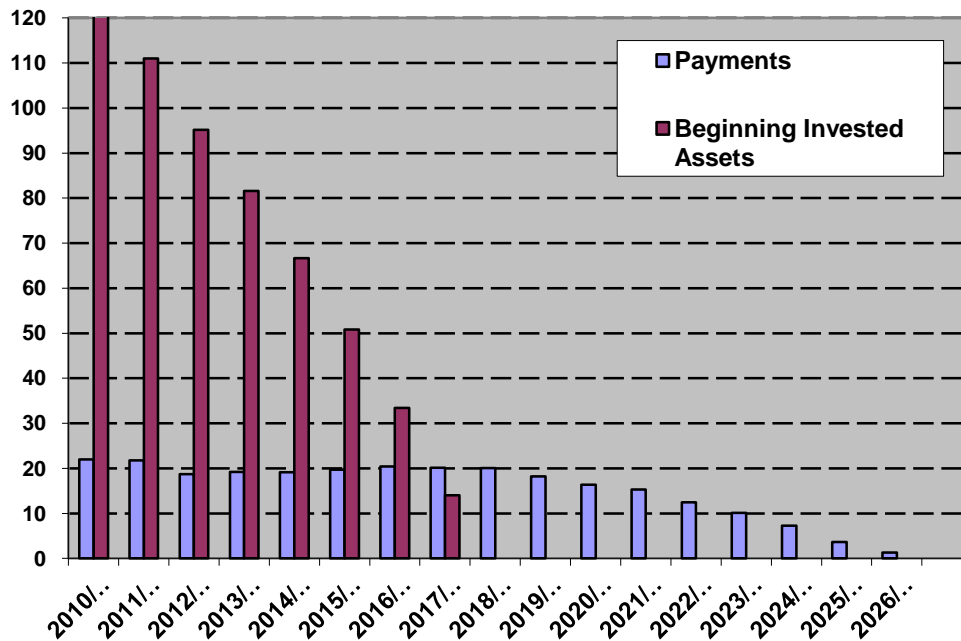


### Number of Contracts By Year of Matriculation



The benefit payments for tuition generated by these contracts are shown in the chart and table immediately following.

### Assets vs. Tuition Payments By Academic Year



Assets vs. Tuition Payments By Academic Year		
Amounts in \$ millions		
Year	Assets	Payments
2010/11	126.2	22.0
2011/12	111.0	21.8
2012/13	95.2	18.8
2013/14	81.6	19.2
2014/15	66.7	19.2
2015/16	50.9	19.7
2016/17	33.4	20.5
2017/18	14.0	20.1
2018/19		20.0
2019/20		18.2
2020/21		16.3
2021/22		15.3
2022/23		12.5
2023/24		10.1
2024/25		7.3
2025/26		3.7
2026/27		1.3

### *Current Assets*

As of June 30, 2010 the Program's assets were deployed in a mix of fixed income investments and equity investments. The allocation of assets to each class is shown in the following table.

### Fund Investments

The market value of Program assets is shown in the table below.

Market value of assets held as of June 30, 2010		
	<u>Amount</u>	<u>% Of Total</u>
Cash & Fixed Income	<u>54,882,246</u>	46.6%
Domestic Equity	<u>50,764,851</u>	43.1%
International Equity	<u>12,037,267</u>	10.2%
TOTAL	<u>117,684,364</u>	99.9%

## V. ACTUARIAL METHODS AND ASSUMPTIONS

### *Methods*

The actuarial method for the determination of the adequacy of the Fund consists of projecting future tuition rates, future expenses based on the average anticipated number of contracts and future utilization of contracts. Future benefits and expenses are discounted using the assumed investment yield as the interest discount rate. The assumed discount rate is based on the current and anticipated mix of assets of the Fund.

For the projection of future benefits, the analysis proceeds as follows:

- Project future tuition rates for all years under consideration. Future tuition is based on the assumptions for tuition inflation.
- Determine the nominal cost of future benefit payments.
- Determine the nominal value of expenses.
- Determine the nominal value of future contract payments.
- Determine the present value of future contract benefits, future expenses and future revenue based on the investment yield assumptions.
- Perform projections for all of the Program's beneficiaries to determine if the Fund is adequate in the aggregate.
- In making our projections of the surplus, we assume that the Program will not sell any more contracts. This is a conservative limitation that provides a static “snapshot view” of the Program as of June 30, 2010.

## *Assumptions*

Actuarial assumptions used to determine financial soundness of programs are of two general types: economic and demographic. Demographic assumptions determine the expected exposure to financial claims and generally answer the question "How and when will people use their contractual benefits?" Economic assumptions are concerned with the expected level of benefit usage and answer the question "What is the expected value of benefit usage?" The assumptions that we used were those that were approved by the South Carolina Treasurer's Office, after consultation with us.

### Economic Assumptions

Economic assumptions are used to estimate the annual tuition rates at two- and four-year colleges, increases in Fund expenses, and Fund earnings on assets invested. Because inflation is a major component of the rate of increase in tuition rates and of investment returns, we considered these rates together. We believe that the difference in these rates is more important than the absolute level of the rates. The following paragraphs describe the economic assumptions used in this study.

#### *Federal Income Tax*

We assumed that Fund earnings are exempt from Federal Income Tax.

#### *Annual Tuition Rates and Bias Load*

Our assumptions were guided by our observations of historic tuition increases, trends in post secondary enrollment in South Carolina and the level of legislative appropriations for post secondary schools in South Carolina.

The Bias Load assumption accounts for Program enrollment at institutions that are more expensive than the Weighted Average Tuition. The choice of this assumption was based on a review of Program experience and what we have seen in other prepaid tuition programs.

The assumptions for tuition inflation and bias load are shown in the table immediately below.

<b>Tuition Inflation</b>	
For those attending SC public universities	7.0%
All others	8.0%
<b>Bias Load - applicable for those attending SC public universities</b>	
All Years	3.0%

The tuition inflation assumption for those attending public universities in South Carolina is based on the statutory limit on benefit increases for Program beneficiaries. The inflation assumption for all others is based on an assumed average increase the Weighted Average Tuition of 9% (same assumption as last year), applicable to 50% of those who attend either private college or out-of-state college, and an increase in private tuition of 7% applicable to the other 50% of those who attend either private college or out-of-state college. These assumptions were based on experience of the Program through June 2008.

#### *Fund Earnings Rate*

In setting our assumptions for the yield on assets, we relied on input from Treasurer's Office personnel and their investment advisor, Jamison, Eaton & Wood, Inc.

Our investment yield assumption is:

7.25% for all future.

This assumption is based upon the recommendation of the Program's in-house investment advisor.

Although we do not expect the Fund to realize this exact rate in any year, we believe it represents a reasonable earnings rate over the time horizon of this report. In some years the Fund will have yields in excess of the assumed rate, while in other years the Fund will earn less than this rate.

#### *Annual Expenses*

Expense projections are based on current expense rates from the Records Administrator plus additional expenses based on other advisement expenses and internal allocations.

#### Demographic Assumptions

The demographic assumptions used in this report are based on our experience with similar types of liabilities. Our choice of assumptions is based on recent experience and our best estimates as to future events. These assumptions are as follows:

#### *Mortality and Disability*

We assumed that there would be no terminations due to death or disability.



### *At-Will Termination of Contract*

Our projections include assumptions regarding voluntary termination of contracts prior to matriculation. These assumptions vary by payment type and by number of years from contract purchase. These assumptions are shown in the following table.

	<b>Lump Sum</b>	<b>48 Monthly Payments</b>	<b>Extended Payments</b>
Year of purchase	2.0%	5.0%	8.0%
Year of purchase+1	2.0%	4.0%	7.0%
Year of purchase+2	2.0%	3.0%	6.0%
Year of purchase+3	1.5%	2.0%	5.0%
Year of purchase+4	1.5%	1.0%	4.0%
Year of purchase+5	1.5%	1.0%	3.0%
Year of purchase+6	1.5%	1.0%	2.0%
Year of purchase+7	1.0%	1.0%	2.0%
Year of purchase+8	1.0%	1.0%	2.0%
Thereafter	1.0%	1.0%	1.0%

### *Matriculation Percent*

All beneficiaries are assumed to matriculate at the matriculation date specified in the application, except for those who are projected to terminate.

### *Utilization of Benefits*

Four-year contract beneficiaries are assumed to use their benefits ratably over four years, while two-year contract beneficiaries are assumed to use their benefits ratably over two years. However, for contracts which are past their anticipated matriculation date, but have not used any benefits, all benefits are projected to be used completely over the next two years.

We believe that this is a conservative assumption since experience at other prepaid tuition programs, and universities in general, indicates that the average student takes somewhat longer than four years to complete a four-year degree.

### *Dropout Rate*

All beneficiaries are assumed to use 100% of their contractual benefits once they have enrolled in college.

### *Frequency of Beneficiary Replacement*

Since all surviving beneficiaries are expected to matriculate and are expected to use their benefits until completion, the assumption is made that no replacement of beneficiaries will occur.

## VI. ADEQUACY OF THE FUND AS OF JUNE 30, 2010

In determining the adequacy of the Fund, we estimated the future disbursements for higher education expenses of beneficiaries, expenses and refunds for terminated contracts. We also projected the future assets based on current assets and expected earnings on assets. We believe these estimates are reasonable based on the information available and our past experience and judgment.

The estimates of the prospective assets and liabilities of the Fund are summarized in the table on the following page and demonstrate the financial position of the Fund. The value of all assets is \$126,190,054 while the expected value of all liabilities is \$179,144,744. The expected present value of the excess of liabilities over assets is \$52,954,690. This compares to the prior year's deficit of \$64,373,848.

The deficit will change from year to year due to positive and negative cash flows and due to the change in the present value of future benefit usage and expense payments because of the passage of time. The deficit will also change due to the variance of experience from the assumptions. These variances include tuition increases, investment income and expenses.

The deficit will also change due to the updating of the assumptions to reflect the Program's emerging experience. The changes for the year ending June 30, 2010 are summarized in the table below.

<b>Progression of Surplus/(Deficit)</b>	
Surplus at June 30, 2009	(\$ 64,373,848)
Projected Change to June 30, 2010	(4,667,104)
Gain From Favorable Investment Experience	5,116,512
Change Due to Additional Contract Sales	N/A
All Other Experience Items	10,969,750
Surplus at June 30, 2010	(\$ 52,954,690)

In the following chart we show the value of expected future benefit usage, expected future payments, current assets and expected surplus as of the end of each future year for contracts in place as of June 30, 2010. Note that existing assets are projected to be sufficient to meet future liabilities through 2017.

**PRESENT VALUE OF ASSETS AND LIABILITIES**

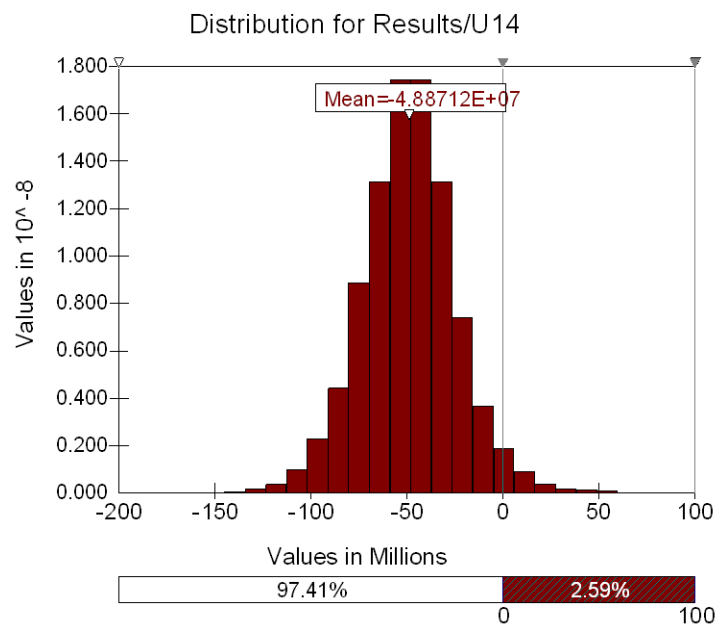
Fiscal Year Ending	Value of Assets	Present Value of Future Benefits And Expenses	Surplus/ (Deficit)
2010	126,190,054	179,144,744	(52,954,690)
2011	110,992,361	167,786,266	(56,793,905)
2012	95,190,993	156,102,456	(60,911,463)
2013	81,606,654	146,934,198	(65,327,544)
2014	66,667,364	136,731,154	(70,063,791)
2015	50,850,362	125,993,778	(75,143,416)
2016	33,431,613	114,022,927	(80,591,313)
2017	14,044,645	100,478,829	(86,434,184)
2018	(6,306,780)	86,393,882	(92,700,662)
2019	(27,985,385)	71,436,075	(99,421,460)
2020	(49,275,326)	57,354,190	(106,629,516)
2021	(70,093,811)	44,266,345	(114,360,156)
2022	(91,274,797)	31,376,470	(122,651,267)
2023	(110,963,059)	20,580,425	(131,543,484)
2024	(129,564,531)	11,515,855	(141,080,386)
2025	(146,539,368)	4,769,346	(151,308,714)
2026	(160,989,771)	1,288,825	(162,278,596)
2027	(174,043,794)	- 0 -	(174,043,794)

## VII. STOCHASTIC ANALYSIS

We have retained the same model for stochastic projections as we used last year. We have updated the beginning values to reflect 2010 actual results, but otherwise have left the same structure and parameters in place.

As in prior years, we ran 10,000 scenarios with varying tuition inflation and investment returns. The results are summarized in the table below.

Proportion with positive Actuarial Reserve	2.59%
25% of results are better than:	(34,065,252)
50% of results are better than:	(48,778,008)
75% of results are better than:	(64,041,260)
Largest Actuarial Reserve	70,530,856
Smallest Actuarial Reserve	(166,457,648)
Mean Actuarial Reserve	(48,871,195)



The most important measures from the table above are the Proportion with positive Actuarial Reserve and the 50% Results. The Proportion with positive Actuarial Reserve probability of 2.59% indicates that there is about 1/39<sup>th</sup> likelihood that the Program will have a surplus.

The 50% Results measure is a “best-estimate” measure of results. If our assumptions are neither conservative (that is they understate results) nor aggressive (that is they overstate results) then the 50% Results measure should be close to our projected result

of (\$52,954,690). The table above indicates that our assumptions are slightly conservative compared to historical norms.

The Smallest Actuarial Reserve indicates what happens if economic events continue adversely for the lifetime of the current contracts (that is, high tuition increases, coupled with negative returns in the equity market until the end of the projection horizon). On the other hand, the Largest Actuarial Reserve indicates what happens if economic conditions are favorable for the remaining lifetime of the current contracts.

## VIII. BREAK-EVEN RATES & SENSITIVITY TESTING

We calculated both the levelized investment return necessary to provide a break-even result on the Program’s surplus and the levelized tuition increase necessary to provide break-even results. These break-even rates are shown in the table below. These break-even rates are those required for all future years in order to achieve break-even.

Break-even investment return	15.56% per year
Break-even tuition inflation	-1.07% per year

If either of these break-even rates were achieved, the deficit would be cured. Otherwise, the only sure method of curing the deficit is through additional funding or through limitation of benefits. We are currently projecting that an additional appropriation of \$58,800,000 payable in December 2011 would cure the deficit.

We also investigated the effect of variances in both university tuition inflation and investment yield assumptions from those anticipated by the adequacy test assumptions. These scenarios are described below and are based on level adjustments to the baseline adequacy assumptions discussed earlier in this report.

- 1) Tuition inflation lower than adequacy test assumptions by 0.25% every year. Inflation changes only affect those who attend private or out-of-state institutions.
- 2) Tuition inflation higher than adequacy test assumptions by 0.25% every year.
- 3) Investment yields higher than adequacy test assumptions by 0.25% every year.
- 4) Investment yields lower than adequacy test assumptions by 0.25% every year.
- 5) Tuition inflation higher and investment yields lower than adequacy test assumptions by 0.25% every year.

The Surplus for each of these scenarios is shown below.

Sensitivity Testing Results		
Scenario	Surplus	Variance From Baseline
1	(52,547,706)	406,984
2	(53,368,584)	(413,894)
3	(50,776,125)	2,178,565
4	(55,181,460)	(2,226,770)
5	(55,603,819)	(2,649,129)

## IX. CHANGES IN ACTUARIAL ASSUMPTIONS

Since the last Actuarial Report, there have been no changes in the actuarial assumptions.



## X. EXPECTED USE OF FUNDS

The Fund is expected to pay benefits and expenses in the following proportions:

- Tuition payments 97.1%
- Payments of refunds to contract owners - 2.7%
- Program expenses - 0.2%

These results are shown graphically below.

