Annual Actuarial Valuation of the South Carolina Tuition Prepayment Program Fund

June 30, 2016

Prepared by
John T. Condo, FSA, MAAA, Ph.D.
Actuarial Resources Corporation of GA

ACTUARIAL RESOURCES CORPORATION
CONSULTANTS • ACTUARIES

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

September 14, 2016

The Honorable Curtis M. Loftis, Jr.
Treasurer, State of South Carolina
118 Wade Hampton Building
Columbia, SC 29201

Dear Treasurer Loftis:

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, 2016. 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 $125,660,173 and the value of assets is $82,392,324, for a difference of $43,267,849. The funded ratio is 65.6% of liabilities. For comparison purposes, in 2015 the deficit was $55,910,003 and the funded ratio was 62.8%. You should note that **the Fund is projected to run out of assets in the Fiscal Year beginning on July 1, 2022** unless remedial actions are taken.

SCTPP was created by the 1997 South Carolina General Assembly, and enrollment into the Program began in 1998. Since, 2001 the Fund has been operating with an actuarial deficit.

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,

John T. Condo, FSA, MAAA, Ph.D.
Vice President
Actuarial Resources Corporation

TABLE OF CONTENTS

Section		Page
I.	Executive Summary	1
II.	Reliances & Actuarial Standards	5
III.	Description of the Program	6
IV.	Summary of Contract Data and Current Assets	9
V.	Actuarial Methods and Assumptions	12
VI.	Adequacy of the Fund as of June 30, 2016	17
VII.	Change in Actuarial Assumptions	19
VIII.	Expected Use of Funds	21

I. EXECUTIVE SUMMARY

The following are the key findings of our analysis.

Adequacy of the Fund

The Fund's liabilities exceed its assets by $43,267,849. The key results are shown below.

Value as of June 30, 2016	Assets and Liabilities
Assets	
Investments	$80,375,573
Future Contract Payments	2,016,751
Total Assets	$82,392,324
Liabilities and Surplus	
Future Contract Benefits	$125,600,052
Other Liabilities	60,121
Total Liabilities	$125,660,173
Surplus	($43,267,849)
Total Liabilities and Surplus	$82,392,324
Funded Ratio	65.6%

Note: The above assets and liabilities are based on unaudited financial information. Audited balances are contained in the Fund's Annual Report.

From Last Year to This Year

The table below summarizes the change in the deficit from June 30, 2015 to June 30, 2016.

Progression of Surplus/(Deficit)	
Surplus at June 30, 2015	($ 55,910,003)
Projected Change to June 30, 2016	(1,458,620)
Gain From Favorable Investment Experience	503,467
Gain Due to Favorable Tuition Inflation	4,393,914
Gain Due to Change in Assumptions	8,976,688
All Other Experience Items	226,705
Surplus at June 30, 2016	($ 43,267,849)

Implications of the Deficit

SCTPP was created by the 1997 South Carolina General Assembly, and enrollment into the Program began in 1998. Since, 2001 the Fund has been operating with an actuarial deficit. SCTPP has not accepted new entrants into the program since 2006. The South Carolina General Assembly indefinitely closed the Program to new enrollment in 2008 due to the Fund's actuarial 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 the Fiscal Year beginning on July 1, 2022. 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 on a return of premium basis. As of June 30, 2016 this liability was $86.0 million. If the Program is shut down at June 30, 2017, we project that the liability will be $85.6 million. We project assets to be $69.1 million, so that we are projecting that the State would need to refund $16.5 million from the General Fund.
2. Shut down the Program on September 30 2022 when the Program is projected to run out of assets. This would require the refund of unused contributions on a return of

premium basis, which we project to be $52.1 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 $8.7 million annually beginning in September 2022 (immediately before asset depletion) continuing until all benefits are projected to be paid. Total additional appropriations would be $52,200,000.
4. Scenario 3, immediately above, allows for assets to be depleted at interim dates since cash out-flows are greater than $8.7 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 $50,180,000.
   - September 2022: $27.33 million
   - September 2023: $ 8.81 million
   - September 2024: $ 6.48 million
   - September 2025: $ 4.41 million
   - September 2026: $ 2.31 million
   - September 2027: $ 0.84 million
5. Provide an additional appropriation now to offset the deficit. We are projecting that a lump-sum appropriation of $43.7 million in December 2016 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 $49.3 million in September 2022 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 $6.60 million beginning September 2016 and ending September 2022 would offset the deficit if all actuarial assumptions are realized. This is a total appropriation of $46,200,000.
8. Provide a series of annual appropriations until all liabilities are mature in February 2028. (As in Scenario 3, assets may depleted at interim dates.) We project that these amounts would be:
   - $7.66 million, if begun at December 2016 for a total of $45,960,000;
   - $9.29 million, if begun at December 2017 for a total of $46,450,000;
   - $11.74 million, if begun at December 2018 for a total of $46,960,000

Investment Strategy

As of June 30, 2015, the investment strategy of SCTPP migrated to 100% duration matched fixed income assets. The State Treasurer's Office, with the assistance of the Program advisors, has adopted this strategy to better match the fund's assets and liabilities in order to manage the Fund's long-standing actuarial deficit in an effort to preserve existing assets. The portfolio was revised in part to lower risk by eliminating equity holdings and investing in high quality fixed income assets which provide cash flows which better match liability payments. The strategy is based on the recommendation of Columbia Management Investment Advisers, LLC which assumed investment management of the Fund assets on October 2012 and the approval of the fund's investment advisor, Pension Consulting Alliance.

Actuarial Resources Corporation of Georgia has not reviewed the strategy nor are we expressing an opinion on the strategy.

Key economic assumptions are listed below. The assumption for future investment returns is based on the recommendation of Columbia Management Investment Advisers, LLC and Pension Consulting Alliance after considering the likely returns of the SCTPP Portfolio and reviewing with the Actuarial Resources Corporation of Georgia and the State Treasurer's Office.

Key Assumptions	
Return on Investments (net of expenses)	
All future years	2.10%
Asset Allocation	
Fixed Income	100.00%
Tuition Inflation	
All future years	5.5%
Bias Load	
All years	3.0%

For this year's report, our office, Columbia Management Investment Advisers, LLC, Pension Consulting Alliance and the State Treasurer's Office, reviewed all major assumptions. Consequently, the expected tuition inflation was decreased from 7% per year to 5.5%, contracts are now assumed to be utilized for 5 years after matriculation instead of 4, the investment return assumption is decreased from 2.2% to 2.1%, and contracts which have sat idle well past their planned matriculation dates are valued on a return of premium basis. In all previous years, it was assumed these contracts would begin usage immediately after the valuation date.

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 InTuition Solutions, Inc., and reviewed 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 Columbia Management Investment Advisers, LLC;
- 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 and Columbia Management Investment Advisers, LLC.

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.

Since, 2001 the Fund has been operating with an actuarial deficit. SCTPP has not accepted new entrants since 2006. The South Carolina General Assembly indefinitely closed the Program to new enrollment in 2008 due to the Fund's actuarial deficit.

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. The General Assembly passed the legislation below which was effective July 1, 2008.

S.75 (Rat #0296, Act #0246 of 2008)
Section 59-4-110
(A) Notwithstanding another provision of law, the South Carolina Tuition Prepayment Program may not accept new participants until the General Assembly authorizes the program to accept new participants by joint resolution.
(B) This section does not affect the existing participants in the program, and the South Carolina Tuition Prepayment Program remains in full operation for this purpose.
Section 59-4-120

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, monies paid for the purchase of a tuition prepayment contract shall be returned to the contributor in lump sum to include the lesser of the total of contract contributions plus the compounded rate of return earned by the Fund or the current Weighted Average. Applicable interest is determined by the State Treasurer's Office on a year-to-year basis.

If the beneficiary is awarded a scholarship, monies paid for the purchase of a tuition prepayment contract shall be returned on a pro-rata basis to the contributor in semester installments coinciding with the matriculation by the beneficiary in amounts equal to the lesser of the original purchase price plus the compounded rate or return earned by the Fund or the current Weighted Average Tuition.

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, not including administrative fees, minus any amounts paid as benefits by the Fund.

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, not including administrative fees, minus any amounts paid as benefits by the Fund.

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

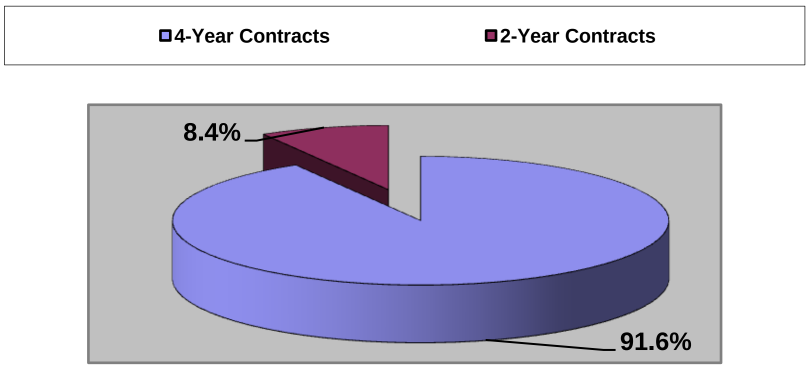
Benefits are available until the beneficiary is age 30. This limit may be extended to age 34 if the beneficiary has military service.

IV. SUMMARY OF CONTRACT DATA AND CURRENT ASSETS

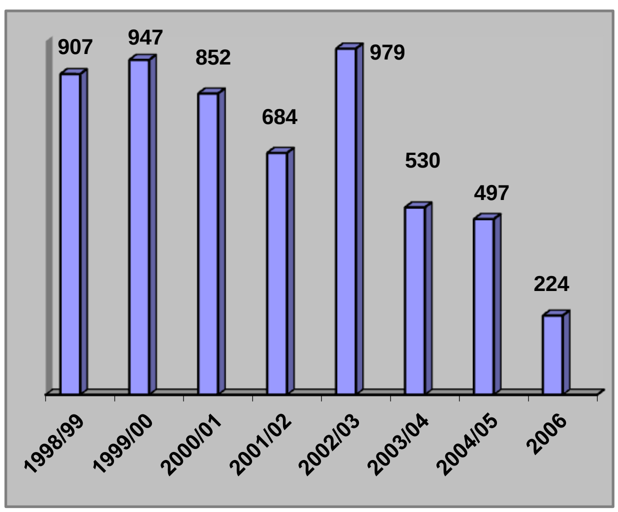
Contract Data

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.

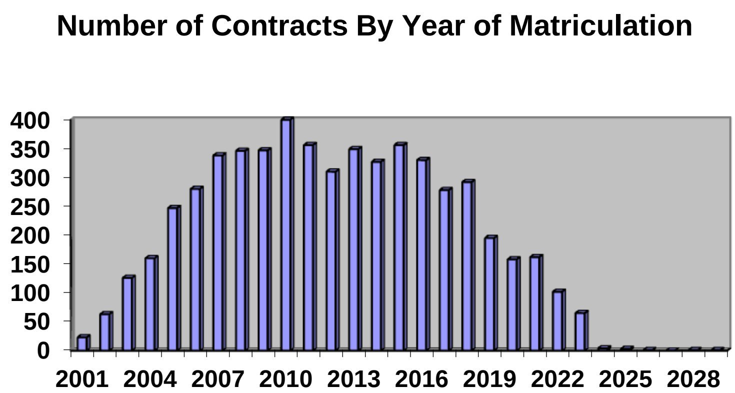
Distribution of Contracts by Contract Type



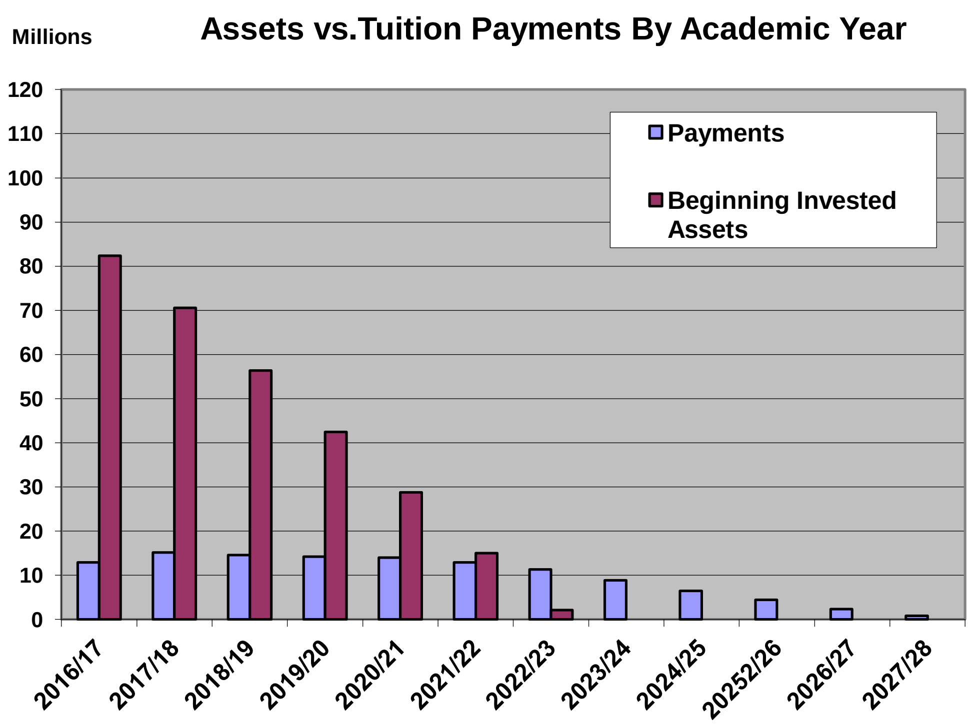
Distribution of Contracts by Enrollment Year



Note: The Program has not accepted new entrants since 2006. In 2008, the General Assembly closed the program to new entrants indefinitely as a result of the actuarial deficit.



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 Amounts in $ millions		
Year	Assets	Payments
2016/17	82.4	12.9
2017/18	70.6	15.2
2018/19	56.4	14.6
2019/20	42.5	14.2
2020/21	28.8	14.0
2021/22	15.0	12.9
2022/23		11.3
2023/24		8.8
2024/25		6.5
2025/26		4.4
2026/27		2.3
2027/28		0.8

Current Assets

As of June 30, 2016 the Program's assets were deployed 100% in duration matched fixed income assets.

Fund Investments

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

Market value of assets held as of June 30, 2016		
	Amount	% Of Total
Fixed Income	80,375,573	100.00%

V. ACTUARIAL METHODS AND ASSUMPTIONS

Methods

The actuarial method for the determination of the adequacy of the Fund consists of projecting future tuition rates based on the average anticipated number of contracts and future utilization of contracts. Future benefits 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 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, 2016.

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.

Income Tax

We assumed that Fund earnings are exempt from Federal and State 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.

Tuition Inflation	
All future years	5.5%
Bias Load	
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.

Fund Earnings Rate

In setting our assumptions for the yield on assets, we relied on input from the State Treasurer's Office personnel and their investment advisor Pension Consulting Alliance, and Columbia Management Investment Advisers, LLC.

Our investment yield assumption (net of investment expenses) is:

2.10% for all future years.

The assumption for yield on future investment returns is based on the recommendation of Columbia Management Investment Advisers, LLC and Pension Consulting Alliance after considering the likely returns of the SCTPP Portfolio and reviewing with Actuarial Resources Corporation of Georgia and the State Treasurer's Office.

The State Treasurer annually informs the State Legislature of the Program's funded status by letter. A letter was sent to the State Legislature in December 2015 with a copy of the 2015 SCTPP Actuarial Report and an update on the unfunded liability.

In conjunction with Columbia Management Investment Advisers, LLC, Pension Consulting Alliance and Actuarial Resources Corporation of Georgia, the State Treasurer's Office reviews the investment return assumption annually. 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.

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.

	Lump Sum	**48 Monthly Payments**	**Extended Payments**
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 five 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 reasonable 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, 2016

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 $82,392,324 while the expected value of all liabilities is $125,660,173. The expected present value of the excess of liabilities over assets is $43,267,849. This compares to the prior year's deficit of $55,910,003.

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 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 and investment income.

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, 2016 are summarized in the table below.

Progression of Surplus/(Deficit)	
Surplus at June 30, 2015	($ 55,910,003)
Projected Change to June 30, 2016	(1,458,620)
Gain From Favorable Investment Experience	503,467
Gain Due to Favorable Tuition Inflation	4,393,914
Gain Due to Change in Assumptions	8,976,688
All Other Experience Items	226,705
Surplus at June 30, 2016	($ 43,267,849)

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, 2016. Note that existing assets are projected to be sufficient to meet future liabilities through 2020.

PRESENT VALUE OF ASSETS AND LIABILITIES

Fiscal Year Ending	Value of Assets	Present Value of Future Benefits	Surplus/ (Deficit)
2016	82,392,324	125,600,052	(43,207,728)
2017	70,595,273	114,909,200	(44,313,927)
2018	56,360,217	101,577,492	(45,217,275)
2019	42,484,202	88,624,936	(46,140,734)
2020	28,757,936	75,842,286	(47,084,350)
2021	15,033,741	63,082,026	(48,048,285)
2022	2,143,537	51,177,945	(49,034,408)
2023	(27,736,491)	22,275,768	(50,012,259)
2024	(37,277,550)	13,769,438	(51,046,988)
2025	(44,650,755)	7,456,797	(52,107,551)
2026	(50,069,580)	3,124,462	(53,194,042)
2027	(53,468,781)	838,266	(54,307,048)
2028	(55,446,015)	0	(55,446,015)

VII. CHANGES IN ACTUARIAL ASSUMPTIONS

This year, all major assumptions were reviewed. Consequently, the expected tuition inflation was decreased from 7% per year to 5.5%, contracts are now assumed to be utilized for 5 years after matriculation instead of 4, the investment return assumption is decreased from 2.2% to 2.1%, and contracts which have sat idle well past their planned matriculation dates are valued on a return of premium basis. In all previous years, it was assumed these contracts would begin usage immediately after the valuation date.

Decreased Tuition Inflation

The average tuition inflation over the last 5 years and over the last ten years is less than 4% per year. To more accurately reflect this while maintaining an element of conservatism, the expected inflation was reduced from 7% to 5.5% per year.

5 Year Utilization of Contracts

Actual SCTPP cash flows consistently showed projected cash flows to be excessive. An analysis of contract usage indicated that a major reason for this was contracts were not always used in the first 4 years post-matriculation. As a result, the 4 year usage assumption has been changed to 5 years.

Change in Investment Return

The investment return assumption was modestly adjusted from 2.2% to 2.1%.

Current Assumption	Prior Assumption
2.10%	2.20%

Valuing Idle Contracts on a Return of Premium Basis

An experience study of contract usage showed that many contracts have never been used even though they are well past the planned matriculation dates. Additionally, many contracts that have not been used for several years still have available tuition credits. As these contracts will likely never be used, they are now valued on a return of premium basis (the same as other contract terminations).

Dollar Effect of Change in Assumptions

If assumptions had been the same as last year, the Plan's deficit would have been

($52,244,537)

These changes reduced the deficit by $8,976,688.

The components of the change are:

- Change in Tuition Inflation $ 5,369,599 improvement of results
- Change in Contract Utilization $ 1,731,066 worsening of results
- Change in Investment Return $ 467,219 worsening of results
- Return of Premium on Idle Contracts $ 5,805,374 improvement of results

VIII. EXPECTED USE OF FUNDS

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

- Tuition payments - 86.2%
- Payments of refunds to contract owners – 13.8%

These results are shown graphically below.