Office of the State Actuary

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# 2017 Actuarial Valuation Report

## Guaranteed Education Tuition Program

November 2017

# Office of the State Actuary

*"Supporting financial security for generations."*



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# LETTER OF INTRODUCTION

Office of the State Actuary
"Supporting financial security for generations."

**Letter of Introduction**
**Guaranteed Education Tuition**
**Actuarial Valuation Report**
**As of June 30, 2017**

November 2017

This report documents the results of an actuarial valuation of the Guaranteed Education Tuition (GET) program. The primary purposes of this valuation are to:

- Calculate the funded status of the contracts sold as of the valuation date.
- Explain what the funded status represents and how the reader should use it.
- Show how the funded status changed from the last valuation and how the funded status at this valuation date changes when we use different assumptions.

This report also provides information regarding the data, assumptions and methods used in the valuation of the GET program.

This report is organized in the following sections:

- Executive Summary.
- Background.
- Plan Description.
- Best Estimate Results.
- Sensitivity of Best Estimate Results.
- Actuarial Certification Letter.
- Appendices.

The Executive Summary provides the key results for current contracts. The Background and Plan Description sections explain how this valuation complements annual GET communications, how the Office of the State Actuary supports GET, and provide

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a general understanding of the GET program. The next two sections provide detailed actuarial asset, liability, and cash flow information over the next 25 years. The Appendices describe the key assumptions and methods, assets, participant data, and additional information used to prepare this valuation.

We encourage you to submit any questions you might have concerning this report to our regular address or our e-mail address at state.actuary@leg.wa.gov. We also invite you to visit GET's website for further information regarding Washington's GET program.

Sincerely,

Matthew M. Smith, FCA, EA, MAAA
State Actuary

Graham Dyer
Actuarial Analyst

# EXECUTIVE SUMMARY

## INTENDED USE

The purpose of this report is to:

- Provide an annual update of the financial status of the Guaranteed Education Tuition (GET) program.
- Provide a snapshot view of the present value of current contracts' obligations and assets as of the valuation date.
- Provide a best-estimate projection of the program assuming no future unit sales other than those purchased through existing monthly payment contracts.
- Show how these results could vary if key assumptions are altered.

All of this information should be used together to understand the current status of the GET program.

This report is one of several key documents related to GET throughout a fiscal year. This report is not intended to replace program information supplied by GET or other analysis supplied by the Office of the State Actuary (OSA), including analysis provided for the Comprehensive Annual Financial Report. Please replace this report when a more recent report becomes available.

## COMMENTS ON 2017 RESULTS

Many factors can influence how actuarial valuation results change from one measurement date to the next. Those factors include changes in the covered population; changes in program provisions, assumptions, and methods; and experience that varies from our expectations.

Significant factors for this year's valuation include the following:

- Higher than expected investment returns for the plan year ending June 30, 2017 (increased funded status);
- Lower than expected tuition growth was adopted in the 2017 Legislative budget for the next two school years ending in 2019 (increased funded status);
- We lowered our assumptions for both the investment rate of return and tuition growth (decreased and increased funded status, respectively); and
- The GET Committee, at their July 2017 special meeting, authorized a "rebase" of unredeemed and fully purchased units at August 1, 2017, and removed the minimum payout value of $117.82. The rebase lowered the payout value from $117.82 per unit to $103.86 and correspondingly provided additional units to customers such that the account value on August 1, 2017, remains the same immediately before and after the rebase (decreased funded status). The rebase occurred after the valuation date of June 30, 2017. We estimated the impact of the rebase as of the valuation date.

The GET Committee, at their September 2016 meeting, authorized an extension of the special refund rules until 60 days after the opening of the state's 529 college savings program. Refunds processed within this prospective window could materially change the funded status of the program. We will include the impact of refunds that occur after the June 30, 2017, valuation date in the June 30, 2018, actuarial valuation report after the expected closure of the window.

This valuation reflects unredeemed purchased or contracted units at June 30, 2017. The GET Committee, at their September 2017 meeting, adopted a new unit price of $113 for future sales starting on November 1, 2017. We will include the impact of new units purchased or contracted during the next enrollment period in next year's actuarial valuation report.

The GET Committee or Legislature may decide to close or terminate the program in the future. We include supplemental analysis in this report for those two scenarios. If either scenario occurs, the Washington State Investment Board (WSIB) may change the program's asset allocation to increase liquidity. In turn, a closure may lead to a lower assumed rate of investment return. A lower assumed rate of return would increase the present value of program obligations and lower the program's funded status. The sensitivity analysis section demonstrates how the closed and terminated program measurements change when we assume lower rates of return.

The results of the valuation **exclude the impacts of differential tuition**. If differential tuition were implemented and included in the GET unit payout value, the results of this valuation could materially change

## FUNDED STATUS OF CURRENT CONTRACTS

The following table summarizes the key measures of the program's funded status as of the current and prior year's valuation dates. The present value of future obligations represents the expected value, as of the valuation date, of all future payments from the program for current contracts only. The future payments represent both unit payout values and expenses (please see the appendices for further details on the expenses included in this valuation). We discount future payments to the valuation date using the expected rate of investment return to determine the present value of those future payments. The present value of the fund represents both assets currently on hand and the present value of monthly contract receivables. Please see the Best Estimate Results section of this report for further information on how the funded status and fund value changed from last year's valuation.

| Funded Status Summary | | |
|---|---|---|
| *(Dollars in Millions)* | 2017 | 2016 |
| Present Value of Future Obligations | $1,734 | $1,726 |
| Present Value of Fund | $2,303 | $2,341 |
| Funded Status | 132.8% | 135.6% |
| Reserve/(Deficit) | $570 | $615 |

The funded status helps readers evaluate the health of the GET program at a single point in time. A history of funded status measured consistently over a defined period helps readers evaluate a plan's long-term ability to accurately assess and react to experience. A plan more/less than 100 percent funded is not automatically considered over-funded/at-risk.

The reserve/(deficit) indicates the excess/shortfall of the fund assets on hand to cover the program's obligations at the valuation date. The reserve level can be interpreted similarly to the funded status.

A self-sustaining program that collects all cash inflows up front, like GET, may want to aim for a long-term reserve of approximately 15 percent (or 115 percent funded status) in order to protect against unexpected adverse outcomes over the life of the program. The program may require a reserve above 15 percent under future circumstances that vary from today's environment.

Please note the program's funded status is highly sensitive to changes in tuition policy and associated changes in assumed tuition growth. The program's funded status is also sensitive to changes to the long-term assumed rate of investment return. Small increases/decreases in the assumed rate of return can produce large increases/decreases in the funded status, while small increases/decreases in the assumed tuition growth can produce large decreases/increases in the funded status.

As a result of this sensitivity, readers should exercise caution when interpreting and reaching conclusions based on a single, point-in-time, measurement.

Please see the Sensitivity of Best Estimate Results section and the appendices for how these results could change under different assumptions.

## PROJECTION OF CURRENT CONTRACTS

The next table shows a projection of future funded status assuming no future unit sales, aside from unit purchases already under contract. Along with the funded status, the table shows the expected assets, net cash flows, and present value of obligations (so the reader can assess the size of the program).

We advise readers to exercise caution when using, distributing, or relying on the projection. As with any projection, this projection will only occur if all assumptions are realized. Furthermore, this projection represents current contracts only (no future unit sales) and assumes no future changes to current program provisions.

A large expected reserve develops under this projection because we assume the current reserve of $570 million will continue to grow with the long-term expected return of 5.65 percent each year. However, as noted earlier, if the program is permanently closed or

| Projection of Current Contracts Only (If all Assumptions are Realized) | | | | |
|---|---|---|---|---|
| *(Dollars in Millions); BOY = Beginning of Year* | | | | |
| Fiscal Year | Funded Status | BOY Fund Value | BOY Obligation Value | Net Cash Flow |
| 2017 | 133% | $2,303 | $1,734 | ($9) |
| 2018 | 136% | 2,273 | 1,673 | (20) |
| 2019 | 140% | 2,235 | 1,601 | (37) |
| 2020 | 144% | 2,180 | 1,512 | (56) |
| 2021 | 150% | 2,109 | 1,404 | (78) |
| 2022 | 158% | 2,018 | 1,274 | (52) |
| 2023 | 167% | 1,955 | 1,170 | (59) |
| 2024 | 178% | 1,887 | 1,059 | (65) |
| 2025 | 193% | 1,814 | 940 | (71) |
| 2026 | 213% | 1,737 | 815 | (71) |
| 2027 | 241% | 1,661 | 688 | (68) |
| 2028 | 282% | 1,589 | 563 | (63) |
| 2029 | 346% | 1,524 | 441 | (49) |
| 2030 | 446% | 1,473 | 330 | (32) |
| 2031 | 615% | 1,440 | 234 | (9) |
| 2032 | 915% | 1,430 | 156 | 14 |
| 2033 | * | 1,444 | 98 | 37 |
| 2034 | * | 1,481 | 59 | 54 |
| 2035 | * | 1,535 | 33 | 70 |
| 2036 | * | 1,605 | 17 | 82 |
| 2037 | * | 1,687 | 10 | 91 |
| 2038 | * | 1,778 | 6 | 98 |
| 2039 | * | 1,876 | 4 | 104 |
| 2040 | * | 1,980 | 2 | 109 |
| 2041 | * | 2,089 | 0 | 118 |
| 2042 | * | $2,207 | $0 | $125 |

**Funded Status exceeds 1,000% due to very small obligation value.*

terminated, WSIB may change the program's asset allocation. That in turn may lead to a lower assumed rate of investment return. A lower assumed rate of return would increase the present value of program obligations and lower the program's reserve and funded status.

As noted earlier, the impact of future customer-requested refunds under the special and temporary refund rules may materially change the projection of the program's assets and obligations. The projections in this actuarial valuation reflect customer-requested refunds through June 30, 2017, only.

Please see the Sensitivity of Best Estimate Results section for how these results could change under different assumptions and how the results change if the program were terminated.

## KEY ASSUMPTIONS

The results of this valuation are based on a number of assumptions including both economic and demographic factors. We summarize the key assumptions in the next table. Please see the Assumptions, Methods, and Data section in the appendices for a detailed listing of the assumptions used in this valuation. Both the assumed annual rate of investment return and tuition growth changed from our last valuation.

| Key Assumptions | |
|---|---|
| Annual Investment Return | 5.65% |
| **Annual Tuition Growth** | |
| 2017-18 | 2.2% |
| 2018-19 | 2.0% |
| 2019-20 | 6.5% |
| 2020-21 | 6.5% |
| 2021-22 | 6.5% |
| 2022-23 | 6.5% |
| 2023-24 | 5.0% |
| 2024-25 | 5.0% |
| 2025-26 | 5.0% |
| 2026-27 | 5.0% |
| 2027-28 | 5.0% |
| 2028-29+ | 5.0% |

## CONTRACT DATA

The table below summarizes the current contract and unit data used in this valuation for the plan year ending June 30, 2017, as well as for the prior year. Please see the Best Estimate Results section for a table reconciling outstanding GET units from last year to this year. Please also see the Contract Data section in the appendices for additional information on when units were purchased and their expected use years. The number of units outstanding at June 30, 2017, reflects the estimated impact of the program's rebase on August 1, 2017.

| Contract Summary | | |
|---|---|---|
| | 2017 | 2016 |
| Number of Current Contracts | 99,108 | 109,561 |
| Number of Units Outstanding | 17,424,203 | 17,617,656 |

# BACKGROUND

The Washington State Legislature created the Guaranteed Education Tuition (GET) program in 1997. The program sold units annually from its inception through June 30, 2015, when the GET Committee suspended new unit sales. The program will reopen (and sell new units) starting on November 1, 2017.

RCW 28B.95 outlines the purpose of the GET program along with general guidelines regarding how it is administered. The statute establishes the five-member Committee on Advanced Tuition Payment and College Savings (GET Committee). The GET Committee meets regularly to discuss the goals and status of the program, make administrative decisions, and set the unit price for the following enrollment period.

GET staff supports the functions of the program and the GET Committee by administering the program and staffing GET Committee meetings. GET staff also prepares studies and reports directed to the GET Committee by the Legislature. Communications from GET staff can be found on the GET website.

Statute also defines the eight-member Legislative Advisory Committee (LAC). The LAC provides advice to the GET Committee and Office of the State Actuary (OSA) regarding the administration of the program.

OSA assists the GET Committee and the Legislature by providing actuarial services and consulting. OSA's three primary services for GET include:

- Prepare an annual actuarial valuation of GET (this document) for the GET Committee.
- Prepare unit price-setting analysis for the GET Committee (when necessary).
- Consult, price, and communicate the effects of potential changes to the GET program for the GET Committee or the Legislature.

This valuation should not be used in isolation to understand the ongoing health of the GET program. Rather, this document should be used together with the annual report from GET staff, OSA's price-setting analysis (when performed), and any other studies or reports created by GET staff, OSA, or LAC.

# PLAN DESCRIPTION

A combination of RCW 28B.95 (determined by the Legislature) and the Guaranteed Education Tuition Program (GET) participant agreement (determined by the GET Committee) make up the terms of the GET program. Statute provides general guidelines and certain rules for the GET Committee, whereas the GET contract states all specific details for the purchaser.

The main plan provisions are outlined below so the reader can get a sense for what cash flows occur, what parties are involved, and what drives the results of the actuarial valuation. For a complete description of the plan provisions we direct you to GET's website, which includes both summarized plan provisions and the full GET contract. If the summary below conflicts with relevant statute or the GET participant agreement, the relevant statute and participant agreement supersede this summary.

Future unit sales are suspended until the program reopens on November 1, 2017. The graphic below illustrates the standard yearly process when new unit sales are allowed and under normal refund rules.

**Unit Price is Set**

- GET Committee sets the price annually for the current enrollment period.
- Based on adopted price-setting guidelines.

**Units are Purchased**

- Maximum of 600 units.
- Can be purchased either through a lump sum payment or a monthly contract (with finance charges).

**Money is Invested**

- Investment returns on the proceeds from unit sales are expected to pay a portion of the future unit value and lowers the price of the unit today.
- Invested by the Washington State Investment Board.

**Units are Redeemed**

- Unit Value (specific dollar amount) equals 1 percent of annual resident undergraduate tuition and state mandated fees at most expensive public Washington university at time of unit use.
- Maximum of 150 units per year, plus any unused units from a prior year.
- Used at any eligible in-state or out-of-state higher education institution based on Unit Value, or
- Refunded based on Unit Value or transferred to another eligible beneficiary.

# BEST ESTIMATE RESULTS

This section provides details of our best estimate of the present value of obligations, assets, cash flow, and funded status information for the Guaranteed Education Tuition Program (GET) for outstanding units at June 30, 2017. The first subsection shows the assets currently set aside for the contracts sold as of the valuation date, along with a history of the funded status. Also provided is a "gain/loss" table that illustrates how the funded status changed since last year, and a short series of tables that reconcile fund values and outstanding contracts from last year to this year. The last subsection illustrates how the program is expected to fare beyond the valuation date, assuming no future unit sales other than those purchased through existing monthly payment contracts.

Please see the Executive Summary section for a description of this information and how it can be interpreted.

## STATUS OF CURRENT CONTRACTS

The next two tables display the program's current funded status, along with a funded status history.

| Funded Status | |
|---|---|
| *(Dollars in Millions)* | |
| **Obligations** | |
| a) Present Value of Unit Redemptions | $1,719 |
| b) Present Value of Administrative Expenses | $15 |
| c) Present Value of Obligations (a+b) | $1,734 |
| **Fund Value** | |
| d) Assets | $2,168 |
| e) Present Value of Monthly Contract Receivables | $136 |
| f) Present Value of Fund (d+e) | $2,303 |
| **Calculation of Funded Status** | |
| g) Present Value of Fund (f) | $2,303 |
| h) Present Value of Obligations (c) | $1,734 |
| i) Ratio of Fund Value to Obligations (g/h) | 132.8% |
| j) Reserve / (Deficit) (g-h) | $570 |

| Funded Status History | |
|---|---|
| Fiscal Year | Funded Status |
| 2017 | 132.8% |
| 2016 | 135.6% |
| 2015 | 140.1% |
| 2014 | 105.8% |
| 2013 | 94.1% |
| 2012 | 78.5% |
| 2011 | 79.1% |
| 2010 | 86.2% |
| 2009 | 84.2% |
| 2008 | 109.5% |
| 2007 | 117.4% |
| 2006 | 108.8% |
| 2005 | 108.1% |
| 2004 | 104.5% |
| 2003 | 98.4% |
| 2002 | 89.6% |
| 2001 | 104.9% |
| 2000 | 113.4% |
| 1999 | 110.1% |

## RECONCILIATIONS

The following table demonstrates actuarial gains and losses, expressed as funded status changes. We use gain/loss analysis to compare actual changes to assumed changes in the assets and obligations. We also use this analysis to determine:

- The accuracy of our valuation model and annual processing;
- Why funded status changed; and,
- The reasonableness of the actuarial assumptions.

Actuarial gains will increase funded status; actuarial losses will decrease funded status. Under a reasonable set of actuarial assumptions, actuarial gains and losses will offset over long-term experience periods.

| Gain/(Loss) Analysis<br>Change in Funded Status by Source | |
|---|---|
| **2016 Funded Status** | **135.6%** |
| **Changes in 2017 Funded Status** | |
| **Expected Change in Funded Status** | **3.9%** |
| **Program Obligations** | |
| Tuition Payments or Refunds* | 6.8% |
| Expenses | 0.1% |
| New Units Purchased | 0.0% |
| Other | 0.2% |
| **Total Program Obligations Gains/Losses** | **7.1%** |
| **Program Assets** | |
| Contributions | 0.0% |
| Distributions | (5.7%) |
| Contract Receivables | (1.0%) |
| Investment Earnings | 6.1% |
| Other | 0.0% |
| **Total Program Assets Gains/Losses** | **(0.5%)** |
| **Additional Changes** | |
| Tuition Growth Assumption Change | 5.0% |
| Investment Return Assumption Change | (2.9%) |
| Method Change | 0.0% |
| Unit Rebase Change | (14.8%) |
| **Total Additional Change Gains/Losses** | **(12.7%)** |
| **Unexplained Gains/Losses** | **(0.6%)** |
| **Total Change** | **(2.8%)** |
| **2017 Funded Status** | **132.8%** |

*Note: Totals may not agree due to rounding.*
**The GET program allowed non-penalty refunds during the suspension of new unit sales.*

The next three tables show reconciliations from last year to this year, for Market Value of Assets, Present Value (PV) of Monthly Contracts, and Outstanding Units.

| Change in Market Value of Assets | |
|---|---|
| *(Dollars in Millions)* | |
| **2016 Market Value of Assets** | **$2,167** |
| **Changes in Net Asset Value** | |
| Interest and Other Investment Income | 32 |
| Capital Gains and Losses | 37 |
| Unrealized Gains and Losses | 153 |
| Expenses | (1) |
| Contributions | 34 |
| Distributions | (255) |
| **Total Changes in Net Asset Value** | **1** |
| **2017 Market Value of Assets** | **$2,168** |

| Change in PV of Monthly Contract Receivables | |
|---|---|
| *(Dollars in Millions)* | |
| **PV of Monthly Contracts at June 30, 2016** | **$174** |
| **Changes in PV Monthly Contracts** | |
| Assumption Changes or Program Changes | 2 |
| Actual Payments Received in 2016 | (32) |
| Interest Adjustment | 9 |
| Interest on Advanced Payment | 0 |
| Account Downgrades | (1) |
| Account Conversions* | (17) |
| PV of Monthly Contracts for New Units in 2017 | 0 |
| Other** | 1 |
| **Total Changes in PV Monthly Contracts** | **(38)** |
| **PV of Monthly Contracts at June 30, 2017** | **$136** |

**Conversion of Custom Monthly accounts to Lump-Sum accounts. Includes voluntary refunds.*

***Includes unexplained changes.*

| Change in Number of Outstanding Units | |
|---|---|
| **Number of Outstanding Units at June 30, 2016** | **17,617,656** |
| New Units Purchased | 0 |
| Units Redeemed | (1,134,387) |
| Units Refunded[1] | (665,365) |
| Units Defaulted | (10,023) |
| Units Downgraded[2] | (8,050) |
| Units Converted[3] | (11,503) |
| Units Rolled Over to Other 529 Plans[4] | (315,874) |
| Other | (976) |
| **Number of Outstanding Units at June 30, 2017[5]** | **15,471,478** |
| Units Added From Rebase (Estimate)[6] | 1,952,725 |
| **Estimated Number of Outstanding Units After August 1, 2017 Rebase** | **17,424,203** |

*[1] Includes Custom Monthly contract conversions prior to refund.*

*[2] Customer-requested account changes.*

*[3] Excludes Custom Monthly contract conversions prior to refund.*

*[4] Rollovers to other states' 529 plans since August 2016.*

*[5] GET reports two fewer outstanding units. The discrepancy will be resolved with the next valuation.*

*[6] Units estimated as of 6/30/2017. GET completed the rebase process on 8/1/2017.*

## CLOSED PROGRAM CASH FLOWS

The following table shows how the program is expected to fare beyond the valuation date, assuming no future unit sales other than those purchased through existing monthly payment contracts.

Under a closed program scenario, all existing customers with unredeemed units can redeem those units under current program terms, but the program would sell no additional units.

| Projection of Current Contracts Only (If all Assumptions are Realized) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *(Dollars in Millions); BOY = Beginning of Year* | | | | | | | Cash Inflows | | | Cash Outflows | |
| Fiscal Year | Funded Status | Unit Value[1] | Number of Units Used | BOY Fund Value[2] | BOY Obligation Value | Net Cash Flow | Monthly Contracts | Investment Return | State Contributions | Unit Use | Expense |
| **2017** | 133% | $104 | 1,472,941 | $2,303 | $1,734 | ($9) | $28 | $119 | $0 | ($153) | ($3) |
| **2018** | 136% | 106 | 1,511,113 | 2,273 | 1,673 | (20) | 25 | 118 | 0 | (160) | (3) |
| **2019** | 140% | 113 | 1,537,491 | 2,235 | 1,601 | (37) | 22 | 117 | 0 | (173) | (2) |
| **2020** | 144% | 120 | 1,557,847 | 2,180 | 1,512 | (56) | 19 | 114 | 0 | (187) | (2) |
| **2021** | 150% | 128 | 1,586,478 | 2,109 | 1,404 | (78) | 16 | 110 | 0 | (203) | (2) |
| **2022** | 158% | 136 | 1,250,934 | 2,018 | 1,274 | (52) | 14 | 107 | 0 | (170) | (2) |
| **2023** | 167% | 143 | 1,202,402 | 1,955 | 1,170 | (59) | 11 | 104 | 0 | (172) | (2) |
| **2024** | 178% | 150 | 1,152,322 | 1,887 | 1,059 | (65) | 9 | 100 | 0 | (173) | (2) |
| **2025** | 193% | 158 | 1,095,252 | 1,814 | 940 | (71) | 7 | 97 | 0 | (173) | (2) |
| **2026** | 213% | 166 | 1,011,096 | 1,737 | 815 | (71) | 6 | 93 | 0 | (167) | (2) |
| **2027** | 241% | 174 | 918,889 | 1,661 | 688 | (68) | 4 | 89 | 0 | (160) | (1) |
| **2028** | 282% | 183 | 817,783 | 1,589 | 563 | (63) | 3 | 85 | 0 | (149) | (2) |
| **2029** | 346% | 192 | 684,910 | 1,524 | 441 | (49) | 2 | 82 | 0 | (131) | (2) |
| **2030** | 446% | 201 | 551,539 | 1,473 | 330 | (32) | 1 | 80 | 0 | (111) | (2) |
| **2031** | 615% | 211 | 411,091 | 1,440 | 234 | (9) | 0 | 79 | 0 | (87) | (2) |
| **2032** | 915% | 222 | 286,924 | 1,430 | 156 | 14 | 0 | 79 | 0 | (64) | (2) |
| **2033** | * | 233 | 179,624 | 1,444 | 98 | 37 | 0 | 80 | 0 | (42) | (2) |
| **2034** | * | 245 | 108,667 | 1,481 | 59 | 54 | 0 | 83 | 0 | (27) | (2) |
| **2035** | * | 257 | 56,764 | 1,535 | 33 | 70 | 0 | 86 | 0 | (15) | (2) |
| **2036** | * | 270 | 23,297 | 1,605 | 17 | 82 | 0 | 90 | 0 | (6) | (2) |
| **2037** | * | 283 | 6,437 | 1,687 | 10 | 91 | 0 | 95 | 0 | (2) | (2) |
| **2038** | * | 297 | 381 | 1,778 | 6 | 98 | 0 | 100 | 0 | (0) | (2) |
| **2039** | * | 312 | 13 | 1,876 | 4 | 104 | 0 | 106 | 0 | (0) | (2) |
| **2040** | * | 328 | 6 | 1,980 | 2 | 109 | 0 | 112 | 0 | (0) | (2) |
| **2041** | * | 344 | 0 | 2,089 | 0 | 118 | 0 | 118 | 0 | 0 | 0 |
| **2042** | * | $362 | 0 | $2,207 | $0 | $125 | $0 | $125 | $0 | $0 | $0 |

[1] *Shown in dollars (not in millions).*

[2] *Fund Value includes present value of monthly contract receivables. Fund Value is used for Funded Status measurement since liabilities include monthly contract units.*

**Funded Status exceeds 1,000% due to very small obligation value.*

# SENSITIVITY OF BEST ESTIMATE RESULTS

The best estimate results are sensitive to the key assumptions used in the valuation. In this section, we calculated the results after varying the rate of investment return (as well as the discount rate) and tuition growth to illustrate the sensitivity of the results to these assumptions. The table in the first subsection shows these results under a closed program. A closed program is based on current contracts only.

In the second subsection, we show the termination liability under RCW 28B.95.090 and the corresponding expected cash flows if the Guaranteed Education Tuition Program (GET) were to be terminated as of the valuation date. Under a termination scenario, all outstanding units outside four years of unit use would be immediately refunded at the current unit value. All participants within four years of unit use could remain in the program and redeem units over the following ten years.

**Sensitivity of Results to Key Assumptions**

**Closed Program***

| *(Dollars in Millions)* | | +1% Tuition | Best Estimate | -1% Tuition | -2% Discount Rate | -1% Discount Rate | Best Estimate | +1% Discount Rate |
|---|---|---|---|---|---|---|---|---|
| **Present Value of Fund** | | $2,303 | $2,303 | $2,303 | $2,314 | $2,308 | $2,303 | $2,299 |
| **Present Value of Obligations** | | $1,819 | $1,734 | $1,655 | $1,968 | $1,845 | $1,734 | $1,633 |
| **Reserve / (Deficit)** | | $484 | $570 | $649 | $345 | $463 | $570 | $666 |
| **Funded Status (as of June 30)** | | | | | | | | |
| | **2017** | 127% | 133% | 139% | 118% | 125% | 133% | 141% |
| | **2018** | 129% | 136% | 143% | 119% | 127% | 136% | 145% |
| | **2019** | 132% | 140% | 148% | 121% | 130% | 140% | 150% |
| | **2020** | 134% | 144% | 155% | 123% | 133% | 144% | 156% |
| | **2021** | 137% | 150% | 165% | 126% | 138% | 150% | 164% |
| | **2022** | 141% | 158% | 177% | 129% | 143% | 158% | 175% |
| | **2023** | 146% | 167% | 191% | 133% | 149% | 167% | 187% |
| | **2024** | 151% | 178% | 209% | 138% | 157% | 178% | 202% |
| | **2025** | 159% | 193% | 233% | 145% | 167% | 193% | 221% |
| | **2026** | 169% | 213% | 266% | 154% | 182% | 213% | 249% |
| | **2027** | 184% | 241% | 312% | 166% | 201% | 241% | 287% |
| | **2028** | 206% | 282% | 379% | 184% | 230% | 282% | 343% |
| | **2029** | 239% | 346% | 483% | 211% | 273% | 346% | 430% |
| | **2030** | 292% | 446% | 647% | 254% | 342% | 446% | 569% |
| | **2031** | 380% | 615% | 924% | 325% | 457% | 615% | 803% |
| | **2032** | 537% | 915% | ** | 450% | 660% | 915% | ** |
| | **2033** | 833% | ** | ** | 680% | ** | ** | ** |
| | **2034** | ** | ** | ** | ** | ** | ** | ** |
| | **2035** | ** | ** | ** | ** | ** | ** | ** |
| | **2036** | ** | ** | ** | ** | ** | ** | ** |

**Based on current contracts only, no future unit sales.*

***Funded Status exceeds 1,000% due to very small obligation value.*

## TERMINATED PROGRAM CASH FLOWS

If program termination were to occur, the present value of obligations as of the valuation date would be $1.757 billion and the fund value would be $2.185 billion, which would result in a reserve of $428 million and a funded status of 124 percent. This represents the funded status if the program were terminated at the valuation date and before the immediate payout occurs. The increase in liability (compared to Closed Program projection) is due to paying out a portion of the units sooner than expected, resulting in lost assumed investment earnings. The decrease in fund value (compared to Closed Program projection) is due to a portion of the outstanding monthly contracts being cancelled, resulting in lower than expected contract receivables. The following table shows these results.

**Projection of Program Termination (If All Assumptions are Realized)**

*(Dollars in Millions); BOY = Beginning of Year*

| | | | | | | | Cash Inflows | | | Cash Outflows | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fiscal Year | Funded Status | Unit Value[1] | Number of Units Used | BOY Fund Value[2] | BOY Obligation Value | Net Cash Flow | Monthly Contracts | Investment Return | State Contributions | Unit Use | Expense |
| **2017** | 124% | $104 | 8,028,071 | $2,185 | $1,757 | ($730) | $8 | $99 | $0 | ($834) | ($3) |
| **2018** | 145% | 106 | 1,511,113 | 1,448 | 996 | (80) | 6 | 77 | 0 | (160) | (3) |
| **2019** | 154% | 113 | 1,537,491 | 1,363 | 885 | (100) | 4 | 72 | 0 | (173) | (2) |
| **2020** | 167% | 120 | 1,557,847 | 1,259 | 755 | (122) | 1 | 66 | 0 | (187) | (2) |
| **2021** | 188% | 128 | 1,586,478 | 1,136 | 603 | (146) | 0 | 58 | 0 | (203) | (2) |
| **2022** | 232% | 136 | 1,061,418 | 990 | 427 | (94) | 0 | 52 | 0 | (145) | (2) |
| **2023** | 298% | 143 | 804,370 | 896 | 301 | (69) | 0 | 47 | 0 | (115) | (2) |
| **2024** | 417% | 150 | 563,669 | 826 | 198 | (42) | 0 | 44 | 0 | (85) | (2) |
| **2025** | 651% | 158 | 773,746 | 784 | 120 | (83) | 0 | 41 | 0 | (122) | (2) |
| **2026** | * | $166 | 0 | $701 | $0 | $40 | $0 | $40 | $0 | $0 | $0 |

[1] *Shown in dollars (not in millions).*

[2] *Fund Value includes present value of monthly contract receivables. Fund Value is used for Funded Status measurement since liabilities include monthly contract units.*

**Funded Status exceeds 1,000% due to very small obligation value.*

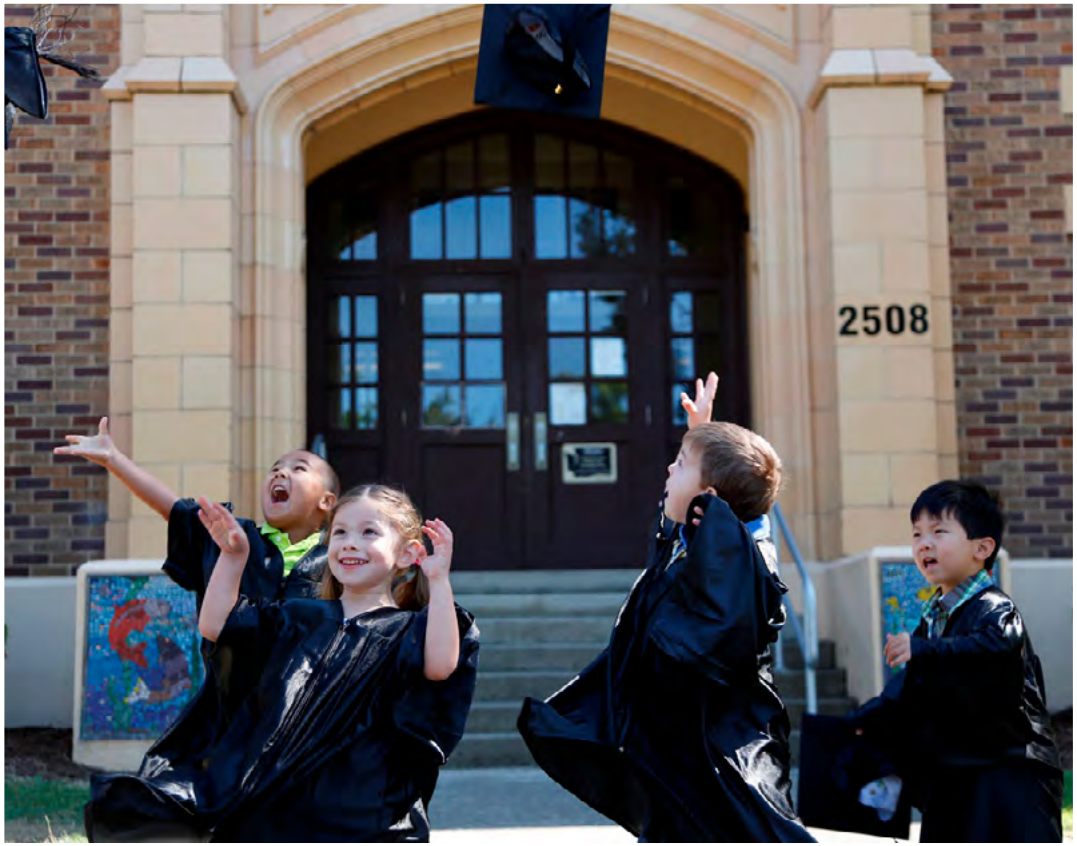
We also show how our best estimate results under program termination change when assuming lower discount rates. If the program were terminated, the Washington State Investment Board (WSIB) may change the program's asset allocation. That in turn may lead to a lower assumed rate of investment return.

| Sensitivity of Results to Key Assumptions | | | |
|---|---|---|---|
| | Terminated Program* | | |
| *(Dollars in Millions)* | Best Estimate | -1% Discount Rate | -2% Discount Rate |
| **Present Value of Fund** | $2,185 | $2,185 | $2,186 |
| **Present Value of Obligations** | $1,757 | $1,801 | $1,847 |
| **Reserve / (Deficit)** | $428 | $385 | $339 |
| **Funded Status (as of June 30)** | | | |
| **2017** | 124% | 121% | 118% |
| **2018** | 145% | 139% | 133% |
| **2019** | 154% | 146% | 139% |
| **2020** | 167% | 157% | 148% |
| **2021** | 188% | 175% | 162% |
| **2022** | 232% | 211% | 192% |
| **2023** | 298% | 265% | 235% |
| **2024** | 417% | 364% | 315% |
| **2025** | 651% | 557% | 471% |
| **2026** | ** | ** | ** |

**Program is terminated; all contracts with expected use year beyond 4 years immediately refunded.*

***Funded Status exceeds 1,000% due to very small obligation value.*

# ACTUARIAL CERTIFICATION LETTER



**Actuarial Certification Letter**
**Guaranteed Education Tuition**
**Actuarial Valuation Report**
**As of June 30, 2017**

November 2017

This report documents the results of an actuarial valuation for the Washington Guaranteed Education Tuition (GET) Program defined under Chapter 28B.95 of the Revised Code of Washington. The primary purpose of this report is to update the annual financial status of the program through the calculation of the funded status for current contracts, in combination with the projection of the expected funded status in future years. This report also provides information on the sensitivity of the valuation results to key assumptions and developments in the program since the last valuation. This report should not be used for other purposes. Please replace this report with a more recent report when available.

The results summarized in this report involve calculations that require assumptions about future economic and demographic events. With the exception of recent changes to the investment return and tuition growth assumptions, we developed the assumptions used in this valuation during the *2015 GET Experience Study*. Copies of the *2015 GET Experience Study* are available upon request. We provide supporting analysis for the investment return and tuition growth assumptions in the appendices of this report.

Standards of practice that specifically apply to the measurement of obligations under prepaid tuition programs have not been defined within the actuarial profession. We used the standards of practice for pension systems where possible to guide the actuarial valuation of GET. In our opinion, the assumptions, methods, and calculations used in the valuation are reasonable and appropriate for the primary purpose as stated above, and are in conformity with generally accepted actuarial principles and standards of practice as of the date of this publication. The use of another set of assumptions and methods, however, could also be reasonable and could produce materially different results. Actual results may vary from our expectations.

In 2015, the GET Committee authorized current contract holders the choice to remain in the program or refund their unredeemed units during a specified window, subject to a minimum payout value of $117.82 per unit, and without program refund penalties. The window for optional refunds was extended by the committee at their September 2016 meeting until 60 days after the opening of the state's 529 savings program. We will include the impact of any remaining non-penalty refunds paid after the measurement date for this actuarial valuation in the June 30, 2018 Actuarial Valuation Report, which we anticipate will be at least 60 days after the savings program has opened.

PO Box 40914 | Olympia, Washington 98504-0914 | state.actuary@leg.wa.gov | leg.wa.gov/osa
Phone: 360.786.6140 | Fax: 360.586.8135 | TDD: 711

The results of the valuation **exclude the potential impacts of differential tuition**. If differential tuition were implemented and included in the GET unit payout value, the results of this valuation could materially change. This analysis will need to be updated in the future if changes are made to the GET program or the Legislature modifies current tuition policy.

The GET Program staff provided the participant and historical data to us. We checked the data for reasonableness as appropriate based on the purpose of this valuation. The Washington State Investment Board provided financial and asset information. We relied on all the information provided as complete and accurate. In our opinion, this information is adequate and substantially complete for the purposes of this valuation.

No members of the GET Committee or their respective staff attempted to bias our work product. We are not aware of any matters that impacted the independence and objectivity of our work.

Consistent with the actuarial Code of Professional Conduct, I, Matthew Smith, must disclose any potential conflict of interest. I have purchased units in GET; however, this does not impair my ability to act fairly. I have performed all analysis without bias or influence. The GET Committee contracted with OSA to perform this valuation, and I supervised the actuarial analysis performed.

We intend this valuation to be used by the GET Committee during the 2018 Fiscal Year only. We advise readers of this valuation to seek professional guidance as to its content and interpretation, and not to rely upon this communication without such guidance. Please read the analysis shown in this valuation as a whole. Distribution of, or reliance on, only parts of this valuation could result in its misuse and may mislead others.

The undersigned, with actuarial credentials, meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. While this report is intended to be complete, we are available to offer extra advice and explanations as needed.

Sincerely,

Matthew M. Smith, FCA, EA, MAAA
State Actuary

Lisa Won, ASA, FCA, MAAA
Deputy State Actuary

# APPENDICES

# APPENDIX A ★ ASSUMPTIONS, METHODS, AND DATA

The assumptions used in this report can be divided into three broad categories: economic, demographic, and behavioral. We discuss the assumptions used in this valuation throughout the next three subsections. However, for more detailed and supporting information on these assumptions, please see the *2015 GET Experience Study letter*. This letter is available upon request.

## ECONOMIC ASSUMPTIONS

The two key economic assumptions are expected investment returns and expected tuition growth. The next table shows what we have assumed for this valuation.

| Key Economic Assumptions | |
|---|---|
| **Investment Returns** | 5.65% per year |
| **Tuition Growth** *(Excludes Differential Tuition)* | |
| **2017-18** | 2.2% |
| **2018-19** | 2.0% |
| **2019-20** | 6.5% |
| **2020-21** | 6.5% |
| **2021-22** | 6.5% |
| **2022-23** | 6.5% |
| **2023-24** | 5.0% |
| **2024-25** | 5.0% |
| **2025-26** | 5.0% |
| **2026-27** | 5.0% |
| **2027-28** | 5.0% |
| **2028-29+** | 5.0% |

Expected investment returns are based on the Washington State Investment Board's (WSIB) most recent Capital Market Assumptions (CMAs) and expected asset allocation over a fifteen-year period. We relied on the CMAs provided by WSIB as accurate and have reviewed them for reasonability. We've implicitly assumed the current 60 percent global equity / 40 percent fixed income portfolio will remain unchanged throughout the projection period. The expected investment returns, net of expenses, are used as the discount rate for expected program payments, expenses, and receivables as well as the investment returns in our closed group projections. For additional information on the program's assets and our return assumption, see Appendix B.

The tables below display the development of the tuition growth assumptions we used to prepare the valuation results. We updated our tuition growth model after the recent experience study. We use the tuition growth model, information from the most recently enacted state budget, and our professional judgment to set tuition growth rates. The tuition growth model has three main structural components.

1. **Long-Term Inflationary Growth —** Represents the increase in total dollars spent on instruction. Over the last twenty years, this has increased by about 4.5 percent per year. We assume it will grow by 5.0 percent in the future. In Step 1 of our model, we estimate the total dollars required for the Cost of Instruction (COI) for undergraduate programs at the University of Washington. Consistent with the results of our recent experience study, we then grow that amount by an assumed long-term inflationary growth factor of 5 percent per year.

2. **State Funding —** Represents the increase or decrease in the percent of total dollars assumed to come from the state versus tuition. Historically, it has decreased from approximately 80 percent (in 1990) to 36 percent (in 2017). This has put upward pressure on tuition since tuition increased to replace lost state funding. We assume state funding will continue to decline to about 28 percent after the next two biennia and level out. As a result, we project tuition will increase above long-term inflationary levels over the period where state funding is assumed to decrease. In Step 2, we assume every lost dollar of state support is replaced by an increased dollar from tuition. The resulting growth in tuition dollars derives the tuition growth rate after state funding.

**3. Scaling Factor —** Represents an adjustment to the increase or decrease in assumed tuition in response to a corresponding decrease or increase in state funding. For every dollar decrease (increase) in state funding, we scale the assumed tuition increases (decreases) by a fraction of that dollar, because past experience indicates that not every dollar of state funding is replaced by an increased dollar of tuition growth. Our scaling factor assumption is 75 percent. In Step 3 of the model, we adjust the tuition growth rates after state funding by our scaling factor assumption, but not below our long-term assumption of 5 percent. Lastly, we set the first two years of tuition growth rates consistent with the recently enacted state budget for higher education and smooth the growth rates for years thereafter.

| Tuition Growth Assumption Structure | | | | | | |
|---|---|---|---|---|---|---|
| *(Dollars in Thousands)* | | Step 1 – Inflation | Step 2 – State Funding | | | |
| School Year | Total Dollars | Inflationary Growth | Assumed State % | State Dollars | Tuition Dollars | Tuition Growth After State Funding |
| 2016-17 | $946,473 | 2.6% | 35.1% | $332,343 | $614,130 | (2.6%) |
| 2017-18 | 975,184 | 3.0% | 36.1% | 351,726 | 623,458 | 1.5% |
| 2018-19 | 1,023,943 | 5.0% | 37.5% | 383,860 | 640,084 | 2.7% |
| 2019-20 | 1,075,140 | 5.0% | 35.2% | 378,893 | 696,247 | 8.8% |
| 2020-21 | 1,128,897 | 5.0% | 33.0% | 372,471 | 756,427 | 8.6% |
| 2021-22 | 1,185,342 | 5.0% | 30.7% | 364,458 | 820,884 | 8.5% |
| 2022-23 | 1,244,609 | 5.0% | 28.5% | 354,714 | 889,896 | 8.4% |
| 2023-24 | 1,306,840 | 5.0% | 28.5% | 372,449 | 934,390 | 5.0% |
| 2024-25 | 1,372,182 | 5.0% | 28.5% | 391,072 | 981,110 | 5.0% |
| 2025-26+ | $1,440,791 | 5.0% | 28.5% | $410,625 | $1,030,166 | 5.0% |

*Historical data provided by the University of Washington.*

*Note: State and tuition dollars in a given year are used to develop tuition increase assumptions for the following year.*

Chapter 36, Laws of 2015, 3rd Special Legislative Session, also established a policy to limit resident, undergraduate tuition growth rates to no more than the annual growth rate in the median state wage. If future Legislatures continue this policy, we would expect future tuition growth rates closer to 3-4 percent per year. However, because the current Legislature cannot obligate a future Legislature, the sustainability of the current higher education budget is not certain, and because past history consistently demonstrates that higher education tuition policy changes remain for short-term periods only, we have assumed tuition growth rates after the next two years that we believe are more reflective of long-term practices and consistent with our expectations for the future.

| Tuition Growth Assumption Structure | | | | |
|---|---|---|---|---|
| Step 3 – Set Tuition Growth Assumption | | | | |
| School Year | Tuition Growth After State Funding | Apply 75% Scaling Factor* | Tuition Growth in 2017-19 | Tuition Growth Assumption |
| 2017-18 | (2.6%) | 5.0% | 2.2% | 2.2% |
| 2018-19 | 1.5% | 5.0% | 2.0% | 2.0% |
| 2019-20 | 2.7% | 5.0% | | 6.5% |
| 2020-21 | 8.8% | 6.6% | | 6.5% |
| 2021-22 | 8.6% | 6.5% | | 6.5% |
| 2022-23 | 8.5% | 6.4% | | 6.5% |
| 2023-24 | 8.4% | 6.3% | | 5.0% |
| 2024-25 | 5.0% | 5.0% | | 5.0% |
| 2025-26 | 5.0% | 5.0% | | 5.0% |
| 2026-27+ | 5.0% | 5.0% | | 5.0% |

**Set value equal to the greater of (a) 75% of tuition growth after state funding or (b) long-term growth assumption of 5%.*

The program's funded status is highly sensitive to short-term changes in tuition growth. For example, under an alternate tuition scenario (as shown in the following table), we assume the recently enacted tuition policy changes hold indefinitely. Under that scenario, the funded status, measured at June 30, 2017, would rise from 133 percent to 151 percent and the reserve would increase from $570 million to $777 million.

| Tuition Growth Assumption - Alternate Growth Scenario | |
|---|---|
| School Year | Annual Tuition Growth |
| 2018-19 | 2.0% |
| 2019-20 | 2.7% |
| 2020-21 | 2.8% |
| 2021-22 | 2.9% |
| 2022-23 | 3.0% |
| 2023-24 | 3.1% |
| 2024-25 | 3.2% |
| 2025-26 | 3.3% |
| 2026-27 | 3.5% |
| 2027-28 | 3.6% |
| 2028-29+ | 3.8% |

The tuition growth assumption does not consider the potential impacts of differential tuition. The impact from differential tuition could vary based on how it interacts with the current contracts. If the payout value is tied to the highest rate of differential tuition, the tuition growth assumption would likely increase. However, if the payout value were tied to the lowest rate of differential tuition, the tuition growth assumption could actually decrease, as base tuition may not need to increase as fast with higher differential tuition making up the difference.

We assumed non-investment program expenses would grow at a rate of 3.50 percent per year. Consistent with the recent experience study and input from GET staff, starting with the 2016 actuarial valuation report, we removed the distribution expense and monthly payment plan expense used in prior actuarial valuations.

Starting with the 2017 actuarial valuation report, we replaced the maintenance expense assumption developed by the prior actuary. We now base the present value of future administrative expenses on the estimated ten-year shutdown costs provided by GET staff. We outline the development of this contingent obligation in the following table.

| Development of Expenses | | |
|---|---|---|
| Fiscal Year | Shutdown Expenses | PV of Expenses |
| 2017 | $2,908,810 | $2,829,962 |
| 2018 | 2,519,106 | 2,319,755 |
| 2019 | 2,076,161 | 1,809,620 |
| 2020 | 1,829,540 | 1,509,380 |
| 2021 | 1,528,447 | 1,193,542 |
| 2022 | 1,558,449 | 1,151,888 |
| 2023 | 1,621,004 | 1,134,050 |
| 2024 | 1,686,226 | 1,116,592 |
| 2025 | 1,754,234 | 1,099,504 |
| 2026 | $1,825,153 | $1,082,777 |
| **PV of Expenses** | | **$15,247,070** |

## DEMOGRAPHIC ASSUMPTIONS

As discussed in the body of this report, new unit sales are suspended until the program reopens in 2017. In past valuations, we assumed new entrants (or future purchasers) would enroll in the program during subsequent years. Under the current enrollment suspension, we assume no new entrants. We include in this report the updated assumptions on future purchasers from the experience study for context and future reference only.

We based the new entrant cohort on an average of the previous three years' new sales data provided by GET staff, in this case 2012 through 2014. We assumed each future cohort would have this same makeup.

The following table shows the percent of the population in each of the 38 combinations. It also shows the number of units each

combination purchases and the length of the monthly payment plan for those who select that payment option. For example, 1.9 percent of the people are assumed to purchase 80 lump sum units that are kept for six years before being used.

To illustrate how we use the table, for every one hundred purchasers, approximately:

- Sixty-nine select the lump-sum payment option and each buys, on average, 74 units.
- Thirty-one select the monthly payment plan option and each buys, on average, 115 units, and pay for these units over an average of 142 months.

**Future Purchaser Cohort Assumption**

| Length in Program (Years) | % Lump Sum | Lump Sum Units Purchased | % Monthly Payment Plan | Monthly Payment Plan Units Purchased | Length of Monthly Payment Plan (Months) |
|---|---|---|---|---|---|
| 2 | 0.2% | 94 | 0.0% | 0 | 0 |
| 3 | 1.6% | 78 | 0.2% | 76 | 25 |
| 4 | 1.0% | 77 | 0.4% | 79 | 37 |
| 5 | 1.5% | 82 | 0.7% | 78 | 48 |
| 6 | 1.9% | 80 | 0.9% | 101 | 59 |
| 7 | 2.2% | 89 | 1.2% | 93 | 69 |
| 8 | 2.7% | 99 | 1.3% | 106 | 80 |
| 9 | 2.9% | 93 | 1.4% | 113 | 92 |
| 10 | 3.1% | 84 | 1.5% | 110 | 102 |
| 11 | 3.0% | 97 | 1.7% | 108 | 114 |
| 12 | 3.3% | 87 | 1.8% | 119 | 125 |
| 13 | 3.6% | 89 | 1.7% | 120 | 132 |
| 14 | 5.0% | 79 | 2.5% | 114 | 144 |
| 15 | 4.8% | 62 | 2.2% | 111 | 156 |
| 16 | 5.5% | 63 | 2.6% | 115 | 163 |
| 17 | 6.5% | 56 | 2.7% | 121 | 175 |
| 18 | 12.0% | 59 | 4.2% | 123 | 190 |
| 19 | 8.3% | 76 | 3.9% | 133 | 199 |
| 20 | 0.0% | 7 | 0.0% | 133 | 112 |
| **Total** | **69.1%** | **74** | **30.7%** | **115** | **142** |

## BEHAVIORAL ASSUMPTIONS

We've made the following assumptions for GET contract holders. As a result of the last experience study, we removed the **Rate of Monthly Payment Default** and **Rate of Refund** from our model. We found those assumptions unnecessary for the purposes of this measurement. However, those assumptions could be necessary for another measurement. Please see the *2015 GET Experience Study* letter for further details.

- Rate of Redemption — The following shows what percent of a contract holder's total units we expect will be used upon reaching college (or their "use year").

| Redemption | |
|---|---|
| | Rate |
| All Years | 20% |

In past valuations, we projected future unit sales to model new unit purchases. For this valuation, we assumed no future purchasers will enter the program due to the suspension of future unit sales. The following projected unit sales description should be used for informational purposes only.

During the experience study we updated our **Projected Unit Sales** model. This model projects unit sales based on an assumed number of units sold corresponding to an average premium, where premium is defined to be the unit price above the payout value of the unit. We adjusted expected future units based on the expected future premium. An increase/decrease in premium would result in a decrease/increase in expected unit sales. For more details, please see the experience study.

In past valuations, we assumed the GET Committee would continue to follow their past price-setting guidelines throughout the projection period. Please see Appendix D for details on the price-setting guidelines in effect prior to the suspension of new unit sales.

We assumed the GET Committee would price future units in line with the expected investment returns and tuition growth discussed in the **Economic Assumptions** subsection. We assumed that neither the Legislature nor the GET Committee will make changes to the program over the projection period.

## MISCELLANEOUS

For purposes of the valuation, we assume mid-valuation year timing on payments in and out of the fund.

## METHODS

We valued the current contract and asset values in GET by estimating the future tuition payments (cash outflow), administrative expenses (cash outflow), and monthly contract payments (cash inflow). The estimation of future cash flows required assumptions about:

- When the contract holder will redeem their units.
- What tuition will be in future years.
- What administrative expenses will be over time.

We discounted these cash flows to today's value in order to calculate the plan's funded status at the valuation date. Discounting the cash flows to today's value requires an assumption regarding how fast invested money will grow over time. The idea is that $1 today is worth more next year ($1.0565 in this case) due to investment earnings. Discounting moves the opposite way and states that $1.0565 a year from now will be worth $1 today. Discounting all of the cash flows to one common year allows for an apples-to-apples comparison of all cash flows.

Due to the suspension of future unit purchases, we did not perform open group analysis with this valuation report. In prior valuations, we estimated the impact of future contract holders; the following paragraphs detail our approach for valuing the open group.

We typically do not have data on who will purchase GET units in the future. Thus, our first step in projecting future unit purchases, is to estimate the makeup of these future purchasers. We refer to the entire group of purchasers within a year as a "cohort". We condense a cohort into 38 summarized mixtures representing different types of people, or purchasers. We model the contract length of these future purchasers such that they remain in the program between 2 and 20 years before unit use (redemption) begins. Additionally, we model that purchasers choose either a

lump sum payment option or a monthly payment plan option. The 38 combinations are made up of the 19 different contract lengths multiplied by the two different payment options. The percent of the population expected to be in each of the combinations is shown in the assumption section.

Next, we value the 38 future purchasers in each cohort. We value each cohort in the same way we value the current contract holders in the actuarial valuation. We estimate future tuition payments (cash outflow), administrative expenses (cash outflow), and monthly contract payments (cash inflow). The estimation of future cash flows required assumptions about when contract holders will redeem their units, whether they will stop making payments on their monthly payment plans, how tuition will change in future years, and what administrative expenses will be over time.

We then discount these cash flows to the cohort's entry year. The model repeats this process for each year in our 25-year projection, since we expected a new cohort to enter each year.

The projection of the GET program measures the same key elements in each future year that we measure under the closed group.

For example, we start with the program's current status — present value of obligations, assets, funded status, and unit price/value. Throughout the next year, investment returns occur at our assumed rate, tuition grows at our assumed rate, people redeem tuition units at our assumed rate, and people buy new units at our assumed rate (discussed above in the assumption subsection). This particular projection moves the program forward assuming experience matches our assumptions exactly. We call this a deterministic projection because all assumptions are realized in the projection (with no variance from the assumption) and the current program rules determine the expected future outcome.

At the end of the first year, a valuation is performed and new obligations, assets, and funded status are calculated. Based on the funded status from the valuation and according to the GET Committee's current price-setting guidelines, we make an assumption as to how they will set a new price for the following year.

Once the new price is set, we project 25 years into the future and recalculate the price each year based on the projected obligations and assets. By the end of the projection, we have developed our "expected" path that the GET program will follow. Of course, in reality, the future will be different than we assume. We believe there is a 50 percent chance the future will be better for the program, and a 50 percent chance the future will be worse for the program.

## DATA

We used the contract data file provided by GET staff. We relied on this data as accurate and complete; we value each entry in the file. We did not perform an audit of this data, but believe it is reasonable for the purposes of our work. We used data entries such as:

- Program Year — The contract holder's entry year into the program.
- Use Year — When the contract holder expects to start using units for tuition.
- Payment Amount — The monthly amount the contract holder owes on their payment plan.
- Payments Due — The number of monthly payments left on their monthly payment plan.
- Units Outstanding — The number of units the contract holder currently owns (including units still being paid for in the monthly payment plan).

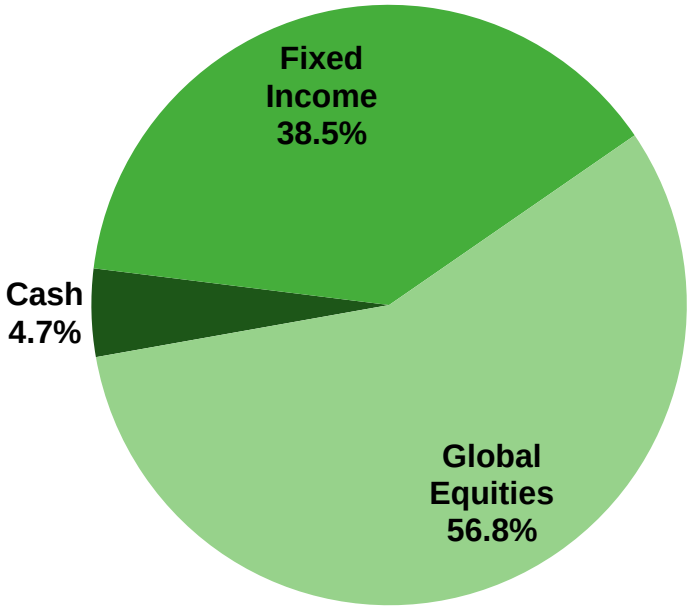
To set our tuition growth assumption we studied the historical tuition data in the following table. We also examined average tuition growth over different periods (see the bottom of the table).

| Year | Tuition Growth | Year | Tuition Growth |
|---|---|---|---|
| 1982-83 | 11.0% | 2000-01 | 3.4% |
| 1983-84 | 11.2% | 2001-02 | 7.1% |
| 1984-85 | 0.0% | 2002-03 | 16.0% |
| 1985-86 | 22.7% | 2003-04 | 7.0% |
| 1986-87 | 0.0% | 2004-05 | 6.6% |
| 1987-88 | 7.9% | 2005-06 | 6.8% |
| 1988-89 | 3.8% | 2006-07 | 6.9% |
| 1989-90 | 1.7% | 2007-08 | 6.8% |
| 1990-91 | 6.9% | 2008-09 | 6.8% |
| 1991-92 | 11.5% | 2009-10 | 13.1% |
| 1992-93 | 3.4% | 2010-11 | 13.1% |
| 1993-94 | 12.4% | 2011-12 | 19.0% |
| 1994-95 | 14.8% | 2012-13 | 15.2% |
| 1995-96 | 3.9% | 2013-14 | 0.0% |
| 1996-97 | 4.0% | 2014-15 | 0.0% |
| 1997-98 | 3.9% | 2015-16 | (5.0%) |
| 1998-99 | 4.0% | 2016-17 | (10.5%) |
| 1999-00 | 3.7% | 2017-18 | 2.2% |
| **5-Year Average** | | | (2.8%) |
| **10-Year Average** | | | 5.0% |
| **20-Year Average** | | | 5.9% |
| **35-Year Average** | | | 6.5% |
| **35-Year Standard Deviation** | | | 6.6% |

# APPENDIX B ★ ASSETS

The chart below shows how GET assets are currently invested. Below the chart are descriptions of those investment types, or asset classes.

**2017 GET Fund Asset Allocation**




**Cash:** Highly liquid, very safe investments that can be easily converted into cash, such as Treasury Bills and money-market funds.

**Fixed Income:** Securities representing debt obligations and usually having fixed payments and maturities. Different types of fixed income securities include government and corporate bonds, mortgage-backed securities, asset-backed securities, convertible issues, and may also include money-market instruments.

**Global Equities:** Shares of U.S. and non-U.S. corporations that trade on public exchanges or "over-the-counter." The ownership of a corporation is represented by shares that are claimed on the corporation's earnings and assets.

The current WSIB Capital Market Assumptions are shown in the following table. The average 6.66 percent portfolio return is a one-year arithmetic return. When compounded over a 15-year period, the arithmetic return decreases to a 6.03 percent median geometric return. We selected a best-estimate assumption of 5.65 percent or the 45th percentile of simulated annual returns over a 15-year period. The difference between the median return of 6.03 percent and our best-estimate assumption of 5.65 percent represents a small margin for "adverse deviation" given the large degree of uncertainty with future returns.

In response to the program's special and temporary refund rules, the WSIB temporarily increased the cash allocation to 5 percent. We reviewed the impact of this temporary asset allocation change on the long-term assumed rate of return and concluded the current assumption remains reasonable as long as the temporary asset allocation change does not extend beyond the period of the temporary refund rules.

**2017 Capital Market Assumptions**

| Asset | Return | Standard Deviation | Weight |
|---|---|---|---|
| **Fixed Income** | 3.90% | 5.50% | 40% |
| **Global Equities** | 8.50% | 18.00% | 60% |
| **Portfolio** | **6.66%** | **11.34%** | **100%** |

| Correlation | Fixed Income | Global Equities |
|---|---|---|
| **Fixed Income** | 1.00 | |
| **Global Equities** | 0.15 | 1.00 |

The target asset allocation is currently 60 percent global equity and 40 percent fixed income.

The following table shows the GET Fund Value. The value of the fund includes the market value of assets held by the WSIB along with the present value of the monthly contract receivables. We assume mid-valuation year timing on payments in and out of the fund for purposes of the valuation.

| Fund Value | |
|---|---|
| **Market Value of Assets** | |
| *(Dollars in Millions)* | |
| Cash | $103 |
| Global Equities | $1,231 |
| Fixed Income | $834 |
| **Total Market Value of Assets** | **$2,168** |
| Present Value of Monthly Contracts | $136 |
| **Total Fund Value** | **$2,303** |

The following table shows the history of investment rates of return for GET since the inception of the program.

| Fiscal Year | Investment Return |
|---|---|
| 1999* | 4.96% |
| 2000 | 10.25% |
| 2001 | (1.63%) |
| 2002 | (2.79%) |
| 2003 | 7.56% |
| 2004 | 16.00% |
| 2005 | 10.07% |
| 2006 | 8.94% |
| 2007 | 14.77% |
| 2008 | (0.70%) |
| 2009 | (16.02%) |
| 2010 | 12.68% |
| 2011 | 20.46% |
| 2012 | 0.07% |
| 2013 | 9.59% |
| 2014 | 16.36% |
| 2015 | 0.83% |
| 2016 | 0.61% |
| 2017 | 10.92% |

**Represents 9-month return.*

# APPENDIX C ★ CONTRACT DATA

The following tables summarize units and contracts by the contract enrollment year and initial contract use year.

| Number of Units Sold by Unit Price | | |
|---|---|---|
| Enrollment Year | Unit Price | Units Sold |
| 1998-99 | $35 | 1,374,095 |
| 1999-00 | 38 | 615,327 |
| 2000-01 | 41 | 523,702 |
| 2001-02 | 42 | 2,463,500 |
| 2002-03 | 52 | 2,099,531 |
| 2003-04 | 57 | 1,896,635 |
| 2004-05 | 61 | 2,108,360 |
| 2005-06 | 66 | 2,146,191 |
| 2006-07 | 70 | 2,339,431 |
| 2007-08 | 74 | 2,102,305 |
| 2008-09 | 76 | 3,177,699 |
| 2009-10 | 101 | 2,624,367 |
| 2010-11 | 117 | 2,697,696 |
| 2011-12 | 163 | 1,503,962* |
| 2012-13 | 172 | 1,038,773 |
| 2013-14 | 172 | 741,701 |
| 2014-15 | $172 | 618,367 |
| 2015-16** | - | 0 |
| 2016-17** | - | 0 |

*Restated number of units sold.

**Unit sales suspended.

| Number of Units Outstanding by Use Year | | |
|---|---|---|
| Fiscal Year | Expected Unit Value | Units Starting to be Used |
| 2017* | $104 | 5,096,935 |
| 2018 | 106 | 1,318,427 |
| 2019 | 113 | 1,269,640 |
| 2020 | 120 | 1,217,576 |
| 2021 | 128 | 1,286,881 |
| 2022 | 136 | 1,166,189 |
| 2023 | 143 | 1,074,662 |
| 2024 | 150 | 1,022,981 |
| 2025 | 158 | 927,884 |
| 2026 | 166 | 867,505 |
| 2027 | 174 | 706,574 |
| 2028 | 183 | 567,260 |
| 2029 | 192 | 357,515 |
| 2030 | 201 | 259,834 |
| 2031 | 211 | 167,086 |
| 2032 | 222 | 85,064 |
| 2033 | 233 | 30,286 |
| 2034 | 245 | 1,839 |
| 2035 | 257 | 35 |
| 2036 | $270 | 30 |

*Includes contracts that already started using units.

| Outstanding Units | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Enrollment Year | | | | | | | | | | | | | | | | | | | |
| Use Year | 1998-99 | 1999-00 | 2000-01 | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 |
| 2017* | 329,819 | 146,648 | 145,413 | 533,823 | 590,268 | 433,461 | 517,957 | 472,148 | 493,803 | 362,128 | 490,085 | 292,683 | 207,562 | 34,260 | 18,004 | 5,875 | 21,703 | 1,295 | 0 |
| 2018 | 2,755 | 11,991 | 34,660 | 114,672 | 127,413 | 95,943 | 166,156 | 136,331 | 137,706 | 98,967 | 155,166 | 99,977 | 89,176 | 24,786 | 11,956 | 5,629 | 1,363 | 455 | 3,323 |
| 2019 | 1,426 | 454 | 17,588 | 155,623 | 123,481 | 82,011 | 102,696 | 152,675 | 138,453 | 99,685 | 124,704 | 110,764 | 95,316 | 33,932 | 15,039 | 8,305 | 6,699 | 162 | 628 |
| 2020 | 12,535 | 341 | 700 | 51,831 | 163,097 | 100,422 | 126,035 | 115,138 | 153,812 | 96,623 | 129,880 | 99,706 | 91,825 | 36,116 | 23,129 | 8,650 | 6,829 | 566 | 340 |
| 2021 | 0 | 2,125 | 23 | 3,316 | 102,146 | 168,833 | 140,125 | 140,169 | 130,488 | 136,316 | 139,349 | 123,121 | 113,682 | 35,180 | 26,434 | 15,289 | 10,205 | 77 | 1 |
| 2022 | 0 | 0 | 3,452 | 596 | 1,965 | 64,723 | 174,926 | 156,908 | 147,083 | 111,597 | 186,101 | 121,201 | 102,504 | 41,502 | 26,524 | 15,936 | 10,543 | 354 | 274 |
| 2023 | 0 | 0 | 0 | 8,511 | 451 | 855 | 97,620 | 190,248 | 170,868 | 115,244 | 129,657 | 153,185 | 109,984 | 41,275 | 26,387 | 17,191 | 12,907 | 278 | 0 |
| 2024 | 0 | 0 | 0 | 0 | 5,797 | 567 | 3,075 | 133,277 | 227,685 | 146,467 | 161,577 | 101,678 | 143,613 | 43,579 | 25,517 | 18,930 | 11,039 | 0 | 179 |
| 2025 | 0 | 0 | 0 | 0 | 0 | 1,403 | 1,689 | 975 | 164,751 | 204,123 | 162,006 | 142,128 | 127,537 | 52,963 | 33,880 | 20,843 | 15,321 | 264 | 0 |
| 2026 | 0 | 0 | 0 | 0 | 0 | 0 | 1,670 | 730 | 1,048 | 173,088 | 284,779 | 144,349 | 135,203 | 52,827 | 43,657 | 19,919 | 10,033 | 0 | 202 |
| 2027 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 977 | 1,514 | 2,981 | 142,018 | 273,054 | 159,543 | 56,326 | 29,833 | 24,219 | 15,851 | 258 | 0 |
| 2028 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,259 | 514 | 1,793 | 164,912 | 245,852 | 70,538 | 42,842 | 19,879 | 19,671 | 0 | 0 |
| 2029 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2,452 | 1,166 | 5,468 | 143,425 | 116,993 | 44,132 | 24,283 | 18,516 | 616 | 463 |
| 2030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,221 | 4,149 | 5,362 | 116,618 | 81,043 | 30,383 | 20,513 | 12 | 533 |
| 2031 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2,698 | 2,556 | 3,717 | 78,410 | 56,257 | 23,165 | 284 | 0 |
| 2032 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,311 | 860 | 1,472 | 40,891 | 40,150 | 380 | 0 |
| 2033 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 349 | 338 | 575 | 28,287 | 397 | 340 |
| 2034 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 808 | 5 | 0 | 0 | 1,026 |
| 2035 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 34 | 0 | 0 |
| 2036 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 |

**Includes contracts that already started using units.*

| Outstanding Contracts | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Enrollment Year | | | | | | | | | | | | | | | | | | | |
| Use Year | 1998-99 | 1999-00 | 2000-01 | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 |
| 2017* | 2,064 | 850 | 864 | 3,160 | 3,632 | 2,483 | 3,159 | 2,866 | 3,019 | 2,314 | 3,043 | 1,901 | 1,410 | 388 | 249 | 87 | 69 | 37 | 0 |
| 2018 | 10 | 42 | 129 | 393 | 489 | 333 | 637 | 549 | 590 | 505 | 707 | 493 | 477 | 201 | 115 | 64 | 28 | 7 | 53 |
| 2019 | 6 | 1 | 62 | 531 | 461 | 317 | 425 | 654 | 574 | 487 | 588 | 527 | 530 | 245 | 164 | 82 | 61 | 2 | 13 |
| 2020 | 79 | 2 | 4 | 176 | 621 | 370 | 521 | 486 | 737 | 501 | 608 | 440 | 503 | 255 | 201 | 89 | 77 | 1 | 1 |
| 2021 | 0 | 18 | 1 | 10 | 360 | 575 | 571 | 608 | 599 | 716 | 656 | 614 | 597 | 295 | 238 | 143 | 109 | 1 | 1 |
| 2022 | 0 | 0 | 18 | 4 | 4 | 255 | 689 | 721 | 692 | 568 | 877 | 581 | 552 | 301 | 237 | 127 | 132 | 4 | 2 |
| 2023 | 0 | 0 | 0 | 55 | 3 | 2 | 373 | 774 | 822 | 634 | 675 | 745 | 596 | 310 | 220 | 143 | 154 | 3 | 1 |
| 2024 | 0 | 0 | 0 | 0 | 30 | 1 | 9 | 534 | 984 | 821 | 824 | 570 | 879 | 332 | 254 | 161 | 138 | 0 | 1 |
| 2025 | 0 | 0 | 0 | 0 | 0 | 10 | 8 | 5 | 701 | 1,022 | 886 | 729 | 731 | 478 | 274 | 203 | 195 | 4 | 0 |
| 2026 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 2 | 4 | 806 | 1,441 | 816 | 819 | 455 | 407 | 185 | 164 | 0 | 1 |
| 2027 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 6 | 10 | 656 | 1,469 | 928 | 486 | 338 | 269 | 195 | 1 | 0 |
| 2028 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 9 | 837 | 1,482 | 600 | 445 | 276 | 298 | 0 | 0 |
| 2029 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 5 | 19 | 792 | 948 | 479 | 332 | 288 | 3 | 4 |
| 2030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 16 | 54 | 802 | 768 | 423 | 326 | 2 | 1 |
| 2031 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 10 | 15 | 675 | 702 | 437 | 1 | 0 |
| 2032 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 3 | 9 | 425 | 695 | 2 | 0 |
| 2033 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 4 | 396 | 3 | 1 |
| 2034 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 5 |
| 2035 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| 2036 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |

**Includes contracts that already started using units.*

# APPENDIX D ★ PRICE-SETTING GUIDELINES

In 2011, the GET Committee adopted new price-setting guidelines (how we price future units) to address the new tuition-setting policy established by the Legislature at that time and to return the program to a fully funded status. The price-setting guidelines adopted in 2011 include the following four parts:

- Expected Cost — Covers the expected present value of the cost of future tuition.
- Expenses — Covers the GET program's annual operating expenses. GET staff determined the expense amount as part of the 2017-18 price-setting analysis.
- Reserve — Covers unexpected future costs such as above-expected tuition growth or below-expected investment returns. The current price-setting guidelines call for a 15 percent reserve. This component can be increased or decreased to alter the probability that a unit will ever create an unfunded liability in the future.
- Amortization — An optional component that covers unexpected past costs from significant program or policy changes. This component did not apply to the most recent pricing-setting analysis.

The GET Committee, at their September 2017 meeting, adopted a new unit price of $113 for future sales starting on November 1, 2017. Please see the *2017 Price-Setting Analysis* dated September 11, 2017, for further details.

| GET Unit Price Information | | |
|---|---|---|
| Category | 2017-18 Enrollment | 2014-15 Enrollment |
| **Unit Price** | | |
| Expected Cost | $94.34 | $124.74 |
| Expenses | 4.18 | 5.93 |
| Reserve | 14.78 | 20.51 |
| Amortization | N/A | 20.82 |
| **Total Unit Price** | **$113.00** | **$172.00** |

*Note: Totals may not agree due to rounding.*

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# 2017 Actuarial Valuation Report

## Guaranteed Education Tuition Program