Office of the State Actuary
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February 6, 2012

Senator Ed Murray
Chair
Senate Ways and Means Committee
P.O. Box 40485
Olympia, WA 98504-0485

Senator Rodney Tom
Chair
Higher Education & Workforce Development Committee
P.O. Box 40466
Olympia, WA 98504-0466

RE: ACTUARIAL ANALYSIS OF DIFFERENTIAL TUITION

At your request, we performed preliminary actuarial analysis on the potential impacts on the Guaranteed Education Tuition (GET) program from "differential tuition" allowable under current law.* We understand that no state institution of higher education currently charges differential tuition, but may adopt such policies next fall.

Our most recent analysis of GET following the new tuition-setting policy established in the 2011 Session excluded the impact of differential tuition. The current GET unit price of $163 also does not include a premium for differential tuition.

The purpose of this analysis is to demonstrate the potential impacts to GET from differential tuition under the following two scenarios occurring in the fall of 2012.

- A one-time increase to the GET payout value of 20 percent.
- A one-time increase to the GET payout value of 50 percent.

For example, a 20 percent increase would increase a $10,000 current annual rate of tuition to $12,000.

The results of our analysis are highly sensitive to assumed future purchaser behavior and future tuition growth. We did not have sufficient time to complete a comprehensive review of how differential tuition policies may affect our current assumptions. For these reasons, this analysis demonstrates potential impacts under two defined scenarios only and does not represent our best-estimate analysis.

** For purposes of this analysis, differential tuition refers to a tuition-setting policy where rates of resident, undergraduate tuition vary by an institution's programs, campuses, courses, or students.*

PO Box 40914
Olympia, Washington, 98504-0914
http://osa.leg.wa.gov
Phone: 360.786.6140
Fax: 360.586.8135
TDD: 800.635.9993

Summary of Results			
(Dollars in Millions – except for GET Unit Price)	Without Differential Tuition	With Differential Tuition 20% Increase	With Differential Tuition 50% Increase
Current GET Unit Price	$163	$257	$521
Unfunded Liability	$521	$1,044	$1,830
Chance of State Contribution over 50 years	1.1%	Over 20%	Over 40%
Worst Case 50-Year State Contributions	$2,270	Over $4,000	Over $5,000
Chance of Purchaser Experiencing Negative Return	1.4%	22%	77%
Chance of Average Annual Sales Below 750,000 Units	15.3%	Over 50%	Over 75%
Average Expected Annual Units Sold (Next 20 Years)	988,244	492,987	234,041

Please see the rest of this letter for further details and supporting information.

Impact on GET Program Status

When we update the current status of the GET program to apply the one-time increases defined above, the expected cost of every unredeemed GET unit that has already been sold immediately increases. However, the assets collected from past purchasers, plus the associated investment returns, remain unchanged.

The following table displays the impacts on GET's current liability, assets, unfunded liability, and funded status from the scenarios defined above.

Impact on GET Program Status*			
(Dollars in Millions)	Without Differential Tuition	With Differential Tuition 20% Increase	With Differential Tuition 50% Increase
Present Value of all GET Contracts	$2,646	$3,169	$3,955
Market Value of Assets	$2,125	$2,125	$2,125
Unfunded Liability	$521	$1,044	$1,830
Funded Status	80%	67%	54%

** Projected values at June 30, 2011.*

Current GET Price-Setting Guidelines

The GET Committee adopts price-setting guidelines (how we price future units) to manage the risks of the program. The current GET unit price includes the following four components:

- **Expected Cost** – Covers the expected cost of future tuition. Given a current unit value of $102, the expected cost of tuition is $122. If tuition were expected to grow at the same rate as investment returns, the expected cost of tuition would equal the current unit value.
- **Expenses** – Covers the expected cost of expenses over the life of the unit. Currently, this adds about $5 to the price.
- **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 equates to about $19. This component can be increased or decreased to alter the probability that a unit will ever create unfunded liability in the future.
- **Amortization** – Covers unexpected past costs. The current unit price includes a $19 charge for this component. This current charge, if collected over the next 30 years of expected future purchasers as level percentage of the expected tuition cost, will fully amortize the current unfunded liability. The GET Committee adopted this one-time amortization to address the unfunded liability created by the new tuition-setting policy established in the 2011 Session (excluding the effects of differential tuition).

Impact on GET Unit Price

When we update the current status of the GET program to apply the one-time differential tuition increases defined above and apply the current price-setting guidelines, we observe the following changes to the GET unit price.

Impact on GET Unit Price

Category	Without Differential Tuition	With Differential Tuition 20% Increase	With Differential Tuition 50% Increase
Unit Price			
Expected Cost	$121.60	$145.92	$182.40
Expenses	4.61	9.25	19.48
Reserve	18.93	23.27	30.28
Amortization	18.70	79.42	289.51
Total Unit Price	**$163.00**	**$257.00**	**$521.00**

Note: Total unit price rounded down.

The expenses and amortization components both increase by more than the 20 or 50 percent increases in the defined scenarios because both components are collected over assumed future purchases. As the price premium increases (total cost ÷ expected cost), we expect fewer future purchases. Therefore, the price of the expense and amortization components must increase to collect the same total dollars over fewer assumed future purchases. The amortization component also increases by the percent increase in unfunded liability displayed earlier under Impact on GET Program Status.

Impact on Program Risk

The program's future success depends on maintaining a delicate balance between risk and affordability. In this case, "risk" represents the risk of the state needing to make a contribution to the program and "affordability" represents the affordability of future GET units. Improving one risk will typically increase the risk of the other.

The following table summarizes how key risk metrics change under the defined scenarios.

Key Risk Metrics

Risk Category	Without Differential Tuition	With Differential Tuition 20% Increase	With Differential Tuition 50% Increase
Chance of State Contribution over 50 years	1.1%	Over 20%	Over 40%
Worst Case 50-Year State Contributions *(Dollars in Millions)*	$2,270	Over $4,000	Over $5,000
Chance of Funded Status Under 50% over 50 years	22.5%	47%	100%
Chance of Purchaser Experiencing Negative Return	1.4%	22%	77%
Chance of Average Annual Sales Below 750,000 Units	15.3%	Over 50%	Over 75%
Average Expected Annual Units Sold (Next 20 Years)	988,244	492,987	234,041

When we apply the current price-setting guidelines, we expect the one-time 20 and 50 percent increases under the defined scenarios will reduce future unit sales by at least 50 and 75 percent respectively. With lower future sales, the GET program collects fewer future dollars to protect against future adverse experience and to recover from past losses. As a result, the risks to the program increase. We observed a significant increase in both the chance and amount of state contributions to the program over the next 50 years.

From the purchaser's perspective, the large increase in the current 30-year amortization component of the GET unit price increases the chance a future purchaser will experience a negative rate of return on their GET investment – from just over 1 percent without differential tuition to 22 and 77 percent for the 20 and 50 percent increase scenarios respectively.

Actuarial Certification

We prepared this preliminary analysis to assist the Legislature in evaluating the potential impacts of differential tuition on the GET program under two defined scenarios. Please do not use this analysis for other purposes.

This analysis involves calculations that require assumptions about future economic and demographic events. Actuarial Standards of Practice (ASOP) for prepaid tuition programs have not been defined within the actuarial profession. We used the ASOPs for pensions where possible to guide our analysis of GET. We believe that the assumptions, methods, and calculations used in this analysis 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 letter. The use of another set of assumptions and methods, however, could also be reasonable and could produce materially different results.

Since the analysis is based on assumptions about future events, actual results will differ to the extent that future experience differs from those assumptions. Significant differences between the actual and assumed future enrollments will impact the results. This analysis will need to be updated in the future if the Legislature enacts either major reform to current tuition policy or other changes to GET.

The GET Program staff provided the participant, asset, and historical data to us. The Washington State Investment Board (WSIB) also provided recent asset data to us. We checked the data for reasonableness as appropriate based on the purpose of this analysis. An audit of the data was not performed. 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 analysis.

We advise readers of this analysis 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 communication as a whole. Distribution of, or reliance on, only parts of this analysis could result in its misuse and may mislead others.

The analysis in this letter will become outdated very quickly. Please replace this analysis with any future actuarial analysis.

Consistent with the Code of Professional Conduct that applies to actuaries, I (Matthew Smith) must disclose any potential conflict of interest. I purchased units in GET; however, this does not impair my ability to act fairly. I performed all analysis without bias or influence. The Legislature mandated the Office of the State Actuary to perform actuarial services for GET and I supervised the actuarial analysis performed.

The undersigned, with actuarial credentials, meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein and are available to provide extra guidance and explanations as needed.

Sincerely,

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

Troy Dempsey, ASA, EA, MAAA
Actuary

cc Representative Ross Hunter, Chair
Ways and Means Committee
Representative Larry Seaquist, Chair
Higher Education Committee
Don Bennett, Director
Higher Education Coordinating Board
Betty Lochner, Director
GET

Appendix – Data, Assumptions and Methods

Data We Used

We relied on participant and asset data provided by GET program staff and relied on asset data provided by WSIB to perform our analysis. The participant data reflects contract information through April 30, 2011. The asset data reflects actual returns through June 30, 2011. We did not audit this data and have relied on the data as complete and accurate for purposes of this analysis.

Assumptions We Made

Most of the assumptions we made remain unchanged from those disclosed in our *2009 GET Solvency Study*. We made the following assumption changes to complete this analysis:

First, we assumed the GET Committee would follow their new price-setting guidelines over the 50-year projection period. The new price-setting guidelines ("current guidelines") require a 15 percent reserve. The guidelines also include a one-time, closed 30-year amortization to address the unfunded liability created by the new tuition-setting policy established in the 2011 Session. For purposes of this analysis, we reset this one-time amortization to include the increased unfunded liability from differential tuition.

We updated the model with actual investment returns through June 30, 2011. The investment returns from July 1, 2010, through June 30, 2011, were 20.46 percent. We altered the expectation of future investment returns in line with WSIB's latest Capital Market Assumptions (CMAs) and asset allocation. The new assumptions have an expected value of 6.32 percent per year. The results of this analysis would change under different CMAs.

We increased our tuition growth assumptions in response to the new tuition-setting policy established during the 2011 Session (see Tuition Growth Assumption below for details).

In addition, we changed the mix of "cash constrained" and "investor" type purchasers from 50/50 to 70 percent and 30 percent respectively. Please see the *2009 GET Solvency Study* for a description of these two purchaser types.

Tuition Growth Assumption

The table below shows the updated tuition assumption under the new tuition-setting policy (before differential tuition).

Tuition Assumption Before Differential Tuition	
Year*	**Tuition Growth**
1	20.0%
2	18.0%
3	12.0%
4	10.0%
5	10.0%
6	8.0%
7+	5.5%

** Year from valuation date.*

We assumed tuition would be normally distributed with a mean of 20, 18, 12, 10, 10, and 8 percent, and a standard deviation of 0, 2, 3, 4, 5, and 5 percent respectively in years 1 through 6. In year 7 and beyond, we assumed tuition would be normally distributed with a mean of 5.5 percent and standard deviation of 5.39 percent.

The tables below show the structure of the tuition model we used to set the new tuition growth assumption. Structurally, the model has the ability to add extra components such as a high tuition/high financial aid model or changing enrollment. However, since we've assumed these components are steady during this period we've left them out of the display.

The tuition model has three main structural components:

1. **Long-Term Inflationary Growth** – This represents the increase in total dollars spent on instruction. Over the last 20 years, this has increased by about 4 percent per year. We assume it will grow by 5.5 percent in the future.
2. **State Funding** – This 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 to 35 percent. 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 25 percent and level out. As a result, we project tuition will increase above long-term inflationary levels over the six-year period where state funding is assumed to decrease.
3. **Peer Catch-Up** – This represents additional total funding growth above the 5.5 percent inflationary component intended to improve quality and catch up to peer institutions (assumed to grow at 5.5 percent). We assume University of Washington will close half of the current gap between it and its peer institutions by increasing total funding 1.5 percent more per year over the next six years.

Tuition Assumption Structure						
(Dollars in Thousands)	Step 1 – Inflation			Step 2 – State Funding		
Year	**Total Dollars**	**Inflationary Growth**	**Assumed State %**	**State Dollars**	**Tuition Dollars**	**Tuition Growth After State Funding**
2011	$666,666		46.1%	$307,110	$359,556	
2012	703,332	5.5%	39.5%	277,816	425,516	18.3%
2013	742,015	5.5%	33.3%	247,091	494,924	16.3%
2014	782,826	5.5%	30.2%	236,414	546,413	10.4%
2015	825,882	5.5%	28.3%	233,312	592,570	8.4%
2016	871,305	5.5%	26.3%	228,718	642,588	8.4%
2017	919,227	5.5%	25.6%	234,862	684,364	6.5%
2018	969,784	5.5%	25.6%	247,780	722,004	5.5%
2019	1,023,123	5.5%	25.6%	261,408	761,715	5.5%
2020	1,079,394	5.5%	25.6%	275,785	803,609	5.5%
2021	1,138,761	5.5%	25.6%	290,953	847,808	5.5%
2022	1,201,393	5.5%	25.6%	306,956	894,437	5.5%
2023	1,267,469	5.5%	25.6%	323,838	943,631	5.5%
2024	1,337,180	5.5%	25.6%	341,650	995,531	5.5%
2025	$1,410,725	5.5%	25.6%	$360,440	$1,050,285	5.5%

Tuition Assumption Structure						
Step 3 – Peer Catch Up						
Year	Peer Funding (per FTE)	Peer Funding Growth	UW Funding (per FTE)	UW Funding Growth	UW Funding as % of Peer	Tuition Growth After State Funding & Peer Catch Up
2011	$27,049		$23,273		86%	
2012	28,537	5.50%	24,902	7.00%	87%	20.0%
2013	30,106	5.50%	26,645	7.00%	89%	18.0%
2014	31,762	5.50%	28,510	7.00%	90%	12.0%
2015	33,509	5.50%	30,506	7.00%	91%	10.0%
2016	35,352	5.50%	32,642	7.00%	92%	10.0%
2017	$37,296	5.50%	$34,926	7.00%	94%	8.0%
2018						5.5%
2019						5.5%
2020						5.5%
2021						5.5%
2022						5.5%
2023						5.5%
2024						5.5%
2025						5.5%

We assumed the GET Committee would price future units in line with these expectations.

Lastly, we increased the 2012 tuition growth rates displayed above by 2,000 or 5,000 basis points to reflect the assumed one-time increase in GET payout value defined by the given differential tuition scenario.

Methods We Used (How We Applied The Assumptions)

Nearly all the methods we used remain unchanged from those disclosed in our *2009 GET Solvency Study*. We made the following method changes to complete this analysis.

We replaced stochastic output with deterministic output (100 percent likelihood) for the following variables:

- Tuition growth during 2011-2012. We set this at 20 percent based on UW's tuition increase for the 2011-2012 school year.
- Assumed number of units purchased during 2011 enrollment. We set this at 2,697,696 based on actual data from GET instead of modeling expected enrollments.

We used a single and closed 30-year amortization period for the amortization component in the unit price. This amortization component increases at 5.5 percent per year so that it remains a constant percent of the expected tuition component of the total unit price.

Otherwise, the methods we used are consistent with the methods disclosed in the *2009 GET Solvency Study*.

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