Appendix E – Texas Growth Index and Texas Projection Measure

When the Texas Assessment of Knowledge and Skills (TAKS) testing program was implemented a new growth measure, the Texas Growth Index (TGI), was introduced. The TGI provides an estimate of a student's academic growth on the TAKS tests, over two consecutive years and in two consecutive grades.

The TGI did not meet the requirements for growth-based accountability for the U.S. Department of Education (USDE) growth pilot. Therefore, when the USDE pilot growth program was announced and student growth legislation in Texas was passed, Texas began researching alternatives for growth measures that would satisfy both federal and state requirements. Ultimately, the Texas Projection Measure (TPM) was selected as the best option.

For the 2008-09 school year, both TGI and TPM values were calculated. This appendix describes the use of these two growth measures in the 2009 state accountability system.

USES OF TGI IN 2009 STATE ACCOUNTABILITY

In 2009, the TGI continues to be used in state accountability much like it was in prior years. For the state accountability system, it is used in two ways:

- to calculate Gold Performance Acknowledgments for Comparable Improvement in Reading/ELA and Mathematics; and

- to calculate the TAKS Progress Indicator under the alternative education accountability (AEA) procedures.

A change in the use of TGI in 2009 is that the TAKS Progress Indicator now uses the TPM for students tested in grades 3 through 10 and uses TGI for grade 11 only. In previous years, the TGI was used for all grades. See *Chapter 10 – AEA Base Indicators* for details on the use of TGI and TPM in the calculation of the TAKS Progress Indicator under AEA procedures.

The continued use of TGI in the state accountability system will be reviewed during each annual accountability development cycle.

The parameters used to determine TGI (shown in the tables below) were developed using the empirical data from the base comparison years — spring 2003 to spring 2004.

TGI METHODOLOGY

With TGI, a student's growth is defined as the student's score in Year 2 minus the student's projected score for Year 2. A student's projected score for Year 2 is the score in the distribution at Year 2 that corresponds to the student's Year 1 score. If the student's score is above the expected score, the student is considered to have grown. If the student's score is below the expected (projected) score, the student is considered to have regressed. Expected growth is defined as maintaining location in the distribution year to year.

To determine the TGI for an individual student, growth equation parameters are needed for each subject and grade. See *Tables 37* and *38* for these parameters. Steps for determining a TGI value for a sample student are shown in *Table 39*.

Table 38: TGI Growth Equation Parameters – Mathematics and Science

Growth Grades	Subject	Starting Point	Increase	Adjustment
3-4	Math	-3.38	1.006	138.07
3-4 *(Spanish)*	Math	-903.49	1.44	190.11
4-5	Math	-530.83	1.258	160.01
4-5 *(Spanish)*	Math	-32.22	1.03	160.29
5-6	Math	-167.96	1.085	152.94
5-6 *(Spanish)*	Math	-11.10	1.04	173.12
6-7	Math	612.26	0.705	95.40
7-8	Math	-544.89	1.269	118.89
8-9	Math	-775.75	1.378	136.19
9-10	Math	480.79	0.773	95.47
10-11	Math	-138.428	1.092	104.38
10-11	Science	410.23	0.832	75.94

Table 39: TGI Growth Equation Parameters – Reading, ELA, and Social Studies

Growth Grades	Subject	Starting Point	Increase	Adjustment
3-4	Reading	-12.89	0.993	135.97
3-4 *(Spanish)*	Reading	-158.07	1.03	158.44
4-5	Reading	-520.23	1.235	149.93
4-5 *(Spanish)*	Reading	-480.94	1.24	159.13
5-6	Reading	-66.29	1.066	151.85
5-6 *(Spanish)*	Reading	109.69	.99	143.36
6-7	Reading	372.28	0.827	126.53
7-8	Reading	-87.53	1.065	128.61
8-9	Reading	712.12	0.663	101.31
9-10	Reading/ELA	535.21	0.762	91.11
10-11	ELA	128.38	0.962	96.41
10-11	Social Studies	464.43	0.810	93.98

TGI growth equation parameters were calculated based on TAKS scale score changes between spring 2003 and spring 2004. These base calculations have been applied in each subsequent year.

Table 40: Sample TGI Calculation

Suppose you wish to examine a student's mathematics growth from Grade 10 to Grade 11. Suppose that student had a scale score of 2188 in Grade 10 and a scale score of 2161 in Grade 11.

	STEPS	EXAMPLE VALUES
Step 1	Find the starting point for that student in the row of the table that matches that student's grade and subject.	-138.428
Step 2	Take the student's scale score in the first year.	2188
Step 3	Find the increase for that student in the row of the *Table 37* or *38* that matches that student's grade and subject.	1.092
Step 4	Multiply student's scale score from the first year by the increase.	2188 x 1.092 = 2389.296
Step 5	Add the amount from Step 1 and the total from Step 4. This is the **expected student scale score for the second year**.	-138.428 + 2389.296 = 2250.868
Step 6	Take the student's scale score from the second year and subtract the expected student score from it. This number is the **difference in expectation**.	2161-2250.868 = -89.868
Step 7	Calculate Adjusted TGI by dividing the result from Step 6 by the Adjustment factor shown on the appropriate row of the table. Round to the second decimal place.	-89.868/104.38 = -0.86
Step 8	If the difference in expectation is positive, that student grew more than expected. If the difference in expectation is negative, that student grew less than expected.	Since -0.86 is negative; the student grew **less** than expected.

HOW TGI IS USED IN DETERMINING COMPARABLE IMPROVEMENT

Comparable Improvement (CI) is calculated separately for TAKS reading/ELA and TAKS mathematics. The student-level TGI values are aggregated to the campus level to create an average TGI for each campus.

Who are included:

Students included in a school's CI calculation are those who:

- took the spring 2009 TAKS reading/ELA and/or mathematics tests, in grades 4 – 11 or took the spring 2009 grade 11 TAKS (Accommodated) test in ELA and/or mathematics

- are part of the 2009 *Accountability Subset* (see *Chapter 2*);

- can be matched to the spring 2008 TAKS administration—anywhere in the state—to find their prior year performance for reading/ELA, and/or mathematics; and,

- have been promoted to one higher grade than in 2008.

Calculating Average TGI:

$$\text{average TGI(reading/ELA)} = \frac{\text{sum of individual student TGI values for reading/ELA}}{\text{total number of students with TGI in reading/ELA}}$$

$$\text{average TGI(mathematics)} = \frac{\text{sum of individual student TGI values for mathematics}}{\text{total number of students with TGI in mathematics}}$$

Once the average TGI is determined, it is listed with the other 40 average TGIs of the school's comparison group. The schools are arranged from highest to lowest average TGI. If the target school falls in the top quartile and all other eligibility criteria are met, it is awarded a GPA for CI. This is calculated separately by subject.

Other information:

- *Retesters.* The analyses establishing the TGI did not include the retest administrations, that is, it is calculated from the first administration for grade 11 exit-level students, and for the first administration in the SSI grades — grade 3 reading and grades 5 and 8 reading and mathematics. Therefore, it should not be calculated for students retesting on either the Exit TAKS or TAKS retest administrations at the SSI grades.

- *Quartile Size.* Because there are 40 schools in a comparison group, there are usually 10 schools in each quartile (with the target school being the 11th school in its quartile). Exceptions to this occur when a group has tied average TGI values at the border between quartiles, or when a school in a group has too few "matched students," and is therefore not assigned an average TGI value or a quartile. This will cause the number of schools in each quartile to vary.

- *Quartile Rank.* High growth values do not necessarily imply that more students are passing the TAKS. It simply evaluates the performance growth of all students regardless of whether they passed or failed.

- *Quartile Position Across Subjects.* A school's quartile position can vary by subject. For instance, a school may be Q1 in reading, but it may be Q2 in mathematics. Quartile position is relative to the performance of the other schools in the group.

- *Quartile Position Across Groups.* A school may be Q1 for its own group and Q4 as a member of another school's group. (However, the quartile value evaluated for a particular school is the one determined for the school's own group.)

- *Minimum Size.* Any school with fewer than 10 matched students for a subject will not have average TGI values calculated and will not be assigned a quartile position.

- *Number of Matched Students.* The number of matched students for reading may differ from the number of matched students for mathematics.

- *TGI Uses.* The TGI is not intended for use with individual students, nor is it intended for comparing the growth of different classrooms within a school to evaluate teachers.

- *Negative TGI Values.* The TGI is a statistic with a mean of zero; negative values for students indicate the growth is less than expected. A negative TGI does not mean that performance of students declined from the prior year. Campuses with negative TGI values are not prohibited from earning CI acknowledgments.

For a more detailed explanation of *Gold Performance Acknowledgment*, see the *Chapter 5 – Gold Performance Acknowledgments.*

HOW TGI IS USED IN DETERMINING THE TAKS PROGRESS INDICATOR

The TAKS Progress Indicator is used in evaluating registered alternative education campuses (AECs) and charter operators that qualify for evaluation under AEA procedures. For an explanation of how TGI is used in this indicator, see *Chapter 10 – AEA Base Indicators.*

USES OF TPM IN 2009 STATE ACCOUNTABILITY

As explained above, the TPM is used under AEA procedures as a component of the TAKS Progress Indicator. Under standard procedures the TPM is used as an additional feature of the system as a means of elevating a campus or district rating when neither the "Percent Meeting the Standard" nor Required Improvement is sufficient to achieve the next higher rating. The TPM offers an alternative approach to demonstrating achievement that meets state goals. See *Chapter 3 – The Basics: Additional Features* and *Appendix D – Data Sources* for more information about how the TPM is used in determining standard accountability ratings.

TPM METHODOLOGY

The TPM estimates whether a student is likely to pass TAKS assessments in the next high-stakes grade (grade 5, 7 [writing only], 8, or 11). The TPM does not evaluate student score changes in past years, so it is more accurately classified as a projection measure, which provides information about how a student will likely perform in the future after receiving grade-level instruction.

This measure is based on (1) the student's current performance on TAKS and (2) the prior year TAKS scores of all students on the campus that the student attends. The TPM is reported in mathematics, reading, English language arts, science, social studies, and writing. Projections for each student are made separately for each subject. When projections are made to a future grade, the result is a projected score. To determine if a student is projected to meet the standard or not in the projected grade, the projected score is compared with the Met Standard cut point in the projected grade and subject.

Resources related to the TPM are available at ritter.tea.state.tx.us/student.assessment/resources/growth_proposal/. Resources at this site include the following:

- Online Texas Projection Measure Calculator
- Step-by-step procedures for calculating the Texas Projection Measure
- A listing of district and campus subject means
- Procedures for developing the Texas Projection Measure equations
- Texas Projection Measure Frequently Asked Questions

Additional information on the TPM will be posted at this website as it becomes available.