

The following document(s) and source(s) were used to write these business rules:

- State Accountability Index Report to the State Board of Education (prepared by Pete Bylsma, June 2009)
<http://www.sbe.wa.gov/documents/Account%20Sys%20-%20SBE%20Input%20Revised%20Paper%20on%20Index%20June%2009.pdf>

Files used for Calculations

- **Spring Score Files**
Two years of score files are needed for the calculations. Indicators 1, 2 and 3 use the current year's score file, but indicator 4 requires the previous year's score file in order to do comparisons for improvement.
- **August Retake Score Files**
August retake files are used to examine if any student testing in that year's spring administration has a better score on their retake test in August. The rules for replacing spring scores with improved August scores are described below.
- **Graduation and Dropout File**
This file is used for calculations of one of the outcomes in all four indicators (graduation rates).
- **School Type File**
This file is used to categorize each school into a school type. The calculations are dependent upon schools being categorized as elementary, middle, high and comprehensive (e.g., K-12).

Test Types and Attempt Codes

The following test types and attempt codes are used in determining which records in the score files to use and to categorize test records as tested, not tested and exempt.

<p>Test types included:</p> <ul style="list-style-type: none"> • MSP/MSPB • HSPE/HSPB • ALG/ALGB • GEO/GEOB • IN1/IN1B • IN2/IN2B • MU1/MU1B • PORT 	<p>Tested attempt codes:</p> <p>Tested is defined by the following attempt codes:</p> <ul style="list-style-type: none"> • TS (Tested) • IS (Insufficient) • PP (Previously Passed) <u>grade 10 only</u> 	<p>Not Tested attempt codes:</p> <p>Not Tested is defined by the following attempt codes:</p> <ul style="list-style-type: none"> • RF (Refused) • AU (Absent Unexcused) • IV (invalid) • IC (incomplete) • NB (No Booklet) • NT (Not Tested) • BL (Blank) • OG (Out of Grade Level) 	<p>Exempt attempt codes:</p> <p>Exempt from testing is defined by the following attempt codes:</p> <ul style="list-style-type: none"> • AX (Absent Excused) • ME (Medical Exemption) • NN (New Non-English Proficient) • PP (Previously Passed) <u>grades 3-8</u> • PE (Partially Enrolled) • NE (Non Enrolled)
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Recoding of the spring score files

The spring score files are the main source files for these calculations. Some records will need to be updated, recoded or excluded based on the following rules:

1. All students in assessed grade levels 3-8 and 10 are included in the calculations, with the following exceptions. Continuous Enrollment is not taken into account in these calculations:
 - a. Students exempted from taking the test will be excluded from subject level calculations. They will still be included in the total enrollment count, though. These records are noted in the score file with one of the attempt codes listed above under “Exempt”.
 - b. Students who are New Non-English Proficient are noted in the score file with an attempt code of NN. This code is listed above as an exempt attempt code. The exception is that if an NN record actually has a passing score, then the passing score is included in the subject level calculations. This recoding should have already taken place in the spring score file.
 - c. Home based, foreign and private school records are excluded from subject level calculations and the total enrollment count. This suppression is done by looking at the three flags in the spring score file for Home based, foreign and private, and if a record has a flag of “Y” for any of these three elements, they are removed.
2. Basic records meeting standard at Level 2 will be counted as passing with a Level 3. These records need to be recoded to a Level 3.
3. Previously Passed records for 10th graders only will be included in calculations with the level in which they previously passed the test.
 - a. Records missing the Previously Passed level will be counted as passing with a Level 3. The records need to be recoded with the level at which the student previously passed, or level 3 if the previously passed level is not present in the score file.
 - b. In addition, if a record’s previously passed level is noted as level 1 or level 2, these records are also recoded to level 3. This is considered “bad data” in the spring score file as the students really did previously pass the test for that subject.
4. Students who are required to take the test but receive no score are noted in the score file with one of the attempt codes listed above under “Not Tested”. These records are included in the calculations as a Level 0. The records in the score file need to be recoded with a level 0 as the spring file has a blank level.
5. If a student performed better on the retake test in August, the spring score is replaced with the August score. The matching between the spring and August files is done on SSID alone. The rule that is applied is if the spring record (by subject) reflects a lower scale score than the matched record in the

August file, then the raw score, scale score, level and met standard variables in the spring file are all updated with the information from the same variables in the August file.

6. Students in the spring file that are marked “Y” in the “Bilingual” variable will be **included** in subject level calculations if they meet **one** of the following pieces of criteria, otherwise the record will be excluded from subject level calculations. The record still counts in the total enrollment count.

a. If the amount of time served in the ELL program is greater than 3 years, OR

The method for evaluating this criterion is as follows:

- i. In the spring score file, the variables “ELLenter” and “ELLexit” are date fields that represent when the student began being served in the ELL program and when the student exited the ELL program services.
- ii. These dates are compared to arrive at the amount of time spent in the program. Most “ELLexit” dates are blank, which implies the student is still being served in the program. When the “ELLexit” date is blank, May 1st is used as an “as of” date to calculate how much time the student has spent in the program up to the testing window.
- iii. If the amount of time (in years) spent in the program is greater than 3 years, the record is considered meeting this piece of criteria.

b. If the ELL student passed the exam

The method for evaluating this criterion is as follows:

- i. If in the spring score file the student met standard in the subject, then the record is considered meeting this piece of criteria.
- ii. This includes the recoding that happens in step 5, above, which updates the spring score file with scores from the August score file if the student performed better on the August retake.

Other Notes

1. The extended graduation rate cohorts are to be rounded to the nearest whole number.
2. Indicator 4 (Improvement) Ceiling Affect: If a Learning Index for a subject reaches 3.85 or higher and remains at 3.85 or higher for two consecutive years, then the subject (Outcome) cell for the Improvement Indicator is not calculated for the school nor included in the overall Accountability Index Rate(s). Similarly, if the Extended Graduation Rate reaches 94% or higher and remains at 94% or higher for two consecutive years, the Extended Graduation Rate Outcome cell for the Improvement Indicator is not calculated for the school nor included in the overall Accountability Index Rate(s).

Calculating the Learning Index

The learning index is used in the overall rating system in the cells that pertain to “achievement vs peers” and “improvement”. The learning index needs to be calculated for each school, subject and, for high schools, the extended graduation rate. The calculation is as follows:

1. Sum all assessed records in the school by the level (level 0, 1, 2, 3 and 4), by subject.
2. Divide the sum of each level by the total number of assessed records to produce the percent scoring at each level.
3. Multiply the percent of each level by the level, and then sum each of the multiplied numbers.

Example:	Level 0: 10% of all students assessed	Level 1: 10% of all students assessed
	Level 2: 30% of all students assessed	Level 3: 30% of all students assessed
		Level 4: 20% of all students assessed

$$\text{School Learning Index} = (0 \times 0.10) + (1 \times 0.10) + (2 \times 0.30) + (3 \times 0.30) + (4 \times 0.20)$$

$$= 0 + .10 + .60 + .90 + .80 = 2.40$$

Running the Multiple Regression to Calculate the Predicted Line and the Residual

1. After the Learning Index is calculated by subject for each school, the schools with a school type of “public” or “tribal” are loaded into SPSS in four different groups based on the school category: elementary, middle, high and comprehensive (aka multi-level). The school category is determined by linking the school code in the spring score file for each record to the School Type File (referenced above), which has categorized every open school into a school type (dependent on the grade span of students they serve). The school category variable in this file is broader than the four categories listed above, but all schools that are categorized as something other than elementary, middle and high are rolled under one category named “comprehensive” (i.e., K-12, JrSr, etc.).
2. For each of the four groups, a multiple regression is run for each subject and the extended graduation rate to determine the predicted regression line and the residual for each school, by subject and extended graduation rate.
3. The dependent variable for each regression is the learning index for each subject (described above) and the extended graduation rate.
4. The independent variables for each regression is the percent mobility (aka non-Continuously Enrolled), percent gifted, percent special education, percent ELL, and percent low income. The mobility calculation is based on the AYP Continuously Enrolled flags, and is calculated by subject. Reading and Writing use the Reading CE variable in the score file; math, science and the graduation rate use the Math CE variable in the score file.
5. Each regression is weighted by the number of students assessed in the subject in each school, and for the extended graduation rate the total N that is used in as the denominator of the extended graduation rate calculation (or otherwise known as the 12th grade enrollment).
6. Below is an example of the details of the SPSS regression for reading. These steps were repeated for each subject and the extended graduation rate. Residuals are saved to 2 decimal places.

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REGRESSION
/DESCRIPTIVES MEAN STDDEV CORR SIG N
/MISSING LISTWISE
/REGWGT=rTotal
/STATISTICS COEFF OUTS R ANOVA COLLIN TOL CHANGE ZPP
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT Lreading
/METHOD=STEPWISE MobilityR_nonCErPercent GiftedPercent SpecEdPercent ELLpercent LowIncPercent
/SCATTERPLOT=(Lreading,*ADJPRED)
/RESIDUALS HIST(ZRESID) NORM(ZRESID)
/SAVE PRED RESID.

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Indicators	Outcomes				Extended Graduation Rate (Applies to Public and Tribal HS Only [not alternative schools])																															
	Reading	Writing	Math	Science																																
<p>Indicator 1: Achvmt of Non-Low Income Record selection criteria: FRL flag = N or Blank</p>	<table border="1"> <thead> <tr> <th>% MET STANDARD</th> <th>RATING</th> </tr> </thead> <tbody> <tr> <td>90 - 100%</td> <td>7</td> </tr> <tr> <td>80 - 89.9%</td> <td>6</td> </tr> <tr> <td>70 - 79.9%</td> <td>5</td> </tr> <tr> <td>60 - 69.9%</td> <td>4</td> </tr> <tr> <td>50 - 59.9%</td> <td>3</td> </tr> <tr> <td>40 - 49.9%</td> <td>2</td> </tr> <tr> <td>< 40%</td> <td>1</td> </tr> </tbody> </table>	% MET STANDARD	RATING	90 - 100%	7	80 - 89.9%	6	70 - 79.9%	5	60 - 69.9%	4	50 - 59.9%	3	40 - 49.9%	2	< 40%	1	<p>Students from all tested grades in a school are combined for each subject, and the percentage of these students that meet standard on their respective tests is the school's percent meeting standard for that subject. That percentage is then compared to this chart to find the rating for each outcome within the indicator.</p>	<table border="1"> <thead> <tr> <th>RATE</th> <th>RATING</th> </tr> </thead> <tbody> <tr> <td>> 95</td> <td>7</td> </tr> <tr> <td>90 - 95%</td> <td>6</td> </tr> <tr> <td>85 - 89.9%</td> <td>5</td> </tr> <tr> <td>80 - 84.9%</td> <td>4</td> </tr> <tr> <td>75 - 79.9%</td> <td>3</td> </tr> <tr> <td>70 - 74.9%</td> <td>2</td> </tr> <tr> <td>< 70%</td> <td>1</td> </tr> </tbody> </table>	RATE	RATING	> 95	7	90 - 95%	6	85 - 89.9%	5	80 - 84.9%	4	75 - 79.9%	3	70 - 74.9%	2	< 70%	1	<p>Extended Grad Rates calculated for AYP are used, and those rates are done separately for Non-Low Income or Low Income. Rates are then compared to this chart to find the rating.</p>
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<p>Indicator 3: Achvmt vs Peers</p>	<table border="1"> <thead> <tr> <th>DIFF IN LEARNING INDEX</th> <th>RATING</th> </tr> </thead> <tbody> <tr> <td>> .20</td> <td>7</td> </tr> <tr> <td>.151 to .20</td> <td>6</td> </tr> <tr> <td>.051 to .15</td> <td>5</td> </tr> <tr> <td>-.05 to .05</td> <td>4</td> </tr> <tr> <td>-.051 to -.15</td> <td>3</td> </tr> <tr> <td>-.151 to -.20</td> <td>2</td> </tr> <tr> <td>< -.20</td> <td>1</td> </tr> </tbody> </table>	DIFF IN LEARNING INDEX	RATING	> .20	7	.151 to .20	6	.051 to .15	5	-.05 to .05	4	-.051 to -.15	3	-.151 to -.20	2	< -.20	1	<p>The Learning Index is calculated for each school and then the multiple regression process is run (see above for calculation details). The calculated residual is then compared to this chart to find the rating for each outcome within the indicator.</p>	<table border="1"> <thead> <tr> <th>DIFFERENCE IN RATE</th> <th>RATING</th> </tr> </thead> <tbody> <tr> <td>> 12</td> <td>7</td> </tr> <tr> <td>6.1 to 12</td> <td>6</td> </tr> <tr> <td>3.1 to 6</td> <td>5</td> </tr> <tr> <td>-3 to 3</td> <td>4</td> </tr> <tr> <td>-3.1 to -6</td> <td>3</td> </tr> <tr> <td>-6.1 to -12</td> <td>2</td> </tr> <tr> <td>< -12</td> <td>1</td> </tr> </tbody> </table>	DIFFERENCE IN RATE	RATING	> 12	7	6.1 to 12	6	3.1 to 6	5	-3 to 3	4	-3.1 to -6	3	-6.1 to -12	2	< -12	1	<p>The multiple regression process is run (see above for calculation details). The calculated residual is then compared to this chart to find the rating for each outcome within the indicator.</p>
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<p>Indicator 4: Improvement (read "ceiling affect" suppression under "Other Notes [above]" for additional rules)</p>	<table border="1"> <thead> <tr> <th>CHANGE IN LEARN INDEX</th> <th>RATING</th> </tr> </thead> <tbody> <tr> <td>> .15</td> <td>7</td> </tr> <tr> <td>.101 to .15.....</td> <td>6</td> </tr> <tr> <td>.051 to .10.....</td> <td>5</td> </tr> <tr> <td>-.05 to .05</td> <td>4</td> </tr> <tr> <td>-.051 to -.10</td> <td>3</td> </tr> <tr> <td>-.101 to -.15</td> <td>2</td> </tr> <tr> <td>< -.15</td> <td>1</td> </tr> </tbody> </table>	CHANGE IN LEARN INDEX	RATING	> .15	7	.101 to .15.....	6	.051 to .10.....	5	-.05 to .05	4	-.051 to -.10	3	-.101 to -.15	2	< -.15	1	<p>The Learning Index for the current year and the previous year are calculated and compared. The difference in the learning index of the two years is then compared to this chart to find the rating.</p>	<table border="1"> <thead> <tr> <th>CHANGE IN RATE</th> <th>RATING</th> </tr> </thead> <tbody> <tr> <td>> 6</td> <td>7</td> </tr> <tr> <td>4.1 to 6</td> <td>6</td> </tr> <tr> <td>2.1 to 4</td> <td>5</td> </tr> <tr> <td>-2 to 2</td> <td>4</td> </tr> <tr> <td>-2.1 to -4</td> <td>3</td> </tr> <tr> <td>-4.1 to -6</td> <td>2</td> </tr> <tr> <td>< -6</td> <td>1</td> </tr> </tbody> </table>	CHANGE IN RATE	RATING	> 6	7	4.1 to 6	6	2.1 to 4	5	-2 to 2	4	-2.1 to -4	3	-4.1 to -6	2	< -6	1	<p>The most recent two years of extended graduation rates are compared. The difference in those rates is then compared to this chart to find the rating.</p>
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<p>Overall Accountability Index Rate</p>	<p>All of the rates in each column (outcome) and row (indicator) above are then averaged by adding the ratings together for each row or column and dividing by the number of ratings present. If a particular cell above is not applicable to a school, or at the student level records needed for the calculation is less than 10, then that cell's rate is not calculated and included in this average (nor is the "empty" cell included in the number of ratings that is used as the denominator). This applies to previous year data that is used in Indicator 4 as well.</p> <p>The Total Average is also calculated by repeating the calculation applied to each row and column, but this average is based on all 20 cells. This becomes the schools overall Accountability Index Rate.</p>																																			

Achievement Gap Calculations:

Achievement gap calculations are done in the same way as described above, but the calculations are only for the cells listed below. In addition, students are put into two categories to measure the gap between the two groups. The two groups are defined in the chart below.

Achievement Gap										
INDICATORS	Reading			Math			Ext Graduation Rate			Average
	Met Std	Peers	Imp	Met Std	Peers	Imp	Met Std	Peers	Imp	
Achievement of Black, Pacific Islander, American Indian/Alaskan Native, Hispanic stds										Avg of all 9 cells in this row
Achievement of white and Asian students										Avg of all 9 cells in this row
Achievement Gap										Difference between the two group averages above