Mississippi Department of Education

Mississippi Performance-Based Pay

A Plan for Implementation

In Accordance with Mississippi Code 1972
§ 37-19-7 as Amended in 2006

This plan covers a subpart in the legislation that allows for providing monies from state funds to school districts for the purpose of rewarding certified teachers, administrators, and non-licensed personnel at individual schools showing improvement in student test scores.

December 1, 2006
[Revised February 2, 2007]

Office of Research and Statistics

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Introduction

This document presents a plan for implementing a provision in Mississippi state law that allows for providing monies from state funds to school districts for the purpose of rewarding certified teachers, administrators, and non-licensed personnel at individual schools showing improvement in student test scores.

Compliance with Requirements in the Legislation

Specific requirements for the Mississippi Performance-Based Pay (MPBP) plan can be found in § 37-19-7, paragraphs (4)(a) and (4)(b) as shown below. For each specified requirement, there is a statement indicating how the plan described in this document satisfies the requirements.

(4)(a) This section shall be known and may be cited as the "Mississippi Performance Based Pay (MPBP)" plan. In addition to the minimum base pay described in this section, only after full funding of MAEP and if funds are available for that purpose, the State of Mississippi may provide monies from state funds to school districts for the purposes of rewarding certified teachers, administrators and nonlicensed personnel at individual schools showing improvement in student test scores. The MPBP plan shall be developed by the State Department of Education based on the following criteria:

(i) It is the express intent of this legislation that the MPBP plan shall utilize only existing standards of accreditation and assessment as established by the State Board of Education.

Compliance: The plan will use school level performance results from the state's existing Achievement Model which is part of the statewide accountability system approved by the Mississippi State Board of Education.

(ii) To ensure that all of Mississippi's teachers, administrators and nonlicensed personnel at all schools have equal access to the monies set aside in this section, the MPBP program shall be designed to calculate each school's performance as determined by the school's increase in scores from the prior school year.

Compliance: Each school's performance is reported in the form of an Achievement Level Index (ALI). The ALI values can be compared from year to year to calculate increases in performance.

The MPBP program shall be based on a standardized scores rating where all levels of schools can be judged in a statistically fair and reasonable way upon implementation.

Compliance: The Achievement Model incorporates statistical adjustments that ensure that the results are comparable across schools regardless of grade configuration. ALI values and increases in ALI values can be compared across schools.

At the end of each year, after all student achievement scores have been standardized, the State Department of Education shall implement the MPBP plan.

Compliance: When the State Board of Education has approved the statewide accountability results (in early September each year), the ALI values for that year and the ALI values for the prior year(s) will be used to calculate increases in performance. The results (available by the end of September each year) will be used to determine which schools are eligible to participate in the MPBP.

(iii) To ensure all teachers cooperate in the spirit of teamwork, individual schools shall submit a plan to the local school educational authority to be approved before the beginning of each school year beginning July 1, 2008. The plan shall include, but not be limited to, how all teachers, regardless of subject area, and administrators will be responsible for improving student achievement for their individual school.

Compliance: The Mississippi Department of Education will provide guidance to school districts regarding the development of required plans.

(b) The State Board of Education shall develop the processes and procedures for designating schools eligible to participate in the MPBP. State assessment results, growth in student achievement at individual schools and other measures deemed appropriate in designating successful student achievement shall be used in establishing MPBP criteria. The State Board of Education shall develop the MPBP policies and procedures and report to the Legislature and Governor by December 1, 2006.

Compliance: This detailed plan describing the processes and procedures for designating schools eligible to participate in the MPBA has been developed for presentation to the Legislature and Governor.

Test Scores -- Measures of Student Performance

During 1999 and 2000, new student assessment programs were developed and pilot tested in Mississippi. The assessments were designed to measure the content in the state curriculum frameworks. Beginning in the 2000-2001 school year, those assessments were administered to all students in certain grades or in certain high school courses. The assessment programs include the following tests.

- Mississippi Curriculum Tests (MCT) in reading, language, and mathematics are administered to all students in grades 2 through 8 during early May each school year. The results at grades 3 through 8 are used for accountability (accreditation) purposes.

- The Subject Area Testing Program (SATP) assesses student performance in key high school courses. There are separate tests in Algebra I, Biology I, English II, and U.S. History from 1877 to the present. Students take each test at the end of the corresponding course. All of the above SATP tests are used for accountability (accreditation) purposes.

Measures of School Performance Based on Test Scores

The results of the assessments administered to Mississippi students are reported each year at the state, district, and school levels. The reported statistics include average scale scores, percentages of students scoring in each proficiency level (Minimal, Basic, Proficient, and Advanced) and the percentage of students passing each subject area test. The assessment results are reported separately by subject and grade for the MCT and by course for the SATP. Since each test measures different curriculum content and since the performance standards represent different levels of performance for each test, raw assessment statistics such as scale score means and percentages of students in each proficiency level cannot simply be averaged or otherwise combined across subjects and grades to yield a meaningful school level measure of student performance.

The Mississippi Achievement Model

Based on legislation passed during the 1999 and 2000 regular sessions, Mississippi developed the student assessment program described above and a new school level accountability system based on achievement and growth. The system was piloted in Fall 2002 based on data from the 2000-2001 and 2001-2002 test administrations. The first live school accountability results were approved by the State Board of Education and reported in the fall of 2003.

Since the new accountability system had to yield comparable performance results at the school level, procedures were developed to combine the assessment data appropriately across subject areas and across the grades in each school. The Mississippi Achievement Model calculates the percentage of students scoring in particular ranges in each subject and in each grade on the MCT and in each subject and grade on the SATP. Those separate percentage values are converted to z-score (standardized) equivalents and weighted based on the number of students taking each test. The sum of the weighted standardized percentage values is a school level performance measure that is comparable across schools regardless of the grade configuration. For example, the performance of a K-3 school can be compared to the performance of a 7-8 school even though the student performance data come from different tests.

In order to place each school into an achievement level of 1 through 5, the accountability system must differentiate between schools with very low student performance as well as schools with very high performance. In order to produce accurate measurements at those extremes, the Achievement Model calculates student performance around two separate proficiency points on each test. For determining whether the school is doing an adequate job getting students to a basic level of performance, the percentage of students scoring Basic or above on the MCT or passing the SATP is used. To determine whether the school is doing an adequate job getting students to a high level of performance, the percentage of students scoring Proficient or above on the MCT or scoring at a "higher achievement point" on the SATP is used. The school's measure of basic performance (the basic achievement index – or BAI) determines whether the school's achievement level will be Level 1 or Level 2. The school's measure of higher performance (the higher achievement index – or HAI) determines whether the school's achievement level will be Level 4 or Level 5. If the school's BAI value places it higher than Level 2, but its HAI value is not high enough for Level 4, the school is assigned to Level 3. From 2003 through 2005, each school was simply assigned to one of the five achievement levels for reporting purposes.

The Achievement Level Index (ALI)

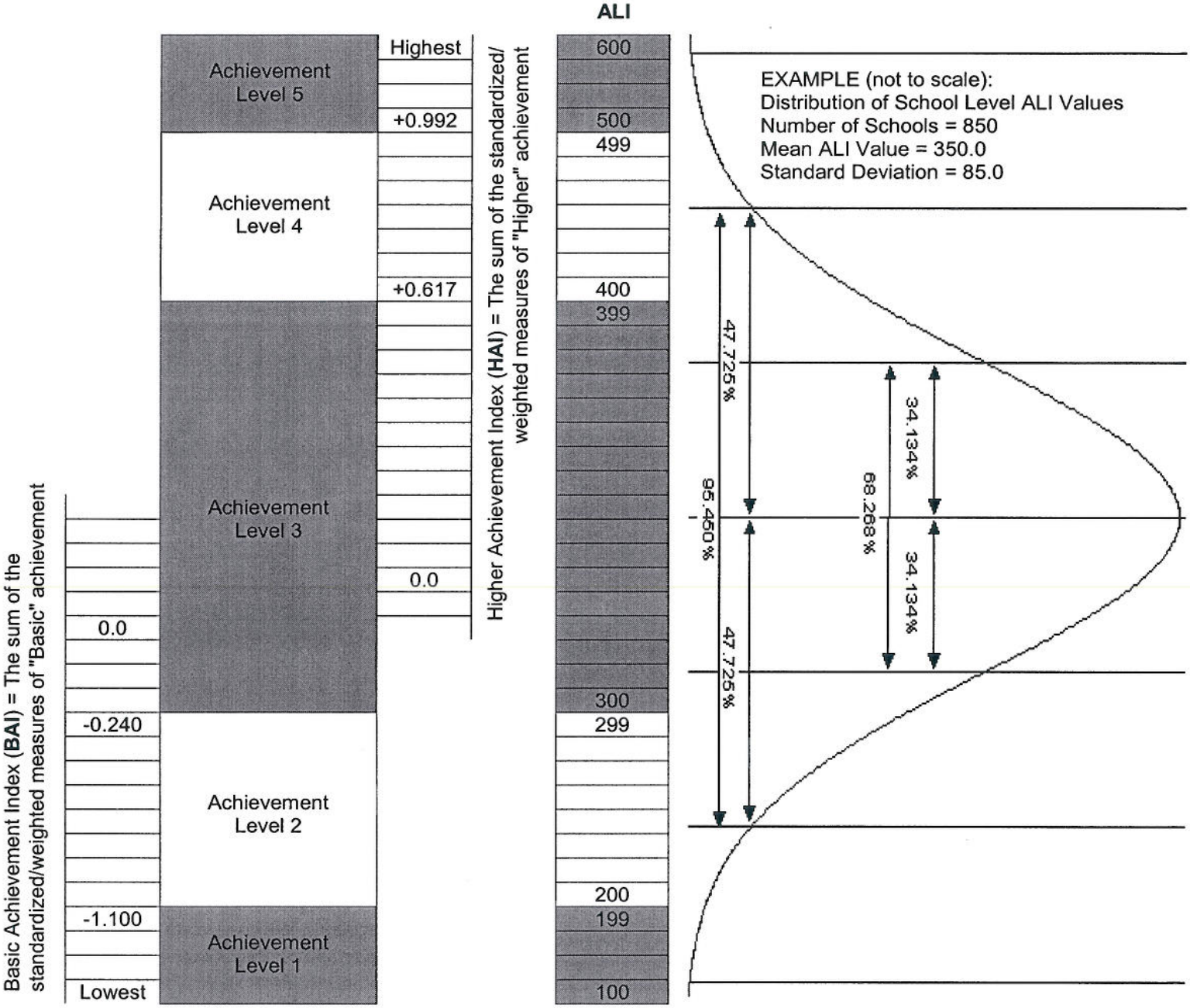
As described above, the Achievement Model uses data from the Mississippi Curriculum Test and the Subject Area Testing Program to calculate a basic achievement index (BAI) and a higher achievement index (HAI). Prior to 2006, each school was assigned an achievement index and a performance classification each consisting of a single value from 1 through 5. There was no finer (more sensitive) measure of school performance.

There are two reasons why a finer measure of school performance is useful. First, a finer measure indicates where a school's performance falls within its assigned achievement level. Second, changes in a finer measure of performance allows a school to gauge its improvement even if it remains in the same achievement level from one year to the next.

The basic elements for producing a finer school performance measure are already calculated within the model – the BAI and HAI values. Figure 1 figure shows how the BAI and HAI values were used to produce a numeric scale onto which a school's performance can be mapped.

Figure 1
The Achievement Level Index

Graphical Illustration of the Mississippi Achievement Model
Showing the Achievement Indexes and the Relationship
of those Scales to the Achievement Level Index (ALI)



Calculation of the Achievement Level Index

The ALI value is computed from the school's achievement level and either its BAI or HAI value. The school performance classification is not used for calculating the ALI. So, the ALI is a measure of student achievement, not a combination of achievement plus growth.

A computer program made a pass through all the schools in achievement levels 1 and 2 and identified the lowest and highest BAI values in each level. The program then made a pass through all the schools in achievement levels 3 through 5 and identified the lowest and highest HAI values in each level. Note: Using the lowest and highest BAI and HAI points from five years (2002 through 2006), fixed range points were established for use beginning in 2007.

The school(s) with the lowest value in each level were assigned an intermediate value of 0 and the school(s) with the highest value were assigned an intermediate value of 99. For achievement level 5, the school(s) with the highest HAI value were assigned an intermediate value of 100.

Schools that did not fall at the lowest or highest BAI or HAI values within their achievement levels were assigned intermediate values using linear interpolation. For example, a school with a BAI/HAI value falling in the middle of the range for all schools in its achievement level was assigned an intermediate value of 50.

The intermediate value was added to a constant representing the school's achievement level – 100 for achievement level 1 schools ... 500 for achievement level 5 schools. The ALI values yielded by this process range from 100 through 199 for achievement level 1 schools ... 500 through 600 for level 5 schools. The ALI range each year is 100 to 600.

The scale produced using this process is a true ordinal scale where higher ALI values represent higher overall school performance. Whereas the separate BAI and HAI scales are linear interval scales in z-score format, the ALI values are linear only within each achievement level grouping (e.g., between 100 and 199, between 200 and 299...). For most purposes, however, the ALI is treated as a linear interval scale.

The ALI value can be used to get a better idea of how each school performed. For example, one school might have an ALI of 310 while another might have an ALI of 390. The school with ALI 390 exhibited higher performance than the school at ALI 310 and very similar performance compared to an achievement level 4 school with an ALI of 400. The ALI provides a finer, more sensitive measure of a school's performance.

Table 1 presents the ALI statistics calculated for schools from 2002 (the pilot year for the Achievement Model) through 2006. The average ALI values for over 800 schools each year show that the values track closely the overall students assessment statistics with large increases in achievement between 2002 and 2003 and between 2003 and 2004 and much smaller increases between 2004 and 2005 and between 2005 and 2006.

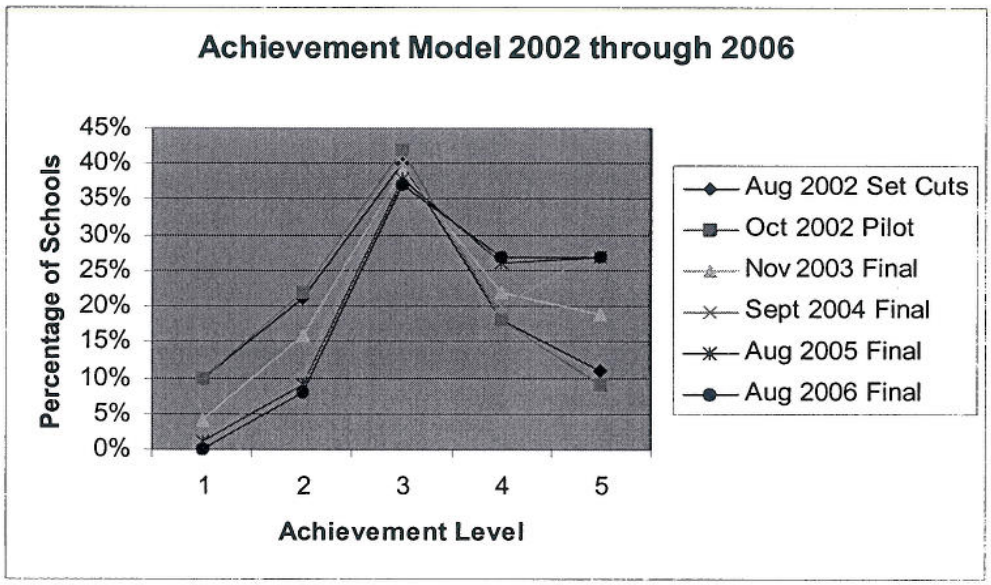
Figure 2 shows how the distribution of schools in each of the achievement levels changed between 2002 and 2006. Because there was an increase in overall school level achievement between 2002 and 2006, the number of schools in the lower achievement levels has decreased while the percentage of schools in the higher achievement levels has increased.

Table 1
School Statistics Based on Achievement Level Index (ALI)[1] Measures

Statistic	2002 School Level ALI Values[2]	2003 School Level ALI Values	2004 School Level ALI Values	2005 School Level ALI Values	2006 School Level ALI Values[3]
N-Count	830 Schools	836 Schools	841 Schools	839 Schools	836 Schools
Mean Value	350.2	385.1	412.7	415.6	417.7
Standard Deviation	107.4	96.7	93.6	90.2	85.1
P80	436	495	510	511	510
P75 (Q3)	409	469	504	503	503
P50 (Median)	365	386	398	400	404
P25 (Q1)	276	341	352	355	359
P20	254	299	337	345	349
+1.0 SD	457	482	506	506	503
+0.5 SD	404	433	460	461	461
Mean	350	385	413	416	418
-0.5 SD	296	337	366	371	375
-1.0 SD	243	288	319	326	333

[1]ALI ranges from 100 to 600 and is derived from a school's Achievement Model BAI and HAI values.
[2]The 2002 values represent results from the pilot run of the Achievement Model in October 2002. The other columns represent final results from the live runs of the model.
[3]The ALI values for 45 schools that were "held harmless" in 2006 are actually from the 2005 final run.

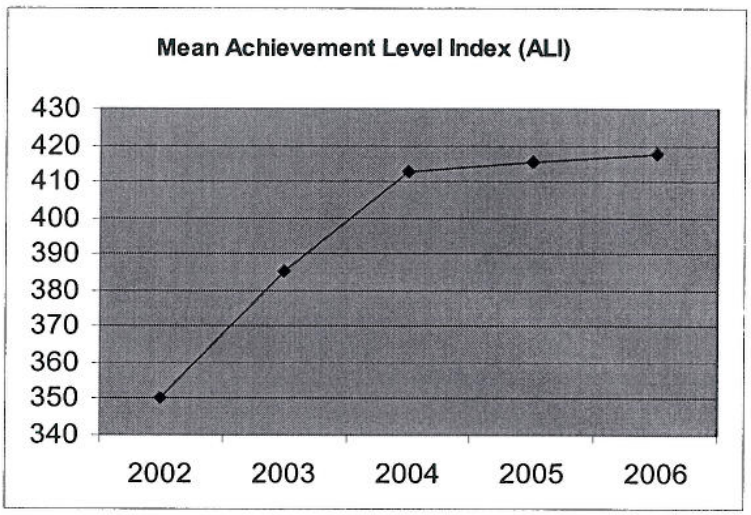
Figure 2



Using the ALI to Measure Changes in School Performance

The data in Table 1 showed how the average ALI value for the schools in Mississippi has increased between 2002 and 2006. This increase is illustrated graphically in Figure 3.

Figure 3



School level changes in ALI values were calculated for each pair of adjacent years and average change (or net change) values were calculated for different multi-year spans (3 years, 4 years). The school level ALI change statistics are presented in Table 2.

Table 2
Statistics for Changes in the Achievement Level Index (ALI) Over Time

Year Spans	Number of Schools	Mean	SD	Minimum	Maximum
One-Year Spans (Change from One Year to the Next)					
2002 to 2003	800	+33.6	56.6	-460	+253
2003 to 2004	812	+28.1	46.6	-156	+231
2004 to 2005	824	+2.1	45.1	-202	+179
2005 to 2006	831	+1.2	43.4	-312	+255
Net Change Over Multi-Year Spans (Over Two Years; Over 3 Years)					
2004 to 2006	822	+1.6	25.2	-98	+103
2003 to 2006	810	+10.4	20.5	-60	+94

If schools are sorted by each of the above change values, approximately the same number of schools will always be found above a selected distribution point (e.g., the 75th percentile), but the change value at the selected point and the actual schools falling above that point will be different.

Using only the most recent one year change value ensures that the maximum number of schools have data (for example, a school that has only been in existence for the last two years would not have a net change value if a two-year span were used), but it maximizes volatility (average changes over multiple years are more stable than simple one year change values).

Using a specific ALI change value (e.g., 10 ALI points or 20 ALI points) for identifying schools eligible to participate in the Mississippi Performance-Based Pay provision would identify different numbers of school each year. Using a specific distribution reference point (e.g., the 75th percentile) would identify approximately the same number of schools each year.

Recommendations

1. Use a distribution point (the 75th percentile) to identify eligible schools.

2. Use a three-year time span (4 consecutive ALI values) to calculate improvement.

3. Begin using the fixed end point (FEP) method rather than the variable end point method (Method 1) for calculating ALI.

4. Incorporate a procedure for recently opened schools with fewer than 4 ALI data points.

   a. For schools with only two ALI values, use a one-year span to calculate improvement.

   b. For schools with only three ALI values, use a two-year span to calculate improvement.

   c. Note and examine any results based on one-year or two-year time spans.

5. **Incorporate a procedure to ensure that ceiling effects do not make it more difficult or impossible for the highest performing schools to meet MPBP eligibility criteria.**

   a. Set a cut point at 600 minus the mean multi-year ALI growth value.

   b. Decrease the cut point by one standard error of the mean (in ALI average growth units).

   c. For schools with ALI value in the first year of the multi-year span at or above the cut point, use a percentage of difference reduction to determine eligibility.

6. Timing of Implementation

   a. Legislature appropriates funds for MPBP (January-May).

   b. Preliminary accountability results are mailed to districts (late July).

   c. Eligible schools are identified based on ALI values approved by the State Board of Education (early September).

   d. Funds are distributed to districts.

7. Distribution of Available Funds

   To ensure equity in distributing funds appropriated for the MPBP [subparagraph (4)(a)(ii)], total staff FTE counts across all eligible schools will be summed and each school will receive a proportion of funds corresponding to the proportion of the grand total FTE represented by the school's total FTP count.

Mississippi Performance-Based Pay (MPBP) Plan

December 1, 2006
[Revised: February 2, 2007]
Mississippi Department of Education

Mississippi Code 1972, § 37-19-7 was amended during the 2006 regular session as follows:

(4) (a) This section shall be known and may be cited as the "Mississippi Performance Based Pay (MPBP)" plan. In addition to the minimum base pay described in this section, **only after full funding of MAEP and if funds are available for that purpose**, the State of Mississippi may provide monies from state funds to school districts for the purposes of rewarding certified teachers, administrators and nonlicensed personnel at individual schools showing improvement in student test scores. The MPBP plan shall be developed by the State Department of Education based on the following criteria:

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(b) The State Board of Education shall develop the processes and procedures for designating schools eligible to participate in the MPBP. State assessment results, growth in student achievement at individual schools and other measures deemed appropriate in designating successful student achievement shall be used in establishing MPBP criteria. The State Board of Education shall develop the MPBP policies and procedures and report to the Legislature and Governor by December 1, 2006.

The following are recommendations for implementing the Mississippi Performance-Based Pay (MPBP) Plan.

The plan shall be based on results from the annual run of the Achievement Model component of the Statewide Accountability System. The Achievement Level Index (ALI) yielded by the model comprises a suitable scale for determining school level student performance and increases in student performance over time as measured by the statewide assessment programs.

1. Use a distribution point (the 75th percentile) to identify eligible schools.

2. Use a three-year time span (4 consecutive ALI values) to calculate improvement.

3. Begin using the fixed end point (FEP) method rather than the variable end point method (Method 1) for calculating ALI.

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   a. Set a cut point at 600 minus the mean multi-year growth value.

   b. Decrease the cut point by one standard error of the mean (in ALI growth units).

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