

Three-Year Exit Criteria for Schools Placed in Level 4: Guidance and Methodology

Measurable Annual Goals

In accordance with the regulations governing district and school accountability and assistance (603 CMR 2.00), the Massachusetts Department of Elementary and Secondary Education (ESE) has established the following academic exit criteria¹ for Level 4 schools:

- 1) Increase the Composite Performance Index (CPI) in English language arts (ELA) and mathematics in the aggregate and for all high-needs students² over a three-year period.
 - a) Level 4 elementary and middle schools shall increase the CPI comparable to the improvement that the top 30 percent of improving schools made statewide between 2006 and 2009.
 - b) Level 4 high schools shall increase the CPI comparable to the improvement that the top 40 percent of improving schools made statewide between 2006 and 2009.
- 2) Decrease the percentage of students scoring Warning/Failing on standard MCAS tests in ELA and mathematics in the aggregate and for all high-needs students over a three-year period.
 - a) Level 4 elementary and middle schools shall decrease the percentage of students scoring Warning/Failing on standard MCAS tests comparable to the improvement that the top 30 percent of improving schools made statewide between 2006 and 2009.
 - b) Level 4 high schools shall decrease the percentage of students scoring Warning/Failing on standard MCAS tests comparable to the improvement that the top 40 percent of improving schools made statewide between 2006 and 2009.
- 3) Achieve and maintain a median student growth percentile (SGP) of 40 or higher in ELA and mathematics in the aggregate and for all high-needs students within three years; and
- 4) Level 4 high schools shall meet the Commonwealth's 2012 graduation rate target (75% 4-year rate, or improvement in the 4-year rate of at least 2 percentage points, or a 80% 5-year rate) for all student groups required under the No Child Left Behind Act (NCLB).

¹The regulations also propose "a measure of postsecondary success, once ESE identifies one that is sufficiently reliable, valid, and timely" as an exit criterion. ESE has not yet determined such a measure.

²A high-needs student is defined as a student belonging to one or more of the following groups: special education, eligibility for free or reduced-price lunch, limited English proficient (LEP), and students who, according to district SIMS reports from the past two years (going back to October 2006), have progressed to a point where they can perform ordinary classroom work in English ("formerly LEP").

Frequently Asked Questions

1. What is a “Level 4” school? How were they identified?

A Level 4 school is an “underperforming” school and is both low performing on MCAS over a four year period (in both ELA and mathematics) and not showing signs of substantial improvement over that time. “Level 4” refers to the placement of those schools in the Commonwealth’s Framework for District Accountability and Assistance.

A school is eligible for placement in Level 4 if it scored in the lowest 20 percent of schools statewide, taking into account multiple measures of school performance, including: MCAS performance, CPI, the percentage of students scoring Warning/Failing on MCAS, growth, graduation and dropout rates, and other indicators. Additionally, schools designated by the Board as chronically underperforming prior to 2010 are also eligible for placement in Level 4. A total of 35 schools were placed in Level 4 in 2010 based on these criteria.

More information about Level 4 Schools can be found at:

<http://www.doe.mass.edu/sda/framework/level4/>

2. Why were CPI, MCAS, growth, and graduation rates selected as academic exit criteria for Level 4 schools?

State and federal regulations require multiple measures for gauging the performance and improvement of the Commonwealth’s lowest performing schools, including progress in areas of academic underperformance, and progress among historically disadvantaged subgroups of students.

CPI, MCAS, and growth measure school performance on different dimensions: the CPI rewards improvement from one MCAS performance level to the next, with a particular emphasis on all students reaching grade-level proficiency; declines in MCAS failure rates indicate the extent to which a school is supporting its neediest students; growth, a norm-referenced measure, shows how much groups of students in the school grew from one year to the next as compared to students and schools with similar MCAS performance histories; and the high school graduation rate is an important indicator of the degree to which the school is preparing its students for college and beyond. Taken as a whole, progress on these measures is compelling evidence that students have had equitable access to high quality learning opportunities and are being sufficiently prepared for school and post-secondary success.

For details on how the CPI is calculated, refer to the *School Leader's Guide to the 2009 Adequate Yearly Progress Reports* at www.doe.mass.edu/sda/ayp/2009/default.html.

3. Are these schools expected to show progress on additional indicators in order to exit Level 4 status?

Yes. Level 4 schools are expected to show progress in implementing the conditions for school effectiveness as described in state regulations, and the local school district must also demonstrate that it has the capacity to continue making progress in sustaining school performance.

4. What student groups in Level 4 schools are required to meet the goals?

Each Level 4 school is required to meet three-year goals with respect to CPI, MCAS, and growth for the school’s overall population (“the aggregate”) and for the school’s high-needs

students, defined as any student receiving special education services, any student eligible for free or reduced-price lunch, or any student with limited English proficiency (LEP). Goals are calculated in the aggregate if there are at least 20 students, and goals are calculated for high-needs students if the group consists of 40 students or more.

Each Level 4 high school is also required to meet a three-year goal with respect to graduation rates. Goals are calculated for groups of 6 or more students belonging to the following groups: students with disabilities, students with limited English proficiency, economically disadvantaged students (eligible for free/reduced price school lunch), and African American/Black, Hispanic, Asian, White, and Native American students.

For details on how graduation rates are calculated, refer to the *School Leader's Guide to the 2009 Adequate Yearly Progress Reports* at www.doe.mass.edu/sda/ayp/2009/default.html.

For information on the graduation rate standard adopted by the Massachusetts Board of Elementary and Secondary Education, refer to the December 15, 2009 Board Minutes at www.doe.mass.edu/boe/minutes/09/1215reg.doc.

5. Why aren't the goals for CPI, MCAS, and growth set for specific racial and ethnic groups?

ESE's analyses determined that a high-needs student is more likely to score below proficient on MCAS tests than a non-White student. When a school is making progress with respect to its high-needs students, it benefits all students who are most likely to be below proficient, regardless of their racial or ethnic background.

The academic progress of a school's high-needs students is a key indicator of the extent to which the school has addressed achievement gaps among different groups of historically disadvantaged students and between high-needs students and all students statewide.

For high school graduation rates, goals are set for all groups required under NCLB, including racial and ethnic groups.

6. How were the goals set for Level 4 schools?

ESE used a statistical analysis technique called linear regression to predict how much a Level 4 school with a given starting point should improve over three years based on the actual improvement of schools statewide in the prior three years. Unlike those schools, however, the performance of Level 4 schools remained flat or declined. Level 4 schools are therefore required to reach goals that have been attained by other schools.

Because the model uses an equation that accounts for the improvement made by hundreds of aggregate and high-needs groups, ESE can set goals for student groups at every performance level with a degree of precision that is not possible using other approaches, even though they may be simpler to understand.

7. In setting goals for Level 4 schools, how many schools statewide were they compared against?

The goals for Level 4 elementary and middle schools are based on the improvement that the aggregate and/or high-needs groups in hundreds of schools statewide made between 2006 and 2009 at the 70th percentile, and the goals for Level 4 high schools are based on comparison schools at the 60th percentile. In other words, if a school's aggregate or high-needs group were among the top 30 or 40 percent, respectively, of all improving groups

statewide between 2006 and 2009, those schools were included in the comparison.

8. Why does each Level 4 school have separate goals for ELA and mathematics? Why not set an absolute goal, such as requiring all Level 4 schools to have a certain percentage of all students scoring Proficient by 2012?

Level 4 schools are required to reach goals that have been attained by other schools, because they were based on the improvement that schools serving groups of students with comparable starting points as the Level 4 schools made in ELA and mathematics, respectively, over three years. Moreover, only the most improved schools were included in the comparison group; as such, the goals Level 4 schools are expected to reach are not just attainable, but ambitious as well.

9. Why were just improving schools included in the comparison group for Level 4 schools? Why not base the improvement that Level 4 schools need to make on all schools in the state?

Level 4 schools are being compared to schools that improved in the past because the expectation is that given increased resources, flexibility, and accountability, Level 4 schools will make gains as much as schools that improved in the absence of those supports.

10. In developing the list of comparison schools, why weren't the Level 4 elementary schools compared to just elementary schools in the comparison group, Level 4 middle schools to other middle schools, and Level 4 high schools to other high schools?

ESE decided against indexing the performance of Level 4 elementary, middle, and high schools to “non-Level 4” elementary, middle, and high schools for three reasons: First, although ESE will often classify schools as elementary, middle, or high for various reporting purposes, there is in fact an enormous diversity of grade configurations, making it difficult to determine what the “cut-off” should be in terms of grades served. Second, because there are fewer high schools in the Commonwealth than other types of schools, the chance for measurement error in setting targets for the Level 4 high schools is increased if they are only being compared to other high schools. Also, because the Commonwealth’s high schools tend to be higher performing than other types of schools between 2006 and 2009, there would be very few similarly low performing high schools to serve as a comparison group for the Level 4 high schools. Third, including as many aggregate and high-needs groups as possible in the regression model increases the validity of the model because the model is based upon the improvement made by hundreds of groups ELA and mathematics.

11. Are these goals ambitious?

Yes. ESE defines ambitious to mean that Level 4 schools are expected to improve, at a minimum, as much as the top 30 or 40 percent of improving schools, depending on whether they are elementary/middle or high schools.

Level 4 schools are not expected to improve as much as the “average” school; in fact, the standards are higher—Level 4 schools are compared against only those schools statewide that showed improvement over the last three years, not all Massachusetts schools.

Level 4 schools were designated because their performance either declined and/or remained unacceptably low over the past four years—at a time when many other schools did improve. A Level 4 school that meets its three-year goals will still have work to do. However, in meeting these goals, it helps signify that the district and the school have made

demonstrable steps providing a high quality education for all students, particularly its neediest students.

12. Are these goals attainable?

Yes. These goals have been achieved by other schools, many of which serve similar student populations. Specifically, 31 elementary/middle schools and 6 high schools met all of the Level 4 exit criteria between 2006 and 2009; of those, 26 of the elementary schools and 2 of the high schools are located in the Commonwealth's urban districts.

13. Why are the CPI and MCAS goals for Level 4 elementary/middle schools compared against the top 30 percent of improving schools and the goals for Level 4 high schools compared against the top 40 percent of improving schools?

All of the high schools that meet the goals at the 70th percentile or higher were vocational-technical schools. ESE selected the 60th percentile as the criterion for the Level 4 high schools because these goals were met by "traditional" high schools as well. Moreover, unlike the Level 4 elementary and middle schools, Level 4 high schools must also make AYP for the graduation rate standard for all reportable groups under NCLB by the third year.

14. What is the timeline by which Level 4 school will be expected to improve?

Level 4 schools are expected to improve over a three year period. As such, each Level 4 school is assigned a three-year target and interim annual targets. These interim targets will help ESE, educators, and the public to determine whether the school is on track toward meeting their three-year goals and to make adjustments, as needed, if performance in an intermediate year falls below expectations³.

15. Students in Level 4 schools will have already taken the spring 2010 MCAS by the time these goals take effect. Moreover, some of these schools have yet to implement interventions. How will the 2010 performance of these schools affect the goal?

In some cases, local school districts have already taken steps to improve teaching and learning in Level 4 schools. If such a school showed improvement in 2010, then the district may count that improvement toward achieving the school's three-year goal by the year 2012. If a Level 4 school performed lower in 2010 than in 2009, then the goal may be extended to the year 2013 to allow its reforms to take effect.

16. Why is growth included as an exit criterion for Level 4 schools?

Unlike annual MCAS scores and the CPI figures used in AYP determinations, which compare the performance and improvement of students belonging to separate cohorts, growth measures the extent to which students in a school, grade, or group perform from one year to the next with respect to students with the same or similar "score histories" (scores in previous years). Also unlike MCAS scores and CPI, the Commonwealth's growth model measures student growth everywhere on the MCAS performance scale, from top to bottom. All schools have the opportunity to show growth, regardless of their students' academic background or current level of performance.

³ Please note that while the final three-year targets are calculated precisely using the methodology set forth below, interim annual targets are determined by dividing the targets into three annual increments and are rounded to the nearest tenth.

Although Massachusetts has only two years of growth data, the model used by the Commonwealth is six years old and was devised by teachers' unions and other stakeholder groups to put all teachers, schools, and districts on the same footing regardless of the students they serve. Regardless of what student walks in the door in September, a school has an equal chance to help a student reach the 1st or the 99th percentile—this would not be the case with CPI, MCAS, or any other current measure of academic performance.

17. How is the growth model, which is norm-referenced, compatible for use with MCAS, a criterion-referenced test?

Because growth scores compare the MCAS scores from one year to another at the student level, it is completely compatible with MCAS, a criterion referenced test, because growth accounts for the fact that MCAS has different criteria at different grades. Assuming the MCAS score for a given student is valid, then the change in MCAS scores at the student level is also valid.

18. With respect to the growth criterion, Level 4 schools are expected to achieve and maintain “only” moderate growth (a median SGP of 40 or higher) each year. Why is that?

Level 4 schools are expected to demonstrate improved performance on a range of metrics, including growth. A school that is meeting its performance expectations with respect to the CPI and MCAS measures that is also demonstrating moderate growth is one that is performing—and improving—at least as well as the typical Massachusetts school, if not more.

19. Will goals be reassigned to a Level 4 school if the school splits, merges with another school, or otherwise undergoes changes to student enrollment or grade configuration?

Yes. If a Level 4 school is reconfigured, to the extent feasible ESE will use existing data to establish baseline performance against which the goals can be measured. For example, if a school serving students in grades 3-8 in 2010 serves students only in grades 3-5 in 2011, ESE will recreate the school's 2010 baseline performance data to reflect the new grade configuration and thus measure improvement by comparing 2011 grade 3-5 data against 2010 grade 3-5 performance data.

20. Where can I find more information on the Framework for District Accountability and Assistance?

Please visit ESE's website at <http://www.doe.mass.edu/sda/framework/default.html>.

Detailed Methodology for Establishing CPI and MCAS Goals

Step 1: Create a “high-needs” student group for each Massachusetts school

1. In the 2006 and 2009 student-level Megafiles, ESE identified students belonging to one or more of the following groups: special education, eligibility for free or reduced-price lunch, and limited English proficient (LEP).⁴
2. ESE created a “high-needs” group for each school with 40 or more students belonging to the above categories who were enrolled in the school for the full academic year in 2006 or 2009 and who were assessed on standard MCAS tests.

Step 2: Calculate the percentage of students scoring Warning/Failing and a CPI for each school’s aggregate and high-needs group

3. At the school level, ESE calculated the percentage of students scoring Warning/Failing in 2006 and 2009 on standard MCAS tests for each school’s aggregate and high-needs group. ESE performed this calculation separately for ELA and mathematics, and excluded the scores of students taking the MCAS Alternate Assessment. ESE performed this analysis for all schools in the Commonwealth, including Level 4 schools.
4. ESE calculated the CPI for each school’s aggregate and high-needs group. ESE performed this calculation separately for ELA and mathematics, included the CPI points generated by students taking the MCAS Alternate Assessment. ESE performed this analysis for all schools in the Commonwealth, including Level 4 schools.

Step 3: Generate a list of comparison schools

5. ESE generated a list of schools meeting the following criteria: The school had to be open from 2006 to 2009; carry the same school code from 2006 to 2009; receive an AYP determination for at least one subject from 2006 to 2009; and not be an Early Childhood Center (ECC) in 2009.
6. ESE merged in the aggregated data from Step 2 above. Each school had two lines of data: aggregate and high-needs.
7. ESE removed four schools that were reconfigured in 2006 or 2009 [Cobbet Elementary (01630035), Station Avenue Elementary (06450025), Benjamin Banneker Charter School (04200205), and Media and Technology Charter School (04690505)].
8. ESE filtered out schools that did not assess at least 20 students in the aggregate and filtered out any high-needs group with less than 40 students assessed.
9. ESE calculated the change in the percentage of students scoring Warning/Failing on MCAS for the aggregate and high-needs groups and the change in CPI from 2006 to 2009.

Step 4: Calculate Measurable Annual Goals for CPI

10. Using the list of comparison schools generated in Step 3, ESE identified aggregate and

⁴ In addition to LEP students, the LEP group includes students who, according to district SIMS reports from the past two years (going back to October 2006), have progressed to a point where they can perform ordinary classroom work in English (“formerly LEP”).

high-needs groups in those schools that showed improvement in the CPI between 2006 and 2009.

11. Among all of the groups that improved between 2006 and 2009, ESE identified only those groups whose improvement placed them at the 60th percentile or higher (for high schools) and at the 70th percentile or higher (for elementary/middle schools).
12. ESE used a linear regression model where the independent variable was each group's 2006 CPI and the dependent variable was the 2006 to 2009 CPI change figure.

Regression analysis generates a line that establishes a relationship between a dependent variable and an independent variable. A straight line is drawn through the set of points in such a way that makes the sum of squared residuals of the model (the vertical distances between the points of the data set and the fitted line) as small as possible. The resulting equation for the slope of the line allows one to calculate the observed amount of improvement for any given unit of performance.

In this case, ESE wanted to understand the relationship between a school's performance in 2006 and the change in performance between 2006 and 2009. Because ESE selected for the sample only those student groups that improved between 2006 and 2009, for every unit of performance *P*, there is a corresponding and positive unit of improvement *I*. It can also be deduced that, most of the time, schools with lower performance in 2006 tended to improve more between 2006 and 2009 than schools with comparatively higher performance in 2006.

ESE used the regression equations generated from the 60th and 70th percentile analyses to calculate the three-year CPI achievement goal for Level 4 high schools and elementary/middle schools, respectively. This calculation was performed separately for ELA and mathematics.

Step 5: Calculate Measurable Annual Goals for MCAS

13. Using the list of comparison schools generated in Step 3, ESE identified aggregate and high-needs groups in those schools that decreased the percentage of students scoring Warning/Failing between 2006 and 2009.
14. Among all of the groups that decreased the percentage of scoring Warning/Failing between 2006 and 2009, ESE identified only those groups whose percentage point decrease placed them at the 60th percentile or higher (for high schools) and at the 70th percentile or higher (for elementary/middle schools).
15. ESE used a linear regression model where the independent variable was each group's 2006 percentage of students scoring Warning/Failing and the dependent variable was the 2006 to 2009 change in percentage of students scoring Warning/Failing.

ESE used the regression equations generated from the 60th and 70th percentile analyses to calculate the three-year MCAS goal for Level 4 high schools and elementary/middle schools, respectively. This calculation was performed separately for ELA and mathematics.