

## FCAT 2.0 Science, Biology 1 End-of-Course Assessment, and Geometry End-of-Course Assessment Standard Setting Detailed Summary

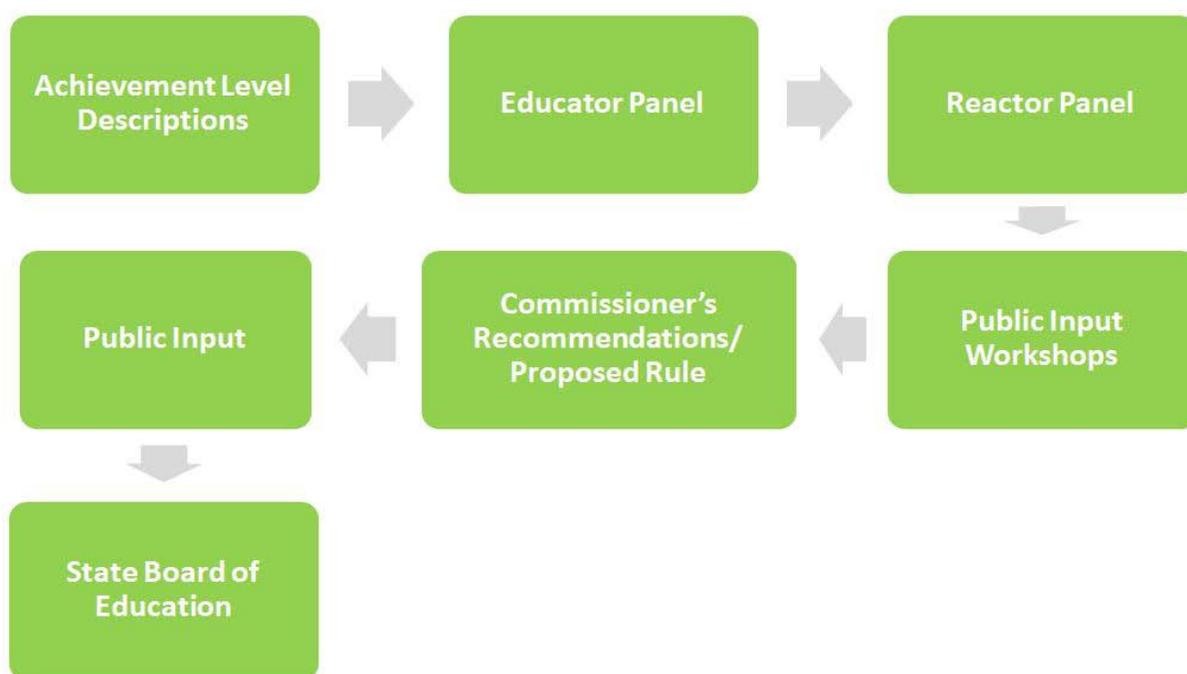
Florida is transitioning from the FCAT to the FCAT 2.0 and Florida End-of-Course (EOC) Assessments, which measure student achievement of the Next Generation Sunshine State Standards (NGSSS). Implementing assessments for the first time requires setting standards.

The basic steps of setting standards are as follows:

1. Develop a policy definition describing the meaning of each Achievement Level.
2. Develop Achievement Level Descriptions (ALDs).
3. Convene a standard-setting panel composed of educators (“Educator Panel”) to propose cut scores for the Achievement Levels.
4. Convene a business and policy leader reactor panel (“Reactor Panel”) to review the proposed cut scores.
5. Obtain State Board of Education approval of cut scores with public input.

This overview is intended to provide information from the Educator Panel and the Reactor Panel in preparation for the rule development workshops and the State Board of Education meeting on December 12, 2012. Updated information will be posted to the [FDOE Standard Setting website](#).

The following flow chart illustrates the basic process of standard setting. (The flow chart was updated on 11/20/2012 to reflect that the Commissioner solicited public feedback prior to making her recommendations.)



## Policy Definitions

Policy definitions provide a general statement of the policy goals for each Achievement Level and are aligned with the purpose of the assessment and the statutory requirements related to Achievement Levels. Rather than detailing content-specific information about what a student should know, policy definitions encompass student performance goals at each Achievement Level for all grade levels and subject areas. The approved policy definitions are provided in Exhibit 1.

### Exhibit 1. Approved Achievement Level Policy Definitions

FCAT 2.0 and Florida End-of-Course Assessments Achievement Level Policy Definitions	
<b>Level 5</b>	Students at this level demonstrate mastery of the most challenging content of the <i>Next Generation Sunshine State Standards</i> .
<b>Level 4</b>	Students at this level demonstrate an above satisfactory level of success with the challenging content of the <i>Next Generation Sunshine State Standards</i> .
<b>Level 3</b>	Students at this level demonstrate a satisfactory level of success with the challenging content of the <i>Next Generation Sunshine State Standards</i> .
<b>Level 2</b>	Students at this level demonstrate a below satisfactory level of success with the challenging content of the <i>Next Generation Sunshine State Standards</i> .
<b>Level 1</b>	Students at this level demonstrate an inadequate level of success with the challenging content of the <i>Next Generation Sunshine State Standards</i> .

## Achievement Level Descriptions

Once the policy definitions are established, the next step in the process is to develop the Achievement Level Descriptions (ALDs). Because policy definitions are very general statements that do not include information about subject-area content, the creation of ALDs enables the translation of policy definitions into detailed descriptions of the knowledge and skills that a student needs to be able to achieve at each level. Whereas the policy definitions apply to all grade levels and subject areas, the ALDs are grade-level and subject-matter specific.

The Department convened groups of Florida educators to draft the new ALDs in September 2011. The process for producing these drafts included a thorough review of the assessed NGSSS and the test item specifications for each grade level and subject area. The committees then developed descriptions of the knowledge and skills of students at each Achievement Level, aligned to the policy definitions, and worked to show progressions across levels within each grade. The ALDs were posted for a 30-day public review and comment period, which ended on June 21, 2012. Public feedback was considered and small modifications were made prior to their use for the standard setting meetings in September.

## Educator Panel

On September 18-21, 2012, the Department convened a panel of Florida educators to serve on the following committees:

- Grade 5 FCAT 2.0 Science (19 panelists)
- Grade 8 FCAT 2.0 Science (18 panelists)
- Biology 1 EOC Assessment (18 panelists)
- Geometry EOC Assessment (20 panelists)

Demographic information for the Educator Panel is provided in Exhibits 2 and 3.

**Exhibit 2. Educator Panel Gender and Race/Ethnicity**

	Male	Female	White	African American	Native American	Asian	Hispanic	Not Reported
Grade 5 FCAT 2.0 Science	1	18	13	3	0	0	2	1
Grade 8 FCAT 2.0 Science	4	14	12	3	0	0	3	0
Biology 1 EOC Assessment	7	11	13	2	0	1	2	0
Geometry EOC Assessment	6	14	16	3	0	0	1	0

**Exhibit 3. Educator Panel District Size and Region**

	District Size: Large	District Size: Medium	District Size: Small	Region: North	Region: South	Region: East	Region: West	Region: Central	Region: Not Reported
Grade 5 FCAT 2.0 Science	9	4	6	1	4	1	5	8	0
Grade 8 FCAT 2.0 Science	8	5	5	4	4	3	4	3	0
Biology 1 EOC Assessment	6	8	4	3	6	0	4	5	0
Geometry EOC Assessment	10	7	3	2	8	0	5	4	1

The purpose of these committees is to identify the “cut points” that define the new Achievement Levels (i.e., level 1/2 cut, level 2/3 cut, level 3/4 cut, level 4/5 cut). The focus of this panel was to make content-based judgments. Each panelist used his or her experience as an educator along with the Achievement Level Descriptions and the spring 2012 assessments to make four rounds of judgments.

- **Round 1:** Panelists made independent percent-correct judgments on each item, for each cut point. (Given the knowledge, skills, and abilities that are required in this question, what percentage of “just barely” students at this Achievement Level should get this item correct?) Data were provided for each panelist and for the table. Each table discussed the items with the largest range of judgments, as well as the empirical difficulty of each item.
- **Round 2:** Panelists independently revised judgments based on the discussion from Round 1. Committee-level data for Round 2 were provided, in addition to individual and table-level data. Each table discussed the items with the largest range of judgments, and then the committee discussed the items with the largest range of judgments.
- **Round 3:** Panelists independently revised judgments based on the discussion from Round 2. In addition to the same type of data provided in Rounds 1 and 2, the committee received impact data (the percentage of the spring 2012 testing population classified into each achievement level based on the committee’s recommended cut scores). The committee discussed the impact data and the items with the largest ranges of judgments.
- **Round 4:** Panelists independently revised judgments based on the discussion from Round 3 and the impact data to provide their final judgments. Each committee was then shown its final recommended cut scores and impact data based on the total population and by subgroup.

**Educator Panel Proposed Cut Scores**

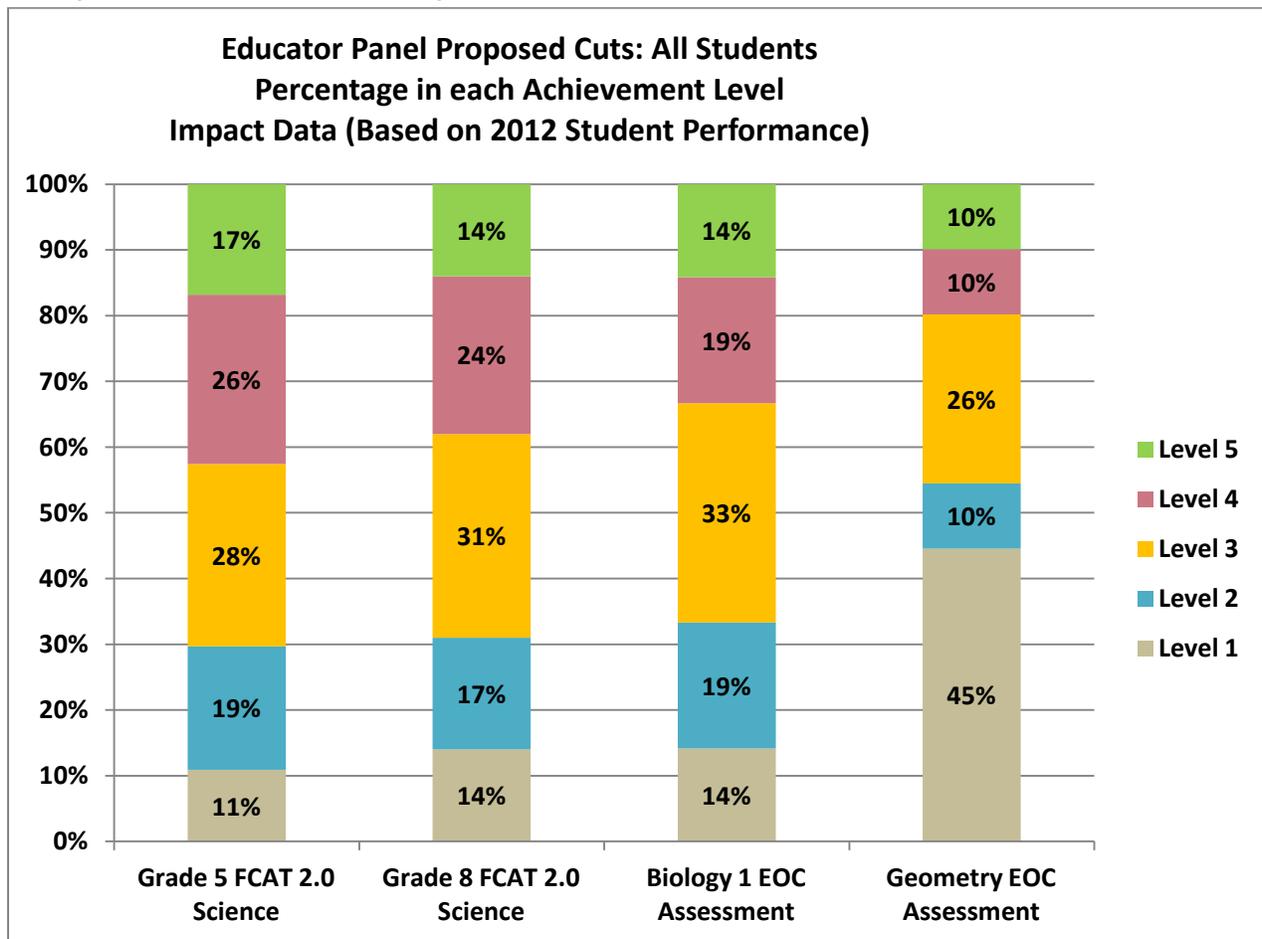
Based on the four rounds, the Educator Panel proposed the following cut scores for the five Achievement Levels (see Exhibit 4). The impact data of these proposed cuts is provided in Exhibit 5 and was generated by applying the proposed cut scores to actual student performance from the spring 2012 administration.

**Exhibit 4. Educator Panel Proposed Cuts and Judgment Variation Bands\***

Cut Point	Grade 5 FCAT 2.0 Science		Grade 8 FCAT 2.0 Science		Biology 1 EOC Assessment		Geometry EOC Assessment	
	Scale Score Cuts	Judgment Variation +/- 2 SE	Scale Score Cuts	Judgment Variation +/- 2 SE	Scale Score Cuts	Judgment Variation +/- 2 SE	Scale Score Cuts	Judgment Variation +/- 2 SE
Level 1/2 Cut	175	163-187	177	163-191	369	341-397	396	384-408
Level 2/3 Cut	190	178-202	191	179-203	389	369-409	403	391-415
Level 3/4 Cut	205	193-217	208	198-218	413	399-427	423	413-433
Level 4/5 Cut	221	207-235	223	211-235	428	414-442	434	420-448

\*Judgment variation is also referred to as Standard Error of Judgment (SE). These bands were provided to the Reactor Panel as a recommended boundary for their modifications based on standard-setting research and best practices.

**Exhibit 5. Impact Data for Educator Panel Proposed Cuts**



## Reactor Panel

On September 27-28, 2012, the Department convened a panel of Florida stakeholders (e.g., community/education organization leaders, state university leaders, business leaders, superintendents) to react to the Educator Panel’s proposals and to modify the proposed cut scores, if necessary. The meeting began with an overview of the standard-setting process and a debrief of the Educator Panel. Three members from the Educator Panel presented on their experience the previous week and were available to answer questions. The Reactor Panel reviewed the tests and practiced the judgment process used by the Educator Panel. While the Educator Panel made content-based judgments, the Reactor Panel was asked to focus on the impact of the proposed cut scores using impact data based on 2012 student performance and data from external assessments (NAEP, PSAT, SAT, PLAN, and ACT, in addition to FCAT 2.0 Reading and Mathematics and Algebra 1 EOC Assessment). The Reactor Panel discussed the cut scores and the judgment variation from the Educator Panel and then provided independent ratings for any modifications to the cut scores as their Round 1 judgments. The Reactor Panel was given the judgment variation score ranges (see Exhibit 6), which are based on standard-setting best practices, as suggested boundaries for their recommendations. Next, the Reactor Panel reviewed the median cut scores from their Round 1 recommendations and impact data and was given an opportunity to model any changes to the cut scores. Before leaving, panelists completed a final survey to indicate their final judgments for the cut scores.

### Reactor Panel Proposed Cut Scores

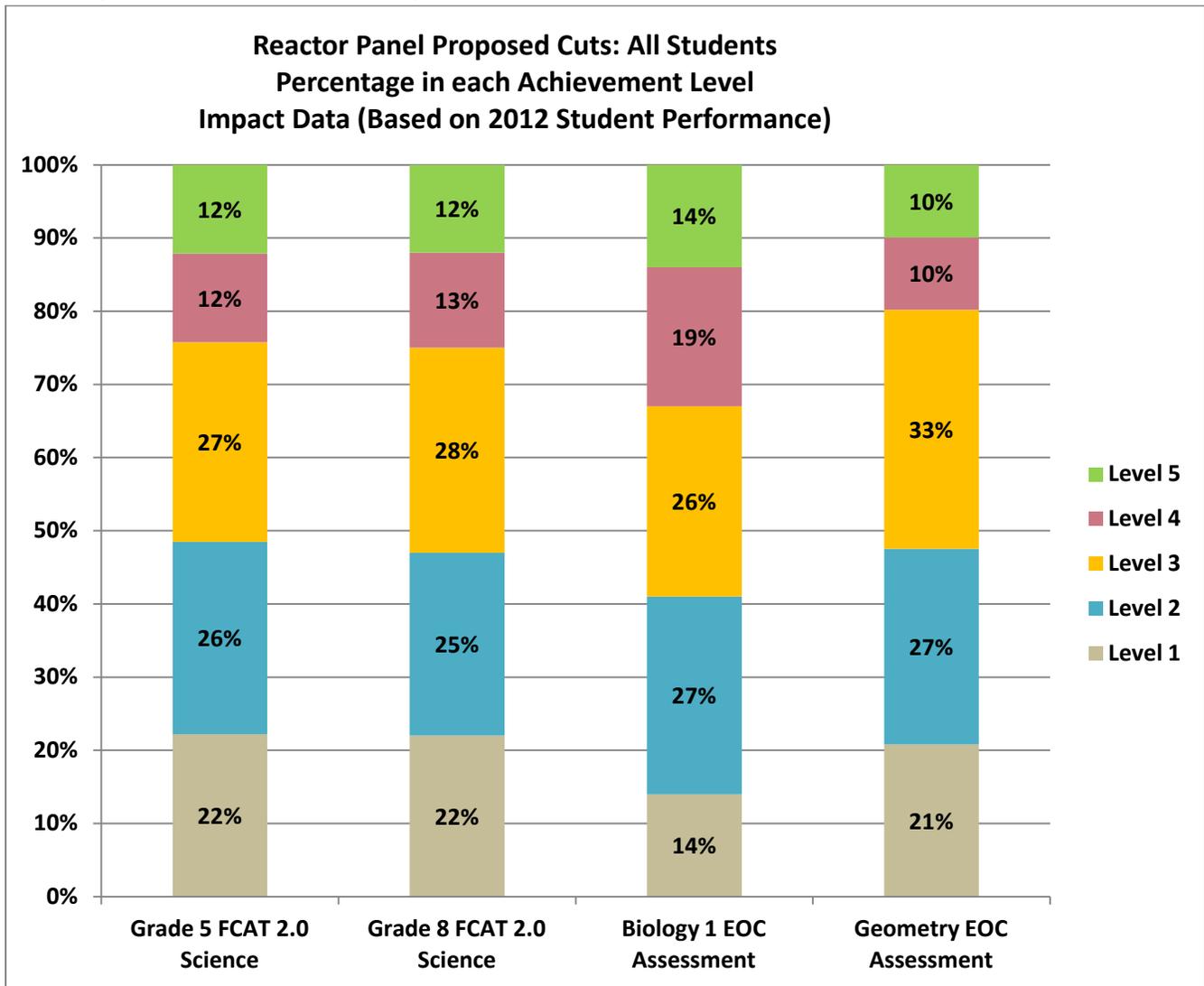
Exhibits 6 and 7 provide the final proposed cut scores and the impact data of those proposed cuts from the Reactor Panel.

**Exhibit 6. Educator Panel Proposed Cuts, Reactor Panel Proposed Cuts, and Educator Panel Judgment Variation Bands\***

Cut Point	Committee	Grade 5 FCAT 2.0 Science		Grade 8 FCAT 2.0 Science		Biology 1 EOC Assessment		Geometry EOC Assessment	
		Scale Score Cuts	Judgment Variation +/- 2 SE	Scale Score Cuts	Judgment Variation +/- 2 SE	Scale Score Cuts	Judgment Variation +/- 2 SE	Scale Score Cuts	Judgment Variation +/- 2 SE
Level 1/2 Cut	Educator Panel	175	163-187	177	163-191	369	341-397	396	384-408
	Reactor Panel	185	N/A	185	N/A	369	N/A	377	N/A
Level 2/3 Cut	Educator Panel	190	178-202	191	179-203	389	369-409	403	391-415
	Reactor Panel	200	N/A	200	N/A	395	N/A	398	N/A
Level 3/4 Cut	Educator Panel	205	193-217	208	198-218	413	399-427	423	413-433
	Reactor Panel	215	N/A	215	N/A	413	N/A	423	N/A
Level 4/5 Cut	Educator Panel	221	207-235	223	211-235	428	414-442	434	420-448
	Reactor Panel	225	N/A	225	N/A	428	N/A	434	N/A

\*Judgment variation is also referred to as Standard Error of Judgment (SE). These bands were provided to the Reactor Panel as a recommended boundary for their modifications based on standard-setting research and best practices.

Exhibit 7. Impact Data for Reactor Panel Proposed Cuts



### Next Steps: Rule Development Workshops and the Commissioner’s Recommendation

On October 15, 16, and 18, a series of rule development workshops will be conducted across the state of Florida to solicit public feedback. The times and locations from the [rule development notice](#) are provided in Exhibit 8. By October 15, the rule development workshop presentation and a form for soliciting public feedback will be posted to the FDOE Standard Setting website: <http://fcats.fldoe.org/standardsetting.asp>.

Commissioner of Education, Pam Stewart, will provide her recommendation for the cut scores in a proposed rule for adoption by the State Board of Education on December 12, 2012. The State Board of Education will determine the final cut scores to be used for these assessments.

**Exhibit 8. Times and Locations for the Rule Development Workshops**

<b>Date</b>	<b>Time</b>	<b>Location</b>
October 15, 2012	4:30 p.m. – 6:00 p.m.	Jefferson High School, Auditorium 4401 West Cypress St. Tampa, FL 33607
October 16, 2012	3:00 p.m. – 4:30 p.m.	Florida Department of Education, Turlington Building 325 West Gaines Street Room 1721 Tallahassee, Florida 32399
October 18, 2012	4:30 p.m. – 6:00 p.m.	Winona Webb Jordan Board Chambers Fulton-Holland Education Center 3300 Forest Hill Blvd. West Palm Beach, FL 33406

**SUMMARY**

The proposed cut scores from the Educator Panel and the Reactor Panel, and the resulting impact data, are provided in the tables below. Also included are the percentage of students at Achievement Level 3 or above and the percentage at each Achievement Level. Performance at Achievement Level 3 is considered “satisfactory.” For Florida EOC Assessments, the passing score is set at Achievement Level 3.

Exhibits 9 and 10 also include student results as they were reported this last year (“Reported\*\*”), when applicable. FCAT 2.0 Science was reported in 2012 on the 2011 FCAT Science scale using equipercentile linking. Because they are new assessments, the Biology 1 EOC and Geometry EOC Assessments do not have a comparable scale for equipercentile linking and there are no reported Achievement Level data in the tables below.

**Exhibit 9. Percentage of Students at Achievement Level 3 or Above Based on the Educator Panel and Reactor Panel Proposed Cuts**

<b>Assessment</b>	<b>Percentage Achievement Level 3 or Above</b>		
	<b>Reported**</b>	<b>Educator Panel</b>	<b>Reactor Panel</b>
<b>Grade 5 FCAT 2.0 Science</b>	51%	70%	52%
<b>Grade 8 FCAT 2.0 Science</b>	46%	69%	53%
<b>Biology 1 EOC Assessment</b>		67%	59%
<b>Geometry EOC Assessment</b>		46%	53%

\*\*Reported in 2012 on the 2011 FCAT Science Scale using equipercentile linking

**Exhibit 10. Percentage of Students in each Achievement Level Based on the Educator Panel and Reactor Panel Proposed Cuts**

Assessment	Source	Percentage of 2012 Test Takers in Each Achievement Level					
		1	2	3	4	5	≥3
<b>Grade 5 FCAT 2.0 Science</b>	Reported**	20%	29%	33%	12%	6%	51%
	Educator Panel	11%	19%	28%	26%	17%	70%
	Reactor Panel	22%	26%	27%	12%	12%	52%
	Final Rule	TBD					
<b>Grade 8 FCAT 2.0 Science</b>	Reported**	22%	31%	34%	9%	3%	46%
	Educator Panel	14%	17%	31%	24%	14%	69%
	Reactor Panel	22%	25%	28%	13%	12%	53%
	Final Rule	TBD					
<b>Biology 1 EOC Assessment</b>	Reported**	TBD					
	Educator Panel	14%	19%	33%	19%	14%	67%
	Reactor Panel	14%	27%	26%	19%	14%	59%
	Final Rule	TBD					
<b>Geometry EOC Assessment</b>	Reported**	TBD					
	Educator Panel	45%	10%	26%	10%	10%	46%
	Reactor Panel	21%	27%	33%	10%	10%	53%
	Final Rule	TBD					

\*\*Reported in 2012 on the 2011 FCAT Science Scale using equipercentile linking