



**Karen B. Salmon, Ph.D.**  
State Superintendent of Schools

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TO: Members of the State Board of Education

FROM: Karen B. Salmon, Ph.D.

DATE: April 23, 2019

SUBJECT: Revision of Maryland's Environmental Literacy Standards

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**PURPOSE:**

The purpose of this agenda item is to inform the State Board of revision recommendations for Maryland's Environmental Literacy Standards. Attached for your review are Maryland's Environmental Literacy Standards, COMAR 13A.04.17.01, *Protocol for Developing and Revising Standards*, results from the statewide survey and draft standards containing recommended edits.

**STANDARDS REVISION PROTOCOL**

As outlined in Attachment III, there are three main phases of the standards revision protocol. During this first phase, Review, a survey is created and disseminated to collect feedback. In addition, a review panel is assembled consisting of key stakeholders. The panel makes initial recommendations for edits to the current standards based upon survey feedback. These recommended edits are being presented to the State Board of Education.

**BACKGROUND/HISTORICAL PERSPECTIVE:**

In 1989, Maryland became the first state to require a comprehensive, multidisciplinary program of environmental education. State standards for Environmental Literacy were adopted by the State Board and incorporated into COMAR 13A.04.17.01 in 1999. In 2008, then Governor Martin O'Malley issued an Executive Order establishing the Maryland Partnership for Children in Nature (CIN). This partnership led to the adoption and incorporation in 2009 of the current Standards for Environmental literacy to reflect recommendations made by CIN.

In accordance with the Regulatory Review and Evaluation Act, Article 10-130-139, Annotated Code of Maryland, the Maryland State Environmental Literacy Standards are due for review. Following the Board procedures enumerated in the May 23, 2017, Protocol for Developing and Revising Standards, MSDE initiated a public survey to seek feedback on the current standards. A committee of teachers, district environmental literacy specialists, university representatives, and private citizens reviewed data from the survey. The committee recommends extensive revisions should be made to the existing Maryland Environmental Literacy Standards to remove existing redundancy with Maryland content

standards from other disciplines including Maryland's Next Generation Science Standards, Social Studies, and Health. These recommendations are reflected in Attachment D.

**ACTION:**

Permission to proceed to Phase II of Protocol for Developing and Revising Standards

**Attachments (5):**

Attachment I: COMAR 13A.04.17.01

Attachment II: Data Results from Public Survey on Environmental Literacy Standards

Attachment III Protocol for Developing and Revising Standards

Attachment IV: Maryland Environmental Literacy Standards (revision draft)

Attachment V: MD Environmental Literacy Standards Revision Recommendations Power Point

# MD Environmental Literacy Standards Revision Recommendations



STATE BOARD MEETING  
2019

# Maryland Environmental Literacy

1989

- First COMAR requiring comprehensive, multidisciplinary program for environmental education

1999

- Standards adopted and incorporated into COMAR

2008

- Governor O'Malley issued the Executive Order establishing the Maryland Partnership for Children in Nature (CIN)

2009

- Current standards adopted and incorporated. COMAR modified to reflect recommendations made by CIN

# Purpose of the Standards

COMAR 13A.04.17.01

A. Each local school system shall provide in public schools a comprehensive, multidisciplinary environmental education program infused within current curricular offerings and aligned with the Maryland Environmental Literacy Curriculum.

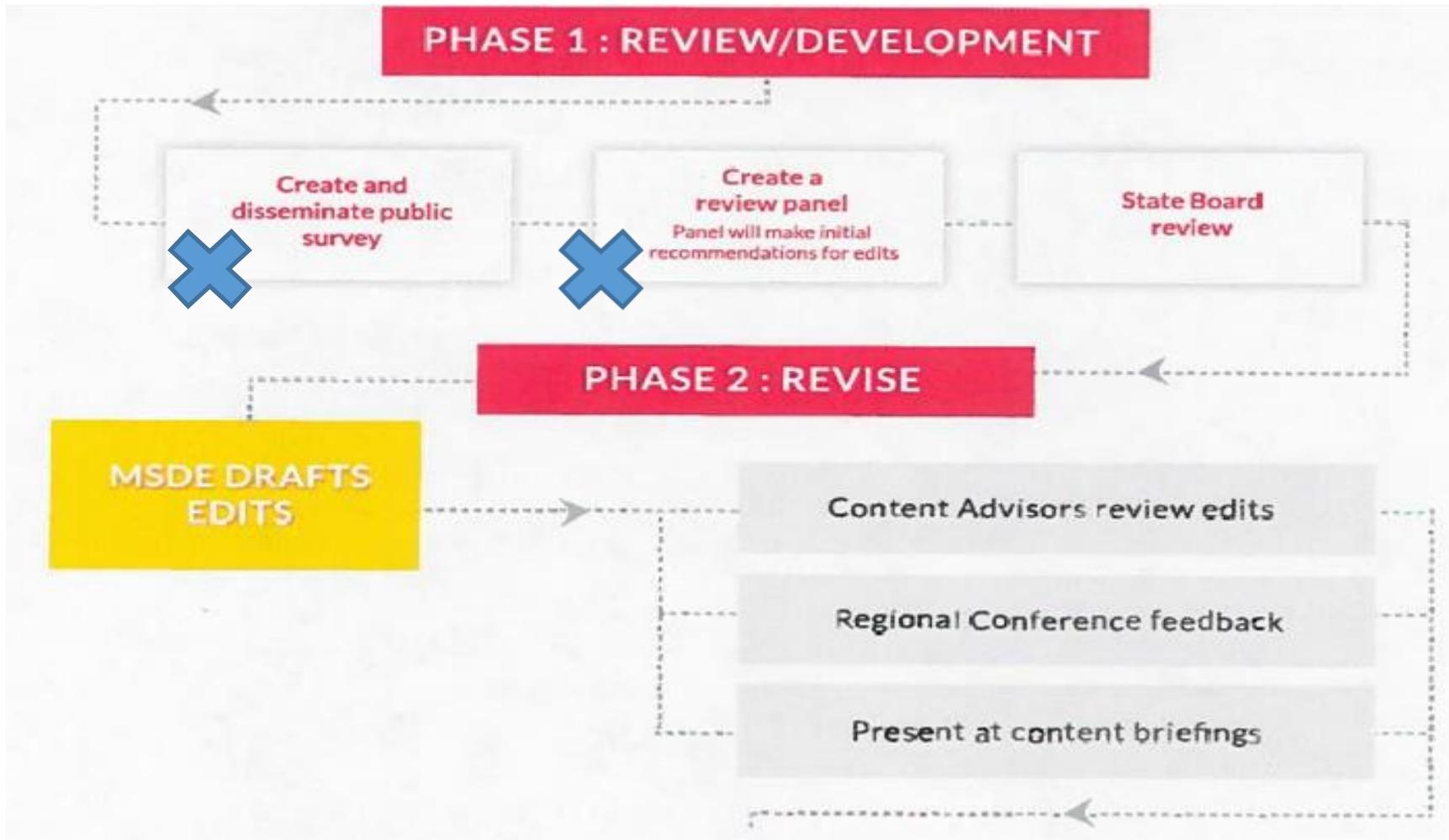
B. The Maryland Environmental Education Program shall:

(1) Provide a developmentally appropriate instructional program;

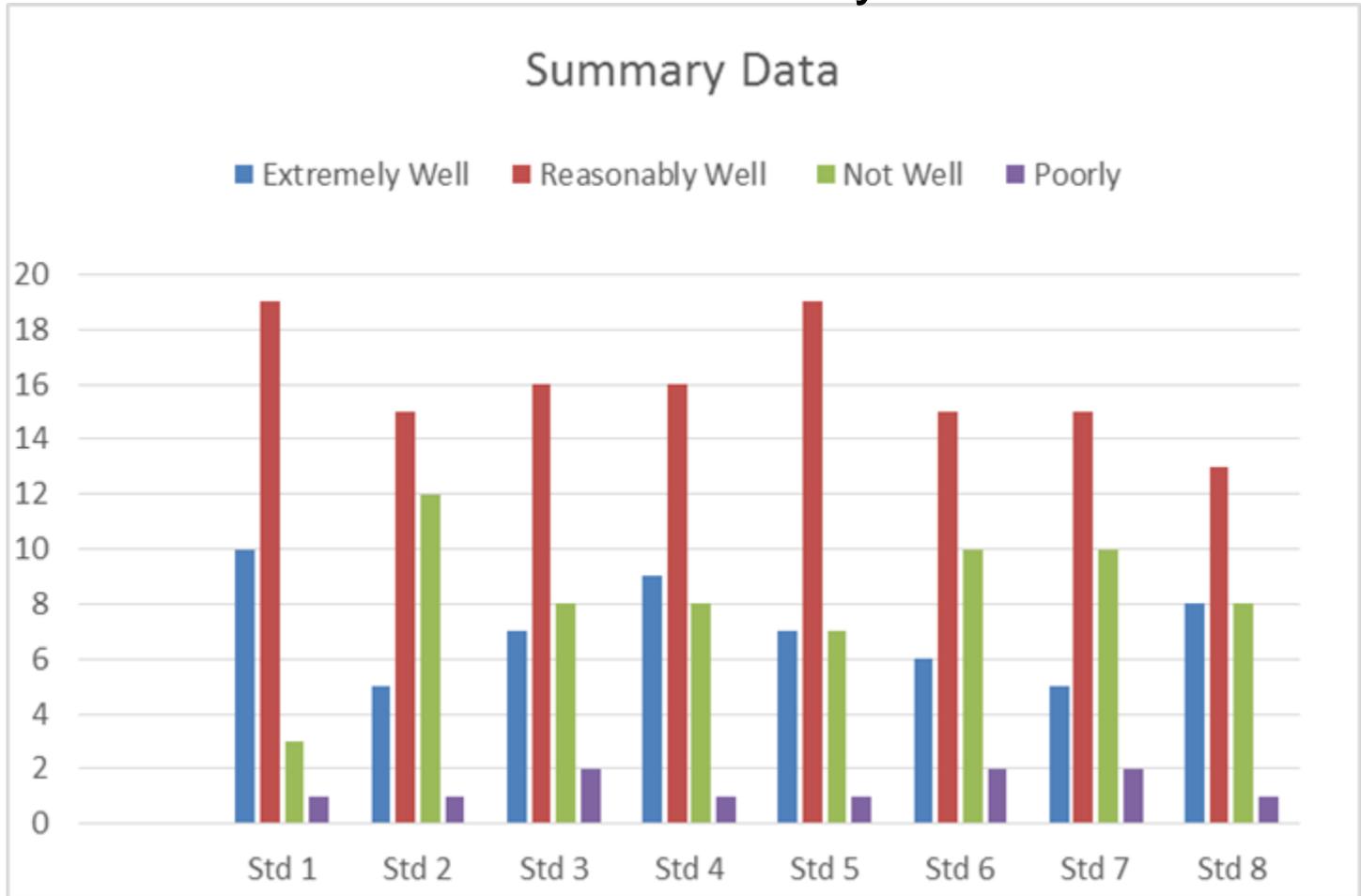
(2) Advance students' knowledge, confidence, skills, and motivation to make decisions and take actions that create and maintain an optimal relationship between themselves and the environment, and preserve and protect the unique natural resources of Maryland, particularly those of the Chesapeake Bay and its watershed.

(3) This comprehensive instructional program shall provide for the diversity of student needs, abilities, and interests at the early, middle, and high school learning years, and shall include all of the standards from the Maryland Environmental Literacy Curriculum as set forth in §C of this regulation.

# Protocol for Developing and Revising Standards



How well do the standards reflect what students should know and be able to do as environmentally literate citizens?



# Review Panel Members

Mark Scallion, Center Director, Pickering Creek Audubon Center

Sarah Haines, Towson University

Peggy Eppig, MAEF/Goucher College

Melanie Parker, Anne Arundel County Public Schools

Frank Cardo, Cecil County Public Schools

Amy Towers, Caroline County Public Schools

JoAnn Roberts, Public stakeholder

Joanna Pi-Sunyer, Baltimore City Public Schools

Kevin Garner, Baltimore City Public Schools

Margarita Rochow, St. Mary's County Public Schools

Star Weaver, Salisbury University

Jemima Clark, Kent County Public Schools/Washington College

Lisa Goetz, Kent County Public Schools

Scott Irwin, Kent County Public Schools

Tracy Kloos, Washington County Public Schools

Katy Clemes, Anne Arundel County Public Schools

# Review Panel Recommendations

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- Extensive revisions should be made to the existing Maryland Environmental Literacy Standards
- In particular, the revisions should strive to remove existing redundancy with Maryland content standards from other disciplines including Science, Social Studies and Health
- Edit existing standards with these goals in mind

# Environmental Literacy Standards DRAFT Revision

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## Standard 1

### Environmental Issue Investigation & Action

- a. The student will investigate and analyze environmental issues ranging from local to global perspectives.
- b. The student will develop and implement a local action project that restores, protects, or sustains the natural environment.

## Standard 2

### Human Dependence on Earth Systems & Resources

- a. The student will explore Earth's systems in order to demonstrate understanding of connections across environmental and human systems.
- b. The student will demonstrate understanding of how humans depend on and modify Earth's systems and resources in order to survive.

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## Standard 3

### Human Impact on Earth's Systems & Resources

- a. The student will explore the impacts of human activities on earth's natural systems and resources.
- b. The student will explore how humans use and attempt to control environmental systems and how those systems impact humans.

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## Standard 4

### The Impact of Human-Induced Environmental Changes on Ecosystem Health

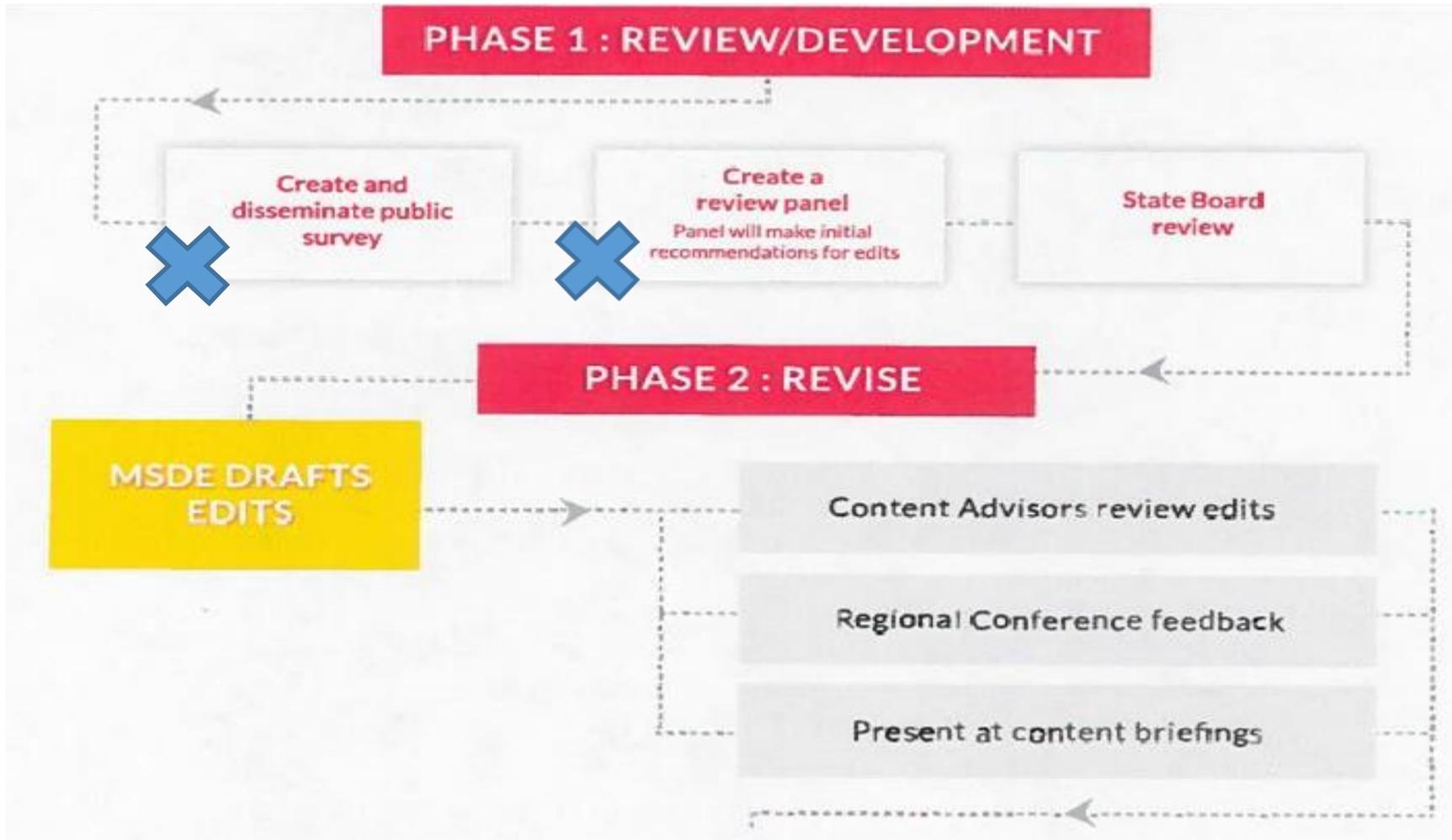
- a. The student will explain the impact of human-induced environmental changes.

## Standard 5

### Individual and Societal responses to Human-induced Environmental changes

- a. The student will explain individual and societal responses to human-induced environmental changes, including possible solutions.

# Next Steps



# Attachment I

## COMAR 13A 04 17 01

### **.01 Environmental Education Instructional Programs for Grades Prekindergarten — 12.**

A. Each local school system shall provide in public schools a comprehensive, multi-disciplinary environmental education program infused within current curricular offerings and aligned with the Maryland Environmental Literacy Curriculum.

B. The Maryland Environmental Education Program shall:

- (1) Provide a developmentally appropriate instructional program;
- (2) Advance students' knowledge, confidence, skills, and motivation to make decisions and take actions that create and maintain an optimal relationship between themselves and the environment, and preserve and protect the unique natural resources of Maryland, particularly those of the Chesapeake Bay and its watershed.
- (3) This comprehensive instructional program shall provide for the diversity of student needs, abilities, and interests at the early, middle, and high school learning years, and shall include all of the standards from the Maryland Environmental Literacy Curriculum as set forth in §C of this regulation.

C. Maryland Environmental Literacy Curriculum.

- (1) Environmental Issues. The student shall:
  - (a) Investigate and analyze environmental issues ranging from local to global perspectives and;
  - (b) Develop and implement a local action project that protects, sustains, or enhances the natural environment.
- (2) Interactions of Earth's Systems. The student shall analyze and apply the properties of systems thinking and modeling to the study of earth's systems.
- (3) Flow of Matter and Energy. The student shall analyze and explain:
  - (a) The movement of matter and energy through interactions of each of the following Earth systems:
    - (i) Biosphere; (ii) Geosphere; (iii) Hydrosphere; (iv) Atmosphere; and (v) Cryosphere
  - (b) The influence of this movement on weather patterns, climatic zones, and the distribution of life.
- (4) Populations, Communities, and Ecosystems. The student shall use physical, chemical, biological, and ecological concepts to analyze and explain the interdependence of humans and organisms in populations, communities, and ecosystems.

- (5) Humans and Natural Resources. The student shall use concepts from chemistry, physics, biology, and ecology to analyze and interpret both positive and negative impacts of human activities on earth's natural systems and resources.
- (6) Environment and Health. The student shall use concepts from science, social studies and health to analyze and interpret both positive and negative impacts of natural events and human activities on human health.
- (7) Environment and Society. The student shall analyze how the interactions of heredity, experience, learning and culture influence social decisions and social change.
- (8) Sustainability. The student shall:
  - (a) Make decisions that demonstrate understanding of natural communities and the ecological, economic, political, and social systems of human communities; and
  - (b) Examine how their personal and collective actions affect the sustainability of these interrelated systems.

D. Each local school system shall establish a support system to enable teachers and administrators to engage in high quality professional development in content knowledge, instructional materials, and methodology related to environmental education.

E. Student Participation. All students shall have the opportunity to participate in the comprehensive environmental education program required by this regulation to meet their graduation requirement in environmental literacy.

#### **COMAR 13A.04.17.02**

#### **.02 Certification Procedures.**

By September 1, 2015 and each 5 years after, each local school superintendent of schools shall certify to the State Superintendent of Schools that the instructional program in environmental education meets, at a minimum, the requirements set forth in Regulation .01 of this chapter.

#### **COMAR 13A.03.02.04**

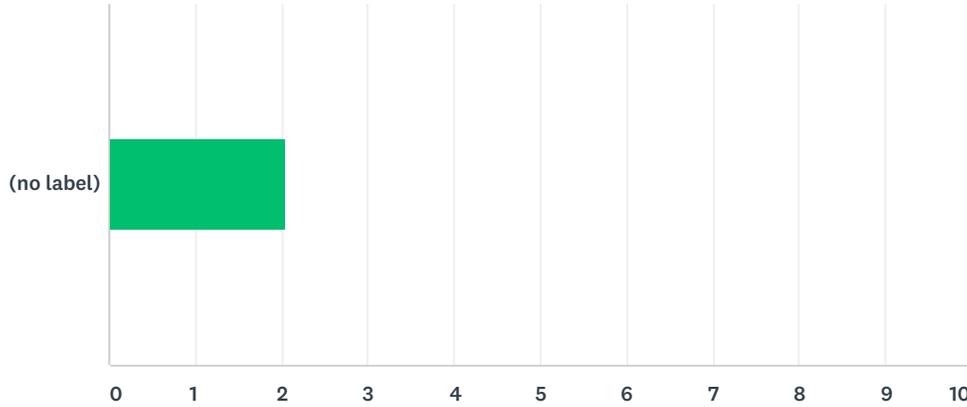
#### **.04 Credit Requirements.**

A. — B. (text unchanged)

C. Beginning with students entering high school in 2011-2012, all students must complete a locally designed high school program of environmental literacy as set forth in COMAR 13A.04.17 that is approved by the State Superintendent of Schools.

Q1 The existing Maryland Environmental Literacy Standards need revision.

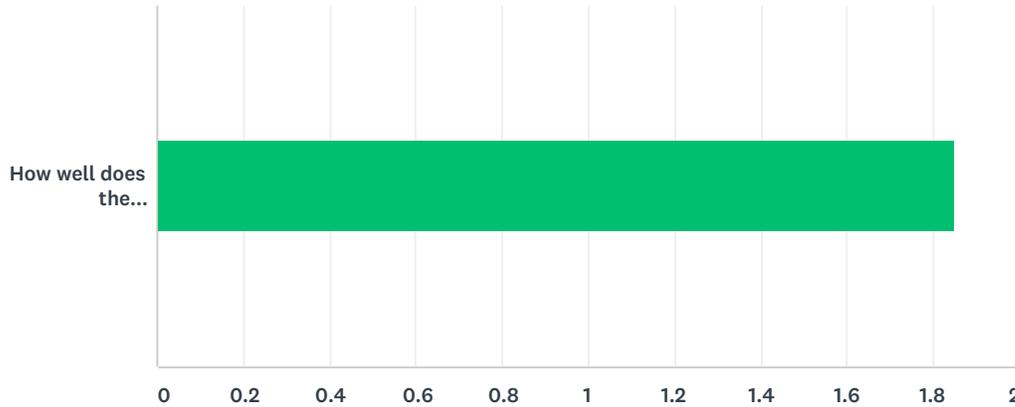
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	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE	TOTAL	WEIGHTED AVERAGE
(no label)	25.00% 13	48.08% 25	25.00% 13	1.92% 1	52	2.04

**Q2 Standard 1 Environmental Issues. The student will investigate and analyze environmental issues ranging from local to global perspectives and develop and implement a local action project that protects, sustains, or enhances the natural environment**

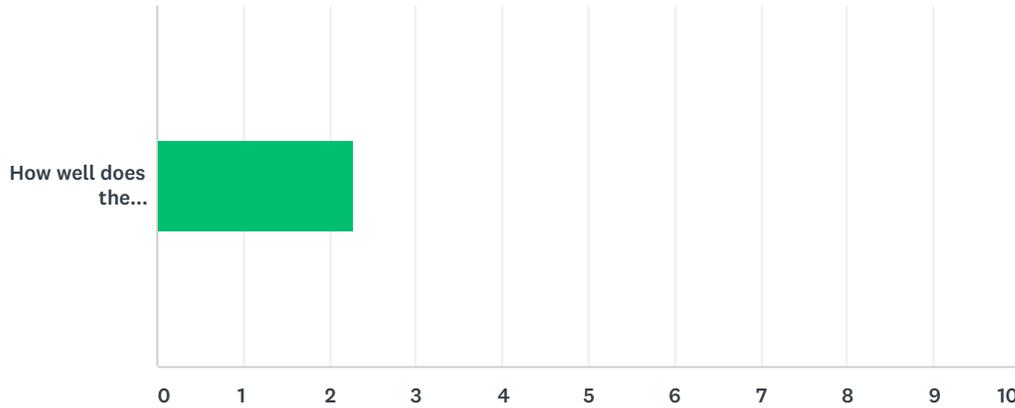
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	EXTREMELY WELL	REASONABLY WELL	NOT WELL	POORLY	TOTAL	WEIGHTED AVERAGE
How well does the Environmental Issues standard reflect what students should know and be able to do as environmentally literate citizens?	30.30% 10	57.58% 19	9.09% 3	3.03% 1	33	1.85

### Q3 Standard 2 Interactions of Earth’s Systems. The student will analyze and apply the properties of systems thinking and modeling to the study of Earth’s systems.

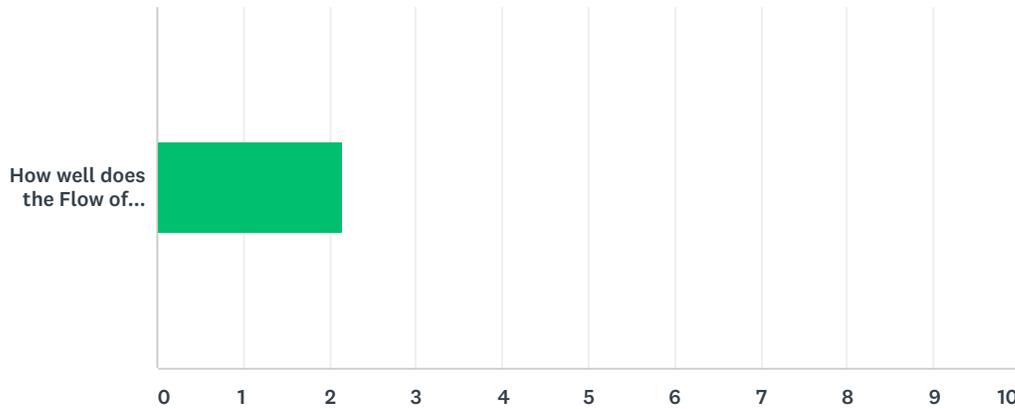
Answered: 34 Skipped: 24



	EXTREMELY WELL	REASONABLY WELL	NOT WELL	POORLY	TOTAL	WEIGHTED AVERAGE
How well does the Interactions of Earth's Systems standard reflect what students should know and be able to do as environmentally literate citizens?	14.71% 5	44.12% 15	38.24% 13	2.94% 1	34	2.29

**Q4 Standard 3 Flow of Matter and Energy.** The student will analyze and explain the movement of matter and energy through interactions of Earth systems (Biosphere, Geosphere, Hydrosphere, Atmosphere and Cryosphere) and the influence of this movement on weather patterns, climatic zones, and the distribution of life.

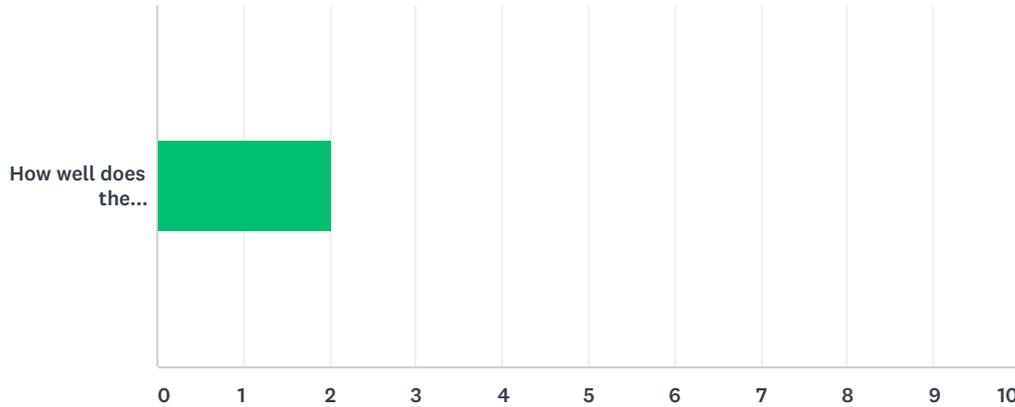
Answered: 33 Skipped: 25



	EXTREMELY WELL	REASONABLY WELL	NOT WELL	POORLY	TOTAL	WEIGHTED AVERAGE
How well does the Flow of Matter and Energy standard reflect what students should know and be able to do as environmentally literate citizens?	21.21% 7	48.48% 16	24.24% 8	6.06% 2	33	2.15

**Q5 Standard 4 Populations, Communities, and Ecosystems. The student will use physical, chemical, biological, and ecological concepts to analyze and explain the interdependence of humans and organisms in populations, communities, and ecosystems.**

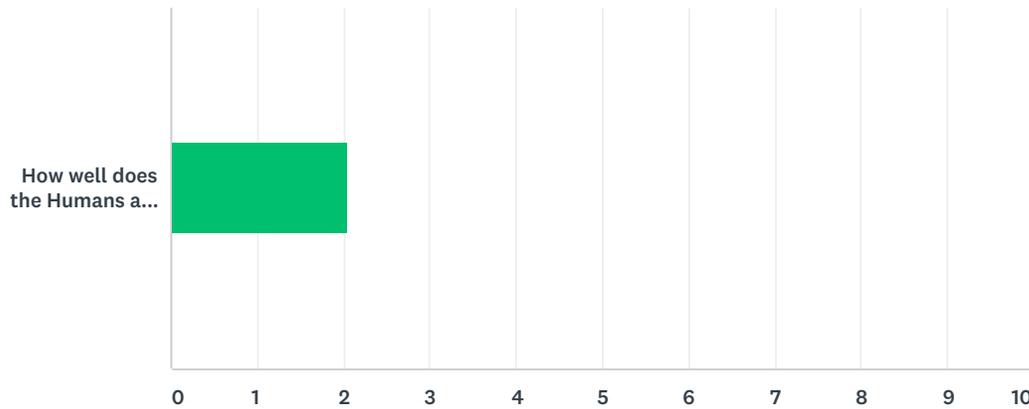
Answered: 34 Skipped: 24



	EXTREMELY WELL	REASONABLY WELL	NOT WELL	POORLY	TOTAL	WEIGHTED AVERAGE
How well does the Populations, Communities, and Ecosystems standard reflect what students should know and be able to do as environmentally literate citizens?	26.47% 9	47.06% 16	23.53% 8	2.94% 1	34	2.03

**Q6 Standard 5 Humans and Natural Resources.** The student will use concepts from chemistry, physics, biology, and ecology to analyze and interpret both positive and negative impacts of human activities on Earth’s natural systems and resources.

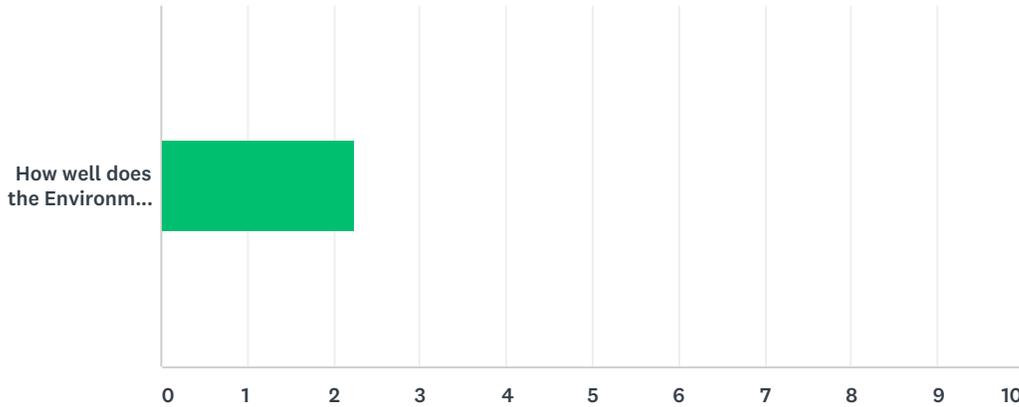
Answered: 34 Skipped: 24



	EXTREMELY WELL	REASONABLY WELL	NOT WELL	POORLY	TOTAL	WEIGHTED AVERAGE
How well does the Humans and Natural Resources standard reflect what students should know and be able to to as environmentally literate citizens?	20.59% 7	55.88% 19	20.59% 7	2.94% 1	34	2.06

**Q7 Standard 6 Environment and Health. The student will use concepts from science, social studies and health to analyze and interpret both positive and negative impacts of natural events and human activities on human health.**

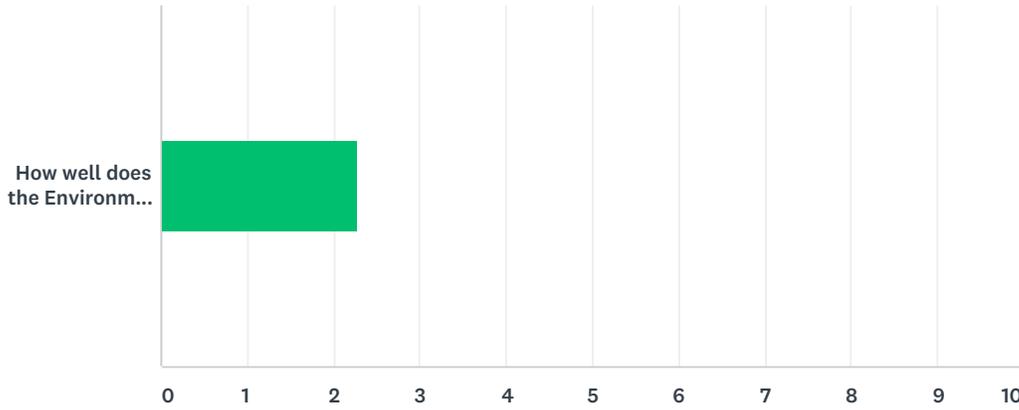
Answered: 33 Skipped: 25



	EXTREMELY WELL	REASONABLY WELL	NOT WELL	POORLY	TOTAL	WEIGHTED AVERAGE
How well does the Environment and Health standard reflect what students should know and be able to do as environmentally literate citizens?	18.18% 6	45.45% 15	30.30% 10	6.06% 2	33	2.24

**Q8 Standard 7 Environment and Society. The student will analyze how the interactions of heredity, experience, learning and culture influence social decisions and social change.**

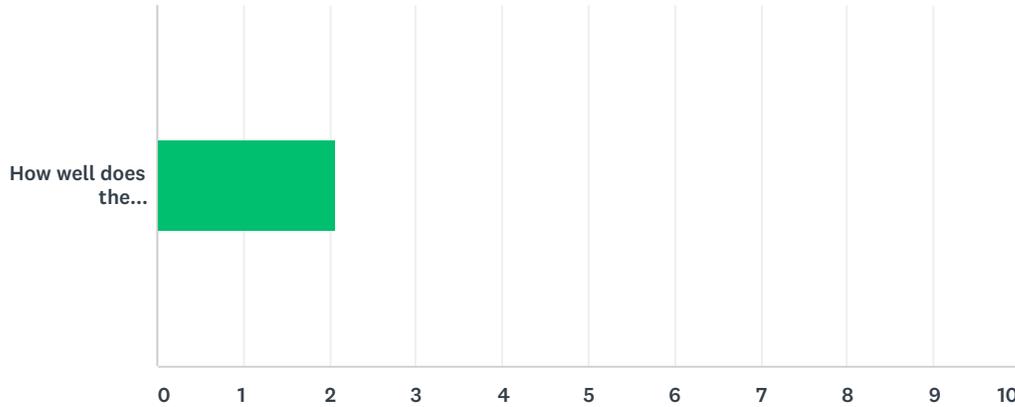
Answered: 32 Skipped: 26



	EXTREMELY WELL	REASONABLY WELL	NOT WELL	POORLY	TOTAL	WEIGHTED AVERAGE
How well does the Environment and Society standard reflect what students should know and be able to do as environmentally literate citizens?	15.63% 5	46.88% 15	31.25% 10	6.25% 2	32	2.28

**Q9 Standard 8 Sustainability.** The student will make decisions that demonstrate understanding of natural communities and the ecological, economic, political, and social systems of human communities and examine how their personal and collective actions affect the sustainability of these interrelated systems.

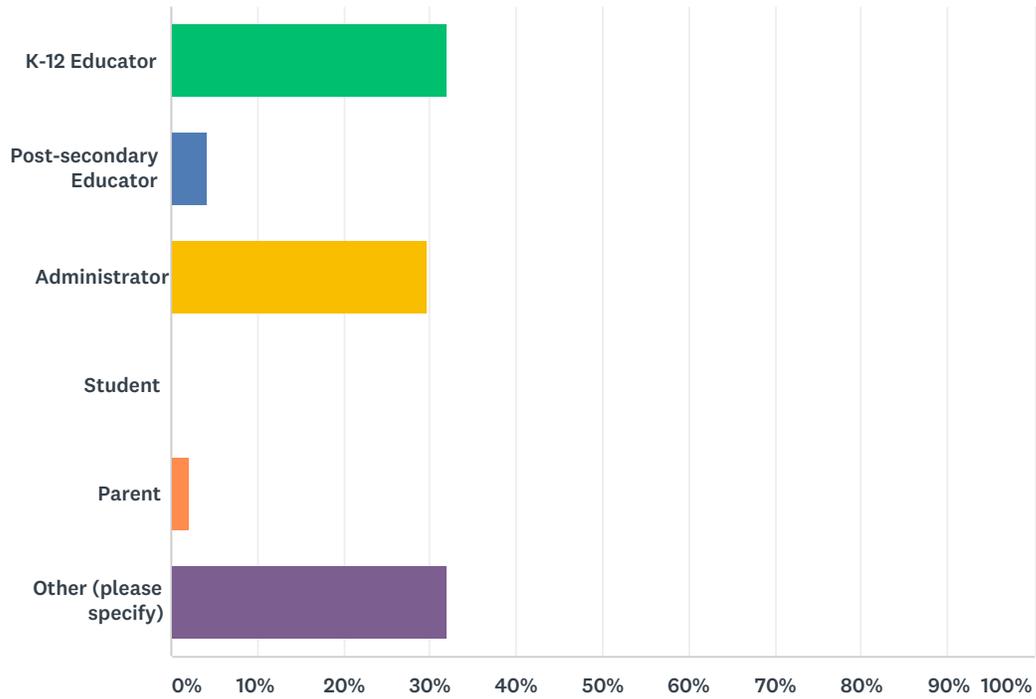
Answered: 30 Skipped: 28



	EXTREMELY WELL	REASONABLY WELL	NOT WELL	POORLY	TOTAL	WEIGHTED AVERAGE
How well does the Sustainability standard reflect what students should know and be able to do as environmentally literate citizens?	26.67% 8	43.33% 13	26.67% 8	3.33% 1	30	2.07

## Q10 Please identify your role as it relates to the standards

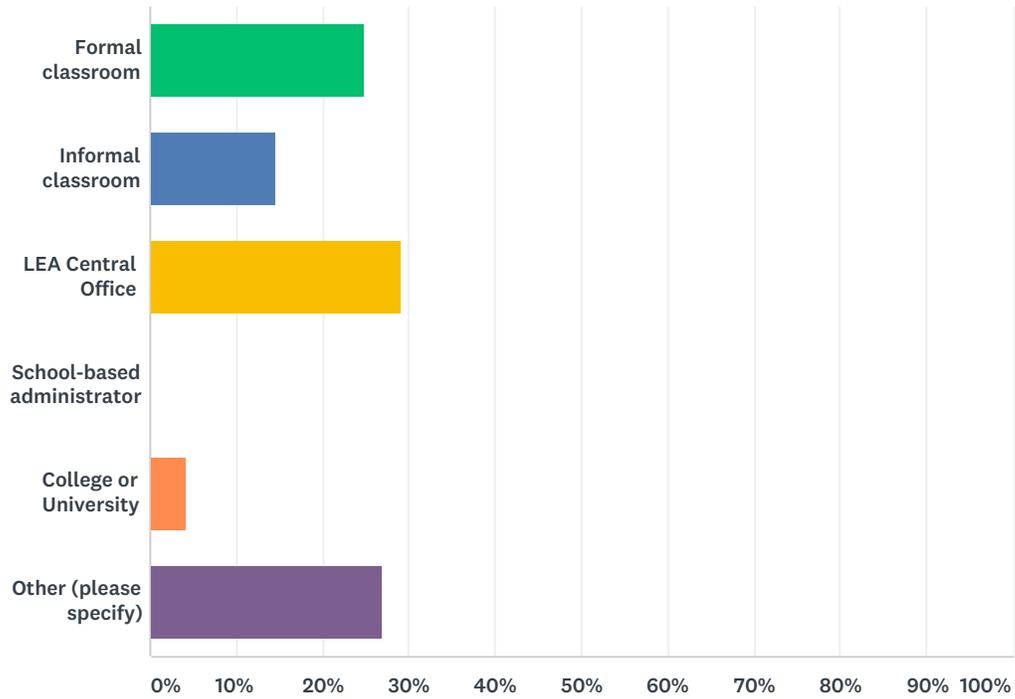
Answered: 47 Skipped: 11



ANSWER CHOICES	RESPONSES	
K-12 Educator	31.91%	15
Post-secondary Educator	4.26%	2
Administrator	29.79%	14
Student	0.00%	0
Parent	2.13%	1
Other (please specify)	31.91%	15
<b>TOTAL</b>		<b>47</b>

## Q11 What is the most accurate description of your place of employment?

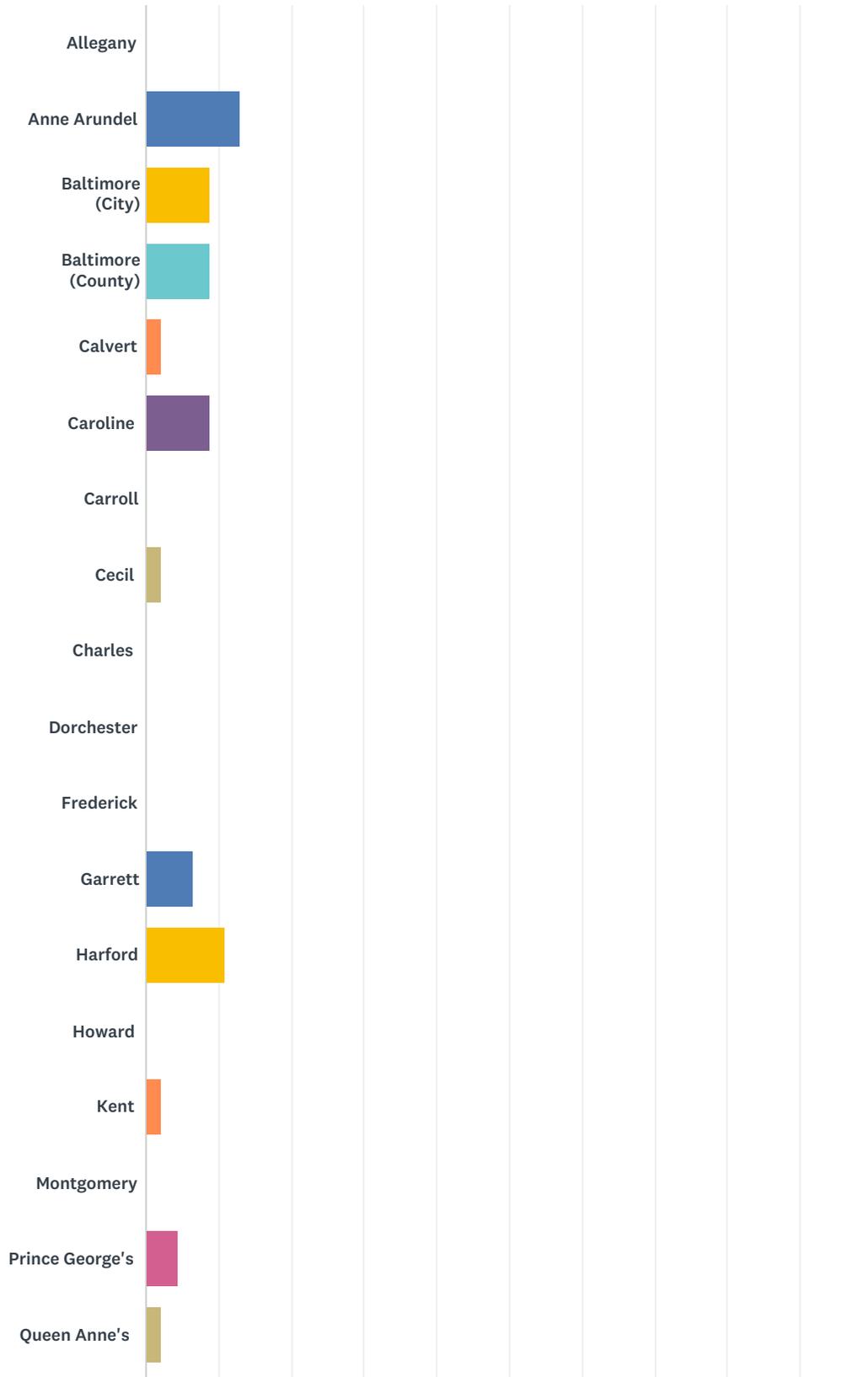
Answered: 48 Skipped: 10



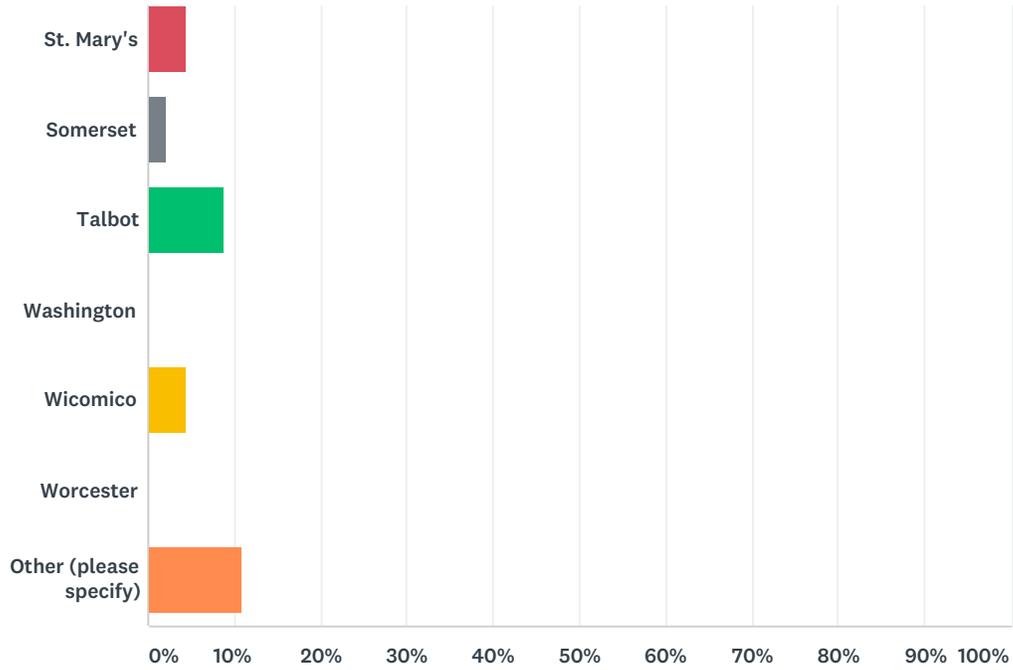
ANSWER CHOICES	RESPONSES	
Formal classroom	25.00%	12
Informal classroom	14.58%	7
LEA Central Office	29.17%	14
School-based administrator	0.00%	0
College or University	4.17%	2
Other (please specify)	27.08%	13
<b>TOTAL</b>		<b>48</b>

### Q12 Where, in Maryland, is your place of employment? If not in Maryland, please indicate County and State in 'Other'.

Answered: 46 Skipped: 12



## Environmental Literacy Standards Review



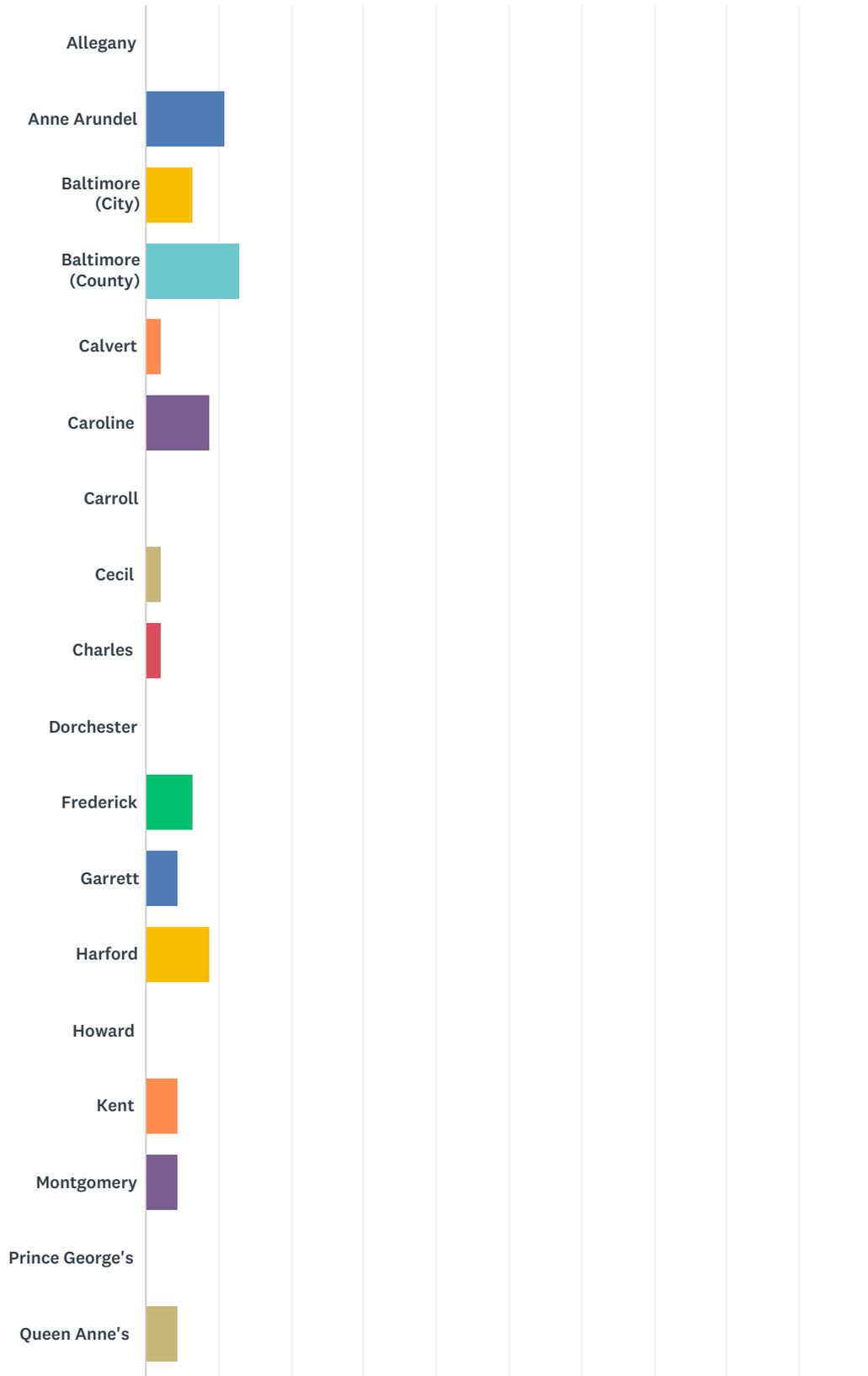
ANSWER CHOICES	RESPONSES	
Allegany	0.00%	0
Anne Arundel	13.04%	6
Baltimore (City)	8.70%	4
Baltimore (County)	8.70%	4
Calvert	2.17%	1
Caroline	8.70%	4
Carroll	0.00%	0
Cecil	2.17%	1
Charles	0.00%	0
Dorchester	0.00%	0
Frederick	0.00%	0
Garrett	6.52%	3
Harford	10.87%	5
Howard	0.00%	0
Kent	2.17%	1
Montgomery	0.00%	0
Prince George's	4.35%	2
Queen Anne's	2.17%	1
St. Mary's	4.35%	2
Somerset	2.17%	1

## Environmental Literacy Standards Review

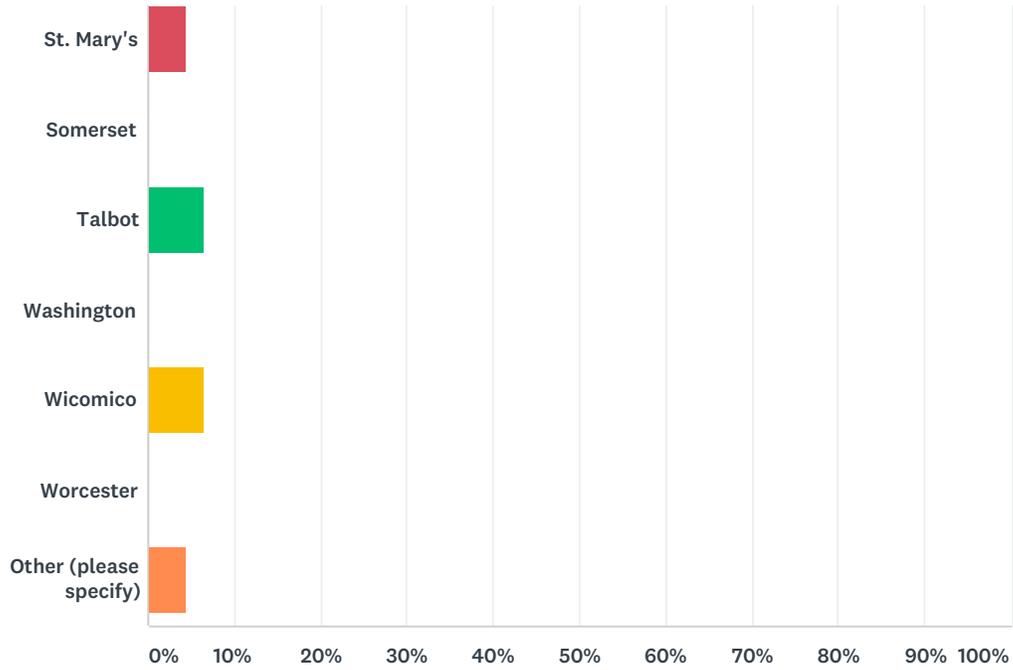
Talbot	8.70%	4
Washington	0.00%	0
Wicomico	4.35%	2
Worcester	0.00%	0
Other (please specify)	10.87%	5
TOTAL		46

# Q13 Where, in Maryland, do you live? If not in Maryland, please indicate County and State in 'Other'.

Answered: 46 Skipped: 12



## Environmental Literacy Standards Review



ANSWER CHOICES	RESPONSES	
Allegany	0.00%	0
Anne Arundel	10.87%	5
Baltimore (City)	6.52%	3
Baltimore (County)	13.04%	6
Calvert	2.17%	1
Caroline	8.70%	4
Carroll	0.00%	0
Cecil	2.17%	1
Charles	2.17%	1
Dorchester	0.00%	0
Frederick	6.52%	3
Garrett	4.35%	2
Harford	8.70%	4
Howard	0.00%	0
Kent	4.35%	2
Montgomery	4.35%	2
Prince George's	0.00%	0
Queen Anne's	4.35%	2
St. Mary's	4.35%	2
Somerset	0.00%	0

## Environmental Literacy Standards Review

Talbot	6.52%	3
Washington	0.00%	0
Wicomico	6.52%	3
Worcester	0.00%	0
Other (please specify)	4.35%	2
TOTAL		46

**Q14 Do you have any other thoughts, comments or suggestions to share about the Maryland Environmental Literacy Standards?**

Answered: 31 Skipped: 27

# Attachment III



Karen B. Salmon, Ph.D.  
State Superintendent of Schools

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**TO:** Members of the State Board of Education

**FROM:** Karen B. Salmon, Ph.D.   
State Superintendent of Schools

**DATE:** May 23, 2017

**SUBJECT:** Protocol for Developing and Revising Standards

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## **Purpose:**

The purpose of this memo is to establish the protocol used by the Maryland State Department of Education (MSDE) when writing, implementing and revising standards. To clarify which documents are revised by MSDE in this process, the following definitions apply.

**Standards** for each content/core area are statements that define what students should know and be able to do. Standards are adopted by the State Board of Education in COMAR and are reviewed at least every 8 years in accordance with the Regulatory Review and Evaluation Act, State Government Article §§10-130–10-139, Annotated Code of Maryland.

**Supporting Documents** provide guidance for implementing the standards adopted by the State Board of Education. They serve as a guide for school systems as they develop local curricula. Supporting documents may consist of frameworks, unit plans, outlines, lesson seeds, model lessons, and resource lists. They are developed, reviewed, and revised by teams of Maryland educators and may also include national models. Supporting documents are considered as works in progress so they can be refined and updated.

**Curricula** are developed by local school systems and define how teachers will teach the standards. Curricula may include methods, scope and sequence, materials, and assessments.

## **Summary of the Standards Review Process**

### **Phase 1 - REVIEW**

MSDE will create and disseminate a public survey to collect stakeholder feedback on the proposed standards. A review panel will be assembled and will consist of PreK–12 educators, curriculum coordinators/specialists, and other stakeholders key to the specific content area. The panel will make initial recommendations for edits to the proposed or existing standards document. The draft standards document will be presented to the State Board of Education for its review.

**Phase 2 - REVISE**

MSDE will draft edits to the revised standards based on panel recommendations, public input and State Board of Education input. The panel will convene to review the edits. The revisions will be given to specific content advisors to review the edits. The proposed draft will be shared regionally for feedback and will be presented at content briefings for additional input. MSDE will make any edits in response to panel, stakeholder and content advisor feedback.

**Phase 3 - ADOPT**

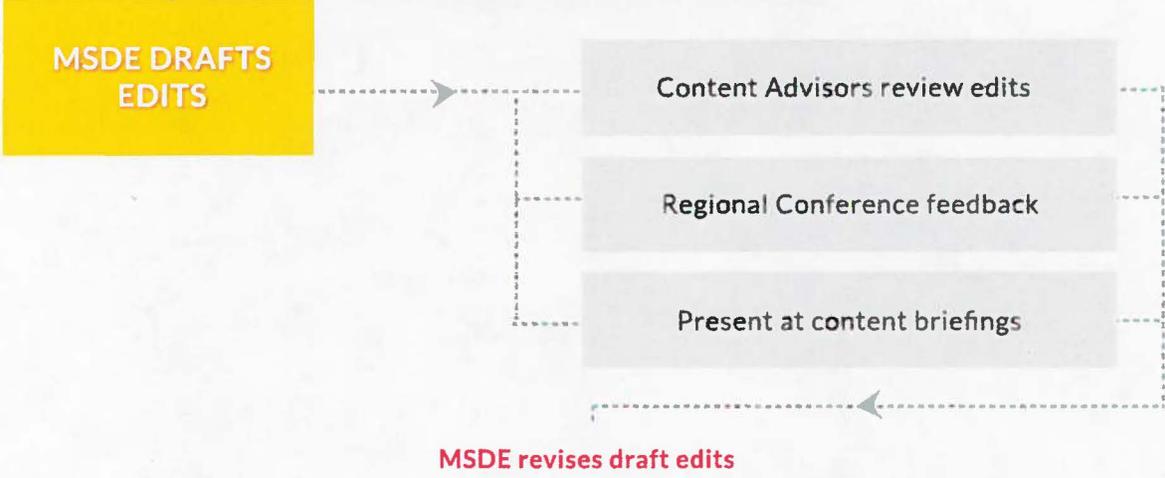
The draft revised standards will be presented to the State Board of Education for approval, following the same procedures that are used for regulations. The proposed standards are set forth as proposed regulations and are sent to the AELR Committee for a 15-day review period. If the AELR Committee does not hold up the proposed regulations for further review, they are published in the Maryland Register for a 30-day public comment period. At the end of the comment period, MSDE staff review and summarize the public comments. Thereafter, MSDE staff will present a recommendation to the State Board of Education to either: (1) adopt the standards in the form they were proposed; or (2) revise the standards and adopt them as final because the suggested revision is not a substantive change; or (3) review the standards and re-propose them because the suggested revision is a substantive change. At any time during this process, the AELR Committee may stop the promulgation process and hold a hearing. Thereafter, it may recommend to the Governor that the regulation not be adopted as a final standard or the AELR Committee may release the regulations for final adoption.

# PROTOCOL FOR DEVELOPING AND REVISING STANDARDS

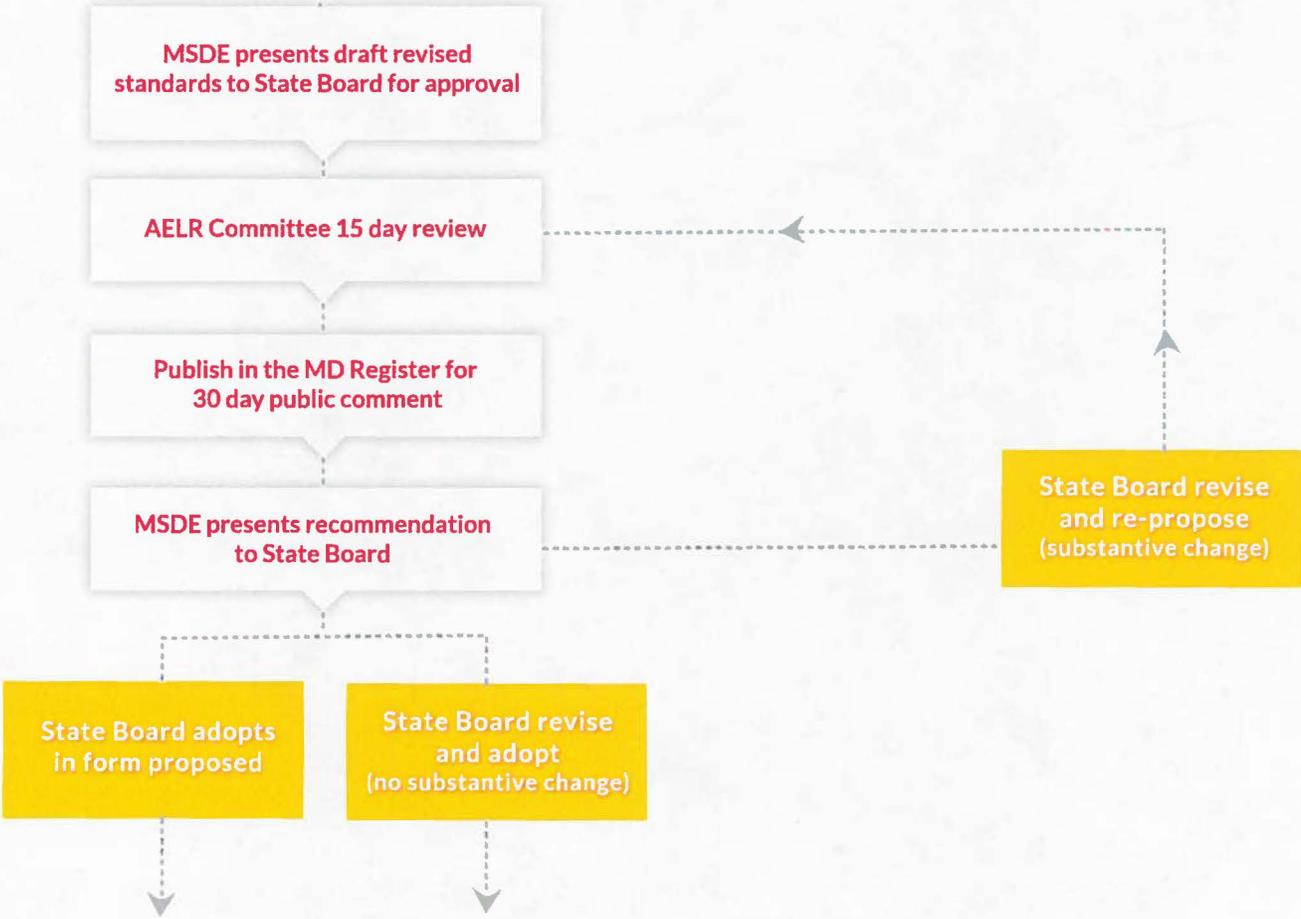
## PHASE 1 : REVIEW/DEVELOPMENT



## PHASE 2 : REVISE



## PHASE 3 : ADOPT



**Standard Adopted**

# Attachment IV

## Standards Revision Draft 2.15.19

(COMAR 13A.04.17.01-C)

### Standard 1

#### Environmental Issue Investigation & Action

- a. The student will investigate and analyze environmental issues ranging from local to global perspectives.
- b. The student will develop and implement a local action project that restores, protects, or sustains the natural environment.

### Standard 2

#### Human Dependence on Earth Systems & Resources

- a. The student will explore Earth's systems in order to demonstrate understanding of connections across environmental and human systems.
- b. The student will demonstrate understanding of how humans depend on and modify Earth's systems and resources in order to survive.

### Standard 3

#### Human Impact on Earth's Systems & Resources

- a. The student will explore the impacts of human activities on earth's natural systems and resources.
- b. The student will explore how humans use and attempt to control environmental systems and how those systems impact humans.

### Standard 4

#### The Impact of Human-Induced Environmental Changes on Ecosystem Health

- a. The student will explain the impact of human-induced environmental changes.

### Standard 5

#### Individual and Societal responses to Human-induced Environmental changes

- a. The student will explain individual and societal responses to human-induced environmental changes, including possible solutions.