

Pennsylvania Environmental Literacy Plan (2015)

The Pennsylvania Advisory Council for Environmental Education represents the collaborative education partnership which is responsible for the development and implementation of the Pennsylvania Environmental Literacy Plan (ELP). Under the leadership of the Pennsylvania Department of Education and the Department of Environmental Protection, the Advisory Council for Environmental Education has designed management strategies for advancing Pennsylvania's Environmental Literacy Plan throughout the state. The Pennsylvania Advisory Council has identified multiple partners and stakeholders who will work collaboratively on implementing the action plan, evaluating and reporting on the progress and success.

The Pennsylvania Environmental Education Act, ACT 24 OF 1993, P.L. 105 Pennsylvania's Environmental Education Act was signed into law on June 22, 1993. The Act provides for Environmental Education programs within the Commonwealth, creates an Environmental Education Fund and authorizes the establishment of an Environmental Education Grants Program. This Act, charges the Departments of Education and Environmental Protection with specific responsibilities to promote and support environmental education throughout the Commonwealth. This act "creates the Advisory Council on Environmental Education to advise and assist the Departments of Education and Environmental Protection in carrying out their respective programs." The Council consists of 19 members with specific numbers assigned under each jurisdiction.

The Pennsylvania Environmental Literacy Plan is designed to support and advance the Environmental Literacy Goal and Outcomes of the Chesapeake Bay Watershed Agreement of 2014 and to expand its implementation to include all the watersheds within the boundaries of Pennsylvania. We in Pennsylvania, recognize that environmental education goes beyond the classroom and this plan includes recommendations for life-long learning.

The Governor of Pennsylvania along with eight neighboring governors and federal agencies have re-affirmed the commitment to work cooperatively for the purpose of creating a more environmentally and economically sustainable Chesapeake Bay watershed. The Environmental Literacy Goal is one of eleven goals that each state will work on collectively to advance restoration and protection of the Chesapeake Bay ecosystem and its watershed. Outcomes have been developed for each goal to provide measureable targets for achieving each goal.

To further advance the Mid-Atlantic Environmental Literacy Goal and the outcomes, each state is responsible to develop a state-specific environmental literacy plan by collaborating with vital partners representing state agencies, organizations and associations.

The Pennsylvania Environmental Literacy Plan (PAELP) examines eight focus areas to be addressed by education leaders and educators in both the formal and non-formal sectors.

- A. The School System
- B. Life-Long Learners and Civic Engagement
- C. Sustainable Practices, Healthy Living and the Environment
- D. Funding and Implementation
- E. Partnerships
- F. Early Childhood Education
- G. Pre-Service Education
- H. Professional Development

The Pennsylvania Environmental Literacy Plan provides a listing of recommendations, actions steps and suggested providers for each of the eight focus areas. The recommendations address specific topics and steps necessary to meet the action and to advance environmental literacy through formal and non-formal education. The intent of the Pennsylvania Environmental Literacy Plan is to define actions and voluntary metrics that will advance environmental literacy in Pennsylvania. The plan is not a contract and does not pre-empt, supersede or override laws or regulations. It is intended to provide support and encourage best practices through consensus, responsibility and collaboration. The council has also identified multiple partners/stakeholders who we felt would hold the primary responsibility in ensuring that actions would be taken to meet the recommendations. They each cross disciplines and sectors at the local, state, and regional levels.

The Mid-Atlantic Environmental Literacy Goal as stated in the 2014 Chesapeake Bay Agreement is as follows:

Enable every student in the region to graduate with the knowledge and skills to act responsibly to protect and restore their local watershed.

Student Outcome

Continually increase students' age appropriate understanding of the watershed through participation in teacher-supported, meaningful watershed educational experiences and rigorous, inquiry-based instruction, with a target of at least one meaningful watershed educational experience in elementary, middle and high school depending on available resources.

Sustainable Schools Outcome

Continually increase the number of schools in the region that reduce the impact of their buildings and grounds on their local watershed, environment and human health through best practices, including student-led protection and restoration projects.

Environmental Literacy Planning Outcome

Each participating Bay Jurisdiction should develop a comprehensive and systemic approach to environmental literacy for all students in that region that includes policies, practices and voluntary metrics that support the environmental literacy goals and outcomes of this agreement.

The Eight Focus Areas

A. School System

Pennsylvania’s Chapter 4 Academic Standards and Assessment regulations outline what must be taught in the public and charter schools in the commonwealth. Pennsylvania has a separate set of Environment and Ecology academic standards that must be taught at the primary, intermediate, middle and high school levels. At the primary and intermediate levels, environment and ecology must be taught to every student, every year in a planned unit of study. At the middle and high school levels, planned courses of instruction in environment and ecology must be provided to every student. The three recommendations for this area are guided by the regulations and laws that govern the schools.

The area of “School System” relates to the following Mid-Atlantic Goals and Outcomes:

Mid-Atlantic Goal 1: Every student in the region graduates with the knowledge and skills to make informed environmental decisions. Outcomes 1.1, 1.2, 1.3, 1.4 (See Appendix A)

Mid-Atlantic Goal 2: All educators in the region responsible for instruction about or in the environment are provided with sustained professional development, tools, and resources that support their role in providing students with high quality environmental education. Outcome 2.1 (See Appendix A)

Mid-Atlantic Goal 4: The Education community in the region functions in a unified manner and coordinates with key national, regional, and state programs to represent the full suite of information and opportunities available for PK-12 audiences. Outcome 4.1 (See Appendix A)

Recommendations	Action Steps	Providers
Recommendation 1 Use Environment & Ecology Standards, Science	1. Ensure that school districts are meeting the Chapter 4 curriculum	PDE, individual school districts, environmental partners at the local, state,

<p>and Technology and Engineering Education Standards, the curriculum frameworks, as well as the PA Academic Standards for Language Arts and Mathematics.</p>	<p>requirements that address required content standards to be taught at the primary, intermediate, middle and high school levels.</p> <p>2. Correlate curriculum work in environment and ecology to the Pennsylvania Academic Standards and encourage the use of the Pennsylvania Environment & Ecology and Science Frameworks.</p> <p>3. Encourage and utilize assessments that reflect proficiency at each grade level in relationship to Environment & Ecology.</p> <p>4. In addition to the opportunities that exist within the school system to meet these standards attention will be given to partnering with outside entities to provide initial and additional experiences for students to address the environment and ecology standards.</p>	<p>regional and federal levels, STEM groups, PAEE, professional organizations, informal science providers</p>
<p>Recommendation 2 Promote all aspects of student achievement in Environment and Ecology through the Environment and Ecology Standards, curriculum framework, assessment, materials, resources, instruction and safe and supportive schools.</p>	<p>Identify how the PA Academic Standards, Assessment Anchors and Eligible Content can be used for the implementation of the Environment and Ecology standards through the following:</p> <p>1. School district curriculum development.</p> <p>2. Development of formative assessments for</p>	<p>PDE, Individual school districts, charter schools and private schools, environmental federal and state agencies, conservation organizations, associations, environmental/science centers and museums</p>

	<p>classroom use.</p> <p>3. Incorporate strategies that would ensure student success at all grade levels.</p> <p>4. Identify instructional strategies for differentiated learning.</p> <p>5. Identify, evaluate and implement exemplary lesson and unit plans.</p> <p>6. Identify model schools implementing exemplary environment and ecology programs.</p>	
<p>Recommendation 3 Engage students in meaningful outdoor learning experiences to address the Environment & Ecology Standards.</p>	<p>1. Incorporate meaningful outdoor learning experiences at the primary, intermediate, middle and high school levels.</p> <p>2. Utilize environmentally-oriented service learning and citizen science projects throughout the K-12 continuum to solidify student environmental literacy.</p> <p>3. Work to encourage environmental related after-school and summer enrichment programs for students.</p> <p>4. Promote the use of real world environmental concerns in project based learning experiences.</p>	<p>Individual school districts, charter schools and private schools, community organizations, environmental partners at the federal, state, regional and local levels</p>

B. Life-Long Learners

A meaningful learner is engaged in comprehensive experiences that explore concepts and issues resulting in increased environmental literacy. This is achieved through the integration of project-based activities that enhance problem solving and critical thinking skills motivating personal and civic responsibility. Civic engagement is an essential principle of all environmental programs. Individuals working alone or together can make a change in their community. The environmental education program helps students develop the combination of knowledge, skills, values and motivation to make that difference.

Civic engagement is promoting the quality of life in a community using both political and non-political processes. The students plan individual or collective actions that are designed to identify and address issues of public concern. They become pro-active members of their community who understand the importance of caring for the earth’s limited resources. They are able to use civic actions to accomplish their goals.

The area of “Life-Long Learners” relates to the following Mid-Atlantic Goal and outcomes:

Mid-Atlantic Goal 1: Every student in the region graduates with the knowledge and skills to make informed environmental decisions. Outcomes 1.1, 1.2, 1.3, 1.4 (See Appendix A)

Recommendations	Action Steps	Providers
<p>Recommendation 1 Provide learners with meaningful experiences that address environment and ecology concepts and real world issues at the local, state, and national levels.</p>	<ol style="list-style-type: none"> 1. Involve learners in meaningful experiences that are place-based, STEM, hands-on, project-based, service learning and/or citizen action. 2. Provide opportunities for learners to identify and understand local environmental issues that address Environment and Ecology Standards and provide an opportunity to engage in a dialogue. 3. Provide meaningful experiences that empower learners and encourage individual voice. 	<p>School districts, higher education facilities, conservation districts, Penn State Cooperative Extension, environmental non-profit organizations, informal education providers, governmental agencies (local, regional, state and federal), STEM groups, businesses, industries, parks and recreation programs and/or families.</p>

<p>Recommendation 2 Learners will have opportunities for acquiring knowledge and skill development in order to enhance citizen stewardship and civic engagement.</p>	<ol style="list-style-type: none"> 1. Facilitate indoor and outdoor environmental education learning experiences to enhance problem solving and critical thinking skills to understand and address local, state and relevant national environmental issues. 2. Offer professional development experiences for civic leaders that highlight environmental concepts enabling them to engage their constituents in broad-based local, state and national decision-making. 	<p>School districts, higher education facilities, conservation districts, Penn State cooperative extension, environmental non-profit organizations, informal education providers, governmental agencies (local, regional, state federal), businesses, industries, parks and recreation programs and/or families.</p>
<p>Recommendation 3 Provide opportunities for all citizens to gain the knowledge and skills needed to enhance the health of their environment.</p>	<ol style="list-style-type: none"> 1. Provide opportunities to understand how local, state, and federal environmental laws and regulations affect individuals and communities. 2. Provide opportunities for individuals to understand their role in establishing, changing and/or supporting laws, regulations, etc. 3. Provide opportunities that empower individuals to take conservation action within their homes and communities. 	<p>Public officials, school districts, higher education facilities, conservation districts, Penn State Cooperative Extension, environmental and other non-profits, informal education providers, governmental agencies, businesses, industries, and/or families.</p>
<p>Recommendation 4 Provide learners with mentorship opportunities.</p>	<p>Develop a cadre of volunteers, civic leaders, business professionals and others to mentor and enhance learning opportunities about the environment.</p>	<p>School districts, higher education facilities, conservation districts, cooperative extensions, environmental non-profits, informal education providers, governmental agencies, businesses, industries, and/or families.</p>
<p>Recommendation 5</p>	<ol style="list-style-type: none"> 1. Engage minority and 	<p>School districts, higher</p>

Provide environmental learning opportunities to a diverse population not currently represented in the leadership or decision making.	stakeholder groups so that all stakeholders have equitable access to environmental education.	education, conservation districts, environmental non-profits, governmental agencies, businesses, industries, Penn State Cooperative Extension and/or families.
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C. Sustainable Practices, Healthy Living and the Environment

A healthy environment goes beyond the walls of a school building to providing meaningful outdoor learning experiences for students but also looks at what can be done in a community to provide for a healthy lifestyle that will have a positive impact on the environment. Many avenues are addressed through the use of physical activities, gardening, composting, energy efficiency, green initiatives and healthy life choices.

As schools move toward a more sustainable environment their curriculum must reflect the Environment and Ecology Standards where students use both the indoor and outdoor environments as learning opportunities. As new technologies become part of the school buildings and grounds every effort must be made to have the students use technologies as learning tools dealing with real-life solutions to a changing world.

The area of “Sustainable Practices, Healthy Living and the Environment” relates to the following Mid-Atlantic Goal and Outcomes:

Mid-Atlantic Goal 3: Every school in the region maintains its buildings, grounds, and operations to support sustainable environmental and human health outcomes. Outcomes 3.1, 3.2 (See Appendix A)

Recommendations	Action Steps	Providers
Recommendation 1 Manage school buildings and grounds as models of sustainability using best management practices.	1. Provide an environment with natural light, high indoor air quality, good acoustics, good nutrition, and other sustainable practices to enhance students’ ability to learn. 2. Incorporate environment and ecology lessons throughout the curriculum	PDE, schools (public and private), DEP, DCNR, community leaders sustainable businesses contractors/architects, DOH, county and local health departments, PennDOT, Pathways for Green Schools, Green Building Council, WWF Eco-Schools, Audobon

	<p>using the building as a tool for illustrating how man-made environments interact with natural systems.</p> <p>3. Through needs assessments, training, technical resources, promotional materials, and stakeholder involvement, schools, teachers and their communities will use best management practices to make school buildings and grounds more sustainable and eligible for green certification or recognition programs.</p>	
<p>Recommendation 2 Promote parks, outdoor facilities, public lands and waters as resources for healthy living.</p>	<p>1. Provide environmental learning opportunities in outdoor recreation through partnerships with parks and recreation agencies and providers.</p> <p>2. Development of integrated standards-based curriculum and assessment using outdoor recreation.</p>	<p>Parks and recreation organizations, PFBC, PDE, DCNR, DEP, PGC, Federally held lands and conservancies, parks, colleges and universities, environmental education centers, outdoor outfitters, businesses, outing clubs</p>
<p>Recommendation 3 Partner schools with agencies, organizations and businesses that have specified funding for field learning experiences, school upgrades, needs assessments, training, technical resources, and other initiatives.</p>	<p>1. Agencies, organizations and businesses with funding will reach out to schools and communities with program opportunities.</p> <p>2. Environment and Ecology organizations will communicate opportunities of funding available for Environment Education.</p>	<p>DCNR, PFBC, PDE, PGC Conservation Districts, DEP, businesses, PDA, DOH, non-governmental organizations, county and local health departments</p>
<p>Recommendation 4 Foster a connection between growing food, healthy eating and the environment.</p>	<p>1. Integrate school/community gardens into the K-12 curriculum through hands-on approaches using school gardens, instructional</p>	<p>Schools, farms and orchards, FFA, supermarkets, Community-Supported Agriculture, Master Gardeners, PDA, Penn State</p>

	kitchens, lunch rooms and classrooms. 2. Integrate healthy living choices into the K-12 curriculum and public programming.	Cooperative Extension, DOH, non-governmental organizations, county and local health departments, health education organizations, college and universities' agricultural programs
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D. Funding and Implementation

Funding will serve as a necessary component to the PA Environmental Literacy Plan (ELP). Investment in programs that foster environmental literacy is critical.

Pennsylvania's Environmental Education Act of 1993 notes that five percent of the fines and penalties collected annually by the state DEP are designated for environmental education. Environmental education grants are awarded to school districts, charter schools, private schools, colleges and universities, intermediate units, environmental education centers, non-profit conservation and education organizations, businesses, and county conservation districts.

A partnership between DEP and PDE has been in place for 29 years. The purpose of this unique and sustained partnership is to address common educational goals as they relate to environmental education across the commonwealth.

Recommendations will be made and actions will be taken to identify new sources of funding to support environmental education and literacy programs.

Implementation through the use of model programs is essential for success. These programs have been identified through PDE's Environmental Education Exemplary Program and Green Ribbon Schools Initiative. These models are examples of what a school district or charter school curriculum would look like as it exemplifies alignment with the Environment & Ecology Standards and assessment anchors and eligible content. These schools will work with any other school to help them move their curriculum, units of study and lessons to address and meet the Environment & Ecology Standards at the proficiency level.

The area of "Funding and Implementation" relates to the following Mid-Atlantic Goals and Outcomes:

Mid-Atlantic Goal 1: Every student in the region graduates with the knowledge and skills to make informed environmental decisions. Outcome 1.1 (See Appendix A)

Mid-Atlantic Goal 2: All educators in the region responsible for instruction about or in the environment are provided with sustained professional development, tools, and resources that support their role in providing students with high quality environmental education. Outcome 2.1 and 2.2 (See Appendix A)

Mid-Atlantic Goal 4: The education community in the region functions in a unified manner and coordinates with key national, regional and state programs to represent the full suite of information and opportunities available for PK-12 audiences. Outcomes 4.2 and 4.3 (See Appendix A)

Recommendations	Action Steps	Providers
<p>Recommendation 1 Utilize existing federal and state funds for the purpose of quality environmental education.</p>	<p>1. Review funding sources for use in environmental Education.</p> <p>2. Continue with the Environmental Education Council and its role with the PA Environmental Education Grants Program administered by DEP</p>	<p>PDE, all state and federal agencies, STEM organizations, DEP</p>
<p>Recommendation 2 Identify new sources of funding to ensure continuation and support for environmental education and literacy programs at the local, regional and state levels.</p>	<p>1. Identify environmental education stakeholders.</p> <p>2. Network with other states and learn the type of strategies they implement to identify available funding.</p> <p>3. Seek local, state and/or federal funding.</p> <p>4. Seek additional grant opportunities.</p>	<p>State agencies, nonprofit, organizations, associations, conservancies, conservation districts</p>
<p>Recommendation 3 Identify model programs and ensure support for replication.</p>	<p>1. Outreach to school districts to have them share their successes with other districts.</p> <p>2. Look to the environmental education community for submission of model programs.</p>	<p>School districts, charter schools and private schools, state agencies and organizations</p>

E. Partnerships

In an increasingly complex world, collaboration is a 21st century essential skill. With that said, partnerships are critical to the success of all student learning and critical thinking. The complicated issues of today demand a collaborative approach to get the skills, support and knowledge needed for solving issues. Partners come in many shapes and forms: formal to informal organizations, young and old, amateurs to experts. These partners not only build a sense of community but combine their time, resources and expertise to empower communities to make positive change.

Pennsylvania’s ability to form high quality partnerships to address extremely important issues is an essential aspect when it comes to success. From the writing of the first set of stand-alone environment and ecology standards to the writing of this literacy plan, consensus for the betterment of children and ultimately the adults they will become has always been the leading force in everything accomplished in our state.

The area of “Partnerships” relates to the following Mid-Atlantic Goals and Outcomes:

Mid-Atlantic Goal 2: All educators in the region responsible for instruction about or in the environment are provided with sustained professional development, tools, and resources that support their role in providing students with high quality environmental education, Outcome 2.1, 2.5. (See Appendix A)

Mid-Atlantic Goal 3: Every school in the region maintains its buildings, grounds, and operations to support positive environmental and human health outcomes. Outcome 3.2 (See Appendix A)

Mid-Atlantic Goal 4: The education community in the region functions in a unified manner and coordinates with key national, regional, and state programs to represent the full suite of information and opportunities available for PK-12 audiences. Outcomes 4.2, 4.3 (See Appendix A)

Recommendations	Action Steps	Providers
<p>Recommendation 1 Develop, sustain and create partnerships to achieve environmental literacy.</p>	<p>1. Non-governmental organizations, government agencies, and other organizations involved in environment and ecology should link with schools and teachers to create and provide meaningful environment and ecology experiences for their students.</p> <p>2. Utilize all current</p>	<p>Environmental and science education groups, conservancies, conservation districts, county parks and recreation groups, social organizations, communities, businesses including utility companies and local, state and federal agencies.</p>

	<p>technology and communication tools to sustain current and new partnerships.</p> <p>3. Incorporate the role and importance in partnerships in achieving sustainability and environmental change into student learning experiences.</p>	
<p>Recommendation 2 Establish a process/program to help environmental education organizations and agencies build partnerships.</p>	<p>1. Model existing successful partnerships and their programs.</p> <p>2. Provide mentoring opportunities to build successful partnerships.</p>	<p>Environmental and science education groups, conservancies, conservation districts, county parks and recreation groups, social organizations, communities, businesses including utility companies and local, state and federal agencies.</p>

F. Early Childhood Education

All young children are naturally curious about their environment and the world around them, learning best when allowed to actively explore. Students diligently involved in these experiences are utilizing scientific practices that are essential for environmental education. For the young learner environment, scientific concepts and an understanding of natural systems can be incorporated throughout the key areas of early learning. For example, children use play to explore and manipulate materials, creative arts to express their ideas, and literacy and language arts to research answers to questions. There is nothing more real to a young child than the world they live in. The opportunities are endless and the experiences will let them become environmentally literate lifelong learners.

The area of “Early Childhood Education” can be the starting point to working with students to achieve developmentally appropriate knowledge and skills Environment and Ecology Education. This relates to the following Mid-Atlantic Goals and Outcomes:

Mid-Atlantic Goal 1: Every student in the region graduates with the knowledge and skills to make informed environmental decisions. Outcomes 1.1, 1.2, 1.4 (See Appendix A)

Mid-Atlantic Goal 2: All educators in the region responsible for instruction about or in the environment are provided with sustained professional development, tools, and resources

that support their role in providing students with high quality environmental education. Outcomes 2.1, 2.2, 2.5 (See Appendix A)

Recommendations	Action Steps	Providers
<p>Recommendation 1 Implement the PreK-3 Environment and Ecology standards as the educational framework.</p>	<p>1. Ensure all PreK-3 programs address environment and ecology standards.</p> <p>2. Follow the strategies for teaching delineated in the Early Childhood Standards (OCDEL).</p>	<p>PDE, OCDEL, LEA, nature and environmental centers, home-school organizations, non-governmental organizations, STEM groups, professional organizations</p>
<p>Recommendation 2 Promote all aspects of student achievement in Environment and Ecology through the Environment and Ecology Standards, curriculum framework, assessment, materials, resources, instruction and safe and supportive schools.</p>	<p>1. Use PreK-3 Environment & Ecology, Science & Technology, and Social Studies Standards to develop curricula.</p> <p>2. Apply appropriate teaching strategies and assessments.</p> <p>3. Utilize materials and resources aligned to the PreK-3 standards.</p>	<p>PDE and OCDEL, school districts, charter schools, private schools, early childhood centers, providers, DCNR</p>
<p>Recommendation 3 Utilize meaningful outdoor learning experiences that addresses environment and ecology.</p>	<p>1. Incorporate meaningful outdoor learning experiences.</p> <p>2. Incorporate instructional strategies for differentiated learning.</p>	<p>PDE and OCDEL, DCNR, PFBC, other local and state agencies, school districts, charter schools, private schools, early childhood centers</p>
<p>Recommendation 4 Use of Keystone Stars and Green School initiatives to develop sustainable schools.</p>	<p>1. Use Keystone Stars and Environment and Ecology Standards and guidelines to achieve sustainable schools.</p>	<p>PDE and OCDEL, DCNR, PFBC, other local and state agencies, school districts, charter schools, private schools, early childhood centers</p>

G. Pre-service Education

It is critical that new teachers enter the classrooms with an understanding of the Environment and Ecology Standards. Beyond being proficient in content, teachers need to have experience in hands-on, scientific practices and meaningful outdoor learning strategies.

Under Chapter 49, colleges and universities are accountable for the teaching of environmental standards in the PreK-4, 4-8, and secondary education programs. Our next generation of teachers will have the responsibility of preparing their students for current and future technologies and challenges that will impact the environment. As such, it is important for pre-service students to have in-school experiences which explore the use of the needed strategies for solving real-world environmental problems.

The area of “Pre-service Education” relates to the following Mid-Atlantic Goal and Outcomes:

The Mid-Atlantic Goal 2: All educators in the region responsible for instruction about or in the environment are provided with sustained professional development, tools, and resources that support their role in providing students with high quality environmental education. Outcomes 2.1, 2.3, 2.5 (See Appendix A)

Recommendations	Action Steps	Providers
<p>Recommendation 1 Incorporate environmental education into every teacher education program.</p>	<p>Ensure that colleges and universities that certify teachers in PA meet the requirements of Chapter 49 incorporating environmental education into their required course teachings.</p>	<p>PDE, colleges and universities with teacher preparation programs</p>
<p>Recommendation 2 Ensure pre-service students enter the classroom with knowledge, skills, and experiences provided by their course work and experiences.</p>	<p>Provide opportunities for pre-service teachers and other education students to become certified in state and national programs that address wildlife, forestry, agriculture, watersheds, biodiversity, sustainability, and other environmental concepts and topics.</p> <p>2. Encourage pre-service students to take courses that</p>	<p>DCNR, DEP, PGC, PBFC, Audubon PA, state and national environmental agencies, environmental centers, museums, colleges and universities, science centers, PDE, professional organizations</p>

	<p>address environment and ecology content, resources and materials.</p> <p>3. Support the inclusion of Environment and Ecology Standards, assessments and resources in pre-service coursework.</p> <p>4. Encourage meaningful environmental education experiences, both indoor and outdoor, as a part of every pre-service program at the elementary, middle and secondary levels that address forestry, wildlife, watersheds, agriculture, watersheds, and/or sustainability and conservation.</p>	
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H. Professional Development

Professional development is a necessary component to the Pennsylvania Environmental Literacy Plan. This plan will include delivery through traditional and non-traditional educational settings and serve pre-service, in-service, non-formal, youth development organizations, etc.

Professional development as described will target all educators in all disciplines regardless of where components of the Pennsylvania Environmental Literacy Plan are implemented. This plan will promote partnerships between and among schools, agencies and organizations to provide expertise and venues for professional development.

Through the implementation of the Pennsylvania Environmental Literacy Plan, educators will have access to high quality, hands-on environmental education professional development, based upon PA Academic Standards, STEM, outdoor education, environmental education, civic engagement and service learning.

The area of Professional Development relates to the following Mid-Atlantic Goals and outcomes:

Mid-Atlantic Goal 2: All educators in the region responsible for instruction about or in the environment are provided with sustained professional development, tools, and resources that support their role in providing students with high quality environmental education. Outcomes 2.1, 2.2, 2.4, 2.5 (See Appendix A)

Mid-Atlantic Goal 4: The education community in the region functions in a unified manner and coordinates with key national, regional and state programs to represent the full suite of information and opportunities available for PK-12 audiences. Outcome 4.2 (See Appendix A)

Recommendations	Action Steps	Providers
<p>Recommendation 1 Determine needs and identify barriers to participation in professional development.</p>	<p>1. Conduct needs assessments through the Chesapeake Bay Program Environmental Literacy Indicator Tool (ELIT).</p> <p>2. Based on results of ELIT, develop strategies for delivering professional development.</p>	<p>CCSIU, Advisory Council on Environmental Education, CBP, facilitators based on outcome of the evaluation (PDE, Professional Development Providers)</p>
<p>Recommendation 2 Provide professional development opportunities for all educators in formal and non-formal settings to improve content knowledge and instructional strategies in environment and ecology, science and social studies as it pertains to environmental content and strategies for delivery.</p>	<p>1. Identify sources of and provide funding for professional development workshops</p> <p>1. Use current research as a means of ensuring that best practices are implemented in both the classroom and all professional development.</p> <p>2. Provide meaningful outdoor learning experiences for teachers to incorporate in curricula.</p> <p>3. Encourage non-formal environmental educators to obtain EE certification, as available, or certification in state and national environmental education</p>	<p>The Pennsylvania Advisory Council on Environmental Education, PDE, PGC, DCNR, DEP, PFBC, Audubon PA, and other local, state, and federal agencies and organizations involved in providing environmental education training opportunities.</p>

	<p>programs.</p> <p>3. Ensure the professional development is: standards-based, cross-curricular, experiential in nature, provides opportunities for meaningful-learner engagement.</p> <p>4. Encourage and support teachers, education support staff, and administrators to participate in professional development opportunities that address state and national environmental education programs.</p> <p>5. Promote professional development that builds capacity, is community based and addresses real-world issues.</p> <p>6. Ensure sustainability of professional development through models such as train-the-trainer, webinars, professional learning communities, critical friends groups, and the use of emerging technologies.</p> <p>7. Support and implement recommendations and guidelines established for professional development by PDE.</p>	
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Appendix A

Mid Atlantic Elementary and Secondary Environmental Literacy Strategy Goals and Outcomes

Goal 1: Every student in the region graduates with the knowledge and skills to make informed environmental decisions.

Outcome 1.1: States engage students at every grade level in outdoor activities designed to increase environmental literacy.

Outcome 1.2: Students participate in interdisciplinary and scaffolded instruction about the key relationships between dynamic earth, energy, and human systems, including STEM content knowledge and thinking skills.

Outcome 1.3: Students have information about career opportunities and requisite skills for environment-based jobs and the opportunity to participate in programs that prepare them for a future in these careers.

Outcome 1.4: Students have the opportunity to pursue enrichment programs and experiences that support in depth understanding of environmental issues and solutions.

Goal 2: All educators in the region responsible for instruction about or in the environment are provided with sustained professional development, tools, and resources that support their role in providing students with high-quality environmental education.

Outcome 2.1: Educators have access to high-quality, curriculum-based lesson plans, resources, and information on training opportunities that focus on environmental issues for all grade levels and subjects.

Outcome 2.2: Teachers have sustained professional development related to environmental education content, outdoor learning strategies, and pedagogy to promote environmental literacy in their students.

Outcome 2.3: Pre-service teachers enter the workforce with knowledge and experience in interdisciplinary environmental education content, outdoor learning strategies, and pedagogy.

Outcome 2.4: Informal environmental educators in the region understand and can communicate current scientific findings and have knowledge of research-based environmental education best practices.

Outcome 2.5: Federal, state, and local natural resource personnel are actively engaged in environmental education and outreach and have adequate training in instructional techniques and the needs of educational audiences.

Goal 3: Every school in the region maintains its buildings, grounds, and operations to support positive environmental and human health outcomes.

Outcome 3.1: School buildings, grounds, and operations are models of sustainability for the community, making continual progress towards net-zero environmental impacts, including carbon, solid waste, wildlife habitat, and hazardous waste.

Outcome 3.2: The school environment has a positive effect on the health of students, staff, and the surrounding community.

Goal 4: The education community in the region functions in a unified manner and coordinates with key national, regional, and state programs to represent the full suite of information and opportunities available for PK-12 audiences.

Outcome 4.1: States in the mid-Atlantic establish and implement a robust plan for ensuring that all students graduate environmentally literate.

Outcome 4.2: Education programs are developed and refined using the best available research on the effectiveness of environmental education, and support continued research in this field.

Outcome 4.3: Federal, state, and nongovernmental organizations with PK-12 programs actively communicate to increase collaboration related to environmental literacy planning and implementation.

Appendix B

ADVISORY COUNCIL ON ENVIRONMENTAL EDUCATION

Name	Organization
Theresa Alberici	PAGC, Harrisburg, PA
Laura Anderson	Environmental Education Coordinator, Tunkhannock, PA
Judy Archibald	Waste Management
David A. Bauman	PDE, Harrisburg, PA
Fran Bires	McKeever Center, Sandy Lake, PA
Kathleen Blouch	Mt. Gretna, PA
Cherie Conrad	Western Beaver High School, Industry, PA
Jean Devlin	DCNR, Harrisburg, PA
Erika Deyarmin	Waste Management
Daniel Dziubek	Slippery Rock University, Slippery Rock, PA
Jack Farster	DEP, Harrisburg, PA
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Appendix C

Terms utilized in the Pennsylvania Environmental Literacy Plan

Best Management Practices	The most effective, practical means of preventing or reducing pollution and improving efficiency.
CBP	Chesapeake Bay Project
CSA	Community-Supported Agriculture
DCNR	PA Department of Conservation of Natural Resources
DEP	PA Department of Environmental Protection
DOH	Department of Health
EE	Environment and Ecology
ELP	Environmental Literacy Plan
FFA	An intercurricular student organization for those interested in agriculture and leadership
IDEA	Individuals with Disabilities Education Act
LEA	Local Education Agencies
NRCS	Natural Resources Conservation Service
OCDEL	Office of Child Development & Early Learning
PAEE	PA Association of Environmental Educators
PDA	PA Department of Agriculture
PDE	PA Department of Education
PennDOT	Pennsylvania Department of Transportation
PFBC	PA Fish & Boat Commission
PGC	PA Game Commission

Providers	Individuals and organizations that provide resources and training to schools
PSSA	PA System of School Assessment
STEM	Science, Technology, Engineering and Mathematics
SAS	Standards Aligned Systems
Title II	Preparing, Training, and Recruiting High Quality Teachers and Principals