

BIENNIAL STRATEGY REVIEW SYSTEM

Chesapeake Bay Program



Students MWEEs Logic Table

Long-term Target: 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 each grade band -- elementary, middle and high school.

Two-year Target: Not established

KEY: Use the following colors to indicate whether a Metric and Expected Response have been identified.

Metric	
Expected Response	No timeline for progress for this action has been specified

Factor	Current Efforts	Gap	Actions (critical in bold)	Metrics	Expected Response and Application	Learn/Adapt
<i>What is impacting our ability to achieve our outcome?</i>	<i>What current efforts are addressing this factor?</i>	<i>What further efforts or information are needed to fully address this factor?</i>	<i>What actions are essential to achieve our outcome?</i>	<i>Do we have a measure of progress? How do we know if we have achieved the intended result?</i>	<i>How and when do we expect these actions to address the identified gap? How might that affect our work going forward?</i>	<i>What did we learn from taking this action? How will this lesson impact our work?</i>
State Education Agency Leadership for Environmental Literacy	Attempting to gain support for focuses PSC agenda on formal education at least once every 2 years; Encouraging high level support within state education agencies; Maintain adequate staffing to drive MWEE	High level engagement from state DOEs	3.1, 3.2 See also Environmental Literacy Planning	No	On-going maintenance of partnerships. Turn over in these positions would require increased effort.	

	implementation					
Legislation and Policy	MD graduation requirement; DC Healthy Schools Act; PA Integrated Standards for Science, Environment, and Ecology, ELIT survey	In some states there are no state-level policy drivers (WV, NY, DE)	See Environmental Literacy Planning	No	On-going and incremental but sharing across states will be critical to move work forward.	
Local Education Agency Implementation of MWEEs (with partners)	Use ELIT to track MWEEs and other environmental literacy needs	Urgency at the school district level to conduct MWEEs; Accountability measures; Supportive policies	3.1, 3.2, See also Environmental Literacy Planning	Yes. ELIT survey collects data and demonstrates self-reporting of where MWEEs are occurring.	ELIT survey results come in every other year. Districts that demonstrate one MWEE in each grade-band on the ELIT survey will serve as models for others.	
Education Reform/Curriculum Alignment	Work with states and school districts to integrate MWEEs into curriculum to reduce perceived burden	Understanding that MWEEs are not add-ons	1.1, 1.2, 1.3, 2.1, 2.2, 4.1, 4.2	Yes. ELIT tracks districts that have MWEEs integrated into curriculum	ELIT survey results come in every other year. Districts that demonstrate sustainability with one MWEE embedded into the curriculum in each grade-band on the ELIT survey will serve as models for others. Funding will be allocated to different geographies.	
Funding/Staffing	Pursue private and innovative funding	Adequate funding for teacher training, transportation, and action projects. Also capacity building of school districts and their partners in some regions.	See Environmental Literacy Planning	No	Diversified funding will enable current funds to be leveraged for increased impact and sustainability. Innovative funding will enable a focus on under-resourced districts.	
School community	Train-the-trainer model using the Facilitator's	Principals (administrators)	1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 3.2, 4.1,	No.	School district-by-school district basis. Sustainability and	

(teachers, principals, staff) awareness and readiness	Guide to ensure effective professional development of teachers who can design more and better MWEEs; Promote online training and maintain resources on Bay Backpack	need to encourage MWEEs and support teachers/staff in receiving training. Facilitators of MWEE training need to be well-versed in MWEE approach and best practices.	4.2, 4.3 See also Environmental Literacy Planning		long-term support for professional development should be built into Environmental Literacy Plans.	
State agency and partner coordination	Ensure that there are staff to drive MWEE development and implementation; Maintain interagency state workgroups	Enhanced collaboration; sharing of best practices across states and partners	1.2, 2.1, 2.2, 3.2, See also Environmental Literacy Planning	No	Through regular convenings and the development of local environmental literacy networks.	

ENVIRONMENTAL LITERACY: 2023-2024 STUDENT WORK PLAN ACTIONS

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Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline	Partner organizations	Lead Workgroup Member
Management Approach 1: Increase and improve resources for educators (pre-service, teachers, and non-formal) to support the development and implementation of Meaningful Watershed Educational Experiences (MWEEs) for students.							
1.1	Develop and implement state-specific outreach strategies to disseminate the MWEE Guide, MWEE Facilitators’ Guide, and other resources, including an increased focus on Bay Backpack as a place to access resources.						
		Update the Facilitator's Guide (PA, VA, MD and Generic), MWEE 201, and MWEE 101 with the new MWEE definition, tools, and resources.	NOAA	Regional	February 2023		Krysta Hougen-Ryall
		Develop DC-specific facilitator's guide to MWEE	DOEE	DC	June 2023	OSSE	Adrienne Farfalla
		Finalize and disseminate the DE MWEE Facilitator's Guide	DAEE	DE	December 2023	DESG, DNS	Ashley Melvin
		Create a Pre-MWEE 101 Online Course	DESG	DE	December 2023	DESG, DEDOE	David Christopher
		Develop and implement a MWEE introductory session of the Next Gen Science Elementary and Secondary Cadres	DOE	DE	December 2023	DESG, DOE, Stroud, DNS	Tonyea Mead
		Promote Bay Backpack on DAEE newsletter/social media	DAEE	DE	Ongoing	DAEE	Ashley Melvin
		Develop and implement a Maryland-specific outreach strategy to disseminate the updated MWEE Guide, Facilitators Guide, MWEE 101/201, and other appropriate resources.	PGC	MD	July 2023	MD DNR, NOAA	Sandi Olek

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Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline	Partner organizations	Lead Workgroup Member
		Disseminate information on how to access the new MWEE Guide, associated tools, and the MWEE Facilitator's Guide. Ensure resources are posted on agency and organization web sites.	VDOE, VRUEC, VAEE	VA	Ongoing	VSELA, VAST, state agency, EE organizations	Anne Petersen, Candace Lutzow-Felling, Bianca Myrick
		Maintain, update and revise all components of Pennsylvania's Virtual Professional Learning Community (Standards Aligned System web page) for formal and nonformal, expand to include agriculture education as well as Environment & Ecology lessons, resources, etc.	PDE	PA	Ongoing		Tamara Peffer
		Develop and update PA Gateway to Green modules including online supports for classroom, hybrid, and digital MWEE exploration at multiple gradebands	PA PDE, DCNR, DEP, Stroud Center, CBF	PA	Ongoing	PA PDE, DCNR, DEP and Stroud Water Research Center, CFB, PSU Extension, Conservation Districts, Commission on Ag Ed Excellence, Alliance for Watershed Education	Tamara Peffer, Steve Kerlin, Ellen Schultz, Erin McCool, Michelle Niedermeier

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Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline	Partner organizations	Lead Workgroup Member
		Expand, revise, and distribute MWEE and STEM tool kits, including classroom and teacher education resources with student-driven EE, Ag, and STEM focus.	PDE, SWRC, PA SeaGrant, PA STEM NetworksIU POC Team	PA	Annual update FYE	PDE, CBF, SWRC	Tamara Peffer, Steve Kerlin, Michelle Niedermeier, Demetrius Roberts, Stephon Fitzpatrick
1.2	Develop relationships with pre-service programs and/or increase the number of college-level courses, teacher prep programs, and professional certification programs that are using the MWEE and environmental literacy instruction.						
		Support the development and launch of the B-WET funded Pre-Service Teacher MWEE Education Hub on Bay Backpack (VA TIDES Project)	Sarah Nuss, Lisa Lawrence	Regional	December 2023	NOAA	Elise Trelegan
		Support the development and implementation of NGSX Preservice course for university faculty and informal educators	DOE	DE	December 2023	Tidemark, NGSX	Tonyea Mead
		Promote Masters Naturalist Program with the E-LIT Networks	DAEE	DE	Ongoing	DAEE, DESG, UD, DNS, DE State Parks,	Ashley Melvin
		Work with University of Delaware on developing a Masters of Nature Education internship	DE State Parks	DE	Ongoing	DAEE, DESG, UD, DNS, DE State Parks	Angel Burns
		Continue to convene the PGC Higher Education Environmental Literacy workgroup	PGC	MD	Ongoing	MAEOE, Shore Rivers, Towson	Sandi Olek

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Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline	Partner organizations	Lead Workgroup Member
		Engage pre-service programs to determine how they can provide environmental education as part of their coursework (such as teaching methods) with a target of 6 contact hours of training in environmental education	PDE	PA	Dec 2022	PASHE	Tamara Peffer, Dr. Volkman
		Communicate professional development opportunities for pre-service teachers through Teaching Green, Science Matters, SAS EE, & Ag, and Science newsletters, and other STEM communication channels.	PDE DEP, DCNR	PA	Ongoing	PA PDE, DCNR, DEP and Stroud Water Research Center, CFB, PSU Extension, Conservation Districts, Commission on Ag Ed Excellence	Tamara Peffer, Steve Kerlin, Lauren Beal, Nanette Marcum Detrich
		Design and implement PD sessions to fill environmental literacy, methodology, and pedagogical gaps within Teacher Preparation and Educational Leadership programs for preservice teachers and school administrator certification programs. Use NOAA ELit and PA Env Ed Capacity surveys to inform design.	PDE, IU 13	PA	Ongoing	PA PDE, DCNR, DEP and Stroud Water Research Center, CFB, PSU Extension, Conservation Districts, Commission on Ag Ed Excellence	Tamara Peffer, Bert Myers, Carissa Longo, Demetrius Roberts

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Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline	Partner organizations	Lead Workgroup Member
		Iteratively update the PAEE EE certification program for non-formal educators to support sound methodology and equitable access to outdoor field experiences that are supportive of MWEEs . Maintain ongoing enrollment and review process.	PAEE, DCNR, DEP, PDE	PA	Ongoing		PAEE Officers
1.3	Increase the integration of climate change, sustainable schools, and youth-led action into MWEEs by identifying model Environmental Literacy Models (ELMs) and other resources, and providing professional development focused on these priorities.						
		Draft, publish, and rollout B-WET Notice of Funding Opportunity (NOFO) to encourage the development of systemic MWEEs with authentic community connections (DEIJ), comprehensive planning at the school district level, and meaningful connections to climate change and school grounds	NOAA	Regional	October 2022		Elise Trelegan
		Work with B-WET grantees to submit one or more final ELMs with linked resources that will be added to Bay Backpack.	NOAA	Regional	Ongoing	B-WET Grantees	Elise Trelegan
		Publish online course that models use of Climate data tools and highlights actions within the CB region in response to climate impacts	NOAA	Regional	June 2023		Krysta Hougen-Ryall
		Promote and deliver high quality MWEE professional development that is supportive of state standards and models effective use of virtual resources for teachers and non-formal educators	DESG, DOE, DAEE	DE	Ongoing	DNS	Tonyea Mead, David Christopher

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Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline	Partner organizations	Lead Workgroup Member
		Offer the NGSX: Oceans, Climate Change, Big Data course for educators in Delaware	DOE	DE	Annually	Tidemark, NGSX	Tonyea Mead
		Align efforts on Environmental Literacy professional development workshops (Project WET, Project WILD, Project Learning Tree and/or Guidelines for Excellence in EE)	DAEE	DE	December 2023	Dept of Ag, DNREC, DE State Parks, DAEE	Angel Burns, Ashley Melvin
		Working with partner organizations and advisory members, PGC will identify model ELMS that include climate change and identify appropriate platforms to host these materials collaboratively.	PGC	MD	2023-2024		Sandi Olek
		PGC partner organizations and advisory networks will continue and/or expand efforts to provide professional development around how to integrate climate change, sustainable schools, and youth action into MWEEs.	PGC	MD	2023-2024		Sandi Olek
		Elicit information on current B-WET and other EE grants focused on climate change and request exemplar ELMs and resources to inform PD and support climate change education	VRUEC	VA	Annually	VAEE	Candace Lutzow-Felling
		Provide asynchronous professional learning on climate change to support teacher understanding and evidence concerning climate change.	VDOE	VA	Jan 2023	Environmental organizations and institutes of higher education	Anne Petersen

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Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline	Partner organizations	Lead Workgroup Member
		Develop a 3-tiered, hybridized MWEE Professional Development and Instructional Model series for formal and non-formal educators that provides pedagogical support materials to help teachers move along the spectrum from in-person to fully digital. Disseminate through professional development hosted by the NOAA Environmental Literacy Capacity Building Task Force and other state and regional partners.	PDE, DEP, DCNR, Stroud Center	PA	Ongoing	PDE, DCNR, DEP, Stroud Center, CBF, PSU Extension, Conservation Districts, Commission on Ag Ed Excellence	PA Task force
		Organize network resources by theme (e.g. Issue, MWEE component, curricular connection, audience expansion, research supports, etc.); may also include white papers, literature reviews, research summaries.	PA ELIT Capacity Building Leadership Team	PA	Ongoing	PA DEP, PA PDE, DCNR, DEP, and Stroud Water Research Center, CBF, PSU Extension	Tamara Peffer, Bert Myers, Carissa Longo, Tarrea Potter, Steve Kerlin, Jenn Fetter
		Collaborate with PA CTE, Pa AG and FFA, PDE School Services (e.g. Migrant Ed, Refuge, and 21st Century programs) to provide professional development and resource support to include MWEEs and EE Education in education offerings. These programs include school time, after school, and summer programs.	PDE, PDA, WETI (Millersville)	PA	Ongoing	PDE, PACTE, PAEE, PA Com for Ag Ed Ex., PSAYDN, CSIU, EEAC, PDE OCDEL	Tamara Peffer, Jean Kelleher, Scott Sheely

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Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline	Partner organizations	Lead Workgroup Member
		Expand network of NGO educators trained in MWEE framework; document expansion via PA EE Near ME	PDE, DCNR, PAEE, ,21st Century Program, Migrant Education Program.	PA	Ongoing	PDE, PACTE, PAEE, PA Com for Ag Ed Ex., PSAYDN, CSIU, EEAC, PDE OCDEL	Tamara Peffer, Jean Kelleher, Stephon Fitzpatrick, Demetrius Roberts, Carmen Medina, PAEE Leadershop, Steve Kerlin, Michelle Niedermeier

Management Approach 2: Support facilitators in developing effective MWEE professional development for educators (pre-service, teachers, and non-formal).

2.1	Provide training to increase the number of trained MWEE facilitators, including modeling how to ensure that MWEEs are multidisciplinary, and culturally and locally relevant.						
		Support the development of a new NAAEE EE Pro version of MWEE 101 for nonformal educators across the country	NOAA	Regional	December 2023	NAAEE	Krysta Hougen-Ryall
		Conduct a train-the-trainer on the DC Facilitator's Guide	DOEE	DC	Oct 2023	OSSE	Adrienne Farfalla
		Conduct MWEE Amabassdor Training	DESG	DE	Dec 2023	DNS, DAEE	David Christopher
		Provide training to support implmentation of MWEE professional development using the Facilitator's Guide that is tied to regional environmental issues.	VAEE, VRUEC, VDOE, VA Network	VA	Ongoing	DCR; VSELA	Bianca Myrick, Candace Lutzow-Felling, Anne Petersen

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Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline	Partner organizations	Lead Workgroup Member
		Engage professional and practice groups such as, PA IU system, PA STEM Ecosystems, Ag Ed (e.g. PAAE), Environmental Justice Advisory Board, School Support Services groups (e.g. Migrant & Refugee ED, and 21st Century Programs through PD that demonstrates utilization of MWEE and ELM as a tool to promote inclusive problem based learning practices that address statewide initiatives.	PDE	PA	Ongoing	PDE	Tamara Peffer, Demrius Roberts, Carmen Medina, Stephon Fitzpatrick
2.2	Support communities of practice for MWEEs and education for climate action that provide opportunities for practitioners to network and share best practices, communication strategies, and resources.						
		Develop and implement an annual plan of webinars and opportunities to support B-WET grantees and MWEE providers	NOAA	Regional	Ongoing	B-WET Grantees	Elise Trelegan
		Support the development and implementation of an education for climate action community of practice and offer opportunities for the CoP to connect and learn about climate education models and practices.	NOAA	Regional	Ongoing	NERRS, Sea Grant	Bart Merrick
		Support the MACCE-Forum Action teams and convene Forum participants and other stakeholders quarterly to share progress of these action teams (Student Leadership, Strengthening Strategic Networks, Climate Reacy Workforce and Resilience Hubs)	NOAA	Regional	Ongoing	NERRS, Sea Grant	Bart Merrick

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Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline	Partner organizations	Lead Workgroup Member
		Support the planning and implementation of the 2023 MACCE-Conference (Summer 2023)	NOAA	Regional	June 2023	NERRS, Sea Grant	Bart Merrick
		Use PD opportunities to develop and expand environmental literacy within regional communities of practice and elicit conversations among regional stakeholders. Regional PD opportunities to be developed as the Virginia network develops and through existing/on-going PD opportunities through our respective organizations.	VRUEC, VAAE, VDOE	VA	Ongoing	DCR Env Specialists, State agencies, Environmental Organizations	Bianca Myrick, Candace Lutzow-Felling, Anne Petersen
		Host the annual MAEOE conference	MAEOE	MD	2023-2024		Laura Collard
		Continue supporting the Outdoor Learning Network Initiative efforts in Berkeley, Morgan, and Jefferson Counties with the goal of embedding systemic, curricularly integrated, and partner-supported MWEs.	Cacapon Institute	WV	Ongoing	Experience Learning, Potomac Valley Audubon	Frank Rogers
		Develop a facilitator training/capacity network in connection to PA ELIT that includes PA STEM Ecosystems, PA BSP EE team, PA Conservation District education and outreach staff (including Envirothon Coordinators), PA Library System, PSU Extension educators. Connect to PA Facilitators Guide development to ensure QA/QC.	PA PDE, DCNR, DEP, Stroud Water Research Center, CFB	PA	June 2024	PDE, DCNR, DEP and Stroud Water Research Center, CFB, PSU Extension, Conservation Districts, Commission on Ag Ed Excellence	Tamara Peffer, Demetrius Roberts, Chris Kemmerer, Bert Myers, Michelle Niedermeier, Steve Kerlin

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Management Approach 3: Increase the number of school and school district personnel who support using environmental literacy programming, including MWEEs, as an educational best practice that builds and reinforces core content understanding.

3.1	Collect, analyze, and communicate the benefits of using MWEEs as a best practice to district administrators and principals. Use a variety of student data to connect existing educational and key policy initiatives within each state.						
		Create a B-WET Chesapeake video focused on school district implementation that highlights Arlington Public Schools	NOAA	Regional	December 2023	NAAEE, Contractor, Arlington Public Schools	Elise Trelegan
		Determine and share the results from the "Cost of MWEE analysis" with Bay Program and environmental literacy partners in the state.	PGC	MD	December 2023	DNR with local partners	Sandi Olek
		Analyze student performance data on state assessments to communicate and inform potential next steps for environmental education and implementation of MWEEs.	VDOE	VA	Annually		Anne Petersen
		VA network defines potential actions to increase support for ELit and MWEE, especially in those school divisions that provide no or limited ELit opportunities for students. As network hubs are created and activated, these hubs will focus on strategies to address the ELit/MWEE gaps.	VRUEC & VAEE	VA	December 2024	VDOE	Bianca Myrick, Candace Lutzow-Felling
3.2	Provide professional development for school and school district administrators focused on the MWEE as an educational best practice and build their capacity as MWEE Ambassadors.						

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Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline	Partner organizations	Lead Workgroup Member
		Conduct professional development for school administrators on MWEEs	DESG, DOE	DE	Dec 2023	DESG, DNS, DAEE	David Christopher
		Explore the replication of the CRSD model of community leadership tours bringing together formal & non-formal stakeholders in other DE school districts	Ceaser Rodney School District	DE	Ongoing	DOE, DAEE	Todd Klawinski
		As a collective, PGC will determine a way to identify existing professional development initiatives Maryland along with current gaps in these efforts. Identifying existing PD efforts may relate to the work of the Environmental Literacy Advisory Network (ELAN) work especially with regards to network weavers.	PGC	MD	Ongoing		Laura Collard
		PGC will collate the information described above into a resource to share with agency/ organizational leadership (ex. storymap) and consider if this resource could be included in those that we are already planning to share publically (Students 1.1)	PGC	MD	Ongoing		Laura Collard

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Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline	Partner organizations	Lead Workgroup Member
		Administer and iteratively adapt PA Administrator/leadership level training (ACT 45) that incorporates Environmental Literacy Plan Development and highlights benefits of systemic MWEE integration.	PDE, DCNR, CBF, SWRC, IU 13	PA	Ongoing	PA PDE, DCNR, DEP, and Stroud Water Research Center, CBF, PSU Extension, Comm for Ag Ed Ex), Earth Force, IU13	Tamara Peffer, Steve Kerlin, Chris Kemmerer, Bert Myers
		Develop and offer professional development programs which support environmental literacy plan development and implementation. Encourage partnering of non-formal educators to provide outside support for teachers and administrators opportunity to develop community- wide, systemic, interdisciplinary programs.	PDE, DCNR, CBF, SWRC, IU 13, Fairmount Waterworks	PA	December 2023	PA PDE, DCNR, DEP, and Stroud Water Research Center, CBF, PSU Extension, Comm for Ag Ed Ex), Earth Force	Tamara Peffer (PDE)/ Steve Kerlin (SWRC), Chris Kemmerer (DCNR), Bert Myers (DEP), Laura Beal (IU 13)

Management Approach 4: Increase the number of high-quality environmental education experiences for youth.

4.1	Increase the number of student experiences that include outdoor learning and build toward incorporating all elements of the Meaningful Watershed Ed						
		Provide funding for school systems, individual schools, and non-formal education partners to establish and lead outdoor educational opportunities with a focus on high-quality MWEEs	NOAA, CBT	Regional	Ongoing		Elise Trelegan, Emily Stransky

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		Provide oversight, guidance, and support for B-WET grants to support high quality, sustainable MWEE programming that includes NOAA science	NOAA	Regional	Ongoing		Elise Trelegan
		Ensure that presentations on the B-WET program and MWEE framework are offered at state environmental education conferences	NOAA	Regional	Ongoing	VAEE, PAEE, MAEOE, DAEE	Elise Trelegan
		Initiate the development of a career awareness oriented MWEE in the middle school grade band.	DOE/Advanced CTE	DE	Ongoing	Advanced CTE	Jon Wickert and Tonyea Mead
		Continue to fund MWEEs through the DEP EE Grant Program, Pathways To Green School mini awards, and PA SMART Grants.	DEP, PDE	PA	ongoing	PDE, DEP	Bert Myers/Tamara Peffer
4.2	Increase the number of MWEEs that center on and/or incorporate education for climate action.						
		Within regional funding opportunities prioritize the development of MWEEs that focus on education for climate action	NOAA, CBT	Regional	Ongoing		Elise Trelegan, Emily Stransky
4.3	Increase the number of opportunities for youth leadership and youth-led action.						
		Track and support the development of the new NOAA youth leadership program to ensure lessons learned from CBP youth initiative are incorporated	NOAA	Regional	Ongoing	National Park Service Chesapeake	Elise Trelegan
		Host a Youth Summit centered on Climate Change	DOE	DE	December 2023	Odyssey Charter School	Tonyea Mead