



TEACHING GREEN



TOM WOLF, GOVERNOR • PATRICK MCDONNELL, DEP SECRETARY

Welcome, Educators!

As nature shows us, adaptation is all. During the Covid-19 pandemic, we're seeing incredible adaptation by environmental educators statewide who are developing thoughtful ways to move instruction indoors and online. Here we offer some online learning resources from DEP and our close partners so that you and your learners, whether youth or adults, can stay home, stay healthy, and stay smart. Thank you for all you do to foster environmental literacy and stewardship in Pennsylvania. — Bert Myers, Director, Environmental Education and Information Center, DEP



Environmental Ed at Home

Teaching Environmental Education at Home
The Pennsylvania Association of Environmental Educators partnered with DEP and other environmental educators across the state to develop [Teaching Environmental Education at Home](#), a gateway to a range of meaningful environmental education and science online activities. The path starts here for engaging virtual exploration of climate, landfills, volcanoes, bat caves, watersheds, forests, and many other parts of the environment — including your own yard.



Standards Aligned System: Environmental Content and Communities

The Pennsylvania Department of Education's [Standards Aligned System](#) offers an amazing array of content and lesson plan ideas for digital learning. Check out the new Environment, Ecology, and Agriculture lesson/unit plans in the Materials and Resources section. All are aligned to state academic standards. In addition, the Environment, Ecology, and Agriculture Professional Learning Community is updated frequently to provide resources for schools, teachers, and students. It's also a great place to ask questions or share your lesson adaptations and ideas!



Grants

Success Stories: 2019 Environmental Education Grant Projects

A number of 2019 Environmental Education Grant-funded projects have successfully concluded, while others continue to make progress despite interruptions created by COVID-19 restrictions. We share a few here to inform and inspire you!

Columbia County Conservation District: "DIY Stormwater" Workshop Webinar

Columbia County Conservation District staff put their ingenuity to work by shifting their "DIY Stormwater" workshop to an online webinar on April 18. Timed near Earth Day 50, the [webinar](#) attracted 55 participants! Participants learned why it's important to reduce stormwater runoff pollution, how to calculate their property's runoff, and how to assemble a rain barrel. They'll receive a rain barrel kit when COVID-19 restrictions are lifted.

Because participants expressed enthusiasm for future webinars, the conservation district hosted a [No Mow, Let It Grow](#) lunch-and-learn webinar on May 1 that engaged 37 participants. The webinar featured information on flash flooding and options to the traditional lawn. Based on feedback, a native plants webinar is slated for May 8. To advertise the webinars, the conservation district created a Facebook event with a registration link.



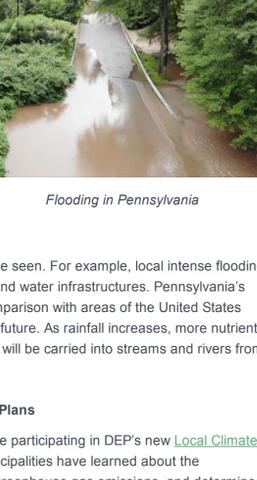
Mercer County Conservation District and Buhl Farm Park: "Everyone Lives Downstream" In-School Watershed Programs

Staff at Mercer County Conservation District and Buhl Farm Park provided watershed education programs to 13 public and private schools in the 2019-2020 academic year. Students learned the importance of improving water quality by also caring for the land, and explored this using a 3D Enviroscope. Ten schools enthusiastically opted to participate in a follow-up activity this spring, a rain barrel competition called "All Drops Matter" organized by Mercer County Middle School. Students prepared themed rain barrels and written plans for installing and maintaining the barrels on school grounds. Project leaders are in the process of developing an online voting platform, and the rain barrels will be displayed at the conservation district's annual Pioneers in Conservation meeting.

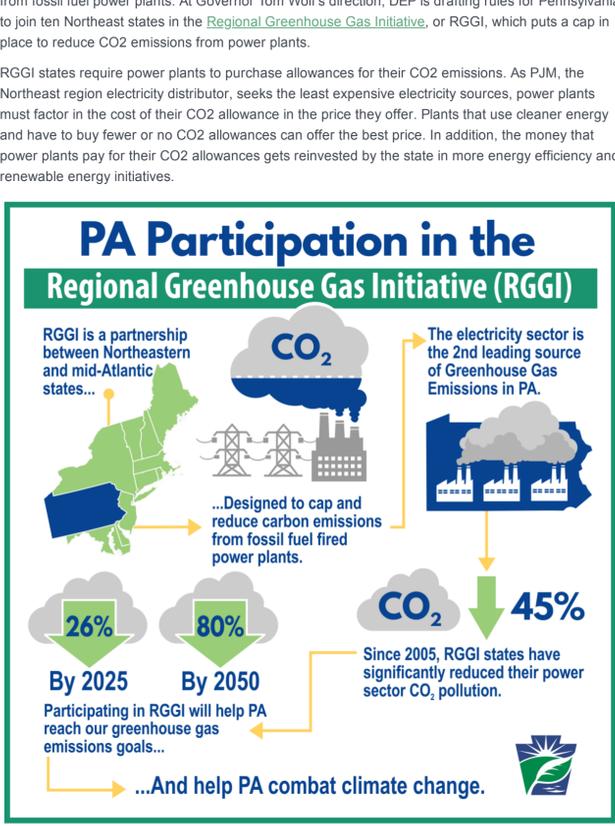


Dauphin County Conservation District: "Managing Stormwater on Your Property" Workshops

Dauphin County Conservation District staff taught more than 60 people how to reduce stormwater runoff at their homes in two workshops held last fall. Participants learned best practices such as planting rain gardens, planting trees and shrubs on stream banks, using rain barrels, improving downspout connections, installing porous pavement instead of asphalt or concrete, keeping yard waste out of storm sewers and streams, and more. At the end of the workshops, over 50 people committed to adopting at least some of these stormwater management practices at home. Conservation district staff plan to follow up to learn whether they were successful in using these practices and, if not, what challenges prevented them.



Climate Change in PA



DEP is a central source of state-specific materials to help Pennsylvania communities, businesses, organizations, and citizens reduce greenhouse gas emissions, understand and adapt to temperature and rainfall changes already happening, and plan and take action to lessen the impacts of future climate changes. When you're looking for factual information on climate change here in Pennsylvania, look to [dep.pa.gov/climate](#). Recently added resources include:

Impacts of Climate Change in Pennsylvania in 2050

If we don't reduce greenhouse gas emissions, what will Pennsylvania look like in 2050? The [2020 Pennsylvania Climate Impacts Assessment](#) uses state and federal data to project future climate change-related impacts in three areas: livestock, infrastructure, and water quality. It follows a 2015 report that outlines likely climate impacts on outdoor recreation, energy use, and other areas. Both reports were produced for DEP by the Penn State University Environment and Natural Resources Institute.



Flooding in Pennsylvania

Every county is expected to be warmer and wetter, with statewide average rainfall increasing 8-12 percent compared with the amount of rainfall in 2000, particularly in winter and spring, while average temperature rises by 4.9° F. Many impacts will be seen. For example, local intense flooding is likely to stress Pennsylvania's energy, transportation, and water infrastructures. Pennsylvania's inventory of poultry livestock could double, based on comparison with areas of the United States where current temperatures are what's projected for our future. As rainfall increases, more nutrient (nitrogen and phosphorus) and sediment runoff pollution will be carried into streams and rivers from agricultural and urban areas.

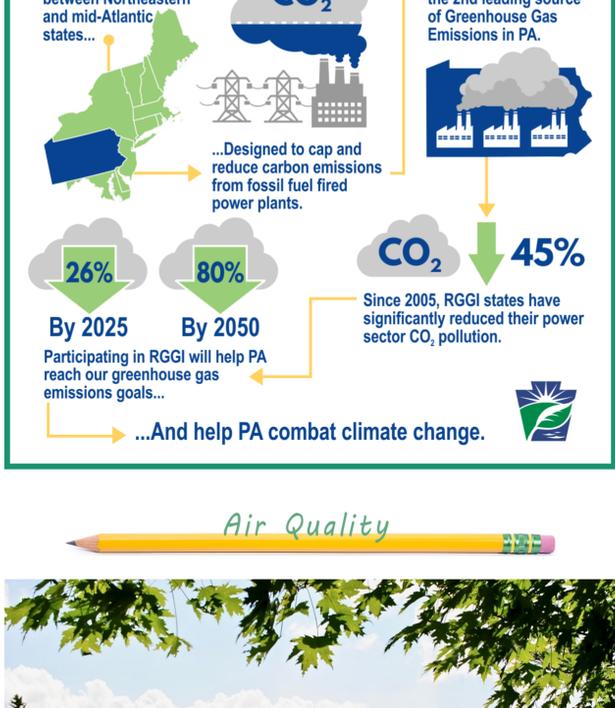
Helping Communities Develop Local Climate Action Plans

Is your community one of twenty around the state that are participating in DEP's new [Local Climate Action Assistance Program](#)? Through this program, municipalities have learned about the [Pennsylvania Climate Action Plan](#), measured their local greenhouse gas emissions, and determined local climate-related vulnerabilities. They're now drafting climate action plans to share publicly for input from leaders and residents in their communities.

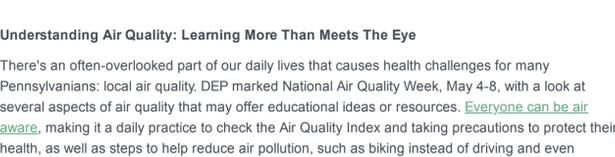
Joining Other Northeast States in Reducing Carbon Dioxide Emissions from Power Plants

The second biggest source of carbon dioxide (CO₂) pollution in Pennsylvania is electricity generation from fossil fuel power plants. At Governor Tom Wolf's direction, DEP is drafting rules for Pennsylvania to join ten Northeast states in the [Regional Greenhouse Gas Initiative](#), or RGGI, which puts a cap in place to reduce CO₂ emissions from power plants.

RGGI states require power plants to purchase allowances for their CO₂ emissions. As PJM, the Northeast region electricity distributor, seeks the least expensive electricity sources, power plants must factor in the cost of their CO₂ allowance in the price they offer. Plants that use cleaner energy and have to buy fewer or no CO₂ allowances can offer the best price. In addition, the money that power plants pay for their CO₂ allowances gets reinvested by the state in more energy efficiency and renewable energy initiatives.



Air Quality



Understanding Air Quality: Learning More Than Meets The Eye

There's an often-overlooked part of our daily lives that causes health challenges for many Pennsylvanians: local air quality. DEP marked National Air Quality Week, May 4-8, with a look at several aspects of air quality that may offer educational ideas or resources. [Everyone can be air aware](#), making it a daily practice to check the Air Quality Index and taking precautions to protect their health, as well as steps to help reduce air pollution, such as biking instead of driving and even [practicing good campfire and fire pit habits](#). Learn more about air quality in Pennsylvania at [Our Common Wealth](#).

Harrisburg Falcons

Three Hatchlings Arrive

Welcome, Young Peregrine Falcons!

With the birth of three hatchlings in April, it's been life as normal at the [peregrine falcon nest](#) atop the Rachel Carson State Office Building. The hatchlings, or eyasses, weigh only about 1.5 ounces at birth and are covered in a fluffy white down. But the fastest flyers on the planet are fast growers, too. Feathers replace the down in three to five weeks, and the young birds are essentially full grown and starting their first flying attempts at six weeks of age. The return of state-threatened peregrine falcons to the Northeast is one of nature's great comeback stories: Check out this DEP blog post [chronicling the history of peregrines' return to Pennsylvania](#).



Banding Event is Off Due to COVID-19

Our annual banding event will not occur. In the interest of protecting everyone's health during the pandemic, DEP and the Game Commission have canceled this event, which usually takes place in May, for the first time in 20 years.

Water

The following resources not only meet Pennsylvania state Environment and Ecology Academic Standards, but also teach students about a key state initiative: reducing nutrient and sediment runoff pollution in our 43 counties in the Chesapeake Bay Watershed. Pennsylvania is one of six states participating in the Chesapeake Bay Watershed Agreement, which includes increasing environmental literacy about watersheds as a central goal. Toward this end, here are some great educational resources:



The Chesapeake Bay Watershed in PA

[MWEF educator's guide from the Chesapeake Bay Program](#): Find out how to take your water education up another notch by creating a Meaningful Watershed Educational Experience (MWEF) for your students. Students will enjoy hands-on learning experiences designed to foster a lifelong relationship with the waters they live in and a sense of environmental ethics and stewardship essential to the long-term sustainability of the Chesapeake Bay Watershed and all watersheds.

[MWEF 101](#): This National Oceanic and Atmospheric Administration (NOAA) tool provides online professional development to help guide your creation and use of MWEFs.

[Bay Watershed Education and Training](#): The B-WET program from NOAA promotes locally relevant, authentic experiential learning focused on K-12 audiences.

[Bay Backpack](#): This website from the Chesapeake Executive Council supports hands-on environmental learning. This site provides funding opportunities, field studies, ancillary curriculum guides and lesson plans, and stewardship/action project support related to the Chesapeake Bay and can easily be adapted to any Pennsylvania water basin or watershed.



[WikiWatershed](#): This web toolkit from Stroud Water Research Center is designed to help citizens, conservation practitioners, municipal decision-makers, researchers, educators, and students advance knowledge and stewardship of freshwater.

[Sea Grant Aquatic Invaders AttackPack](#): This kit is filled with materials to help teach groups about Great Lakes aquatic invasive species (AIS), the problems AIS cause, and what can be done to reduce them. Each pack includes preserved specimens of AIS, rugged plastic fact sheets, and a classroom guide.



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