

FREE

The **Appalachian VOICE**

Dec. 2018 / Jan. 2019



ENERGY Democracy

Part Two of a two-part series looks at how everyday people are taking charge of their electricity systems and prioritizing clean energy, affordability and choice



ALSO INSIDE:

Citizen Science

Discover projects underway across the region and how you can get involved

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About the Cover

Water droplets from fog form into rime ice on shrubs at the summit of Elk Knob in Watauga County, N.C., last December. Grandfather Mountain, the highest of the Blue Ridge mountains, can be seen in the background. Photo by James M. Davidson orchardhillmedia.com Instagram: @jdavidson888

A note from our executive director

Those in the paths of proposed pipelines, downstream from mountaintop removal coal mines or struggling to pay unnecessarily high electricity bills are impacted every day by our energy system's failure to protect people and the planet. But even for those further removed from these common situations, it's becoming increasingly clear that the way energy is produced and delivered benefits a handful of big companies at the expense of our air and water, our climate and ordinary people.

We need an energy system that is responsive and responsible to the people it serves, one that prioritizes affordable energy efficiency and renewable energy options. In other words, we need energy democracy. Unfortunately, instead of advancing accessible clean energy, many of our utilities are prioritizing profits by working to further entrench the status quo.

For instance, Duke Energy and Do-

minion Energy are looking to saddle ratepayers with the cost of the unnecessary and destructive \$7 billion Atlantic Coast Pipeline.

These same utility giants, alongside others like the Tennessee Valley Authority and Appalachian Power, are resisting policies that would allow residents to buy solar power from independent companies instead. These third-party power purchase agreements have fostered solar growth and energy independence in other parts of the country. Residents of Appalachia deserve the same opportunity.

All too often, member-owned electric cooperatives are also standing in the way of progress. All 13 electric cooperatives in Virginia recently intervened in a case brought by three member-owners of one co-op who are seeking more transparency from their cooperative (read more on the centerspread).



With clean energy solutions available and increasingly affordable, the only equitable system is one that offers citizens a choice over how — and from whom — they buy power, and that allows small solar generators to fully participate in the market.

This issue of The Appalachian Voice includes the second installment of a two-part series focused on our electricity system. In the last issue we examined some major problems; here, beginning with the centerspread, we examine some solutions, sharing stories of how people are reclaiming their power, both literally and figuratively.

Appalachian Voices is committed to advancing energy democracy in our region, and we hope you'll join us as we build this road together in 2019.

For a fair and clean energy system,

Tom

Tom Cormons, Executive Director

GET INVOLVED environmental & cultural events

See more at appvoices.org/calendar

First Day Hike

Jan. 1: Start the new year off on the right foot with a guided hike at any participating state park near you. For locations and more info visit stateparks.org/first-day-hikes

Smith Mountain Lake State Park Hike

Jan. 10, 9 a.m.-3 p.m.: Join the Roanoke Outdoor Foundation for an easy, guided 5-mile hike through Smith Mountain Lake State Park. \$8. Roanoke, Va. Call (540) 297-6066 or visit tinyurl.com/SmithMtnHike

Lore and Tracking Weekend

Jan. 18-20: Visit Twin Falls Resort State Park to learn about tracking, history and 18th-century skills used by indigenous people and European colonists. \$42.42 workshop only, \$120.82 lodging and workshop, discount for two people. Mullens, W.Va. Call (304) 294-4000 or visit wvstateparks.com/event/tracking-woods-lore-weekend to register.

Cold Full Moon Hike

Jan. 20: Cass Scenic Railroad State Park is offering guided three-mile full moon hikes from the visitors center aided by the light of this

full moon, traditionally called the Long Moon or Cold Moon. Free. Cass, W.Va. Call (304) 456-4300 or visit tinyurl.com/coldmoonwalk.

Winter Woody Plant Identification

Jan. 26, 8:30 a.m.: Learn how to identify a variety of winter plants at the Great Smoky Mountains Institute at Tremont. \$64, breakfast and lunch included. Townsend, Tenn. Call (865) 448-6709 or visit tinyurl.com/WinterPlantID

Wintergreen Hike

Feb. 2, 11 a.m.: Take a 1-mile hike along the Hemlock Nature Trail in South Mountains State Park and learn about evergreen plants. Free. Connelly Springs, N.C. Call (828) 433-4772 or visit tinyurl.com/southwintergreen.

Appalachian State Old Time Fiddler's Convention

Feb. 8-9: This student-operated and student-funded convention at Appalachian State University celebrates history, art and music of Appalachia. Instructional workshops, competitions, concerts, handmade craft markets and more! Boone, N.C. Visit fiddle.appstate.edu for more info and a schedule of events.



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Across Appalachia

Microplastics Flood Tennessee River Watershed

When Andreas Fath swam the Tennessee River in 2017, he was unaware that approximately 30,000 particles of microplastics could be found floating in his immediate vicinity at any given time.

Fath, a German scientist from Furtwangen University and an accomplished long-distance swimmer, partnered with Sewanee University Professor of Geology Martin Knoll for "TenneSwim." Fath swam the entire 652 miles of the Tennessee River in 34 days while the team collected water samples along the way. Fath had completed a similar swim along the Rhine River in Europe, prompting Knoll to contact him in 2015 about researching and swimming an American river.

In 2017, a team of volunteers and students joined Fath and Knoll on their journey to test the river for contaminants and raise awareness of water quality issues.

According to the U.S. Environmental Protection Agency's water quality data, "the river looks pretty clean," Knoll says. The Tennessee River, a watershed with a population of 5 million people, had much lower levels of pharmaceuticals and pesticides than in the Rhine, which drains

a watershed with 50 million people.

However, the "big shock," Knoll says, came when the water samples were tested for microplastics, which are not regulated by the EPA. Results showed microplastics between 0.25 and 0.5 millimeters in size were present at a rate of 16,000 to 17,000 particles per cubic meter of water in the Tennessee River, compared to the Rhine's 200 particles per cubic meter.

"That's incredible," Knoll says.

Microplastic studies on freshwater wildlife are limited, but saltwater studies have shown these plastics can weaken an organism's ability to reproduce and digest food by interrupting hormonal functions in the body. Microplastics and toxins attached to them can accumulate in fish and eventually be consumed by humans through food or water.

Knoll noted that most microplastics sink, and the TenneSwim team only tested waters close to the surface. His samples found high levels of plastic at all points in the Tennessee River.

"It's a problem through the watershed," Knoll says, which leads him to believe the problem is litter. "In my mind, that's the source of the majority of this stuff, is litter." — *By Eric Halvarson*

Knoxville Chemical Waste Permit Renewed After Citizen Hearing

On Oct. 11, a solid waste permit was renewed for Rohm and Haas Chemical Plant in Knoxville, Tenn.

To raise awareness of the plant, nonprofit groups Statewide Organizing for Community eMpowerment, Science for the People's Knoxville chapter, and Students Promoting Environmental Action in Knoxville were involved in a Tennessee Department of Environment and Conservation hearing on the permit renewal in September.

Community members voiced concerns over chemicals produced at the plant, standards used for waste storage, and quality of the cleanup of previous spills.

The plant had previous infractions for leaking contaminants into local groundwater, and part of the waste permit's mandate is to continue remediation work that began in 2008.

"A lot of people don't even know

there's a potential danger," says Tiara-Lady Wilson, a member of Statewide Organizing for Community eMpowerment.

Rohm and Haas is required to remediate tetrachloroethene, which leaked into groundwater at the site, as part of the permit. The company has been injecting sodium lactate into groundwater sources as a form of bioremediation. Tetrachloroethene degrades into more toxic chemicals such as vinyl chloride, which have been linked to cancer, liver and kidney damage and more.

"At the end of the day, Rohm and Haas is following the law," Wilson says. While no changes were made to the permit after public comment, Wilson notes that not everything that is legal is right.

"It's the state-level regulators at this point that wield any power as far as actually monitoring and regulating giant corporations," says Ben Allen of Science for the People. — *By Eric Halvarson*

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Across Appalachia

Judge Refutes Trump Administration Decision on Red Wolf Conservation

On Nov. 5, a federal judge ruled that the U.S. Fish and Wildlife Service violated the Endangered Species Act and the National Environmental Policy Act by failing to uphold a congressional mandate to defend and conserve the critically endangered red wolf in Eastern North Carolina, where the world's only wild population of red wolves lives in a five-county area on the Albemarle Peninsula.

In his order, Chief Judge Terrence Boyle of the U.S. District Court for the Eastern District of North Carolina made permanent the Obama administration's 2016 order to end the Fish and Wildlife Service's shoot-to-kill authorization, which means that neither the agency

nor private landowners can capture and kill red wolves that roam off their refuge unless the agency can prove that a wolf is a threat to humans or livestock.

The court's decision stands to significantly alter the agency's June proposal to decrease the protected habitat of the endangered wolves by nearly 90 percent. The plan would have limited red wolves to the Alligator River National Wildlife Refuge and an Air Force bombing range. The Southern Environmental Law Center, the nonprofit law firm that filed the case on behalf of several environmental organizations, states that as few as 24 red wolves remain in the wild — all in Eastern North Carolina. — *By Kennedy Kavanaugh*

Canaan Valley Cancels Plans for Commercial Logging

On Oct. 30, Canaan Valley National Wildlife Refuge Manager Ron Hollis canceled plans to commercially log nearly 20 percent of the wildlife refuge, which is within West Virginia's Monongahela National Forest. The original plan, released in August, would have allowed in-house and contract commercial logging for 30 to 40 acres annually, with commercial areas recut in 40-year cycles.

West Virginia conservation group Friends of Blackwater and other organizations successfully mobilized opposition to the timbering plan. The public submitted hundreds of comments citing scientific and ecological concerns, which required the agency to extend the comment period.

Hollis announced that the refuge would pursue limited non-commercial logging as an alternative to commercial timber harvest.

In a press statement, Friends of Blackwater Director Judy Rodd said, "We are very happy that endangered species habitat will be protected using non-commercial forest management to promote a diversity of habitat types on the refuge."

According to the U.S. Fish and Wildlife Service, the refuge is currently home to 580 species of plants and 288 animal species within its high elevation grasslands, wetlands and forests.

Also in October, the Center for Biological Diversity, a nonprofit conservation advocacy group, submitted comments opposing two other logging projects the U.S. Forest Service proposed for the Monongahela National Forest. These plans target nearly 400 acres in the Spruce Mountain Grouse Management Area and more than 2,400 acres in the Big Rock area. — *By Caelann Wood*

Proposed Landfill at Oak Ridge Sparks Controversy

On Nov. 7, a public meeting addressed concerns over a proposed landfill for Tennessee's Oak Ridge Reservation, a 37,000-acre area that produced enriched uranium for nuclear weapons during World War II and the Cold War. Residents cited worries such as high levels of precipitation at the site and the management of contaminated water in nearby streams.

The U.S. Environmental Protection Agency designated the area as a Superfund site in 1989. UCOR is the official environmental cleanup contractor for the site and oversees the current waste treatments. In September, UCOR CEO Kenneth J. Rueter told The Oak Ridger that "future cleanup is threatened without another facility that provides the capacity to finish the cleanup in Oak Ridge."

Clarkrange, Tenn., resident Sid Jones argued in a letter to the Oak Ridger that while the current facility

is presented as an "unblemished success," significant issues have occurred including flooding and the release of radioactive wastewater.

The Oak Ridge Quality Advisory Board Chairman told The Oak Ridger that he would like the U.S. Department of Energy to try a different solution — preferably one that removes waste from the site, noting that the ground below the proposed landfill is "like Swiss cheese."

The Tennessee Department of Environment and Conservation raised similar concerns in a public release which details "important issues that have not been resolved enough to gain state approval of [the Department of Energy's] proposed plan." These concerns include groundwater contamination, the transportation and handling of mercury and a lack of transparency regarding the amount of waste within the facility. — *By Caelann Wood*

WV Drops Drinking Water Protections

On Nov. 26, a West Virginia legislative committee accepted an industry group's last-minute amendment to state drinking water standards dictating safe pollutant levels. Instead of updating state rules to be consistent with federal standards set in 2015, state regulators will continue using 1980's-era rules unless lawmakers change them. Hundreds of residents requested improved water protections during the summer 2018 comment period. A vote on the final rules is expected in early 2019.

The West Virginia Manufacturers Association argued that the federal standards could hurt industry and needed more scientific study. But Del. Barbara Fleischauer, one of two committee members to vote against the change, called the move "outrageous" and said that new standards are years overdue.

"To move in this direction is ignoring science," Del. Fleischauer said during the committee meeting. — *By Kevin Ridder*

Second Two-headed Snake Recently Found in Region

In early October, a couple from Leslie County, Ky., found a weeks-old two-headed copperhead snake in their yard. The couple donated the snake to the Salato Wildlife Education Center in Frankfort. This follows the September discovery of another baby two-headed copperhead in Virginia, which passed away in captivity in early November due to spinal complications.

According to Virginia State Herpetologist J.D. Kleopfer, finding a two-headed copperhead in the wild is incredibly rare as they normally can't survive on their own. "They pop up once in a blue moon and it's just a matter of pure luck that someone finds them before they get eaten by something

or killed," says Kleopfer.

State herpetologists believe that the discovery of these two anomalies is just a coincidence.

Copperheads give live births, typically in late August and early September. According to Kleopfer, these animals probably wouldn't have lasted more than a few weeks out in the wild.

"Two-headed snakes rarely survive more than a few weeks — often there are major internal problems — but a two-headed rat snake found in Tennessee survived and thrived for twenty years in captivity," says Kentucky State Herpetologist John MacGregor. — *By Kennedy Kavanaugh*

Holiday Traditions NEVER GROW OLD

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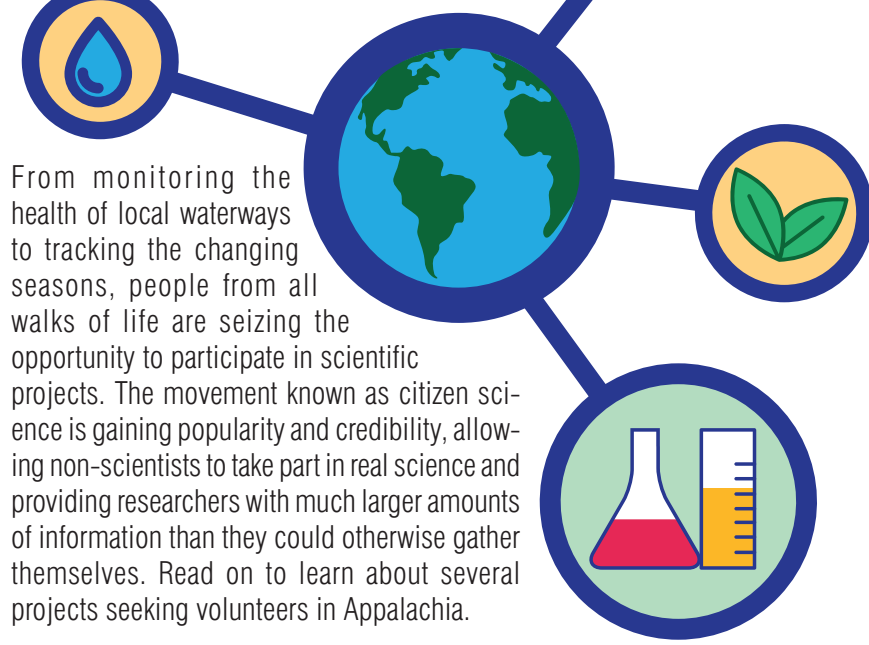
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citizen science



From monitoring the health of local waterways to tracking the changing seasons, people from all walks of life are seizing the opportunity to participate in scientific projects. The movement known as citizen science is gaining popularity and credibility, allowing non-scientists to take part in real science and providing researchers with much larger amounts of information than they could otherwise gather themselves. Read on to learn about several projects seeking volunteers in Appalachia.

Candid Critters

Citizen scientists across North Carolina are playing candid camera with wild creatures.

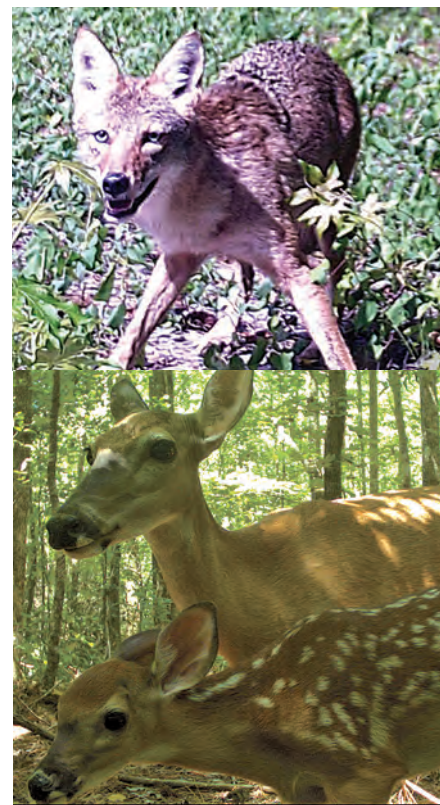
Candid Critters, a North Carolina-based tracking study, equips volunteers to set up trail cameras in backyards or parks in the hopes of capturing elusive animals on video. The collected footage is then uploaded to eMammal, an online database for scientists and the public to browse.

"The main goals are to get some good data on these animals and compare across the state how common are they, what's affecting their distribution," says Roland Kays, project leader and head of the Biodiversity Research Lab at the Museum of Natural Sciences.

Information gleaned from the videos will be used for wildlife management and conservation in partnership with the North Carolina Wildlife Resources Commission.

The project will continue through 2019 and could be extended if funding is available.

Learn more and sign up online at nccandidcritters.org — *By Lorelei Goff*



Cameras with the Candid Critters project in North Carolina took these images of a coyote and two deer. Photos courtesy of eMammal

Beetlemania

Armies of invading bark and ambrosia beetles have been marching through forests in the Southeast and spreading west, killing millions of trees. The SciStarter Backyard Bark Beetle project helps scientists understand the spread of the tiny invaders.

Project Manager Allan Gonzalez says the project is designed to raise awareness about bark beetles and their spread.

"They're so small — about the size of the tip of a pen — that if you move firewood from one county to another, you might be helping to spread the range of an exotic beetle without even trying," says Gonzalez. "It's important to get people thinking about the impacts."

Volunteers put simple traps on trees in their backyard or school yard. The trapped beetles are then sent to Gonzalez for identification. He then notifies the participants about what beetles they found and adds the information to the project website and map.

"It's not like they send something and never hear back," Gonzalez says. "They'll find out what they had, and if they're really curious, they can look into what that beetle does."

Get involved by visiting backyardbarkbeetles.org. — *By Lorelei Goff*



Kids collect and identify beetles as part of the Backyard Bark Beetle project. Photos by Allan Gonzalez

The Hunt for the Rusty Patched Bumble Bee

Wild South Conservation Biologist Morgan Harris' search for the elusive — and endangered — rusty patched bumble bee was unsuccessful this year.

"It used to be really, really common," Harris says. "We had 738 volunteer hours spent looking this year that provided 474 observations submitted to our project and we didn't find one."

According to Harris, five other bee

species are at risk, two of which were identified among the 474 photographs submitted to the project. Volunteers can photograph the bees on flowers or capture them in jars and release them after taking the photos.

The project was spurred by the roughly 90 percent decline in the rusty patched bumble bee's population across its range in parts of the East and Midwest. Harris plans to try again in 2019 in the hopes that one of these

endangered bees will be located and the Southern Appalachians will be designated as critical habitat for the species.

The critical habitat designation would provide more protection for the lands that support the species, including lower pesticide use, minimal mowing of open areas and habitat maintenance.

Get involved at tinyurl.com/search-rusty-patched-bee. — *By Lorelei Goff*



Photo: Wild South

Volunteers Track Seasonal Changes on the Appalachian Trail

The Appalachian Trail winds its way from Georgia to Maine, over mountains that harbor rich and diverse ecosystems. Besides being a much-loved natural scenic trail for hiking and backpacking enthusiasts, the AT provides a vital, 2,200-mile corridor for wildlife that thrives in its protected habitats through 11 degrees of temperate zone latitude and 6,500 feet of elevation variations. It also connects other protected state and federal lands.

The high volume of traffic on the AT and the length of its contiguous habitats make it ideal for studying how phenology, the seasonal life cycle phases of plants and animals, is related to climate. The A.T. Seasons project does that, while engaging volunteers in hands-on citizen science.

The project is the result of a partnership between the National Phenology Network, the Great Smoky Mountains National Park, the Appalachian Trail Conservancy, the Appalachian Mountain Club and the U.S. Geological Survey. According to Paul Super, science coordinator at the Great Smoky Mountains National Park's Appalachian Highlands Science Learning Center at Purchase Knob, the National Park Service pro-

posed the partnership as a way to use the Appalachian Trail for monitoring phenology.

Observations are collected through Nature's Notebook, an app developed by the USA National Phenology Network that enables citizen scientists to submit phenology observations. Observations can be made on two dozen species, such as when red maple tree buds emerge, mayapples bloom, eastern tent caterpillar tents are seen or the song of the black-throated green warbler is heard.

"USA NPN was established in 2007 mainly because back then, the Intergovernmental Panel on Climate Change recognized that phenology, which is the timing of seasonal events in plants and animals, is one of the easiest ways to get a sense of how plants and animals or ecosystems are responding to environmental conditions that are variable or changing," says National Phenology Network Assistant Director Theresa Crimmins.



Massanutten Mountain. Photo by Lorianne Barnett

"The A.T. Seasons project is really that exact same project but with a smaller subset of plants and animals, because they're representative of what folks would see all along the Appalachian Trail."

Hundreds of citizen science volunteers exponentially increase the amount of data that can be gathered. That data is important for scientists determining whether phenological phases in plants and animals are occurring at different times in response to changes in the climate. According to Super, "They are indeed showing a warming, an earlier spring."

Besides contributing to science, volunteers may find their experiences in the A.T. Seasons project enriches their lives in unexpected ways, Super points out.

"A lot of our volunteers mention just enjoying getting to know individual trees and seeing them repeatedly, either visiting monthly or bimonthly," he says. "Typically, when we're out in

the woods, we don't see the trees for the forest."

Super is intrigued by the variation in how different individuals within some species respond to the same environmental conditions.

"Here at my office at Purchase Knob, there are a number of yellow buckeyes in our phenology plot," he explains. "Half of them behave one way and half of them seem to behave another way. You'll have half of them burst their buds and start to grow their leaves, and then in a little bit the other half start to do that. So it's a little odd and surprising to see that. We think of them as just trees or as just yellow buckeye, and yet there's something else going on here."

Super encourages folks to get involved and get to know a few trees or other species of their choice. Volunteers can join the project as casual mobile app observers, trained observers or partner groups. More information and instructions for joining the project can be found on the Nature's Notebook website or by attending trainings in the Great Smoky Mountains National Park.

Learn more at atseasons.usanpn.org. — *By Lorelei Goff*

Data from Drones

A project by Wild South to photograph and document stream sedimentation in Western North Carolina waterways will get underway in early 2019. Volunteers will use drones, kites and balloons to obtain aerial photographs in the hopes of saving habitat for the hellbender salamander — a task made harder by the amphibian's bad reputation.

"They're one of those species that people used to just hate," says Wild South Conservation Biologist Morgan Harris. "They got the name hellbender because they thought they looked like something that crawled out of hell. There were myths that they were venomous, poisonous and ate all the trout in the streams."



Eastern hellbender. Photo by Lori Williams

Even though these myths aren't true, hellbenders are listed as a species of special concern in North Carolina. Wild South wants to keep them off the endangered list by slowing the destruction of their nesting sites.

Sedimentation from eroding stream banks stripped of trees and shrubs moves downstream and covers the hellbenders' nesting rocks, making the habitat unusable for these salamanders and a number of other species. Volunteers with the project will take photos after it rains in the hopes of capturing large plumes of mud washing down tributaries into rivers. Harris will then take what he hopes will be compelling evidence to landowners.

"The main goal is to get landowners to talk to me so that I can help them figure out what they can do to either restore their stream or enhance their stream bank," Harris says. "Hopefully this project will provide captivating images that will really help people understand what's happening."

Get involved at tinyurl.com/wnc-sedimentation. — *By Lorelei Goff*

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Pipeline Vigilance: VOLUNTEERS MONITOR CONSTRUCTION

By Molly Moore

Since March 2017, Becky Ellis of Putnam County, W.Va., has regularly visited area waterways, sometimes scaling down a steep bank with the aid of ropes to document the condition of local streams. Ellis, like scores of similar volunteers, isn't a scientist — she has a full-time job in land title work — but she has been trained to collect water quality data as part of a network of individuals and organizations working to ensure pipeline companies follow environmental rules.

Volunteers like Ellis carefully note stream conditions before pipeline construction and document any changes during and after. Environmental watchdog organizations use the evidence to alert authorities, which has led to both informal arrangements where companies fix their mistakes and state-issued violations against pipeline companies.

Ellis monitors along the Mountaineer XPress Pipeline route in West Virginia, while others document along the Mountain Valley and Atlantic Coast pipelines' paths.

To get started, Ellis attended a pipeline monitoring training presented by the West Virginia chapter of conservation

group Trout Unlimited and environmental organization West Virginia Rivers Coalition.

Trainees learn to use conductivity meters, which can indicate the presence of dissolved solids in the water, and pH strips, which measure acidity. Fluctuations in conductivity and acidity can indicate the presence of toxins. If such changes are detected, program coordinators alert state regulators to conduct formal inspections. Monitors also learn to measure sedimentation and document visual changes, such as the amount of silt covering riverstones.

Mountaineer XPress

Ellis learned about the training through the West Virginia environmental group Ohio Valley Environmental Coalition, which has organized water monitoring volunteers across five of the state's southwestern counties.

TransCanada Corporation's 170-mile Mountaineer XPress pipeline follows the path of the SM-80, a pipeline built in the '50s and '60s and infamous for the 2012 explosion in Sissonville, W.Va., that destroyed three homes and damaged others. OVEC Project Coordinator Robin Blakeman notes that while the MXP is officially terminating in Cabell County, the gas will then be sent to older SM-80 lines — a main reason the group decided to get engaged in water testing.

"They are replacing some segments of the old line through Cabell and Wayne



Elizabeth Struthers Malbon conducts a water quality assessment at the North Fork of the Roanoke River, near Mountain Valley Pipeline construction. Photo by Lynda Majors

observing a creek, reporting problems and seeing them resolved.

"It's rewarding, you feel like you're doing what you can to help," she says.

OVEC reports citizen complaints to the state, but Blakeman explains that regulators are stretched thin. Inspectors might not arrive until weeks after an incident and often don't issue violations. "Usually we find the inspector wants to just work it out with the contractor who's doing the construction so that they do things better," she says.

According to Blakeman, volunteers will continue to monitor for erosion and hillside slippage up to a year after the line is buried and operational. The June 2018 explosion in Moundsville, W.Va., on TransCanada's new Leach XPress Pipeline, was attributed to a landslide.

Mountain Valley Pipeline

Construction along many sections of the Mountain Valley Pipeline in Virginia and West Virginia kept citizen water monitors busy in 2018. Among them is Elizabeth Struthers Malbon, a retired Virginia Tech religious studies professor involved in Preserve Montgomery County VA, a grassroots group that formed to fight the pipeline.

In April 2018, Malbon attended a water monitoring training organized by Appalachian Voices, the publisher of this newspaper, Trout Unlimited and West Virginia Rivers Coalition. Soon, Malbon

Continued on page 10



Near Mountaineer XPress construction, waters that normally run crystal clear take on a hazy hue. Photo by Becky Ellis

Shady Invaders

As invasive shrubs creep through Eastern forests, they compete with native species and disrupt life on the forest floor, depriving plants, insects and reptiles of sunlight by gaining their leaves earlier in spring and holding onto their foliage longer in the fall.

Researchers at Penn State designed the Shady Invaders project to observe invasive and native shrubs and learn how deciduous forest ecosystems are impacted.

Cathie Bird, a volunteer with the project

in Pioneer, Tenn., observes invasive honeysuckle and multiflora rose, along with a native understory plant called mapleleaf viburnum. She wasn't surprised by the conclusions from her observations.

"When early springs were noticed from the data, I'd already had this sense that spring was earlier," Bird says. "But doing this work is like a check on my perceptions and feelings and I think that's really interesting."

One of her favorite species to observe is an understory plant called the dog-tooth violet.

"When there are no leaves, no flowers, no anything above the ground, what's happening out of sight of people is the plants are

connecting with each other in colonies — like extending little things under the soil and linking up," Bird says. "It's totally fascinating."

She says becoming a citizen scientist and observing changes in the natural world has, in turn, changed her.

"I think one of the problems we have is that

people are more disconnected from nature," Bird says. "What I've found is this has actually connected me even more strongly. I



Viburnum acerifolium, also known as mapleleaf viburnum. Photo by Cathie Bird

think it's just being right up in a thing's face — a plant, looking at birds — and just wondering about their experience and what their life is like and what they're seeing and what the other things around them are doing.

"It's really broadened my relationships with other species and deepened them as well."

Visit usanpn.org/nn/ShadyInvaders. — By Lorelei Goff

Keeping Eyes on Coal's Impact

Citizen scientists surveil water quality near active and former coal mines to hold companies accountable to the law

By Kevin Ridder

Once a month, Jason Von-Kundra joins a small group of fellow concerned citizens to test water flowing from a strip mine in Wise County, Va. Although the Meadowview, Va., farmer doesn't particularly enjoy these monthly trips to the active mountaintop removal coal mine, he sees them not as a choice, but as a calling.

"If I could choose, I would choose not to do this work," says Von-Kundra. "I would love to go take a hike and enjoy the scenic beauty that this region offers, but instead I see the importance of having to sacrifice some time instead to do this work to protect that, that way others can [enjoy it]."

Von-Kundra is a citizen scientist and member of the Young Appalachian Patriots, a grassroots organization aiming to get regional youth involved in bettering their communities. The group works with several other nonprofit organizations including Appalachian Voices, the publisher of this newspaper, to test fast-flowing mine drainage for illegal levels of toxic heavy metals such as iron, manganese and selenium. Von-Kundra has been a water monitor since mid-2017.

The Young Appalachian Patriots are one of many water quality watchdog groups throughout the region that test streams and wetlands near coal mines. Some groups are organized and consistent, while others are loose networks of interested individuals who visit affected streams when they can.

Sometimes it's obvious when water is contaminated; it might smell of sulfur, have an oily film or be a violent orange. But even normal-seeming water can be unsafe, so Von-Kundra and his peers perform field tests for water acidity and conductivity to see whether an expensive lab test is warranted.

These tests serve as indicators of heavy metal levels. If tests show that the water is abnormally conductive or acidic, Von-Kundra's group takes a sample to send to the lab. Samples are sealed in special containers to ensure

that the water stays in the condition in which it was taken. From there, Von-Kundra signs a form transferring ownership of the sample to Appalachian Voices, which covers the cost of lab tests. Von-Kundra makes monthly trips to the mine in question to establish a consistent dataset that any future problems can be compared to.

If a violation of state water quality standards is uncovered, reporting the issue to the state mining agency could be enough to ensure that the company cleans up the problem. If the state agency is unwilling or unable to address the issue, the problem could be addressed through the federal Office of Surface Mining Reclamation and Enforcement, or through a citizen lawsuit.

The state agency performs its own water quality tests periodically, but Von-Kundra maintains that regulators don't scrutinize mining companies nearly enough.

"We tested conductivity 10 times [higher than] what a healthy stream should be and witnessed heavy water flowing over the road due to poor containment and flow systems," Von-Kundra says of a mid-November visit to strip mines in Dickenson County, Va. "I feel devastated every time I see this abuse of land and water."

"I think it's crucial for citizen monitoring to happen because we're filling those gaps," he adds. "If we weren't doing it, nobody else would."

Get Involved!

If you would like to help hold coal companies accountable to the law, you can find a group that offers water monitoring training at ace-project.org/how-to-get-involved. Or, you can get in touch with the groups below:

APPALACHIAN VOICES: Call the Norton, Va., office at (276) 679-1691 or email willie@appvoices.org

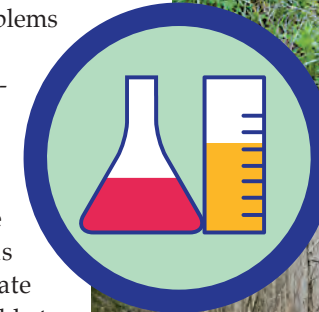
SAVE OUR STREAMS: In Virginia, call (301) 548-0150 ext. 219 or visit vasos.org. In West Virginia, call (304) 574-4465 or visit dep.wv.gov/sos

YOUNG APPALACHIAN PATRIOTS: Call Jason Von-Kundra at (276) 780-0420 or email vonkundra@gmail.com

EAST TENNESSEE: Email DJ Coker at djcoker92@gmail.com



Above, DJ Coker tests the conductivity of water runoff from an active strip mine near Clairfield, Tenn. Photo by Kevin Ridder. Coker discovered an area stained bright orange by an iron seep, left, at an unrelated site near Clairfield, which he reported to the Tennessee Department of Environment and Conservation. Photo courtesy of TDEC. Jason Von-Kundra, below, samples water runoff from a Dickenson County, Va., coal mine. Photo by Bucky Boone.



Testing in Tennessee

In March, DJ Coker of Campbell County, Tenn., informed the Tennessee Department of Environment and Conservation of a heavily polluted area near Clairfield, Tenn. Coker, who has been monitoring water pollution at East Tennessee coal sites for about four years, states this is among the worst cases he's seen so far.

"It was a very deep orange with an oily film on it," Coker says. "It was over 250 feet of just continuous pollution, and it was coming from an area on top of the ridge."

The ground in the wooded mountain landscape had been stained bright orange by an iron seep, which occurs when water flows across and dissolves iron. This problem, also called acid mine drainage, is common at the site of active and older coal mines. Coker was concerned this could be affecting the water quality of a nearby forest wetland and stream.

To confirm the presence of heavy metals, Coker captured water samples and sent them to a lab through Appalachian Voices. He then filled



out a form and submitted the results to TDEC, which sent a team of investigators to the site in April.

Although there is a reclaimed mine, a gas well and an access road near the site, TDEC determined that the iron seep is "a natural feature and not the result of a permitted facility or action," and so did not issue a water quality violation.

However, TDEC stated that future impacts of the iron seep on water quality

Continued on next page

Pipeline Vigilance

Continued from page 8

was monitoring six sites as part of a team of eight.

Those sites include one on the North Fork of the Roanoke River that Trout Unlimited began monitoring more than a year before construction, providing evidence of stellar water clarity that, when muddied by rain, rebounded quickly.

Water clarity, also known as turbidity, indicates how much suspended material, like sediment, is in the water. Excess sediment has damaging effects on fish and other aquatic life, as well as humans. The data Malbon's team collected in 2018 shows water turbidity upstream of construction followed the same pattern as the year before. But water quality downstream was consistently lower and did not fully recover after a storm.

"MVP has not met the requirement that all disturbed sediment be kept on the construction site," reads a report Malbon prepared. It was filed with the Federal Energy Regulatory Commission in September; copies were sent to Virginia regulators and others.

Malbon's team also monitors a

spring that provided drinking water to the property owners and two tenant households for generations. Monitors repeatedly documented clear water — but then the amount of turbidity increased dramatically.

"The source of their spring has been breached and the spring that ran clean for years and years has been breached," says Malbon. "And so the owners don't really trust it anymore."

The landowners were shocked, and dug two wells weeks later. The spring runs clear at times, but after a heavy rain sediment and other contaminants lodged in the porous karst topography can now flow into the spring.

Serious water quality issues Malbon's team identifies are submitted to Mountain Valley Watch, a project of the grassroots POWHR Coalition. In Virginia, Mountain Valley Watch conducts aerial surveillance and reviews citizen water quality reports to submit complaints to the relevant authorities, some of which have resulted in state-issued violations against the company.

Atlantic Coast Pipeline

The Pipeline Compliance Surveillance Initiative, a project of Allegheny-

Volunteer Opportunities

Get involved by participating in water monitoring or aerial surveillance along the pipeline routes. Pipeline CSI is also seeking volunteers to review aerial photos, which can be done remotely online. For links and resources, visit appvoices.org/pipeline-monitoring.

Blue Ridge Alliance groups opposed to the Atlantic Coast Pipeline, monitors construction along the Atlantic Coast Pipeline's route in West Virginia and is conducting baseline assessments along the proposed path in Virginia, where pipeline developers Dominion Energy and Duke Energy do not have permission to begin building. In North Carolina, a group called NC Pipeline Watch is monitoring construction with aerial imagery and volunteers trained to spot best practices.

In West Virginia, Pipeline CSI has found numerous problems through its combination of sophisticated mapping tools, water monitoring and aerial surveillance from drones and airplanes. The group has filed complaints with state regulators, some of which led to violations issued against pipeline developers. On Dec. 6, Pipeline CSI filed an additional 18 complaints with West Virginia, including instances of runoff controls failing and construction occurring before controls were installed — common occurrences, according to project chair Rick Webb, a retired University of Virginia environmental scientist.

As of late November, federal rulings barred the Atlantic Coast and Mountain Valley pipelines from doing construction

Eyes on Coal's Impact

Continued from page 9

were possible and met with the landowner to discuss possible mitigation options. Any action taken by the landholder would be voluntary since TDEC classifies the seep as a natural feature.

Coker often teams up with fellow citizen scientist April Jarocki to gather water samples.

"I want these mountains to be around for my kids and my grandkids," says Jarocki. "I've played in this water for my whole life, and I want my grandkids to be able to."

Coker was recently certified with the Save Our Streams initiative in Virginia, which trains and provides resources to would-be water monitors. Save Our Streams has yet to establish a foothold in

work in waterways. But an aerial image captured Nov. 21 from a Pipeline CSI plane showed crews boring beneath Dry Fork in Pocahontas County, W.Va. Concerned that developers were using a prohibited, environmentally risky method to circumvent the ban on crossing waterways, Pipeline CSI reported the situation to the state.

They learned that FERC had granted Atlantic Coast a variance allowing the developers to use the previously prohibited construction method.

"It seems like if [pipeline developers] can't meet the requirements, then the requirements are waived," says Webb.

Longtime environmental advocate and aerial drone photographer Allen Johnson lives 600 feet from the pipeline route in Pocahontas County. A member of the local group Eight Rivers Council, Johnson's monitoring along the pipeline's intended path has led to one state-issued violation against the company so far. By showing developers that the public is watching and capable of identifying improper construction methods, Johnson says they might do a better job.

As of early December, construction in Johnson's area was relatively quiet due to the federal stop-work orders, giving residents more time to prepare. According to Johnson, about 20 people attended the most recent Eight Rivers Council meeting, and many expressed interest in joining the monitoring effort.

"I hope they still get shut down," Johnson says. "But if [the pipeline] happens, we've got to be protecting our homeland." ♦

Tennessee, which Coker hopes to change.

The program teaches graduates how to do macroinvertebrate surveys — in other words, to look and see what kind of bugs and other creatures live in the water. The health of the stream can then be judged by the type and number of bugs found, since some insects require cleaner habitats.

"We're not that far in yet with the macroinvertebrate training, but we are hoping that it will get more younger people to help us just a little," Coker says. "Children are all about bugs."

Coker encourages others to find groups in their community that test water quality. A highlight of volunteering, he says, is "knowing that the work is being done, and knowing that I'm making a change for the good in the environment." ♦

Volunteers Identify Old-Growth Forest

By Eric Halvarson

Standing among black oaks, black cherries and walnut trees, Doug Wood recognized he had found something exceptional in West Virginia's Beech Fork State Park. On this cloudy day, Wood solo-hiked to a patch of treetops he had found on Google Maps and began searching for characteristics of old-growth forests, such as a diversity of tree species and few signs of human interference.

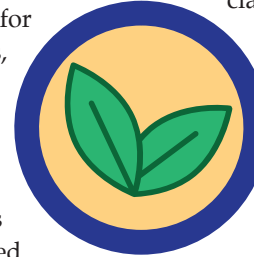
After multiple trips with his wife and friends, Wood has identified a 60-acre area of forest more than 100 years old that he hopes will become recognized by the Old-Growth Forest Network, a nationwide organization dedicated to protecting the unique forest habitats that older trees can provide.

"I could go on and on and on about why I like old-growth forests," Wood says, highlighting in particular the habitats these forests provide for animal species that need them.

To raise awareness of these forests, the Old-Growth Forest Network manages a database of private and public old-growth or maturing secondary forests in 20 states, including most Appalachian states. The network collaborates with volunteer county coordinators who search for these forests on public lands in their county; private landowners can also participate. Volunteers aim to officially dedicate the forest into the network in collaboration with the manager of the land if it is formally protected from commercial logging.

The network strives to "implement, enhance and ensure protection for unprotected forests," according to Melissa Abdo, managing director of the Old-Growth Forest Network. They are developing more resources for those who are interested in strategies to protect forests, and the network acts as a resource for those interested in visiting these forests.

Wood and other volunteers with the network found an old-growth tract in Kanawha State Forest in West Virginia this summer. More than 1,000 acres



Identifying Old-Growth Forests

When trees are over two feet in diameter, Wood looks to find other characteristics of older forests.

"As a ballpark figure to begin your research, you look for big trees," Wood says.

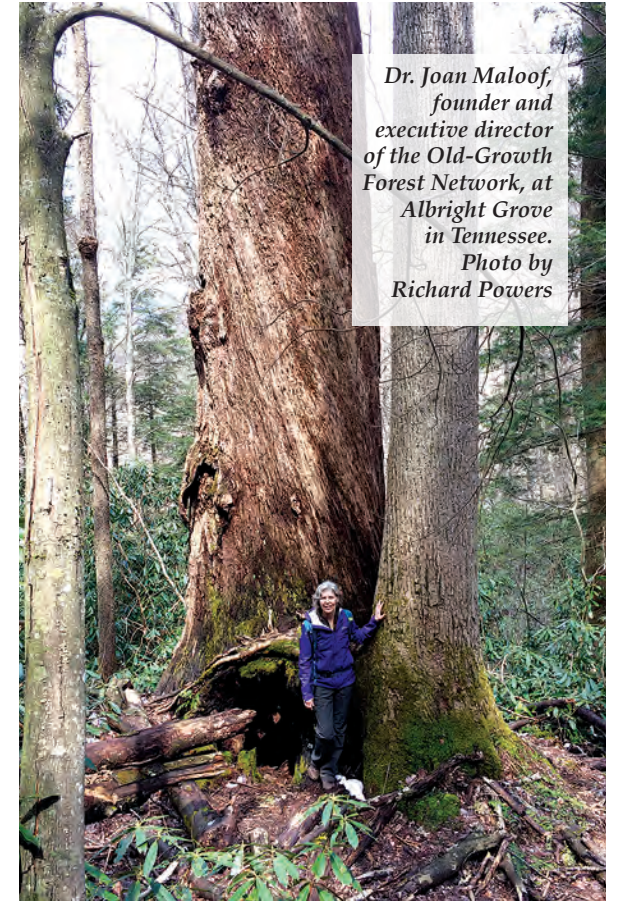
In Beech Fork, Wood saw large trees and small patches in the canopy where trees had died of natural causes and where the fallen trees or standing snags were untouched by humans.

Old-growth forests are often not original growth, but they tend to include larger trees of varying ages and species, with little to no evidence of human interference. These are some of the many traits the group uses to determine old-growth status, according to Abdo. The network's volunteers and other concerned citizens look for "high ecological integrity / quality, high forest diversity for that particular ecosystem, [and] notable old-growth species of flora and fauna," Abdo wrote in an email.

Abdo explains that more than 99 percent of these forests are believed to have been removed or radically altered on the East Coast. The rare stands that remain provide habitats for many species of birds, mammals, insects, aquatic creatures and plants. Wood states that many animals, such as cerulean warblers and black bears, need mature forests in particular seasons — and "old-growth is the best of the best."

"When it comes to aquatic life, [conditions] don't get any better than streams flowing through old-growth forests," Wood says. He stresses the importance of researching these ecosystems for water quality conditions. Studies have found that large root masses of old-growth prevent erosion into streams, keeping sediment out of fish gills and creating clear, healthy water.

For the first time in 2018, Tennessee and North Carolina old-growth forests were recognized



by the network. The Boyd Tract in the Weymouth Woods Sandhills Nature Preserve is the first forest recognized by the network in North Carolina. In Tennessee, the group recognized the Albright Grove of Great Smoky Mountains National Park, which offers a 6.7-mile round-trip hike through virgin cove hardwood forest.

The network is looking for county coordinators like Doug Wood across the country and recognizes local volunteers as vital to their protection of the forests.

"The Old-Growth Forest Network recognizes the importance of having local people and local landowners or land-holding entities, like state agencies and so forth, involved in the process, and that's a key to its success," Wood says. "If you have enough citizens supportive of the effort, then there's a better chance that these old-growth forests are going to survive into the future for our children and future generations to see." ♦

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AppalachA'ville

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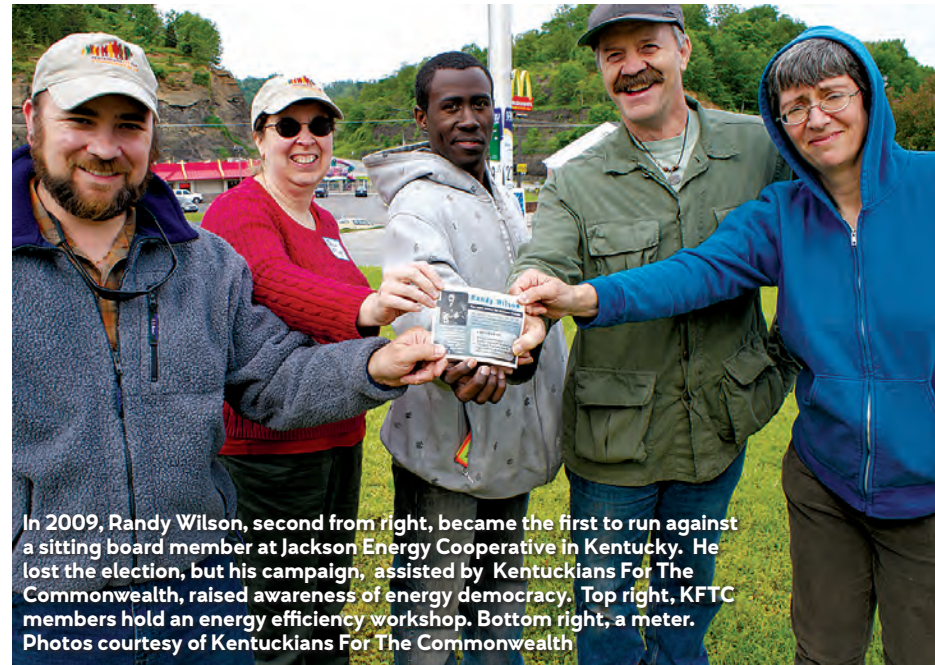
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ENERGY DEMOCRACY

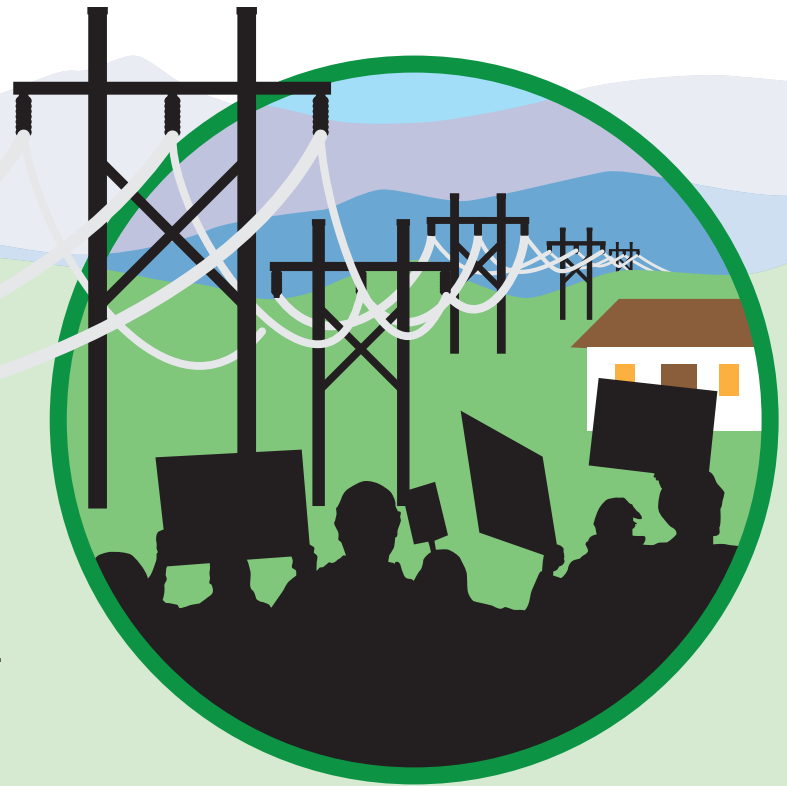


In 2009, Randy Wilson, second from right, became the first to run against a sitting board member at Jackson Energy Cooperative in Kentucky. He lost the election, but his campaign, assisted by Kentuckians For The Commonwealth, raised awareness of energy democracy. Top right, KFTC members hold an energy efficiency workshop. Bottom right, a meter.



In Appalachia and across the country, people are reclaiming their power from electricity monopolies that weren't serving their needs. The stories on the following pages exemplify the principle of energy democracy in action.

In part one of this two-part series, we examined problems with monopoly utilities and looked at how citizens are working to counter utilities' outsized political influence. Find part one online at appvoices.org/imbalance-of-power.



Power to the People

By Kevin Ridder

On Aug. 18, nearly 1,500 member-owners of Tri-County Electric Cooperative drove from six counties to St. Matthews, S.C., to vote out the co-op's entire board of directors and limit the pay of future boards. The member base had to gather 1,600 signatures to force a vote after the board refused to schedule a meeting.

According to an article in *The State*, the special vote occurred several months after the publication revealed the part-time board paid itself roughly \$52,000 per director, plus healthcare and other benefits — more than triple the national average.

After the board members' salaries were revealed, there were widespread calls for the board to resign, including from state representatives and the trade group Electric Cooperatives of South Carolina.

The day before the Aug. 18 vote, *The State* reports, the board held a secret meeting in an attempt to fire the co-op's CEO and cancel the vote. Hundreds of co-op members showed up to protest the meeting.

"You've solidified your character as cowardly and unethical," Tri-County member-owner Joe Strickland told the board, according to *The State*.

A judge issued the board a temporary restraining order to prevent any action before the vote. None of the board members showed up to the Aug. 18 meeting. The Electric Cooperatives of South Carolina has since announced potential reforms to prevent situations like this at other co-ops.

What happened in South Carolina is just one example of energy democracy, a nationwide movement to end utility corruption and bring power to the people. When America's modern electricity system first began to materialize in the late 19th century, it made sense to centralize energy generation as much as possible; building and maintaining such infrastructure is massively

expensive. Over the years, however, most power providers have become entrenched monopoly utilities, largely complacent with the way things have always run.

Ratepayers, on the other hand, have come to want cleaner and more efficient energy from their utilities. Solar prices have dropped dramatically over the last decade, and 76 percent of voters across party lines want utilities to provide more solar, according to a September 2018 poll commissioned by the trade group Solar Energy Industries Association.

John Farrell is the director of the energy democracy initiative at the Institute for Local Self-Reliance, a nonprofit advocacy group. On the organization's website, Farrell states that energy democracy "implies an energy system that is democratic, where decisions are made by the users of energy."

Farrell says that the fossil fuel energy system "lent itself to energy centralization" due to coal and nuclear power plants' large economies of scale.

"With renewable energy, there's no such requirement," he says. "There's no need to concentrate capital in the same way; we can distribute ownership over lots of people. A perfect example is that in California, over 700,000 electric customers — residents and businesses — are now energy producers that have solar on their rooftops."

Coal plants and other fossil fuel infrastructure are often built near low-income communities, which are typically also hit the hardest by high electricity costs. Low-income, rural households spend 9 percent of their annual income on energy, compared to the national average of 3.3 percent, according to a July 2018 report by the American Council for an Energy-Efficient Economy, a nonprofit policy organization. This forces some families to choose between keeping their home at a comfortable temperature or affording food and medical care.



The Minneapolis Energy Options campaign brought greener energy to the city in 2014. Photo courtesy of John Farrell

Stories like these are why Farrell and others strive to advance energy equity, the idea that everyone should have equal access to clean, efficient energy. He emphasizes that with locally distributed energy, residents have more control over energy's potential impacts on their community.

"We have always felt it's best to make decisions about our economy closest to where the people who will experience the consequences of those decisions live," Farrell says.

"With a coal power plant, for example, nobody really wants to have to live near that," he adds.

Liz Veazey — national network and fellowship coordinator of We Own It, an organization that advocates for electric cooperative member engagement — states that electric co-ops could be a transformative force to address problems in communities such as high energy costs relative to income and lack of high-speed internet.

In an email, Veazey wrote, "The [rural electric co-op] could become an engine of local economic growth that better serves the entire community with local energy efficiency programs, local renewable energy generation, broadband internet, support for local hospitals and healthcare and more." ♦



PVEC members line up to vote at the 2018 annual meeting. Photo by Lynn Tobey

Powell Valley Electric Co-op

A citizens group is calling for transparency at their electric cooperative, and helped to generate the second-largest voter turnout in recent history at the co-op's annual meeting

All three reform candidates for Powell Valley Electric Cooperative's board of directors lost their elections at September's annual meeting in Sneedville, Tenn. But Lisa Strickland with PVEC Member Voices — a citizens group that encourages member participation in their co-op — remains optimistic.

"There were no failures, because the number-one thing that happened was that awareness was raised," says Strickland.

Strickland notes that even before the annual meeting, the co-op — which serves part of Northeast Tennessee and Southwest Virginia — had started developing a more informative website in response to member-owner requests. At the meeting in September, more than 1,200 Powell Valley member-owners voted, the second-largest voter turnout in recent history.

At the meeting, Strickland brought forth a motion that the co-op "make a concerted effort to educate their member-owners." The board passed the motion, and has worked with PVEC Member Voices to add a

district map, board meeting information and notifications regarding right-of-way herbicide spraying to their website. The co-op also adopted an open board meeting policy.

Strickland acknowledges that there is still a lot of work to do toward increased transparency. Member-owners have to submit a written notice 20 days prior to a monthly meeting if they plan to speak, and the policy for open meetings could be revoked at any time since it is not in the co-op bylaws. Additionally, Powell Valley Electric intervened in a Virginia State Corporation Commission case against three member-owners of Rappahannock Electric Cooperative who are challenging their co-op's policies (see story at right).

Strickland stated that PVEC Member Voices will decide what path to pursue toward co-op reform in the new year.

"There should be an equal partnership between the members and the board and management," says Strickland. "We are, after all, a community; we're all going to rise or fall together." — *By Kevin Ridder*

Rappahannock Electric Cooperative

Rappahannock's attempt to block members' efforts to bring reform amendments to the ballot has sparked a legal fight. All other Virginia electric co-ops have joined Rappahannock in opposing the members' push for transparency.

Sierra Club Virginia Chair Seth Heald has been a member-owner of Virginia's Rappahannock Electric Cooperative in the northeastern part of the state for more than nine years. He has become an outspoken critic of the co-op's board of directors' lack of transparency. Rappahannock board meetings are closed to the public, meeting minutes are not made available and board compensation is kept secret.

According to Heald, member-owners that mail in signed proxy forms are entered for a chance to win prizes, and there are typically thousands of blank ballots. The board treats each blank ballot as an invitation to vote on that member-owner's behalf, and then selects a single candidate for all the blank ballots to count towards. Heald contends this practice — which generally determines the election outcome — is "unfair and undemocratic."

In 2017, Rappahannock attempted a \$22.2 million rate increase, which included doubling the residential grid access fee. This type of fee, which is charged regardless of how much electricity is used, disproportionately affects low-income households and discourages homeowner solar and energy efficiency improvements. After intervention from Sierra Club Virginia and the state attorney general, the State Corporation Commission instead approved a 40 percent increase to the fixed charge, which is now \$14.

Deciding it was time for reform, Heald banded with other member-owners and solar advocacy organization Solar United Neighbors of Virginia to form the member-owner advocacy group Repower REC. In April 2018, the group informed Rappahannock of their intent to put three bylaw amendments up for a vote at the co-op's 2019 annual meeting. The amendments would open board meetings to the public, reform board election procedures and allow the public to see how much board members were paid.

But when Repower REC asked the co-op for the necessary paperwork to begin collecting the required 500 signatures to put the amendments on the ballot, the Rappahannock board of directors refused. So, in August, three Repower REC members filed a lawsuit, alleging that the co-op was breaking state law by withholding the form and by requiring



Seth Heald, top left, and others with Repower REC are suing Rappahannock Electric for more transparency. Photo courtesy of Repower REC

the signatures at all. Rappahannock categorically denied the allegations, and the case will be heard by Virginia's State Corporation Commission on Dec. 11.

"I'm hopeful that we will, at a minimum, get the petition form," says Heald. "The trouble is we need to submit our petition signatures by around Feb. 1, and the 500 signatures are required to be spread fairly evenly around [the co-op's] 22 Virginia counties." He noted that the board's reluctance may delay the vote on the amendments until 2020.

Soon after Heald filed the lawsuit, all of the 12 other electric cooperatives in Virginia intervened in the case to oppose the reforms, including Powell Valley Electric, which also serves part of Tennessee.

"I'm hopeful, I think our case is strong," Heald says. "But it is concerning to see all of the electric co-ops in the entire state piling on to oppose some reasonable reforms from three co-op members."

Regardless, Heald is undeterred. "This is a long process," Heald says. "It's not something that you can do in three months or six months — but we are growing and we're planning to keep at it."

"If you're not involved, then you're leaving it to other people to control what's happening at your utilities," he adds. "The only way to ensure that your voice is heard is to be active and engaged and inform yourself of what's going on, and our co-op really makes it hard to do that." — *By Kevin Ridder*

Roanoke Electric Cooperative

A rural North Carolina cooperative responds to member feedback by fostering economic development and clean energy

“Members must be at the center of every activity we do on a daily basis,” Roanoke Electric Cooperative CEO Curt Wynn told CoLab Radio in 2016.

The Eastern North Carolina co-op has implemented initiatives to boost community development and make clean energy more accessible.

At the center of Roanoke’s member empowerment efforts is their annual series of Straight Talk Community Forums, which over 400 members attend each year to share ideas and feedback with the co-op’s leaders. Additionally, many members take part in the Action Committee for Rural Electrification, a nationwide grassroots political action committee that backs political candidates who support electric cooperatives.

Nearly 7 percent of the average household’s income in Roanoke Electric’s service area is spent on energy costs, more than double the national average energy burden of 3 percent.

To help their members reduce their electric bills, in 2013 Roanoke began to develop their Smart Energy Savings programs, which include wifi-enabled thermostats and smart water heater controls. Additionally, in 2015 they launched an on-bill energy efficiency finance program, Upgrade to \$ave.

Upgrade to \$ave allows members to make energy efficiency improvements to their home, such as weatherization or more efficient heating and cooling systems, with no upfront costs. The resident then repays the cost of the improvements



Alton Perry of the Sustainable Forestry and Land Retention Project, above, presents an award to Cynthia Fannell of Triple C Ministries in recognition of the group’s forest management plan. Photo: SFLRP. At right, Roanoke Electric Cooperative member-owners attend the co-op’s annual meeting. Photo: REC



to the co-op through a new charge on their bill, which is more than offset by the amount they save because of the improvements. Over 400 member-owners have upgraded their homes and are now reaping an average savings of \$58 per month through Upgrade to \$ave. Through this, Roanoke has invested more than \$4 million back into the community.

Additional projects focused on member concerns include a community solar energy program, expanded high-speed internet access and a workforce training program for energy efficiency contractors.

To address falling rates of land ownership in the area, particularly among African-American landowners, in 2013 Roanoke launched the Sustainable Forestry and African American Land Retention program in cooperation with the

USDA’s Natural Resources Conservation Service. This program provides resources for landowners to manage their forests more sustainably and develop strategies for sustained family generational wealth.

More than two-thirds of Roanoke’s board of directors is black, representing the demographics of the majority African-American area. Additionally, CEO Curt Wynn, hired in 1997, is the first black CEO of an electric co-op in the country.

“I must say as the chief operating officer of the company that I am very proud of how we can celebrate different thoughts, different opinions, and different backgrounds,” says Chief Operating Officer Marshall Cherry. “I think it really has done a lot of good for our organization and helps us to be able to really reach out to a mass of people because we have different perspectives coming out of our employee base.” — *By Kennedy Kavanaugh*

Choctaw Electric Cooperative

Deep-seated corruption at an Oklahoma electric cooperative spurred several member-owners to organize a campaign for reform

When Choctaw Electric Cooperative member-owner Stan Hammons was charged \$1,100 on his first electric bill after moving back to Southeast Oklahoma, he knew something was off. He states the electric rates in Antlers, Okla., were two to three times higher than his previous home of Norman, Okla., despite the fact that all counties served by Choctaw have a poverty rate higher than the national average.

“But more importantly, I started noticing that several of my elderly relatives who were on fixed incomes were having to make decisions about whether to buy their medication or pay their high electric bills,” Hammons says.

After some digging, Hammons and other member-owners discovered that Choctaw’s then-CEO Terry Matlock had

a total annual compensation of around \$300,000, had recently given himself a board-approved \$1.8 million bonus, was using cooperative equipment and employees for personal projects and had a history of using co-op funds to pay for escort services on out-of-state business trips.

“All of that matters, because every mispent dollar is added on to your electric bill,” says Hammons, noting that the co-op was roughly \$70 million in debt in 2014.

So the group of member-owners traveled around the co-op’s service area to educate others about problems with Choctaw, holding meetings and going door-to-door. In 2014, the board fired Matlock. When three board seats came up for election in 2015, reform candidates won all three.

Since 2014, Hammons states the co-

op’s debt has been reduced to \$49 million, a new net metering program has helped increase homeowner solar by roughly 3,000 percent, mail-in ballots are now required and board meetings are open to the public.

“Rates have gone down some, not as much as we’d like,” says Hammons. He notes that the co-op’s leftover debt will likely prohibit major rate decreases for several years. — *By Kevin Ridder*



Photo courtesy of Stan Hammons

Gainesville Loves Mountains

Citizens push their utility away from mountaintop removal coal and toward clean energy



Jason Fufts of Gainesville Loves Mountains speaks with a city commissioner about the coal ordinance.

In late 2014, the Gainesville City Commission in Florida approved a policy that prevents the city-owned municipal utility, Gainesville Regional Utilities, from purchasing strip-mined Appalachian coal and passed a unanimous resolution against mountaintop removal coal mining.

This decision followed over three-and-a-half years of activism by citizens with Gainesville Loves Mountains, a group of volunteers committed to fighting mountaintop removal in Appalachia and advancing clean energy locally. The group held dozens of meetings with city commissioners that resulted in five public hearings and the bipartisan passage of the Mountaintop Removal City Ordinance.

The policy ensures that Gainesville Regional Utilities will not purchase coal mined using mountaintop removal as long as it has bids from other types of mines that are not more than 5 percent higher than bids from mountaintop removal operators. Since the policy’s passage in 2014, the utility has not purchased any coal mined from mountaintop removal and the city’s overall coal consumption has dropped considerably.

Gainesville Loves Mountains is now advancing an Energy Conservation Ordinance aimed at reducing energy consumption and costs for rental properties in Gainesville. This follows years of cooperation with the Sierra Club, NAACP, labor unions, local firefighters and more to get higher energy efficiency standards passed for renters in Alachua County, who make up nearly 50 percent of the community.

Stating that rental properties often consume disproportionately high amounts of energy and that renters often pay overly expensive electric bills, the Energy Conservation Ordinance would require all rental properties to meet basic energy efficiency standards. According to Gainesville Loves Mountains, this ordinance would protect renters from costly utility bills out of their control and reward landlords who make energy efficiency investments in their properties, all while strengthening the local economy. — *By Kennedy Kavanaugh*

Kit Carson and La Plata Electric Cooperatives

Electric cooperatives generally purchase electricity from other entities, such as the Tennessee Valley Authority, Dominion Energy and Duke Energy. In the Southwest, several electric cooperatives are demanding better terms and more renewables from their power provider.

In 2000, 14 electric cooperatives in the Southwest entered into 40-year wholesale power purchase agreements with Colorado-based Tri-State Generation and Transmission, which makes heavy use of coal-fired power. In 2007, New Mexico-based Kit Carson Electric Cooperative refused to extend the contract through 2050.

From 2000 to 2013, Tri-State raised wholesale electricity prices nine times — but a main concern for co-op members was a contract stipulation that capped the amount of renewable energy the co-op could generate itself at 5 percent.

In 2016, Kit Carson reached an agreement with

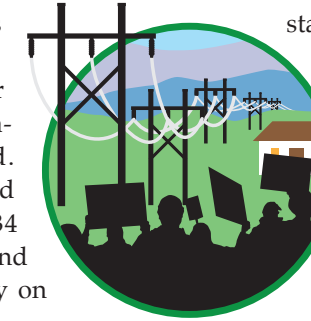
Tri-State and bought themselves out of their contract for \$37 million, entering into a 10-year power purchase agreement with Florida-based Guzman Energy instead. That December, the co-op’s board announced a plan to generate 34 percent of their total energy demand and 100 percent of daytime energy on sunny days with solar by 2022.

As of August, Kit Carson had installed 10 megawatts of solar energy — enough to supply 25 percent of the co-op’s daytime load — according to Mountain Town News.

La Plata

Kit Carson’s story was a catalyst for member-owners of Colorado-based cooperative La Plata Electric Association who wanted to leave their co-op’s power-purchase agreement with Tri-State before its 2050 expiration date. Community members sought help from the San Juan Citizens Alliance, a nonprofit local advocacy organization.

According to a November 2017 blog post by Emily Bowie, a then-campaign organizer with the Alliance, member-owners were upset with La Plata’s board of directors for misrepresenting residents with solar panels. At that month’s board meeting, Director Davin Montoya reportedly



stated, “Solar people want to come in here and get free energy and be subsidized.”

An election for four board seats was approaching in May 2018. So, over the next few months, La Plata member-owners worked with the San Juan Citizens Alliance and supported more progressive board candidates. Alliance-backed candidates won three of the four seats.

“It was very much a ground-led effort,” says Bowie. “The community members came to us, they wanted our support and we were able to provide that stable coordination, but that just enabled the community members to continue to do what they were already doing and get the results that we got.”

In August, the board voted 11 to one to establish a committee to assess their power-purchase contract and look into other power suppliers. Bowie states that there are “a lot of potential pathways that the co-op could take,” including staying and negotiating with Tri-State.

Any decision will partially hinge on Tri-State’s appeal of a June 2016 Federal Energy Regulatory Commission ruling that prohibited Tri-State from charging fees on solar built by cooperatives that exceed Tri-State’s 5 percent cap on renewables. Colorado-based Delta-Montrose Electric Association, the cooperative that brought the case before FERC, announced in 2017 that they are also seeking to leave Tri-State. — *By Kevin Ridder*



The San Juan Citizens’ Alliance holds an event to educate La Plata Electric Association members about how they can get involved in their cooperative. Photo by Anna Peterson

City of Winter Park Electric Utility Department

Some cities and counties have terminated their contracts with commercial utilities and formed municipal, publicly owned utilities instead

When their contract with Progress Energy expired in 2001, the city of Winter Park, Fla., decided to look into other options for their electricity. According to Winter Park City Manager Randy Knight, the city decided not to renew their contract with Progress Energy because the utility proposed a “take-it-or-leave-it” 30-year contract that did not include a way out for Winter Park if Progress performed poorly. Additionally, Progress customers were plagued with frequent power outages.

After several years of legal arguments and a local election in which Progress spent \$500,000 to influence the vote, in 2003 Winter Park citizens voted 69 percent in favor of dropping Progress and forming a municipal utility. The city’s Electric Utility Department began service in 2005.

Municipalization — the process of public takeover of a formerly private utility service — doesn’t always go smoothly. Citizen group Decorah Power’s effort to get their city of Decorah, Iowa, to look into creating a municipal utility failed by three votes in May, according to the Des Moines

Register. Alliant Energy, the incumbent utility, spent over \$100,000 campaigning against the measure. Decorah Power plans to try again, but must wait four years due to state law.

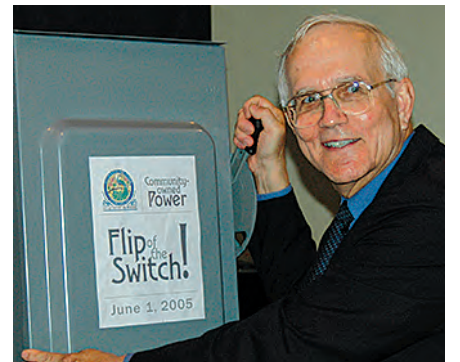
Winter Park is one of around 20 municipal utilities that have begun operation since 2000, according to the American Public Power Association, a national organization that represents more than 2,000 municipally owned electric utilities. Most states have laws allowing local governments to disengage with an incumbent utility if they are unsatisfied with the service provided. Once a community votes in favor of municipalization, the government negotiates a purchase price to take over existing infrastructure from the utility.

Progress initially set the price at more than \$106 million, but the city eventually purchased the infrastructure for \$42.3 million. The utility turned its first profit in fiscal year 2007 and now contributes to the city’s general fund.

Currently, residential customers in Winter Park pay less on their electric bills

than customers of Duke Energy Florida, which now owns Progress. In May, Winter Park announced they were joining with 11 Florida municipal utilities to build three solar farms from which Winter Park will buy 10 megawatts of power. — *By Kevin Ridder*

Photo courtesy of City of Winter Park Communications Department



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Solar "Makers" and Solar "Brakers"

Report highlights restrictive solar policies at Blue Ridge Energy

By Kennedy Kavanaugh

A new report by the Southern Environmental Law Center highlights the Southeast's best and worst utilities for solar energy. The group applauds utilities with policies that encourage affordable rooftop solar installations and draws attention to utilities that impose high monthly fees on solar customers or otherwise undermine residential solar. The report coincides with the nonprofit law firm's October launch of an interactive website that shows how utilities across the Southeast are treating customers with home solar installations.

The website calls out Blue Ridge Energy, an electric cooperative in Western North Carolina, as a "solar

braker." Blue Ridge members must pay an additional \$28.83 per month on top of the co-op's standard \$24.17 monthly fixed charge to install and use residential solar energy, for a total of \$53 each month in minimum fees. That extra fee makes it difficult for many members to save money by going solar.

By comparison, Duke Energy, which the report calls a "solar maker," currently charges no extra fee to customers who install residential solar, and credits solar customers at the utility's retail rate for the energy they produce.

According to Blue Ridge, the solar fees are needed to cover the cost for the co-op to provide backup power when the member's solar system isn't generating enough energy. However, when Appalachian Voices, the nonprofit organization that publishes this paper, requested Blue Ridge Energy's cost of service study to analyze whether these costs are justified, Blue Ridge declined to share the information.

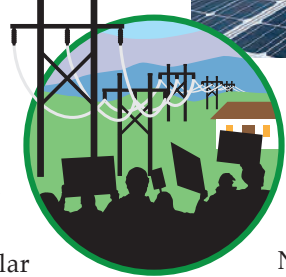
"Electric utilities are charging ever-higher fixed fees in an attempt to counteract decreasing revenues resulting from flat or reduced demand in most areas," explains Appalachian Voices' Energy Savings Program Manager Rory McIlmoil. "But increased fixed fees are detrimental to low-income residents, who generally don't use as much energy, and to consumers who are using less because of investments in solar and energy efficiency."

Blue Ridge Energy, like many electric utilities, offers a system called net metering for people with home solar. Members receive credits on their bill for the excess electricity that they generate and add to the grid during daytime hours, and are charged to use energy from the grid when their panels aren't producing enough energy, such as at night.

Blue Ridge pays members with solar a lower, wholesale electricity rate for the excess solar power they generate, and charges the higher retail rate for the power the members use from the grid. But other co-ops like



Members of the High Country United Church of Christ congregation installed a 10-kilowatt array of solar panels on the roof of their church on Nov. 6, 2015. Photos courtesy of High Country United Church of Christ



have expressed frustration at the co-op's policies.

Connor Boyle is the chairman of the solar committee of the High Country United Church of Christ, a church located in Vilas, N.C., which in 2015 installed a 10-kilowatt rooftop solar array. According to Boyle, the church raised \$35,000 to buy and install the solar panels, despite knowing that because of Blue Ridge's solar fees, the panels would not provide a great economic benefit.

A motivating factor for putting the panels on the church, according to Boyle, was so that church members could still contribute to the solar movement even if home solar was not an option or not economically feasible.

"Even in the summer months when we had long, sunny days with little to no energy use, when we were producing lots in solar and a lot more energy than we were using, we were still paying fixed fees of \$63 a month, regardless of how much energy we used," Boyle says.

Boyle says he would caution Blue Ridge members looking into installing residential solar. "Unfortunately, no matter how much energy you use, you will still have to pay these fixed fees, which are a lot, so just be prepared to pay back these 'penalties' to [Blue Ridge]."

Alternatively, Blue Ridge offers a community solar program that allows subscribers to purchase energy produced by the cooperative's four 368-panel solar arrays. Customers can buy the output from up to 10 solar panels for a \$4.50 per panel monthly fee, and the energy produced by their share of the solar array is credited on their electricity bill.

Due to the way that Blue Ridge calculates their solar rates, however, cost savings are only possible for high-energy-use members.

"You're actually not going to have any savings from it if you're a low user of electricity," Blue Ridge's Jason Lingle told The Appalachian Voice in 2017. "But a higher user of electricity [is] going to save money from the program."

Both the cooperative's community solar and net metering programs grant the most economic benefit to high users of electricity, but they still allow member-owners the option of supporting clean energy — if they can afford it. Boyle and other members of the High Country United Church of Christ want the cooperative to implement policies that allow everyone to receive both economic and environmental benefits from solar. Perhaps one day Blue Ridge will join BARC and others on the "solar maker" list. ♦

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Hiking the Highlands

The Mystical Season: A Love Poem to Winter

By Jamie Goodman

There is a joyful vitality to winter hiking in the mountains — the bracing, crisp air, the rush of wind through bare treetops, solitary trails where the only sounds are the pleasing crunch of snow underfoot and the raucous cawing of crows across the mountainside. Autumn colors have given way to monochromatic landscapes, subtly tinted by dusky green pine and hemlock and bluer green rhododendron and spruce — dramatically lit one moment by a brilliant blue sky, a mere two hours later by moody and magical storm clouds.

The Swedes have a saying: "There's no such thing as bad weather, only bad clothes." Residents of Scandinavian countries are raised with the precept that it's better to embrace winter than to curse the dark and the cold, and they pursue outdoor activities in winter with as much zeal as in summer. Central and Southern Appalachian winters are not as long



nor snowy as Sweden's, but our higher elevation often results in wintry weather comparable to more northern climes.

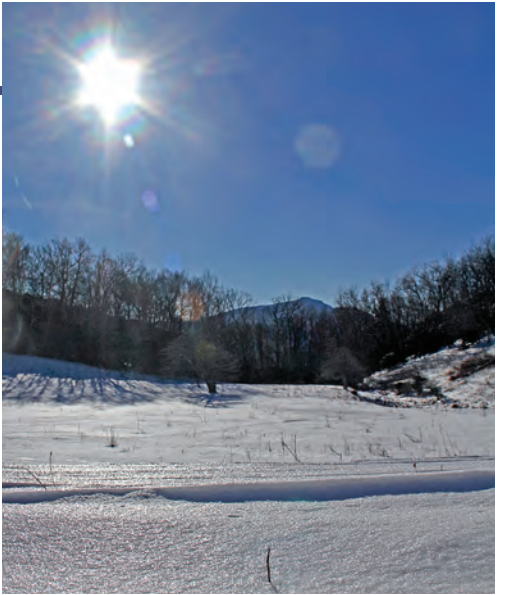
Ever since my birth on a snowy December morning, I have maintained a passionate, evolving love affair with this most enchanted of seasons. Growing up in the mountains, I spent snow days sledding the winterland hillsides with friends; during my teens and 20s, I pursued fast-paced runs down local ski slopes. In my early 30s, the relationship matured into solitary wooded treks, on sunny days soaking in the frosty freshness of the dormant forest, on stormy days delighting in the sensation of my feet floating through newly fallen snow. Today, as I near the half-century mark, the forecast of a storm (and a snowy hike!) at the end of the week is still as gleeful — and, if the weatherman is wrong, the disappointment equally as real — as when I was a kid.

Luckily, there are others who share this exuberant adulation for winter. Here is what a few Facebook friends had to say about the many perks of

Below, the writer on a snowy winter hike with her partner, Appalachian Voices' IT Consultant Jeff Deal. At right, a chilly bluebird day on the Moses Cone trails near Blowing Rock, N.C. Photos courtesy of Jamie Goodman

getting out on the trail in this magical and oft-misunderstood season:

- ❄️ I like hiking while the snow is falling. I am amazed that you can actually hear it land. — *Tamberlyn Blinsink*
- ❄️ It makes the familiar seem new and magical. — *Amy Yount Adams*
- ❄️ I dig the different version of quiet, the hibernation tones, muted colors and the dark, smooth waters of winter streams. — *Noel Sumrall*
- ❄️ The mountains glow purple with the leaves gone, the strong winds provide a cleansing only available during the winter — a time to see way off into the distance. — *Christian Lannie*
- ❄️ Being in the mountains in winter is healing. ... It's as though you were surrounded by a million glistening rainbows when the sunshine hits it and there is something magical about sleeping under the stars and seeing your breath hang in the air before you. — *Megan Naylor*
- ❄️ The adventure of driving in the snow or ice to get there, surfing the pre-hike adrenaline rush, and then the post-hike



shedding of layers and the gifted bliss of a hot bath. — *Sharon Parton*

- ❄️ I actually love looking at plants in decay, or in whatever state they need for winter. — *Sara Woodmansee*
- ❄️ I like seeing Nature at rest. — *David Harman*

So if the snowy weather forecast is true, later this week I will pull on some long johns, mittens, a toboggan and warm winter boots, grab my backpack and hiking poles, and pick a trail to commune with my shimmering, introverted paramour. We don't have much time, after all, because spring isn't that far away. ♦

Ohio Community Choice Aggregation

An Ohio state law has allowed hundreds of communities to choose a cheaper power supplier



The Lachmans in Athens County, Ohio, helped pass an initiative to make their town greener. Photo courtesy of UpGrade Athens County

In eight states so far, a number of electricity and natural gas ratepayers have been able to cut out the monopoly utility middleman and buy power straight from the source.

Some states, like Ohio, allow individual electricity customers to shop around, while others let municipalities band together to purchase electricity wholesale through a process called "community choice aggregation." Some aggregated communities like Cincinnati, Ohio, offer 100 percent green

power options. If an individual does not want to partake in aggregation, they may opt out and choose another power provider at any time.

More than 250 communities in Ohio have switched to municipal aggregation for both gas and electricity, according to LEAN Energy US, a nonprofit group that advocates for aggregation. The Northeast Ohio Public Energy Council, an aggregator established in 2000 that serves more than 500,000 Ohioans, estimates that it saved customers more than \$300 million from 2001 to 2017.

Not all Ohio customers are allowed to participate in aggregation, however. Rural electric cooperative members, municipal utility customers and net metering users are some exceptions.

Aggregators in Ohio can also fund programs for energy efficiency and renewables. Northeast Ohio Public Energy Council offers grants for energy projects that lower utility costs and increase renewables, and had funded 330 such projects as of August 2017.

According to the Southeast Ohio Public Energy Council, a smaller aggregator, residential electric customers typically save

\$50 to \$200 a year with community choice. Residential natural gas customers save roughly \$10 to \$50 per year. The council offers loans to commercial customers for energy efficiency upgrades and free renewable energy assessments for farmers and small businesses through the U.S. Department of Agriculture.

Individual communities can take re-

newable initiatives further still. Residents of Athens, Ohio, overwhelmingly approved a carbon tax for community choice aggregation members in May. The fee, which goes into effect in 2019, is expected to raise residential electric bills by around \$1.60 to \$1.80 per month, and will fund solar projects on public buildings, according to The Athens Messenger. — *By Kevin Ridder*

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Legal Action and Protests Against Pipelines

By Kevin Ridder

As winter settles over the mountains, construction on both the Atlantic Coast and Mountain Valley pipelines is halted in numerous locations across three states, the result of multiple lawsuits. As of press time in early December, pipeline resisters continued to delay construction at various points along Mountain Valley's path.

Also at press time, both pipelines lacked necessary federal permits to do construction work in waterways in West Virginia, Virginia and North Carolina. On Nov. 20, the U.S. Army Corps of Engineers suspended a key Clean Water Act permit for the entirety of Dominion Energy's Atlantic Coast Pipeline. Without this permit, called Nationwide Permit 12, developers are prohibited from building through any of the 1,500-plus waterways and wetlands along the fracked-gas pipeline's 600-mile route.

Earlier in November, the U.S. Fourth Circuit Court of Appeals temporarily invalidated the permit at the request of nonprofit law firm Appalachian Mountain Advocates. The firm represents several environmental groups including Appalachian Voices, the publisher of this newspaper.

The permit suspension for the Atlantic Coast Pipeline follows an Oct. 2 order from the Fourth Circuit striking Mountain Valley's Nationwide Permit 12. In its Nov. 27 opinion, the court explained that the Army Corps could not substitute its own condition in place of West Virginia's requirement that all water crossings be completed within 72 hours.

The court also held that the state could not change or waive its own 72-hour requirement without complying with public notice and comment procedures. While Virginia and North Carolina don't have that requirement, advocates persuaded the Army Corps to suspend its permits in those states unless and until a resolution is reached in West Virginia.

Permits allowing Atlantic Coast Pipeline construction under the Blue Ridge Parkway and the Appalachian Trail were still suspended due to a Fourth Circuit ruling at press time. But according to the Richmond Times-Dispatch, Congress is considering amending the omnibus spending bill to allow federal agencies to circumvent the court and grant permission to Dominion to burrow under the two features.

Developers of both the Atlantic Coast and Mountain Valley pipelines still expect to finish the projects by the end of 2019.

In Pennsylvania, Energy Transfer Partners plans to put their incomplete Mariner East 2 Pipeline into service by the end of 2018 by temporarily connecting finished portions of it with a pipeline built in the 1930s.

On Oct. 2, the West Virginia Department of Environmental Protection fined Mountaineer XPress Pipeline developers \$122,350 for 16 construction violations, and required them to submit a plan of corrective action within 20 days.

On Dec. 3, the DEP held a hearing



The Mountain Valley Pipeline cuts across a mountain in Monroe County, W.Va., above. A protester climbed and hung banners from MVP equipment, right, in Lindside, W.Va., on Nov. 19. At left, a sign supporting the protest. Photos courtesy of Appalachians Against Pipelines

on a stormwater control permit for EQT Midstream Partners' proposed 25-mile, 30-inch-diameter Hammerhead Pipeline. West Virginia Rivers Coalition states that Hammerhead's permit application does not address impacts to drinking water, erosion controls for construction on steep slopes and other concerns.

Hammerhead pipeline developers aim for a late 2019 in-service date.

Protests Continue

Protests have continued to spring up in Mountain Valley's path. Six people were jailed after blocking traffic into a pipe yard near Beckley, W.Va., on Oct. 22. Appalachians Against Pipelines, a group that raises money to fund pipeline fighters' legal fees, states that one of



the resisters was in jail through Oct. 31.

On Nov. 19, an unidentified protestor scaled Mountain Valley construction equipment in Lindside, W.Va., and halted construction for 10 hours until arrested, according to Appalachians Against Pipelines. The individual met bail the next day. Another unidentified person locked themselves to equipment in Monroe County, W.Va., on Nov. 27, where they blocked construction for 10 hours before being jailed. They met bail that night.

On Nov. 15, a Roanoke County, Va., judge dropped trespassing and other charges against Theresa "Red" Terry and her daughter Theresa Minor Terry. The pair gained national attention when they held tree-sits on their land in Mountain Valley's path for more than a month in spring 2018. According to Appalachians Against Pipelines, a Monroe County, W.Va., court dropped charges on Nov. 28 against Becky Crabtree, who blocked pipeline construction for several hours on July 31.

On Nov. 14, the tree-sitter known as Deckard — who occupied a stand on Peters Mountain and stopped Mountain Valley tree clearing for 95 days in early 2018 — was sentenced to 48 hours in jail, Appalachians Against Pipelines reports.

In Elliston, Va., a tree-sit that began Sept. 5 on Cletus and Beverly Bohon's land in the path of the pipeline was ongoing in early December. ♦

Mountain Valley Pipeline Southgate Files for Federal Approval

On Nov. 6, Mountain Valley Pipeline, LLC, filed for Federal Energy Regulatory Commission approval to extend its 303-mile fracked gas pipeline into North Carolina. The project, known as MVP Southgate, would snake 73 miles from Pittsylvania County, Va., through North Carolina's Rockingham and Alamance counties.

While Mountain Valley can now seek permits from the state, it will likely face difficulty from the North Carolina Department of Environmental Quality. On Nov. 5, the state agency sent a letter to FERC stating that many residents are "apprehensive of and sensitive to the possibility of another new pipeline" after last year's approval of

the Atlantic Coast Pipeline.

"We question whether the project satisfies the criteria for the Commission to deem it in the public interest, and whether it is essential to ensure future growth and prosperity for the residents of our State," reads the state agency's letter to FERC.

In September, Alamance County Commissioners unanimously passed a resolution opposing MVP Southgate. The resolution stated that stormwater and erosion control problems in Mountain Valley's path in Virginia raised concern about Southgate's impact on Alamance County's riverfront terrain and other water bodies. The commission has no permitting authority

over the pipeline.

The town council of Stoneville, N.C., narrowly passed a resolution against MVP Southgate on Oct. 2. Energy News Network reports that Stoneville citizens like Steven Pulliam are hoping to start a wave of action in Rockingham County.

"We're really happy about it, this is the first in our county," Pulliam told the publication. "I think this will set a chain of events off."

MVP Southgate originally planned to build two high-powered compressor stations to pump gas through the pipeline, but reduced it to a single station in Pittsylvania County, Va. — By Kevin Ridder

Appalachian States Respond to Climate Change Warnings

By Eric Halvarson

Around the world, governments and international organizations are reacting to the most recent report by the United Nations' Intergovernmental Panel on Climate Change. American leaders are also responding to a new federal report emphasizing the risks of climate change. In Appalachia, local leaders and citizens have joined the call for action in light of the findings.

The world is already 1 degree Celsius above pre-industrial levels. The IPCC report urges leaders to stop global warming at about 1.5 C instead of the 2 C limit on warming called for by the Paris Climate Agreement.

"Climate-related risks to health, livelihoods, food security, water supply, human security and economic growth are projected to increase with global warming of 1.5 degrees Celsius," the report states, noting that risks increase drastically with a figure of 2 C warming. At current greenhouse gas pollution levels, the Earth is projected to warm 1.5 C by 2040.

On Nov. 23, the U.S. Global Change Research Program, a collective of 13 federal agencies and more than 300 experts, released the second volume of the Fourth National Climate Assessment. The report warns that current emissions projections would cause climate impacts that could cost the country \$500 billion by the end of the century. When asked

about the climate report, President Donald Trump told reporters, "I don't believe it."

The Appalachian Mountains face rising temperatures, a higher risk of flooding, forest fires and droughts, and an increased risk of losing habitats and biological diversity to the effects of climate change.

To prevent catastrophic warming, the IPCC report finds that coal must be reduced from 40 percent of the world's electricity source to between 1 and 7 percent by 2050. West Virginia and Kentucky get 93 percent and 79 percent of their electricity from coal, respectively, and are the second- and fifth-highest producing coal states.

State Reactions

West Virginia is developing an energy plan for 2018 to 2022. West Virginia Gov. Jim Justice, who owns a number of coal mines, has raised doubts about climate science and praised Trump's rollback of the Obama administration's carbon emissions rule and introduction of a less-stringent version.

The Ohio Valley Environmental Coalition, a West Virginia grassroots nonprofit organization, wrote about the IPCC report ahead of the midterm elections on its website. OVEC urged readers to "Vote, and then dog the officials with calls and letters to let them know we want climate action!"

"Whether mainstream media, government institutions, and state and local politicians join us remains to be seen, but waiting is not an option," OVEC member Randi Pokladnik wrote in an October blog post. "The time is now and it is up to us."

In January 2018, Kentucky Gov. Matt Bevin called the idea that "mankind is solely responsible and is solely going to be the solution" to climate change "ludicrous." U.S. Rep. John Yarmuth (D-Ky.) is projected to chair the House Budget Committee, a key position for climate-related spending. According to the Huffington Post, Yarmuth has indicated a willingness to work on new climate change legislation, but other Kentucky legislators have denied climate change.

"Climate change will affect everyone," says Caci Gibson, eastern organizer for the Kentucky Student Environmental Coalition, citing recent flooding and changing agricultural seasons as impacts in Eastern Kentucky. "We can look at these reports and use them to galvanize real change."

In North Carolina, Gov. Roy Cooper issued an executive order in October calling for a 40 percent energy-use reduction in government buildings by 2025 and a task force for climate change action in state cabinets.

"With historic storms lashing our state, we must combat climate change, make our state more resilient and lessen

the impact of future natural disaster," Cooper said at a press conference, referencing recent hurricanes.

Students, faculty and staff of Appalachian State University in North Carolina have held multiple meetings in response to the IPCC's report to discuss how the school should and can respond. The university is committed to a carbon neutrality date of 2050, and many involved believe the school should make the transition sooner.

"That report was really a wake up call to us all," says ASU Assistant Professor of Sustainable Development Jacqueline Ignatova. "Seeing packed rooms full of concerned citizens is really encouraging."

On Nov. 2, Virginia Gov. Ralph Northam issued an executive order introducing multiple programs and standards to project sea level rise in Virginia and react to flooding, wildfires and earthquakes. He cited the IPCC report as inspiration to act.

The federal climate assessment warns that Tennessee's healthcare and transportation systems are at particularly high risk from climate-related impacts, and there is no climate action plan for the state. Governor-elect Bill Lee has not issued a clear statement on climate change, but several of the state's U.S. representatives deny human impact on climate change. ♦

Virginia Governor Alters Air Board Before Crucial Vote

On Nov. 15, Virginia Gov. Ralph Northam replaced two members of the state's Air Pollution Control Board less than a week after they offered critical comments and questions during a meeting to consider a compressor station for Dominion Energy's proposed Atlantic Coast Pipeline. The planned industrial facility, which would operate 24/7 to push fracked gas through the pipeline, would be located in the predominately African-American community of Union Hill in Buckingham County, Va. While the air board members' term ended in June, Gov. Northam had allowed them to stay on, like the more than 200 other gubernatorial appointees

whose terms are up.

Residents of Union Hill have expressed concern in public comments and a public hearing regarding the facility's air emissions, near-constant noise pollution and its impact on several nearby slave cemeteries. The remaining members of the air board are scheduled to decide whether to issue the permit on Dec. 10.

Gov. Northam also replaced two members of the State Water Control Board in November including Roberta Kellum, who attempted to pass a motion to revoke certificates for the Mountain Valley and Atlantic Coast pipelines. Robert Dunn, the other dismissed water board member, had voted in favor

of pipeline permits.

Environmental groups including Appalachian Voices, the publisher of this newspaper, were outraged by the governor's action.

"Governor Northam has repeatedly promised that the Mountain Valley and Atlantic Coast pipelines would not be built unless they meet the strictest environmental standards," said Appalachian Voices' Virginia Program Manager Peter Anderson. "By removing three citizen board members who appeared to be holding the projects to those standards, the governor has undermined his own promise."

Visit appvoices.org/blog for updates. — By Kevin Ridder



John Laury, above, and Marie Gillespie, below, residents of Union Hill near the proposed compressor station, spoke before the State Air Pollution Control Board on Nov. 8, 2018. Photos by Lara Mack

Lichen The Story of a Soil-Maker

By Eliza Laubach

Lichen grows at the edge of life: faces of rocks, veneer of tree bark, crust of dry soil. From lush forests to arid mountaintops, more than 20,000 species of lichen cover up to 6 percent of the Earth's surface.

An ancient life form, lichen grows in diverse patterns. The most common types are fruticose, which is shrubby and branching; crustose, which appears as if painted onto rocks; and foliose, which resembles leaves.

One can encounter lichen on a barren rock face and over time find fertility in its wake. Foliose lichen expands when wet — attaching itself tightly to the rock — and then contracts when dry, which causes minuscule flakes of the rock to break off. And so begins a process of soil formation.

Laurence Cole, a community choir elder, was so moved by this small miracle that he wrote a three-part choral hymn to lichen, which begins: "Oh lichen, oh lichen, turning light and stone into flesh and bone."

Lichen is composed of fungi and algae, which depend on each other to live. While the blue-green or cyanobacteria algae within lichen may thrive elsewhere, most fungi in lichens cannot survive on its own.

As lichen evolved, the process helped to create primordial soils on Earth for nearly 2 billion years before those soils were capable of supporting plant life, according to an article on East Antarctica published in Scientific Reports in February 2018. The scien-

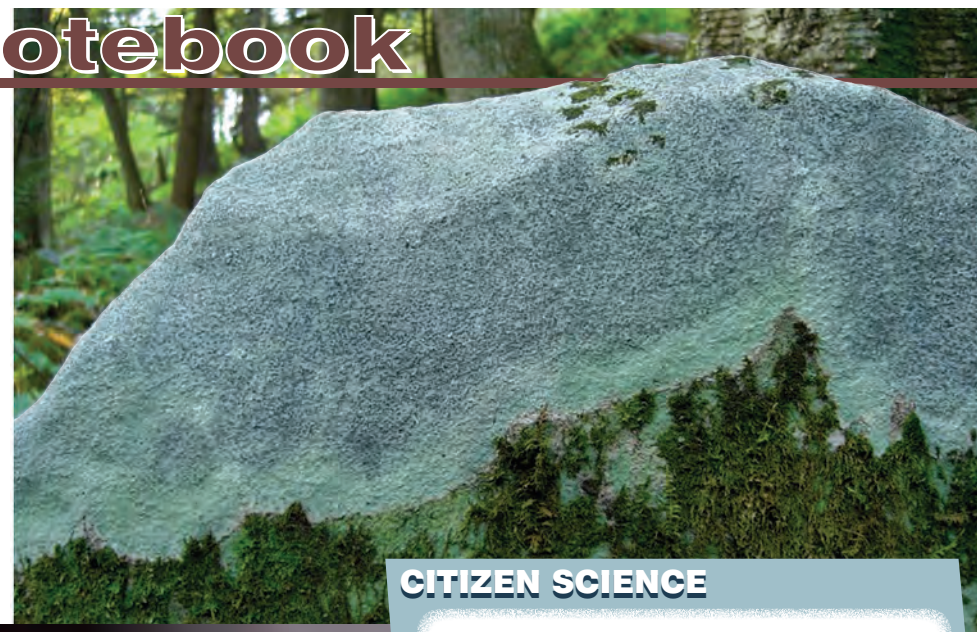
tists looked at cracks within rock where cyanobacteria and fungi preceded the formation of lichen, all of which transformed rock into the building blocks of soil.

And why does a rainy day seem to make lichen glow? Luke Cannon, naturalist and founder of outdoor education company Astounding Earth, connects this phenomenon to lichen's symbiotic nature. During misty and cloudy conditions, the thin fungal layer on the outermost edge of the lichen turns transparent to allow photosynthesis, he explains. This layer turns opaque in dry periods and acts like a blanket of protection for the algae.

Cannon leads educational nature hikes in the woods around Asheville, N.C. Lichen inspired him through a meditative practice called sit spot, which involves sitting in the forest for periods of time, fully present to one's surroundings.

"I was able to see more of what is directly in front of me, which included the lichen and mosses and a number of other small, magnificent discoveries," Cannon says.

Noticing led to studying, and Cannon found himself peering at lichen under a microscope one day. He found other minuscule creatures, such as the affectionately named water bear, or tardigrade, famous for clinging to life



CITIZEN SCIENCE

A hand lens and an identification guide open the door to learning about sensitive lichen species. The West Virginia Department of Natural Resources provides a guide for the state at tinyurl.com/wv-lichen. Explore the U.S. Forest Service lichen and air quality database at tinyurl.com/lichenusfs.

Ethical wild harvesting practices are necessary for the slow-growing bushy beard lichen, above. Only harvest this fruticose species from the forest floor after high winds blow it from its canopy habitat. Photo by Lisa Kimmerling. At top, the blue-eyed lichen, or *Porpidia albocaerulescens*, is a rock-hugging crustose lichen that brightens to a cerulean green upon a rain spell. Photo by Jason Hollinger

naria, resembles lungs in its branching form, hinting at its need to breathe clean air, and thrives far from industry. Green algae and cyanobacteria, a photosynthesizing bacteria, combine with the fungi to create emerald tones.

Also sensitive to air pollution, *Usnea* is a diverse lichen genus with more than 350 species worldwide. Its traditional folk uses center around medicine, and this is a lichen Cannon enjoys using at home.

Usnic acid, a plant compound found in *Usnea* species, is lauded for its antibacterial activity. A 2017 article in the Journal of the American Herbalists Guild details these findings, noting that this compound is the most widely found phytochemical across lichen species.

The region's biodiverse mountains harbor not only medicinal lichen, but also species found nowhere else — and there are indeed at least two endemic Appalachian lichen. A recently discovered endemic species found on the North Carolina-Tennessee border was named in honor of Dolly Parton: *Japewiella dollypartoniana*. Look for it on the Appalachian Trail in the Unicoi Mountains.

Some lichen can dye natural fibers, and select birds liken to *Usnea* as a nest bedding. These tiny, symbiotic life forms weave a texture of togetherness that is only waiting for a closer look. ♦

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N.C. Lowers Risk Rating of Coal Ash Pits

Duke Energy may get a pass on the cleanup of seven toxic coal ash dumps in North Carolina after the state Department of Environmental Quality classified the sites as "low risk" in November. This makes it easier for Duke to merely cap the coal byproduct in place instead of moving it to a lined landfill away from water sources. The DEQ will rule on final cleanup plans for the sites in April 2019.

All seven of these sites were classified as "intermediate risk" under the state's 2014 Coal Ash Management Act. But in 2016, Duke and the DEQ successfully lobbied the legislature to water down the law by making it easier to lower the sites' risk ratings. The law states that Duke can obtain a "low risk" rating by providing an alternative water supply for people within a half-mile of each site and completing state-mandated dam repairs, which the DEQ says Duke has now done.

"But this says nothing about pollution of lakes, rivers and streams;

pollution of groundwater; pollution of existing or potential drinking water supplies; or impacts on people living outside one half-mile or people who use natural resources but don't live within one half-mile; or impacts on ecosystems and aquatic life," Frank Holleman, senior attorney with nonprofit law firm Southern Environmental Law Center, wrote in an email.

Holleman successfully sued Duke to move the coal ash from the Buck Steam Station in central North Carolina. Although the site is one of the seven classified as "low risk," Duke will still have to excavate the coal ash due to this litigation. The DEQ is set to hold public informational meetings on the fate of the other six sites in early 2019.

On Nov. 7, Duke revealed that 24 of its 26 coal ash pits in the Carolinas are not meeting federal standards because they sit within five feet of groundwater aquifers. The only two compliant basins had already been fully excavated. — By Kevin Ridder

Groups File Lawsuit Against Mountaintop Removal Coal Mine in West Virginia

In November, Coal River Mountain Watch, the Sierra Club and Appalachian Voices, the publisher of this newspaper, filed a federal lawsuit against mining company Republic Energy to halt coal mining activities at the Eagle 2 site in Raleigh County, W.Va. The groups state that Republic is unlawfully mining one of the only remaining intact ridges on the heavily mined Coal River Mountain with a permit that expired in 2011.

"Republic has waited 10 years to begin mining the Eagle 2 permit. In that time, demand for coal has decreased substantially," says Debbie Jarrell, co-director of Coal River Mountain Watch, which is based near the mine site. "There is no conceivable reason that this mountain should be mined at this point."

Surface mining permits terminate after three years if no mining has started and if the permit holder has not met standards for an extension, and this permit was issued in 2008. Although Republic did not start mining or file for an extension before 2011, the West Virginia Department of Environmental Protection treated the mining permit as valid when the company began mining operations in spring 2018. Plaintiffs argue that the company did not request several additional extensions and did not offer a valid justification for why it waited an additional seven years to begin mining.

Environmental groups state that a new permit would take into consideration the most up-to-date information such as existing levels of water pollution from nearby mines, and incorpo-

rate up-to-date mining requirements. The DEP has issued multiple notices of violation to several adjacent permits on Coal River Mountain, including 11 in the last two years to the operators of Middle Ridge Mine.

"What our communities need now is support in developing a new economy that benefits local people, promotes well-being and preserves the environment," says Jarrell. "Mining at Coal River Mountain is more than just about a permit; this is our lives being erased to pander to the few wealthy coal corporations." — By Erin Savage

Kinder Morgan Drops Planned Gas Liquids Pipeline, Proposes Natural Gas

After experiencing tremendous local opposition, in October oil and gas pipeline company Kinder Morgan dropped their plans to transport hazardous natural gas liquids from Ohio to Texas via a repurposed 75-year-old, 2-foot diameter pipeline.

The Utica Marcellus Texas Pipeline has carried natural gas, rather than the proposed gas liquids, across six states since the early 1940s. The proposal entailed reversing the 964-mile long pipeline's direction and adding 200 miles of new pipeline to reach petrochemical markets in Louisiana and Texas.

Kentucky citizens, local governments and environmental groups fought the project over the past three-and-a-half years. Boyle, Madison, Marion and Rowan counties in Kentucky formally opposed the project, as well as organizations such as Eastern Kentucky University, Berea College and the Richmond Chamber of Commerce.

Pipeline critics argued that natural gas liquids are more dangerous than natural gas due to its explosion and asphyxiation risks as well as its potential to pollute ground and surface water supplies, including Lexington's drinking water source.

In October, Kinder Morgan announced they still plan reverse the pipeline flow but will continue shipping natural gas instead of switching to liquids. Louisville attorney Tom FitzGerald with the Kentucky Resources Council told InsideClimate News that "we would certainly scrutinize any new compressor stations and any changes in pressure for this 70-plus-year-old line." — By Kennedy Kavanaugh

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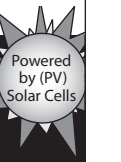
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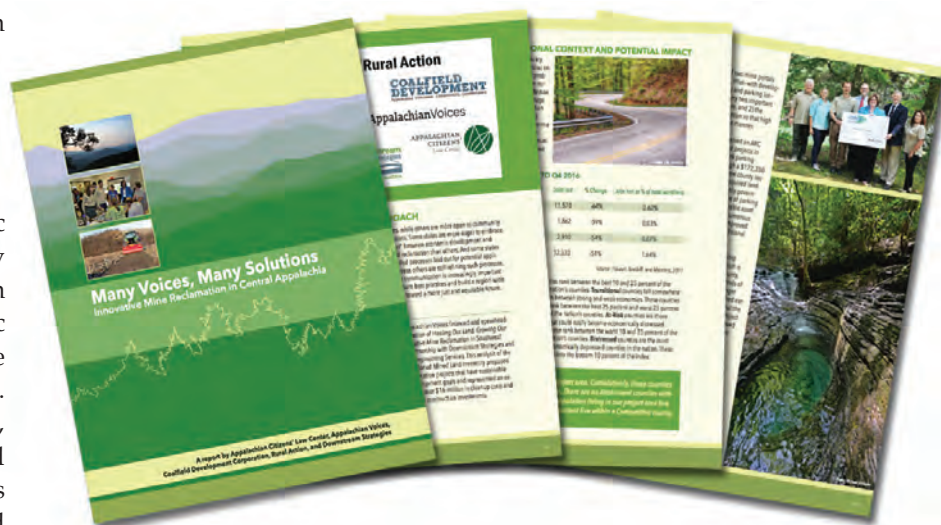
Laying the Groundwork for Innovative Mine Reclamation Projects

In November, we joined a coalition of Central Appalachian groups in the release of a report highlighting 20 innovative projects that would clean up abandoned coal mine lands and give them new life as sustainable agriculture businesses, solar farms or other economic ventures. The report, *Many Voices, Many Solutions: Innovative Mine Reclamation in Central Appalachia*, provides economic impact data on the projects, which can be adapted and replicated across the region.

Communities in Kentucky, Ohio, Virginia and West Virginia are saddled with thousands of coal-impacted sites that were abandoned and never cleaned up and which now pose threats to public health and impede local economic growth. Local leaders and entrepreneurs are working to repurpose these damaged lands for economic solutions specific to each location's context.

The report highlights five sites in each of the four states that represent prime opportunities for a variety of funding streams, including existing federal sources and the draft RECLAIM Act, which is awaiting a vote in Congress. Examples include: an affordable green-energy subdivision near abandoned mine lands in Hazard, Ky., a facility in Corning, Ohio, that uses acid mine drainage to produce paint pigment, an outdoor adventure resort on a reclaimed highwall mining site in Dickenson County, Va., and a mixed agriculture and renewable energy project on a former strip mine in Boone County, W.Va.

The report was authored by the Reclaiming Appalachia Coalition,



which seeks to spur mine reclamation projects throughout Central Appalachia that are responsive to community needs and that accelerate the growth of new, sustainable economic sectors. The coalition consists of lead organizations in four states — Appalachian Voices in Virginia, Appalachian Citizens' Law Center in Kentucky, Coalfield Development Corporation in West Virginia, and Rural Action in Ohio — and a regional technical expert, Downstream Strategies, based in West Virginia.

"This report marks an important step as Appalachian citizens continue to re-imagine and work toward a future of sustainable and healthy local economies, where young people can find meaningful work and stay to raise their own families," says Adam Wells, regional director of community and economic development with Appalachian Voices. Past efforts to reuse old mine sites have generated sparse lasting

economic activity. The "if you build it, they will come" industrial parks and golf courses now largely sit empty and unused. The 166 Appalachian counties within the

project area represent a population of more than 5.7 million people, nearly 40 percent of whom live in counties categorized by the Appalachian Regional Commission as at-risk or distressed based on unemployment, income and poverty factors.

To break free from this unsuccessful approach to coal site reclamation, the coalition established six guiding principles to identify optimal repurposing projects, including ensuring they are appropriate to the place in which they are occurring, that they include non-traditional stakeholders in decision-making, and that they are environmentally sustainable and financially viable long-term.

Read the report at appvoices.org/innovative-reclamation

An Eventful Fall at Appalachian Voices

October and November were eventful months here at Appalachian Voices.

Just before Thanksgiving, we celebrated the halt to construction along Atlantic Coast Pipeline water crossings as a result of one of the many lawsuits we've joined to hold pipeline developers accountable to the law. We participated in the Virginia Air Pollution Control Board's November hearings for the proposed Buckingham Compressor Station alongside community partners, and joined those partners in calling out Gov. Northam for his egregious dismissal of two air board members during the board's deliberations (read more on page 20). By the time this issue of The Appalachian Voice reaches you, we will know the result of the board's Dec. 10 vote. We also held a summit with allies and landowners in the three counties that would be affected by the proposed Mountain Valley Pipeline Southgate extension to help them prepare for the challenges ahead.

Also in November, we joined Coal River Mountain Watch and the Sierra Club in filing a lawsuit to block an unlawful Republic Energy mountaintop removal coal mine in West Virginia. We traveled with residents from Central Appalachia to Washington, D.C., to advocate for black lung benefits and mine

reclamation. We are opposing dangerous utility proposals in regional statehouses that would enrich monopolies at the expense of ratepayers, and we are also advancing policies that would make clean energy more accessible to everyday folks.

Those are just some of the recent highlights. As always, there is a lot happening within our organization and the region at large.

Stay up-to-date by signing up for our monthly email newsletter or our daily and weekly blog alerts at appvoices.org/stay-in-touch. You can support our work (and receive a print subscription to the paper!) by becoming a member at appvoices.org/join.

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John and Faye Cooper Business Owners with Community Purpose

Member Spotlight

By Molly Moore

Today, John and Faye Cooper are well known in the northwestern North Carolina High Country as the owners of the renowned Mast General Store, steadfast supporters of regional organizations and friendly community members. But when the couple moved to Watauga County in the spring of 1980 with their two children, they were newcomers taking a leap of faith.

A year earlier, while visiting the small community of Valle Crucis, N.C., the shuttered Mast General Store building caught John's eye. Continually in operation since 1883, the general store had closed its doors in the fall of 1977. John was intrigued, and before long the Coopers had sold their Florida home, purchased the building and set up an apartment above the store where the family lived for four years.

John and Faye dove headfirst into the day-to-day operations of the store, creating Mast's hallmark blend of old-time provisions and candy paired with quality clothing, shoes and outdoor gear.

"The environment was beautiful and restful," recalls Faye. "Even though we were working very crazy hours and doing a lot of things, our bedroom window looked out at the mountain right there in Valle Crucis."

The venture was a new one, but drew on John's sales experience and Faye's background running a cathedral bookstore. By 1982, the Coopers expanded the Valle Crucis store into the Annex building just down the road, and in 1988 they opened a store in a historic building in downtown Boone, N.C.

"One of the things that we really inscribed in ourselves early on was quality goods, fair prices and friendly service," John says.

Their daughter Lisa Cooper is now president of the company, and John and Faye radiate pride when talking about her commitment to customer service, the staff and the communities where each store is



The Coopers at the original Mast General Store in Valle Crucis, N.C.

based. In addition to the two stores in Valle Crucis, Mast General Store now includes eight other locations in Tennessee and the Carolinas — all located in restored historic buildings.

The Coopers encourage each store to engage in their community. In addition to the charitable efforts their business supports, John and Faye Cooper donate their time and financial resources to a host of causes.

"We ended up finding ourselves giving to health and human service issues, to land conservation and environmental issues and then supporting the arts," John says. "Those areas are the ones that I think need the most help."

The Coopers also take a hands-on role in some projects. When the Hospitality House of Boone was in need, Faye and John headed the campaign to build a larger facility for the organization, which assists homeless individuals from seven surrounding counties. They have volunteered in various capacities with groups such as An Appalachian Summer Festival, Boone Area Chamber of Commerce, Western Youth Network and others.

The Coopers have been members of Appalachian Voices since 2003, and have advertised the Mast General Store in The Appalachian Voice since 1999.

"Conservation is critical with our resources," John says. "And I appreciate so much what Appalachian Voices does, not just here but all over the Southeast."

John's profound concerns with environmental issues and the threats of fossil fuels began long before the couple moved to Western North Carolina. In addition to supporting conservation organizations, in 2015 the Coopers donated nearly 22 acres behind the original Mast Store to the Blue Ridge Conservancy. The donation permanently protects the riverfront land and pastoral view that brought them peace during their first years in the area.

Now, the Coopers are putting their energy into revitalizing the Appalachian Theatre in downtown Boone. Since 2011, John has led the capital campaign to purchase and restore the 1938 building, which is expected to reopen in late summer of 2019.

"My first reason for being involved is to bring the stage back for local talent, and when you do that you also provide entertainment for local people," John says. "I served on the State Arts Council and I saw the importance of revitalizing old theaters in downtowns."

At a public event outside the theater in August 2017, North Carolina Gov. Roy Cooper (no relation) surprised the Coopers with the state's highest civilian honor, the Order of the Long Leaf Pine.

"We feel very blessed to be here and to have the opportunity to serve, and we care about a lot of different areas," says Faye. "And so that's why we do what we do, because we care." ♦

Appalachian Voices is committed to protecting the land, air and water of the central and southern Appalachian region. Our mission is to empower people to defend our region's rich natural and cultural heritage by providing them with tools and strategies for successful grassroots campaigns.

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Josh Branson captured this magical wintry scene in March 2017 while day-hiking the Appalachian Trail near Newfound Gap in the Great Smoky Mountains National Park. Read about the joys of a winter hike on page 17, and view more of Branson's work at JoshBranson.com. We at The Appalachian Voice wish you and yours Happy Holidays and a Happy New Year!

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Appalachian Voices is powered by an abiding love of our common wealth: our mountains, rivers, forests, farms, and communities.

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