

FREE

# The Appalachian VOICE

Dec. 2017 / Jan. 2018



## Current Choices

A continued look at the promises and perils of today's energy options

- Pumped storage | Wind
- Gasification | Coal

## The Call of the Red Crossbill



**ALSO INSIDE:**  
Section Hiking the Art Loeb Trail  
Southern Appalachian Mtn Stewards



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**About the Cover**



Scott Hotaling captured this image in February after driving to Tennessee to photograph the sunrise at Carver's Gap on Roan Mountain. "I wound up wandering down into the forests on the east side of the pass and found the rising sun lighting up one of the most beautiful forest scenes I'd ever seen," he says. View his work at [lightofthewild.com](http://lightofthewild.com)

**A note from our team**

Since our last issue, I have found myself reflecting on multiple acts of senseless violence here and abroad that have lead to massive casualties of innocent people simply leading their everyday lives.

These random acts of violence are appalling, and when it happens we are appropriately shocked and outraged. But there is another type of violence being committed against innocent people who are slowly murdered through the calculated decisions of corporate polluters who are paid handsomely for their actions — and we, the general public, are largely unaware or complacent.

The fossil fuel industry is a giant, a heartless giant, that is fed by greed. This giant will only be held responsible for its actions if citizens demand it — currently, government agencies seem more willing to prop up the fossil fuel sector than hold it accountable. Last year, Duke Energy and Dominion Energy each made around \$2.1 billion; Duke's CEO brought home close to \$10.8 million, while Dominion's CEO claimed over \$20 million. In contrast, entire communities are living in these utility giants' "sacrifice zones" and are exposed daily to a cocktail of toxins in the air they breathe and water they drink that makes them sick.

That's why groups like Appalachian Voices stand with these frontline communities against the often-deadly impacts of the fossil fuel industry and these

**A note from our executive director**

Appalachia is large and diverse, tied together by beautiful mountains, fresh waterways and strong cultures. But outside industries have historically exploited the region's rich resources and hard-working residents, leaving local communities to shoulder the burdens of pollution and boom-and-bust economics.

In North Carolina, residents are forced to contend with the toxic wastes from coal-fired power plants and the threats from the potential expansion of fracked-gas infrastructure. Here, our N.C. Program Manager Amy Adams reflects on the human costs of these energy choices.

For the future,  
Tom Cormons  
Executive Director

calculated acts of corporate violence.

By demanding a shift to cleaner fuel sources such as wind and solar and increasing the energy efficiency of our homes and businesses, we can protect thousands of innocent lives.

I invite you to stand with me, and together we can take down the giants.



For our communities,  
Amy Adams  
North Carolina Program Manager

**GET INVOLVED** environmental & cultural events

**Energy Efficiency Task Force Volunteer Nights**  
Dec. 6, Jan. 24, and Feb. 7, 6-8 p.m. Help the Appalachian Voices Energy Savings Team spread the word to Western North Carolina about decreasing energy waste and increasing the use of renewable resources. Boone, N.C. Call (828) 262-1500 or visit [appvoices.org/volunteer](http://appvoices.org/volunteer)

**Living with Nature Hike**  
Dec. 9, 1 p.m. Join The Nature Foundation at Wintergreen for a moderate hike covering tree and wildflower identification, geology and local wildlife. \$8 for non-members. Trillium House, Wintergreen, Va. Call (434) 325-8169 or visit [twfnf.org](http://twfnf.org)

**118th Annual Audubon Christmas Bird Count**  
Dec. 14 - Jan. 5. Participate in the nation's longest-running citizen science project by hiking park trails to identify and count as many birds as possible. Maybe you will find an elusive red crossbill! Beginning birders can join groups with more experience. Visit [audubon.org/join-christmas-bird-count](http://audubon.org/join-christmas-bird-count)

**VA State Meetings on Pipelines**  
Dec 6-7 and 11-12, 9:30 a.m. Voice the need to protect our water at the Virginia State Water Control Board meetings for the proposed

Mountain Valley and Atlantic Coast pipelines. Even if you do not speak, show your solidarity by attending. Richmond, Va. Call (804) 698-4000 or visit [appvoices.org/fracking/actions](http://appvoices.org/fracking/actions)

**Winter Plant Hike**  
Dec. 16, 3 p.m. Hike the 0.75-mile Holly Discovery Trail with Park Ranger Kevin Bischof to find plants that hold their green coloration during the winter. Lake James State Park, N.C. Call (828) 584-7728 or visit [tinyurl.com/WinterPlantHike](http://tinyurl.com/WinterPlantHike)

**Tree Toss**  
Dec. 26-30, 1-3 p.m. Watch the animals at the North Georgia Zoo play with reused Christmas trees. Donate your un-decorated natural Christmas tree for \$1 off admissions. \$20-23. Cleveland, Ga. Call (706) 348-7279 or visit [tinyurl.com/TreeToss](http://tinyurl.com/TreeToss)

**Birding with Friends**  
Dec. 27, 8 a.m. This monthly event in the Seven Islands State Birding Park is designed for birders of all experience levels to mingle. Over 200 species of birds have been spotted in the park. Free. Kodak, Tenn. Call (865) 407-8335 or visit [tinyurl.com/BirdingFriends](http://tinyurl.com/BirdingFriends)

**First Day Hike at Blackwater Falls**  
Jan. 1. Embrace the new year by hitting the trail. Find a First Day hike in your area, or join

See more at [appvoices.org/calendar](http://appvoices.org/calendar)

naturalist Paulita Cousin for a three-mile loop at the spectacular Blackwater Falls State Park. Free. Davis, W.Va. Call (304) 259-5216

**How to Hike the A.T.**  
Jan 11. Join Appalachian Trail Conservancy staff for an interactive workshop on every aspect of planning a long distance hike on the A.T. Pre-registration is required. Free. Asheville, N.C. Call (828) 357-6542 or visit [tinyurl.com/HowToHike](http://tinyurl.com/HowToHike)

**Duke Energy Carolinas Rate Hike Hearings**  
Jan. 16, 7 p.m., Franklin, N.C. | Jan. 24, 7 p.m., Greensboro, N.C., | Jan. 30, 6:30 p.m., Charlotte, N.C. The North Carolina Utilities Commission will be hearing testimonies from Duke Energy customers in regards to their 16.7% rate hike proposal. Visit <http://tinyurl.com/DukeHearings>

**Nothin' Nice Play**  
Jan. 25, 27 and 28, 7 p.m. A story by Linda Parris-Bailey about a young man forced to confront environmental racism and its impact on his family and community. Find the Appalachian Voices table outside of the show. Knoxville, Tenn. \$15-100. Visit [tinyurl.com/Nothin-Nice](http://tinyurl.com/Nothin-Nice)

**Across Appalachia**

**Three New Preserves Established on Pine Mountain in Eastern Kentucky**

By Rachel Pressley

In October, the Kentucky Natural Lands Trust established three new preserves by purchasing nearly 2,000 acres on the north face of Pine Mountain near Cumberland, Ky.



Photo courtesy of Kentucky Natural Lands Trust

In addition to the Narrows Preserve established in March, the areas recently protected are known as the Line Fork Preserve, the Hurricane Gap Preserve and the Kingdom Come Preserve. These tracts of land will also contribute to the Great Eastern Trail, a recreational hiking trail being built from New York to Alabama.

The 125-mile long ridge known as Pine Mountain "is one of the largest tracts of intact contiguous forest remaining in Kentucky," according to the land trust. Project planners are working to conserve and protect the land that reaches from Jellico, Tenn., to Elkhorn City, Ky. It will eventually be open to the public to access the Great Eastern Trail.

The new preserves connect other protected lands, joining Kingdom Come State Park and the Hensley Pine Mountain Wildlife Management Area and connecting the E. Lucy Braun State Park Nature Preserve to Kentenia State Forest. Part of the Great Eastern Trail will also join Breaks Interstate Park with Cumberland Gap National Historical Park in Kentucky.

This will connect thousands of acres in the region, conserving habitats for plant and animal species such as the green salamander, migratory warbler, yellow-fringed orchid, black bear and Indiana and northern long-eared bats.

**Virginia Announces Cleanest Air in 20 Years**

After years of work to improve the air quality in Virginia, the Department of Environmental Quality announced that the summer of 2017 was the cleanest ground-level ozone season in the commonwealth in the past 20 years.

In the 1990s, many areas in Virginia regularly struggled to meet the old ozone health standards of 120 parts per billion, but this summer the state only failed to meet the new standard of 70 parts per billion on four occasions.

Levels of pollutants such as ozone, nitrogen oxides, sulfur dioxide, carbon monoxide and particulate matter have all fallen, according to the agency. — *Otto Solberg*

**New River Gorge Bridge Celebrates 40 Years**

A crowd of thousands gathered on Oct. 21 as the New River Gorge Bridge in West Virginia celebrated its 40th year balancing with nature.

During the annual Bridge Day, people can rappel, skydive and participate in high lining, an activity where people ride along a speed-controlled zipline with belays. The skydivers, known as BASE jumpers, leapt over 800 feet into the New River Gorge with parachutes designed for rapid deployment. The first BASE jumpers were present at this bridge in 1979, just two years after construction was completed. — *Rachel Pressley*

**CORRECTION:** The article "Seeking Opportunities in Clean Energy" in our Oct./Nov. 2017 issue incorrectly quoted a U.S. Dept. of Energy report as stating that 187,117 workers are employed by the coal, oil and natural gas

industries combined. That number applies only to electric power generation. When combined with the fuels sector, these industries employ a combined 1,073,872 people. The Appalachian Voice regrets the error.

**Three Struggling Coal Towns Conduct Merger Study**

By Otto Solberg

In the coal-bearing region of Eastern Kentucky, the town governments of Benham, Cumberland and Lynch are conducting a merger study for their three communities.

The neighboring towns each share Highway 160 as their main street and are all situated along a seven-mile section of the road. The study is investigating whether the governments could collectively save money by combining their administrations and sharing services and equipment. Each town is struggling with aging infrastructure, meager tax bases and the downturn of the coal industry.

Benham was built in 1909 by International Harvester to mine coal

for manufacturing. In 1917, U.S. Steel needed coal for World War I and built Lynch, the biggest company-owned coal town in the world at the time, a couple miles to the east. To the west of Benham, Cumberland grew as the retail center for the two towns.

As coal production has dropped, local governments have lost money from a state tax on coal mining. The towns' tax bases are cut more and more as many residents leave in search of work. According to the U.S. Census, a third of the houses in Lynch sit vacant, and the town's population has dropped below 700 despite housing over 10,000 in its prime.

The merger study will be completed in 2018, and any merger proposal would require a vote from residents.

**POWER Initiative Awards Seventh Round of Grants**

The federal Appalachian Regional Commission announced its latest round of POWER grants in September. The Partnerships for Opportunity and Workforce and Economic Revitalization Initiative provides grants to community projects that aim to prepare workers for new industries and create jobs in areas affected by the downturn of the coal industry.

The largest grant awarded in September was \$1.2 million to support local food systems in 58 Appalachian counties through the Central Appalachian Network, a program of the West Virginia-based Natural Capital Investment Fund.

Other grants included \$101,981 in technical assistance for the Southern Appalachian Labor School in Kincaid, W.Va.,

which is studying the feasibility of a project that would "train and employ individuals to deconstruct old coal camp houses and replace them with modular units" with the goal of launching a business that provides workforce training while improving local housing options.

Since October 2015, the POWER grant program has awarded \$94 million to projects in coal-impacted Appalachian counties. According to the ARC's research, these investments "will create or retain almost 8,800 jobs, leverage an additional \$210 million into the region and prepare thousands of workers and students for jobs in technology, manufacturing, entrepreneurship, agriculture and other sectors." — *Molly Moore*

**River In Time**

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See more about *River in Time* and Bruce's other recordings at [brucegreene.net](http://brucegreene.net) Order online or call: (828) 675-5909



## Program Aims to Boost Virginia's Bobwhite Quail

The U.S. Department of Agriculture's Natural Resources Conservation Service is working to increase northern bobwhite quail populations on land where cattle roam in Virginia by providing more warm-season forages, which are plants that provide food for cattle and habitat for quail.

With funding assistance from the Northern Bobwhite in Working Grasslands initiative, the program will not only provide habitat for the ground-nesting birds, but is expected by the USDA to better the outcomes of cattle production in the area. This

allows farmers to implement conservation practices that focus on habitat loss while continuing to use the land for agriculture.

The program provides financial and technical assistance to farmers who replace invasive fescue grass with native grasses, which help to restore soil health, increase weight gain among cattle and safeguard against droughts in the summertime.

Anyone with grazing land in Virginia can apply, though the program focuses on 14 counties. — Rachel Pressley

## VA Senators Introduce Bill to Expand Wilderness

The Virginia Wilderness Additions Act, a bill introduced by U.S. Senators Tim Kaine and Mark Warner in October, proposes expanding the Rich Hole and Rough Mountain Wilderness Areas in the George Washington National Forest in Bath County, Va., by a combined 5,600 acres. The U.S. Forest Service recommended these additions in 2014.

Designating federal land as a wilderness area is the highest level of protection, and can only be achieved through congressional action.

County leadership wholeheartedly supports this expansion and encourages Congress to act swiftly on this important bill," said Bath County Administrator Ashton Harrison in a press release from Sen. Kaine's office.

The nonprofit Virginia Wilderness Committee stated that the additions would "create a nearly unbroken wild area of over 20,000 acres." The bill was referred to the Committee on Agriculture, Nutrition, and Forestry in October, where it awaits approval to reach the Senate floor. — Kevin Ridder

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## Monsanto Herbicide Threatens Nearby Crops

By Otto Solberg

This summer, 3.1 million acres of soybeans in the United States were damaged by dicamba herbicides that drifted from their intended targets. Monsanto developed a genetically modified soybean, Xtend, which is resistant to their dicamba herbicide. However, the new dicamba spray is more likely to evaporate and drift to other fields, damaging crops that are not dicamba-resistant.

After the extensive damages this summer, many states issued temporary bans on the herbicide, and the EPA added restrictions to the spray application process. However, Missouri implemented many of the same restrictions last year and still saw crop damage.

The Ohio Valley ReSource, a

regional journalism collaborative, mapped all of the reported dicamba issues in Ohio, West Virginia and Kentucky, and found correlation between the chemical drift and temperature inversion. This phenomenon occurs when warm air traps cold air below it, keeping the vaporized dicamba near the ground and allowing it to drift nearby. Although a majority of affected crops were in the flat lands of West Tennessee and the Midwest, National Weather Service meteorologist Justin Tibbs told ReSource that farms in the Appalachian Mountains are susceptible to temperature inversion.

Without tighter restrictions, many farmers may be persuaded to use Monsanto's Xtend seeds and dicamba spray in the 2018 season, or risk their crops being ruined by neighboring farms that use the spray.

## Tennessee Superfund Site Cleanup Progressing

After the U.S. Environmental Protection Agency spent \$9.1 million cleaning up the former Smokey Mountain Smelters site in Knox County, Tenn., officials are soliciting community feedback regarding what to do with the land, according to the Knoxville News Sentinel.

The facility, which produced fertilizers and agricultural chemicals from the 1920s to 1960s and smelted aluminum from 1979 to 1994, was placed on the EPA's Superfund National Priorities List in 2010 "because of contaminated soils, sediment and surface water," according to the

EPA's website.

The site is close to a stream that feeds directly into the Tennessee River. EPA Remedial Project Manager Scott Miller told the News Sentinel that treating the groundwater and installing a lined cap to prevent leakage is expected to take another two years. Finishing the project is projected to cost an additional \$2.9 million.

EPA Public Affairs Specialist Jason McDonald told the News Sentinel that the agency is "pursuing private parties responsible for the contamination" to pay for past and future costs. — Kevin Ridder

## Weeklong Warehouse Fire Raised Air Quality Concerns

Around 1 a.m. on Oct. 21, a fire started at an IEI Plastics-owned warehouse storing plastics and unknown materials in Parkersburg, W.Va. In the roughly eight-day blaze that ensued, Gov. Jim Justice declared a state of emergency for Wood County. The cause of the fire, which Wood County Commission President Blair Couch stated would cost the county \$1.5 million, was not determined at press time.

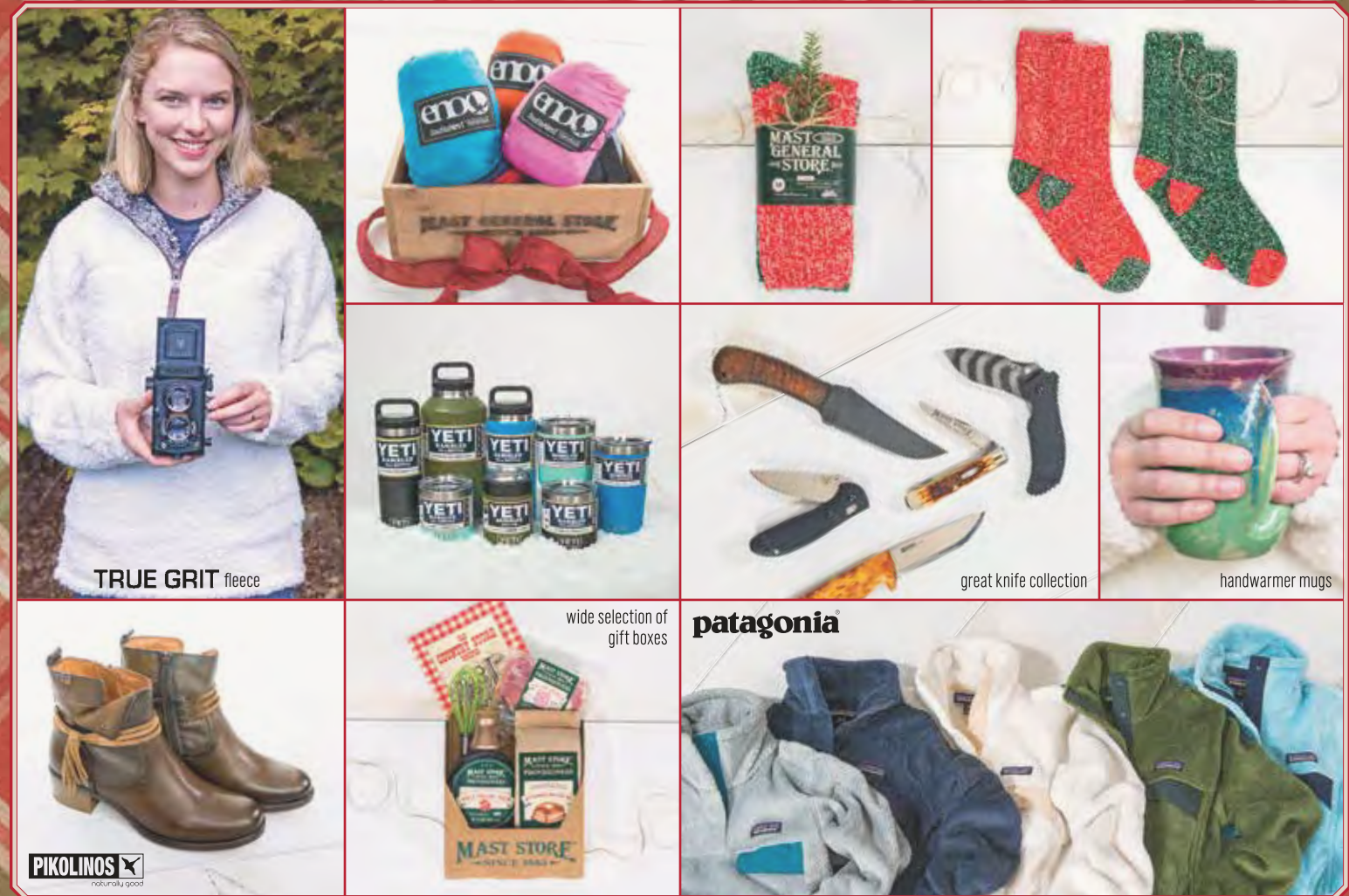
The federal Agency for Toxic Substances and Disease Registry detected spikes in particulate matter during the first

few days of the fire. The Parkersburg News and Sentinel reported that "schools, county agencies and businesses closed as health officials warned people to stay indoors and avoid breathing the smoke."

A class-action lawsuit was filed on behalf of residents against IEI Plastics and others for current and future hospital bills, emotional distress, gross negligence and more, as reported by the News and Sentinel. A hearing was set for Nov. 22. — Kevin Ridder

## THE EXPERIENCE IS A GIFT

Snowflakes pirouette lightly across the sidewalk. List in hand, a warm greeting welcomes you inside. With an eclectic mix of items to surprise your entire family, perhaps the best gift of all is your trip back in time.



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# Hiking the Highlands

## Section Hiking the Art Loeb Trail

By Melanie Harsha

On the night before Halloween 2017, just after Western North Carolina's first wintry storm of the season, I embarked on a short overnight backpacking trip.

The Art Loeb Trail is a point-to-point backpacking trail that is just over 30 miles long, located near Canton, N.C. It is named for Art Loeb, a resident of Brevard, N.C., who had a passion for hiking and was a member of the Carolina Mountain Club.

Black Balsam Knob to Shining Rock is perhaps the most scenic section along the trail. This 8.3-mile portion of the trail offers 360-degree views, green rhododendron tunnels and several spur trails to explore other areas.

My hiking partner and I chose to do this particular section as an overnight, but this could easily be accomplished on a day hike, or could be extended to a multi-night backpacking trip.

Black Balsam Knob is just off the Blue Ridge Parkway and a short walk from a parking area, making it extremely popular throughout the year. A few miles away from the knob, however, the trail becomes more remote, especially in the colder months.

We hiked just after a cold snap, when the trail had quite a bit of ice and snow. This also meant the night was rather brisk — around freezing temperatures — and I made sure to bring my cold weather supplies.

During my research prior to this trip, I read that the trail was unclearly marked, overgrown and hard to follow at some points. I had quite the opposite experience, though this may be because I hiked during a time of year when the vegetation was less dense. The Art Loeb Trail was well-marked with white blazes and numerous wooden signs. I also used GPS mapping on my phone and had a paper map and a compass as backup.

Water is sparse on this trail for most of the year, though it was plentiful during my hike because the snowmelt supplied springs along the way. Just before Shining Rock, a piped

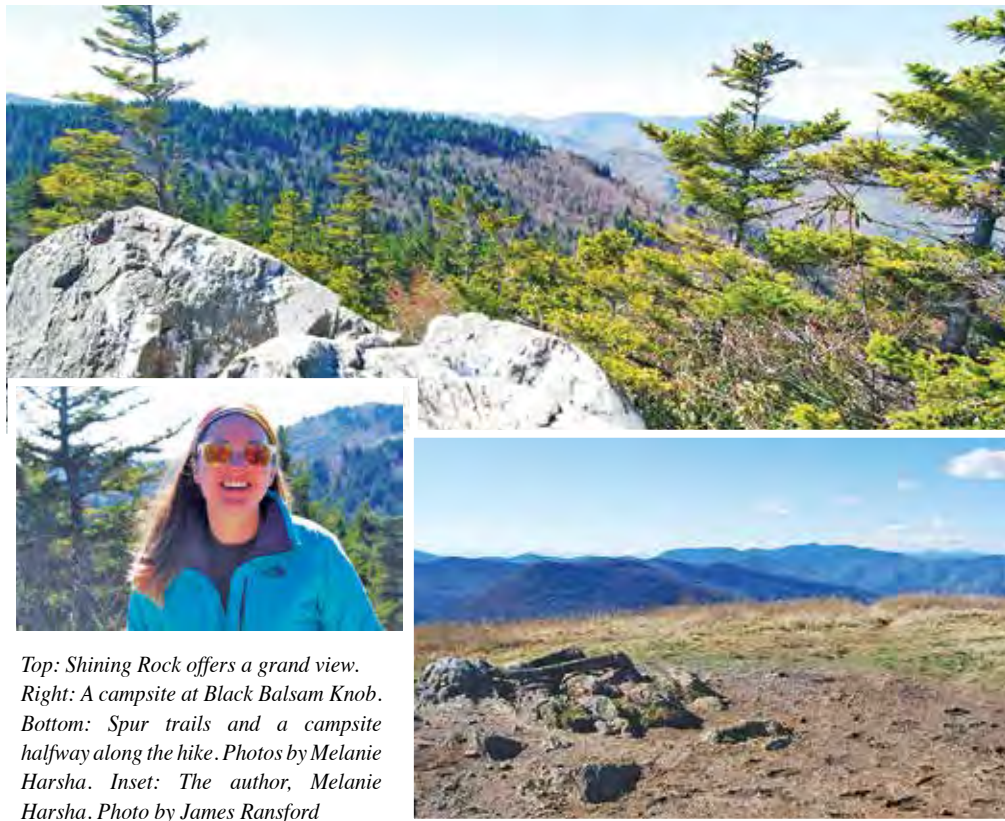
spring provides a reliable water source throughout the year. It is safe to say that if the area recently received precipitation, there will be water available. However, make sure to pack in plenty of water just in case, and bring the necessary accoutrements for water treatment.

### The Hike

A wide, graveled path leads into a wooded area for a couple hundred yards until you reach a clearing with your first view of Black Balsam Knob. The trail goes to the top of the grassy bald with roughly 300 feet of elevation gain. There are several great spots to stop for a picture or snack on top of the bald. Over the next two miles, the trail crosses balds with panoramic views of Pisgah National Forest and glimpses of the Blue Ridge Parkway.

After these two miles of sweeping vistas, the trail dips into a wooded area for about half of a mile, where you will find a perfect site to set up camp away from the elements. This section of trail is a bit rocky and muddy, but soon changes back to more forgiving terrain.

Coming out of the woods, the trail travels around another bald leading to a campfire ring and several campsites. This, in my opinion, is the most scenic campsite on this section of trail. In fact, the balds offer some of the most beautiful campsites in the Blue Ridge Mountains. There are plenty of campsites along this trail, so there is no need to



Top: Shining Rock offers a grand view. Right: A campsite at Black Balsam Knob. Bottom: Spur trails and a campsite halfway along the hike. Photos by Melanie Harsha. Inset: The author, Melanie Harsha. Photo by James Ransford

disturb the vegetation in order to create a new site. In harsh weather, however, it's best to avoid camping on the balds to minimize exposure to high winds.

Just after this campsite, you will see a horse trail and another hiking spur trail to your left, with a large sign that reads "Shining Rock Wilderness" and a detailed map with important trail updates. If you take a spur trail, be sure to get back on the Art Loeb, as it can be confused with the other spur trails.

The next mile goes around a relatively flat bald, a section that can become muddy and slippery during wet weather. This last mile before Shining Rock has a mixture of panoramic views and dips into green tunnels of mountain laurel and rhododendron, which bloom in late spring.

Just 50 yards beyond a piped spring on your right, a sign reads "Shining Creek/Big East Fork Trailhead - 3.4

miles." Go about 100 yards past this sign and you will come to a circular clearing surrounded by wooded campsites that are sprinkled within the forest.

To your left, there is a 4.4-mile spur trail to Deep Gap and Cold Mountain, but if you continue straight the trail will take you to the top of the iconic Shining Rock.

The 0.3-mile climb to the summit of Shining Rock is technical but well worth it. I highly suggest catching the sunset at the top of the massive, white granite boulder. Be sure to bring a headlamp if you plan on climbing down in the dark.

I chose to set up my tent for the evening on the soft pine needles at one of the tree-covered campsites at the base of Shining Rock. The evening was chilly, but we started a roaring fire in the stone campfire ring. This night we had the site to ourselves, which allowed us to hear the owls hooting nearby and the coyotes howling in the distance.

The next morning we awoke to a light frost and, after a healthy breakfast of Snickers bars, we packed up camp. There wasn't a cloud in the sky, which made for a beautiful view for our second time atop Shining Rock. After climbing down, we started on the 4.15-mile return trek towards the car. Traversing over Black Balsam Knob and admiring the fall colors convinced me to return to Art Loeb, but next time to hike it in its entirety. ♦

# Naturalist's Notebook

## Crossbills, Conifers and Calls

By Otto Solberg

The red crossbill is an elusive finch that can be found feasting in the conifer trees of the Appalachian Mountains during any time of the year—but finding exactly where can be a challenge for even the most experienced birders.

Red crossbills are named for the unique crossing of their upper and lower beaks that allows them to extract seeds from conifer tree cones. By biting down, the crossing bills actually pushes apart the cone and allows them to grab the seeds with their tongues. There are nine different types of red crossbills, each of them distinguished by how their beaks have adapted to the cones of different trees.

While some types only prefer the seeds of one or two trees, the Type-1 red crossbill, or Appalachian crossbill, is not as picky. Its beak is smaller and better suited for softer cones, like those from hemlocks and many spruce, fir and pine trees.

While the Type-1's are often found in the upper elevations of the Appalachian Mountains, they are nomadic birds that move to wherever the cone crop is more abundant. Although they generally travel the Appalachian Mountains in search of food, Type-1's have been recorded as far west as California.

"If there's not a good cone crop across a landscape scale, they might go a considerable distance to find food," says Curtis Smalling, director of conservation for Audubon North Carolina. "So people that never have them might all of the sudden one winter might have a ton of them."

This traveling lifestyle means that unlike most birds, crossbills have no set breeding season.

"They breed based on availability of food," says Casey Rucker, author of the red crossbill species account for the West Virginia Breeding Bird Atlas II, which is scheduled for release in 2018. Crossbills may build a nest and breed whenever they find a good cone crop, except during winter.

Without a permanent home, these birds can be very difficult to find or study. Within 15 to 25 days after hatching, a young crossbill can already fly long distances, although their crossed bills may not be fully grown until much later. According to Rucker, red crossbills have been observed in West Virginia for over a century, yet there are no confirmed breeding records of the birds in the state. Their nests are hidden high up near the trunks of dense conifer trees, and their plumage can easily blend into the forest.

"Females tend to be yellowish-green. Adult males tend to be red. The younger birds can be largely brown, especially in the nest," says Smalling. "It's not uncommon to see mixed flocks that have all plumages."

Crossbills are most easily recognized and found by their flight call. Although relatively quiet when settled into a tree, they make a distinct series of "chip" calls while flying.

"They're usually noisiest when they all take off in the flock. That's when they call the loudest," says Marilyn Westphal, member of the Elisha Mitchell Audubon Society in Western North Carolina and a contributor to a report on Type-1 red crossbills for the American Birding Association.

Even to a trained ear, distinguishing the difference in call sounds between the nine types of red crossbills can be very difficult.

In order to reliably identify crossbill types, their calls must be recorded and examined for slight differences.

During periods known as "irruptions," when cone crops are low, crossbills can travel hundreds of miles from their native areas in search of new food sources — making it especially important to properly identify which type is being observed.

"Another issue obviously is climate change because many of these trees may not remain as temperatures warm and snow cover becomes less consistent over the winters," says Rucker.

A nomadic bird travels Appalachia searching for the best conifer cones



### Red Crossbill Facts

- There are nine types of red crossbills, which rarely crossbreed
- Flocks consist of two to 40 or more birds
- Red crossbills stand around six inches tall and have a 10-inch wingspan
- They can live up to eight years in the wild

A red crossbill alights on a tree at Briery Branch Gap near the Virginia-West Virginia state line. Photo by Dick Rowe

Although the red crossbill population as a whole is generally stable, certain types could be more vulnerable to loss of their particular habitat.

In 2016, the Cassia crossbill was declared a separate species from the red crossbill because it relies solely on the seeds of the lodgepole pine in the South Hills and Albion Mountains of Idaho.

"The Cassia crossbill is adapted to one particular tree, and that tree is being wiped out by climate change," says Rucker. "So it may be that this species will be named and go extinct in the 21st century." ♦

The red crossbills of the Appalachian Mountains survived the major logging of the 19th century and more recent damages to hemlock and fir trees from the woolly adelgid parasite. Although their nomadic lifestyle makes them adaptive and robust birds, it is important that more of their food sources are not eliminated.

Currently, a group of private, state, federal and non-governmental organizations are cooperating on the Central Appalachian Spruce Restoration Initiative. Although not intended specifically for protecting the red crossbill, the project is aimed at restoring one of its key regional food sources and could help ensure these unique birds' future in the Appalachian Mountains. ♦



### Art Loeb Trail: Black Balsam Knob to Shining Rock

**Length:** 8.3 miles, out and back  
**Difficulty:** Moderate  
**Directions:** At mile marker 420 on the Blue Ridge Parkway, turn onto Forest Service Road 816 (Black Balsam Knob Road). The trailhead is just under a mile on your right. Bear canisters for food are required. Dogs are allowed.  
**Contact:** Pisgah National Forest (828) 877-3265

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# Southern Appalachian Mountain Stewards

## Community Organizing Amid Destructive Mining

By Hannah Gillespie

In 2000, Pat Jervis, a high school teacher in Wise County, Va., received notice of the Kelly Branch Surface Mine permit in front of his mother's home. He appealed to government agencies to challenge Meg Lynn Coal's permit to mine and began meeting with other community members who were concerned about the impacts of surface mining.

Although the mine's permits were granted in 2000 and Kelly Branch moved forward, the citizens were still engaged in monitoring environmental threats. In 2007, this group became the Southern Appalachian Mountain Stewards, a nonprofit organization whose goals are to stop surface coal mining from destroying their neighborhoods, to improve the quality of life in the area and to help rebuild sustainable communities.

"It started out as just some local citizens trying to protect their property and trying to use the laws to do that," says Jervis. "Which, at first glance, looked like that was possible. But it's more political than it is legal, I think. Those were some hard lessons to learn. And I've taught civics. You can teach how the law is supposed to work, but as I've heard a lot during my lifetime: what is legal isn't always fair."

Southern Appalachian Mountain Stewards has utilized a variety of tactics, including community organizing, political advocacy, nonviolent direct action and alternative economic projects. This included SAMS members going door-to-door and sharing information with the community.

The community was already aware of the dangers associated with mining due to a local tragedy that occurred in 2004 at a mine owned by Jerry Wharton, who also owned the company behind the Kelly Branch Mine.

"The focal point that convinced people they had to do something was the death of Jeremy Davis who was a three-year-old boy, asleep in a trailer, below ... a mountaintop-removal mine," says Bill McCabe, an environmental justice organizer for the Sierra Club who worked with SAMS and regional mining communities. "An unlicensed bulldozer

operator, at 3 o'clock in the morning, pushed a boulder over the mountain and it crashed into a trailer and killed the child in his bed. The regulators didn't do [anything]. The coal operators denied their liability. And well, the death of a three-year-old has a pretty dramatic effect. That galvanized people."

Wise County has historically been dominated by coal mining. More than 30 peer-reviewed studies since 2010 show a connection between proximity to mountaintop removal operations and poor health outcomes, including higher rates of cancers, birth defects and heart, lung and kidney disease. Coal mining's changes to the landscape have affected local residents environmentally, politically and economically.

Many older SAMS members speak about how their home has changed. Larry Bush, a former union coal miner, describes a pond that used to be deep enough for baptisms. "Now it's filled with silt — runoff from those mines — to where you just can't. It's just weeds growing across what was a ten foot deep pond," he says.

Residents describe other changes in their communities due to mountaintop removal such as the burying of streams and air contamination from coal dust. Private coal companies have also restricted access to areas where residents used to live, walk and hunt. SAMS members have challenged these and other factors since the organization's inception.



During the fight against the Ison Rock Ridge mine permit, SAMS members delivered this "Certificate of Failure," above, to the Department of Mines, Minerals and Energy. A reprint now hangs proudly in the SAMS office. Photo by Hannah Gillespie. At left, SAMS members protest the proposed mine on Ison Rock Ridge in May 2011. Photo courtesy of the Sierra Club



SAMS members Jane Branham and Bill McCabe at Branham's home in Norton, Va. Photo by Hannah Gillespie

### Ison Rock Ridge

"The biggest victory that I can think of right off the top of my head, was saving a mountain!" says Jane Branham, former SAMS president.

In 2007, A&G Coal Corporation — which by then operated the Kelly Branch Mine— proposed a 1,200-acre surface coal mine on Ison Rock Ridge in Wise County, Va. For eight years, SAMS members worked to stop the permit from being issued by organizing and participating in marches, hearings and campaigns and pursuing legal appeals in conjunction with other organizations.

The state initially approved the permit in 2010, but the U.S. Environmental Protection Agency intervened to delay the process because of the company's water quality violations and related problems at other mines.

Members recall participating in



monitoring local water quality, including at the Kelly Branch mine near Jervis' mother's home, and campaigning against coal dust while the permit was on hold.

"Matt Hepler [was] our water organizer," recalls Diana Withen, former SAMS vice president. "He [did] a lot of water testing, and he's gotten several hits on selenium in the water, and where the coal companies are releasing more than the legal amount into the water." These and other water pollution violations have led to court cases and settlements, totaling hundreds of thousands in fines.

SAMS member Sam Broach describes the coal dust from trucks traveling to and from other nearby mines. "It was so dusty, you'd go through [a nearby intersection] and everything was just covered with dust," he says. "People got to where they couldn't breathe so we went to our congressman, to D.C., and to Richmond. Finally, we got them to put in washers to wash those trucks down, to try to keep the dust from coming out [and] they stopped coming through town, so we got some victories there."

The Virginia Department of Mines, Minerals and Energy denied the Ison Rock Ridge permit application in 2013 after A&G failed to address the EPA's concerns and keep their application current. A&G then started appeal-

*continued on next page*

## Remembering Dianne Bady

Reprinted with permission from the Ohio Valley Environmental Coalition

The staff and board of OVEC, the Ohio Valley Environmental Coalition, are grieved to announce the death of Dianne Bady, who founded the environmental and social justice organization in 1987.

Dianne, 67, succumbed to cancer on October 23, 2017 at Emogene Dolin Jones Hospice House in Huntington, W.Va. Her husband Rick, her son Aaron, her sister Monica McFarland, and OVEC staff members were with her in her final hours.

Dianne spent the past few years educating herself, OVEC members, and the public about the human health and environmental impacts of fracking and its related activities and infrastructure. She was especially concerned that the gas industry touted concept of the "Appalachian Storage Hub" and the development of Rogersville Shale could lock our region into more pollution and more health problems, while locking out the potential for a cleaner, healthier, and more just energy economy.

Under Dianne's leadership, OVEC's tenacious work to end mountaintop removal coal mining gained national and international recognition,

with numerous awards being granted to the organization and staff, including the prestigious Ford Foundation Leadership for a Changing World Award.

In 1987, BASF Corporation planned to burn or bury all of the toxic waste it generated in North America in a low-income community near Huntington. Dianne and a handful of people organized to oppose and successfully ward off that scheme. Their efforts launched OVEC.

Until then, polluting industries in the lower Ohio River Valley had not been seriously challenged by citizens to follow environmental laws and regulations. Dianne was adamant that the voices of ordinary people in affected communities be heard.

In the 30 years since then, OVEC has celebrated victories both large and small, and, of course, has also encountered setbacks. In one important victory, the group staved off construction of a mega dioxin-spewing pulp mill slated for Apple Grove, in Mason County, W.Va.

"Dianne carried a vision of a healthier environment, but beyond



that, she had great compassion and love for people and an abhorrence for injustice. She was stricken to her core by the destruction wrought by fossil fuel corporations, and she sought healing and solace in her gardens and in the beauty of the nature," says Janet Keating, who worked closely with Dianne for 24 years at OVEC.

"OVEC is Dianne's legacy," says OVEC Executive Director Natalie Thompson. "Undoubtedly, polluters were hoping this little environmental group was just a flash in the pan. Here we are, 30 years later, a well-respected, fully staffed organization

that continues to amplify the voices of citizens who envision a healthier environment, intact mountains, and clean, potable water. That is Dianne's legacy. May we celebrate her life and her love and her tireless commitment to our environment and our people."

The family has suggested that in lieu of flowers people send donations in memory of Dianne to OVEC, either online or via check:

**OVEC**  
PO Box 6753  
Huntington, WV 25773-6753

## Southern Appalachian Mountain Stewards

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ing that process and SAMS intervened. The process of appeals finally ended in a win for SAMS in 2015.

The victory is a source of pride for many SAMS members, though Ison Rock Ridge is not permanently protected. Since oil and gas company Penn Virginia Corporation owns the land, A&G or another mining company could lease the land and re-apply for the permit.

"Ison Rock Ridge sits in between five communities including the town of Appalachia and four historical coal camps around Appalachia," Branham says. "If that mountain had been blasted away it would have devastated all those communities and those communities knew it."

Branham describes SAMS members

knocking on doors and making phone calls to connect with others in the community. Even in an area "dominated by the mono-economy system here ... almost everybody was like thank you, thank you for helping us, thank you for being our voice," she says.

### Moving forward

"Wise County used to be one of the biggest apple producers in the nation, before strip mines came in," says Withen. "But when they blew up the mountains, they blew up the apple orchards, so we have two apple orchards now left in our county. Wise is [still] the heaviest stripped coal county in Virginia. Twenty-five percent of the land is already blown up. But, there is a lot of potential there still."

After periods of internal division and moments of uncertainty regarding the livelihood of the organization,

SAMS is currently in transition. According to Bill McCabe, as older members' health worsens, the organization feels an urgency to re-engage past members and document its history before those stories are lost.

In the midst of this transition, some members have found strength. "SAMS'

biggest asset has been, for a long time and still is, that it's a family," says Adam Wells, former SAMS treasurer and current New Economy program manager for Appalachian Voices, the publisher of this newspaper. "We love each other. Don't always agree with each other

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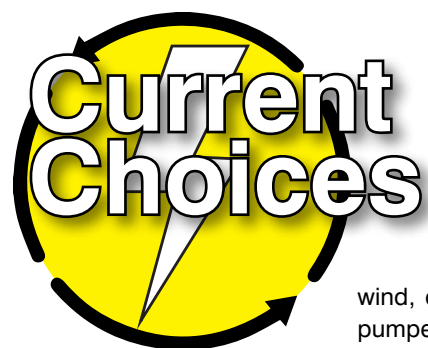


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The consequences of America's energy choices have been controversial for decades, and that debate is heightened in the face of climate change. Though coal and natural gas and their related problems often take center stage, they are far from the only energy sources at play in Appalachia.

On the following pages, we take a look at some of the region's more unconventional power sources, including wind, chicken litter, sewage and a type of hydropower known as pumped storage. Depending on how and where they are deployed,

such energy sources can bring clean, green electricity to the grid — or cause their own environmental or public health concerns. That line is not always clear.

But the consequences of some energy choices are well established, even if policymakers prefer to ignore the causes of climate change and prop up coal (see page 16), or debate whether to permit two new fracked-gas pipelines (see page 20).

And if you missed our October/November 2017 issue, which featured solar energy in the region, catch up online at [apvoices.org/thevoice](http://apvoices.org/thevoice).

## Pumped Up: A new hydro-storage energy facility in Southwest Virginia could potentially reuse an old coal mine — or raze a hillside

By Kevin Ridder

At first glance, pumping millions of gallons of water uphill to later release for energy may seem like a senseless use of energy. But pumped storage can actually bring much-needed stability to the grid or balance out wind and solar's inconsistent energy generation.

A community's energy usage typically ramps up in the morning, peaks in the early evening and falls as people go to sleep. When more power is being produced than used, a pumped storage plant could use that extra energy to pump water uphill — and then reverse the process to generate energy during a time of peak energy usage, serving as a massive battery.

Appalachia is already home to the Dominion Energy's Bath County Pumped Storage Station in Virginia, the world's largest pumped storage plant at 3,003 megawatts. Now, Dominion is exploring the possibility of another, smaller plant in the coal-bearing region of Southwest Virginia.

This comes after two bills backed by Dominion and Appalachian Power promoting pumped storage projects became law on July 1. The legislation speeds up the approval process for a pumped storage project — as long as it is "in the coal-

field region" — and allows the utility to petition the Virginia State Corporation Commission for a consumer rate hike to pay for it. It also declares the construction of pumped storage facilities "to be in the public interest."

"It ends up creating an essentially zero-risk proposition for Dominion," says Matt Wasson, director of programs for Appalachian Voices, the publisher of this newspaper. "Their ratepayers are basically taking all the risk."

According to a September Dominion press release, the company is looking at two possible sites for the potential \$2 billion proposed project: a 4,100-acre Dominion-owned site in Tazewell County and the abandoned Bullitt Mine site in Wise County, which Dominion would need to purchase. Other sites have not been ruled out.

"Dominion Energy filed a preliminary permit with the Federal Energy Regulatory Commission (FERC) for the Tazewell location on [Sept. 6]," the release states. "The company has contracted with Virginia Tech to conduct the study of the former Bullitt Mine near Appalachia, Va."

In an October Coalfield Progress article, Stuart Burrill wrote "[Dominion] officials said they expect the Bullitt site,



The relatively small exterior of the Bath County, Va., pumped storage facility belies its status as the largest of its kind in the world. Photo courtesy of Dominion Energy

if used, would generate about 100-150 megawatts." The preliminary Tazewell permit proposes a 446-megawatt capacity.

According to Dan Genest with Dominion, the smaller energy potential at the Bullitt site stems from the need for smaller equipment and a shorter elevation drop.

A study performed by Chmura Economics and Analytics and commissioned by Dominion states that a \$2 billion project over 10 years would "support a total of 86 jobs annually in the state," with 76 of those in Southwest Virginia. The facility would be "expected to employ about 50 permanent workers."

"We hope to have a decision on the preferred site, and whether to move forward, by the end of the first quarter of 2018," David Botkins of Dominion Energy wrote in an email. "It would take 10 years before the facility could be in commercial operation."

### Responsible Land Usage

According to LeRoy Coleman with the National Hydropower Association, a nonprofit that promotes hydropower, several pumped storage projects are built on mines — but a project on the Bullitt site would be the first in the nation on a coal mine.

Gabby Gillespie, Southwest Virginia organizing representative for the Sierra

Club, is unsure about the possibility of a pumped storage project in her home of Wise County. She says she hopes "that this project would require some form of environmental impact study or assessment" in addition to the feasibility study being conducted by Virginia Tech.

"Anytime that we're using underground mines, especially when pumping water into them, I do think we need to consider the impacts on our water and the impacts of continuous disturbance of formerly mined lands," Gillespie says. "That's a practice I haven't seen a lot of research about."

Virginia U.S. Rep. Morgan Griffith introduced a bill in June that would loosen the regulatory process for closed-loop hydro projects, like the potential venture on Bullitt Mine, that don't connect with an existing, naturally flowing water source.

"H.R. 2880 removes environmental impact statements for closed-loop pumped storage hydropower projects that are determined not to affect animals and plants," Rep. Griffith said in an email statement.

The Tazewell County site would need to have environmental impacts taken into consideration, according to the preliminary permit application. It would connect with West Fork Cove Creek.

*continued on next page*

## Turning Trash into Fuel

By Kevin Ridder

Before construction was finished on the gasification plant in Lebanon, Tenn., in October 2016, over 16 million pounds of wood waste, tires and treated sewage went to the landfill annually. Now, the gasification plant turns that waste into power to meet a third of the energy needs for the city's wastewater treatment plant, the single largest consumer of electricity in Lebanon.

Gasification — the process of converting carbon-based fuels like wood, coal or chicken manure into gas without combustion — is typically achieved by heating the fuel, or feedstock, to a high temperature in an oxygen-starved environment. Additionally, it produces a charcoal-like byproduct, biochar, that can serve as a valuable agricultural soil additive.

While the vast majority of gasification plants use coal or other fossil fuels as part of their feedstock, the number of plants that use biomass or landfill waste is "expected to grow," according to the Gasification and Syngas Technologies Council.

According to Scott McRae, project manager of the Lebanon, Tenn., gasification initiative, the feedstocks "molecu-

larly fall apart" when they reach over 1,500 degrees.

"Literally, they're just falling apart," he says. "And what they're falling apart into is gas. So we siphon that gas off into a thermal oxidizer 20 feet away, basically a giant combustion vessel."

According to Aries Clean Energy, the company that built the \$3.5 million facility, the Lebanon plant is the world's largest downdraft gasifier. By directing airflow down instead of up, downdraft gasifiers greatly reduce tar as a byproduct compared to updraft gasifiers. According to Jeff Snyder, vice president of business development for Aries Clean Energy, the plant produces no tar or slag. The facility has won five industry awards.

"The actual gasification process produces zero emissions," McRae says, but burning the gas produced, commonly called syngas, creates "very low emissions" that are "very, very similar to natural gas."

According to the air pollution permit issued by the Tennessee Department of Environment and Conservation for the Lebanon gasification plant, the facility uses a cyclone filter to limit particulate matter emissions from both wood drying before gasification and from burning the syngas. Some pollutants



Located in front of the largest circular tank, a gasification plant and solar panels provide two-thirds of the Lebanon, Tenn., wastewater treatment plant's power. Photo courtesy of Aries Clean Energy

like particulate matter, sulfur dioxide, carbon monoxide and other gases, are still emitted, however.

Lou Zeller, executive director of environmental nonprofit Blue Ridge Environmental Defense League, expressed concern over toxins from the tires or treated sewage that might "hitch a ride" on potential particulate emissions.

"[Particulates are] very toxic as they have other compounds attached to them," Zeller says.

But Hugh McLaughlin, chief technology officer of NextChar, a manufacturer and supplier of biochar, says that the "high temperatures guarantee the destruction of virtually everything," and that gasification is a way "to get

away from the practice of landfilling, which we've relied on for a long time."

"It's a matter of getting a balance between the benefit of getting rid of this wastestream and some natural energy recovery to the rather modest increment of existing pollution in the atmosphere," McLaughlin says.

### Beneficial Byproduct

According to Snyder with Aries Clean Energy, the only other byproduct of the Lebanon plant's gasification process is biochar, a charcoal-like material that is primarily used as an agricultural fertilizer, but could be used as a coal substitute in power plants.

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## Pumped Up

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Peter Anderson, Virginia program manager at Appalachian Voices, has concerns about a potential project on undeveloped land when there are plenty of properties with past industrial infrastructure or mined lands that could be reclaimed.

"What you'd be doing is razing lands to build an upper reservoir and a lower reservoir, probably a lot of tree and vegetative removal," Anderson says. "You have to do this on a hillside, you need a change in elevation. You're probably cutting down a lot of trees, creating a lot of sediment runoff and erosion problems."

### Would It Be Renewable?

Jeff Leahy of the National Hydropower Association says he sees the need

for pumped storage projects increasing "because of the greater amount of penetration of solar and wind resources."

"I would say that by putting more pumped storage on the grid, ultimately what you're doing is enabling your grid system to be more robust in order to bring more renewables and to green up the grid," Leahy says.

One of the recent Virginia laws promoting pumped storage requires that these potential projects "utilize on-site or off-site renewable energy resources as all or a portion of their power source" and that those renewable resources be "located in the coalfield region of the Commonwealth."

Anderson says, "it's an exciting possibility if you were to power one of these things with 100 percent renewable energy," but that the law is not specific enough.

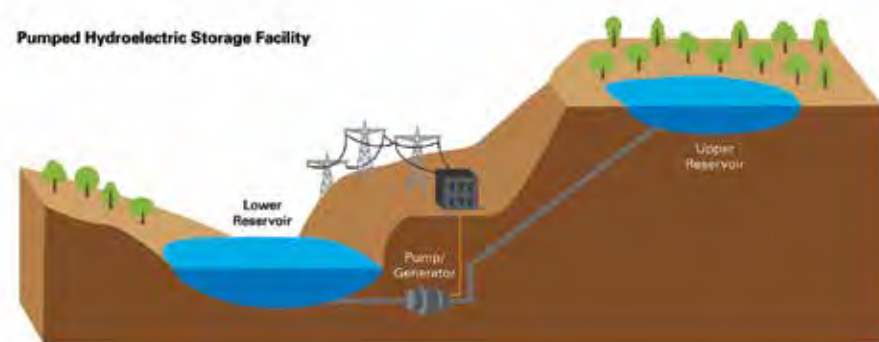
"What does 'a portion of' mean?"

he asks. "Does that mean one percent? Twenty percent? That could mean anything."

In the Virginia code, the burning of biomass counts as renewable energy — meaning it could be used to fulfill this requirement instead of solar or wind.

"Bottom line is: will they use this as an opportunity to build storage for

energy that is truly renewable and do it in a way that builds community wealth?" Anderson says. "Or, since they know the ratepayers are going to pay for it, will the utilities just use this new authority to build large infrastructure that doesn't advance conservation in any way and simply stores coal and biomass power?" ♦



Pumped storage can be thought of as a giant rechargeable battery — pumping water uphill when there's extra energy being produced, and letting it flow downhill to generate energy when needed. Image courtesy of Dominion Energy

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# Mountain Wind



Virginia's first wind farm could break ground in Botetourt County



By Dan Radmacher

Wind power has had a very successful decade. In the last 10 years, global capacity has grown nearly six-fold to 432 gigawatts, according to the Global Wind Energy Council. Though the United States has lagged behind China and the European Union, capacity grew from 11 gigawatts to 82 gigawatts from 2006 to 2016.

Only one region of the United States lacks any significant installed capacity, according to a recent report by the U.S. Department of Energy: the Southeast. According to the DOE, only 0.2 percent of the energy produced in the Southeast is generated by wind power. This is not unexpected, the wind just does not blow that hard in the Southeast. Average wind speeds at turbine-height are far lower than the rest of the nation.

In Appalachia, significant wind energy is being produced only in northeast West Virginia and southwest Pennsylvania.

But if plans by Apex Clean Energy come to fruition as expected, wind turbines will soon begin spinning in the Appalachian Mountains of Virginia. The Rocky Forge Wind project in Bo-

tetourt County has received all of the necessary permits, though it currently does not have an anticipated start date, according to Apex Development Manager Charlie Johnson. The project is planned to generate up to 75 megawatts of electricity from 25 turbines.

Jerry Fraley, who owns the land the project will be built on, was looking for an enduring way to pay for the upkeep of his family's 10,000-acre hunting and wildlife preserve so his grandchildren and great-grandchildren could continue to enjoy it. A deal with Nestlé to tap North Mountain springs for Deer Park Spring Water had just fallen through when the big power line that cuts across the property caught his eye. He started thinking about the potential for wind power at the top of North Mountain.

"I got to thinking about what else I could do and called AEP [Appalachian Electric Power]," Fraley says. "I knew if you had a power line and substation, you're way ahead for wind. The power line turned out to belong to Dominion."

Discussions with Dominion eventually led him to Apex Clean Energy, a relatively new energy company that

has been completing wind power projects at a brisk clip.

"Apex is an outstanding group of people," Fraley says. "They really have the public in mind."

According to Johnson, Fraley's property is ideal for the project.

"The rural piece of private property where Rocky Forge is sited has a strong wind resource, on-site transmission and compatible land use, which makes it one of the best sites in the commonwealth for a project," he says. "The project also received many endorsements, as well as significant public support from the county, region and state as a whole."

The 78-year-old Fraley has a deep connection to the land. His ancestors on his mother's side lived in Botetourt County as far back as the mid-1700s.

"It's important to realize where you come from," Fraley says. "I feel an obligation to the land of my ancestors."

A former coal mine operator, Fraley is a renewable energy proponent.

"Our country is a great country, made strong on its natural resources," he says. "We need to use them wisely. The supply of coal is being depleted. The long-term future of energy is in

*If construction moves forward on the Rocky Forge Wind project, simulated here, it would be Virginia's first wind farm. Image produced by Apex Clean Energy*

renewables."

The project attracted the strong support of the Roanoke Group of the Virginia Chapter of the Sierra Club, according to John Williamson, member of the Botetourt Board of Supervisors. "The Sierra Club showed up at every meeting," he says.

Other environmental groups — the Roanoke Valley Cool Cities Coalition, the Chesapeake Climate Action Network, the Virginia Student Environmental Coalition and the Virginia Conservation Legacy Fund — support the project.

According to Dan Crawford, chairman of the Sierra Club Roanoke Group, there was far less opposition to the Rocky Forge project than for a proposal to put turbines on Poor Mountain. That project has been tabled until the fate of the Mountain Valley Pipeline is resolved.

Getting Sierra Club support for both projects took a bit of doing, he says. "I had to get a little aggressive," he says with a smile. "The chairman at that time was a little timid and argued for a neutral position. That's not the

Sierra Club, though. We don't do the middle ground. It's either right or it's not."

For Crawford, the calculus is simple with the threat of climate change looming.

"By a wide margin, wind is your most productive clean energy source, dollar to kilowatt," he says. "That's shifting as solar drops in price, but it is still the best way to get energy for the buck. We may see the day when solar is the bigger answer, but we know that right now we need as much wind or solar energy as we can build yesterday. We don't have time to tiptoe around."

Opponents to the project, who formed a group called Virginians for Responsible Energy, worry about the blasting and grading that will need to be done on the mountain's steep slopes, as well as the loss of hardwood forest that will have to be cleared for access roads. Their website notes, "The turbines will be brightly lit and will be visible throughout the Shenandoah Valley."

Bird mortality is also a concern of opponents. The website discusses an incident at the Laurel Mountain wind facility in West Virginia when nearly 500 birds were killed when they collided with structures near the turbines on one foggy night in 2011.

Crawford doesn't dismiss concerns about bird mortality, but thinks they need to be put in perspective.

"The Audubon Society has studied the issue for a long time," he says.

## Youth Build Turbines for KidWind Challenge

By Dan Radmacher

The KidWind Challenge gives middle school and high school students the chance to build their own wind turbine as part of a nationwide contest. James Madison University's Center for Wind Energy hosts three regional competitions in Virginia. In May 2017, the winning team in Southwest Virginia, Off the Grid, went on to win the national competition in Anaheim, Calif.

"The KidWind Challenge is great on many levels for these students," says Remy Pangle, the center's associate director and education and outreach coordinator. "The teams present to a panel of judges. They get to see and meet people who do this every day, and it helps them to realize that this is not just fun, but can be a real job."



*Students pose for a photo during the first Wind Energy Summer Camp, which was hosted by the Center for Wind Energy this summer at the Shenandoah Valley Discovery Museum in Winchester, Va. Photo courtesy of the Center for Wind Energy at James Madison University*

The three regional challenges in Virginia are sponsored by Dominion Energy. "We know that today's students are the workforce and decision makers of tomorrow and they are already consumers," says Cynthia Balderson, manager for corporate philanthropy and community partnerships at Dominion. "The KidWind Challenge provides relevant, hands-on learning opportunities for students to explore alternative energy."

The event has grown since the first state competition was held in Richmond in 2012. Regional challenges are now also held in Roanoke and Chantilly.

"The first year, we had 12 teams," Pangle says. "People had to drive quite a way. It's grown to three regional challenges, with each one running anywhere from 20 to 25 teams."

According to Pangle, team sizes have varied over the years, from as few as one to as many as 16 members. The teams work with teachers or coaches and other advisers to learn how to build a wind turbine. While the score depends partly on how well the turbine performs in tests, about half of it depends on how the teams perform in front of the judging panel.

"If you get in front of the



*A high school team explains and justifies their turbine design, demonstrating their knowledge of the wind energy field, before a panel of expert judges at the 2014 National KidWind Challenge in Washington, D.C. Photo courtesy of the Center for Wind Energy at James Madison University*

judges and can't explain how everything works — because mom and dad did it or because you didn't document well — you're not going to win," she says.

The 2018 challenge in Roanoke will be held at the Science Museum of Western Virginia for the first time. Hannah Weiss, education manager for the museum, found out about the challenge when she ended up sitting next to Pangle at the Virginia Children's Engineering Convention. Weiss liked the project-based learning aspect of the challenge.

Too often, Weiss remarked, projects are like desserts — something you get to at the end of a class.

"With project-based learning, the project is the meal," she says. "KidWind is an opportunity to do that. The way you learn about wind energy and how wind turbines work is by building one."

be a model."

In developing its ordinance, the county mostly concentrated on erosion concerns, Williamson says, and the water quality impairments that could result, especially during construction. "Concerns about migratory birds and bats, I frankly considered the state's purview," he says. "We discussed it and evaluated it at the local level to some degree, but we largely deferred to the state."

The Virginia Department of Environmental Quality, following a process laid out in a 2010 state law, approved

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## Wind Energy Stirs Environmental Debates

Not all environmental organizations are as pro-wind power as the Roanoke Group of the Sierra Club's Virginia Chapter. The issue can be extremely divisive, and has caused rifts between and within environmental groups.

The West Virginia Highlands Conservancy has been wrestling with the issue for 20 years, and the discussion at times was quite heated, according to Frank Young, who was president of the group when the issue first came to the forefront with proposals for several wind farms in northwest West Virginia. He remains an active member of the board.

"It was very intense," Young says. "One of the things that drives me is that coal is so terrible for the environment and for the social network of West Virginia that anything that competes against coal couldn't help but be good."

Young says he understands the arguments on the other side, but he remains convinced that "the balance is hundreds of times in favor of wind."

The organization's policy has evolved over the years. In a November 2002 commentary in the Highlands Voice, board member Hugh Rogers summarized the divide on the board.

"However, those who support wind power as an alternative to coal did not change the minds of those who resent its increasingly flagrant occupation of the Highlands," he wrote. "How could some people fail to see that the Highlands around Canaan Valley and Dolly Sods was the wrong place to put hundreds of 300-foot-tall towers? For years, the Conservancy has worked to protect the area. We would betray the trust of our members if we agreed to this new threat."

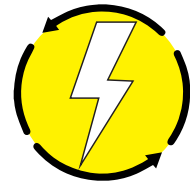
The board passed a number of resolutions between 2002 and 2012. Most of these resolutions expressed skepticism about wind power, with some calling for blanket opposition

to industrial wind projects in the region. Others approved siting wind facilities on mountains at risk for mountaintop removal mining.

The last resolution, passed in 2012, reads: "The West Virginia Highlands Conservancy is concerned about the cumulative impact of industrial scale wind energy development on the environment and acknowledges that continued development of industrial wind facilities, in and of itself, is harmful to the West Virginia Highlands, which it is our mission to protect."

The conservancy continues to push for siting regulations for wind turbines to keep them in the least objectionable locations, but the state legislature has not been receptive.





# North Carolina and Tennessee Halt Development of Wind Energy

By Molly Moore

Though the breeze is still blowing in Tennessee and North Carolina, the air is relatively still when it comes to progress on wind energy. Both states passed moratoriums on new wind projects during their 2017 legislative sessions.

A North Carolina solar law passed this summer includes an amendment that prohibits the state Department of Environmental Quality from issuing permits for new or expanded wind facilities for 18 months. State Sen. Harry Brown (R-District 6) attempted to add a four-year wind moratorium, but legislators reached an 18-month compromise. The moratorium began retroactively on Jan. 1, 2017, and runs until Dec. 31, 2018.

Gov. Roy Cooper signed the bill in July but issued an executive order urging continued momentum for wind projects.

"This executive order directs DEQ to continue recruiting wind energy investments and to move forward with all of the behind the scenes work involved with bringing wind energy projects online, including reviewing permits and conducting pre-application review for prospective sites," Cooper

said in a press statement. "I want wind energy facilities to come online quickly when this moratorium expires so our economy and our environment can continue to benefit."

In promoting the moratorium, Brown and numerous other GOP senators expressed concern that wind turbines could interfere with military flight paths and potentially cause bases to relocate away from eastern North Carolina.

But a 2013 state law already bans any wind developments that would "result in a detriment to continued military presence in the state." And the U.S. Department of Defense is also required to certify that renewable energy projects won't interfere with military flight training or other operations.

The moratorium halts development of two wind farms slated for Chowan and Perquimans counties, even though those sites were approved by the Department of Defense through a joint land use study in 2013.

"The wind energy moratorium provision slams on the brakes of much needed economic development in our most rural communities in eastern North Carolina," reads a

statement from Conservatives for Clean Energy, an organization based in North Carolina and Virginia.

In November, the legislature announced a contract with global firm AECOM to produce maps by May 2018 showing where wind turbines could negatively affect military operations.

According to Southeast Energy News, the process of creating these maps won't be subject to open meetings laws, unlike most policy studies.

## Tennessee

Sharp debate surrounding a 71-megawatt wind farm proposed for Cumberland County, Tenn., led the state legislature to pass a moratorium last spring halting work on large-scale wind developments in the state until July 2018.

Tennessee is one of four states without any statewide regulations on wind energy, according to State Rep. Cameron Sexton (R-Crossville), who introduced the bill. The moratorium signed by Gov. Bill Haslam in May established a joint committee to study wind siting regula-

tions and make recommendations to the relevant state Senate and House committees by Jan. 1, 2018.

The moratorium does not apply to counties and municipalities that have already established local siting regulations for wind facilities.

U.S. Senator Lamar Alexander of Tennessee applauded the state law. "This will give Tennesseans the opportunity to evaluate whether we want our landscape littered with wind turbines that are over two times as tall as the skyboxes at the University of Tennessee football stadium and produce only a small amount of unreliable electricity," he wrote in a statement emailed to the Knoxville News Sentinel.

In June, Virginia-based Apex Clean Energy announced that it was suspending its \$100-million Crab Orchard Wind project slated for Cumberland County. According to a statement from Harry Snyder, the company's development director, the decision was "based on current market conditions and the project's fundamental qualities." ♦

## Mountain Wind

continued from page 13

measures proposed by Apex to protect bats by turning off turbines at night during the summer months when bats are most likely to be flying. They also accepted Apex's assurances that large numbers of the types of birds threatened by turbines aren't present at the site.

Apex called the county permit process "one of the most comprehensive we have seen to date."

"We worked with Botetourt County officials to help them understand the project and answer questions throughout the permit process, leading to a unanimous permit approval," Apex's Johnson says. "As the first potential wind farm for Virginia, we want to develop Rocky Forge responsibly and set the bar high for future projects."

Crawford hopes this will be far

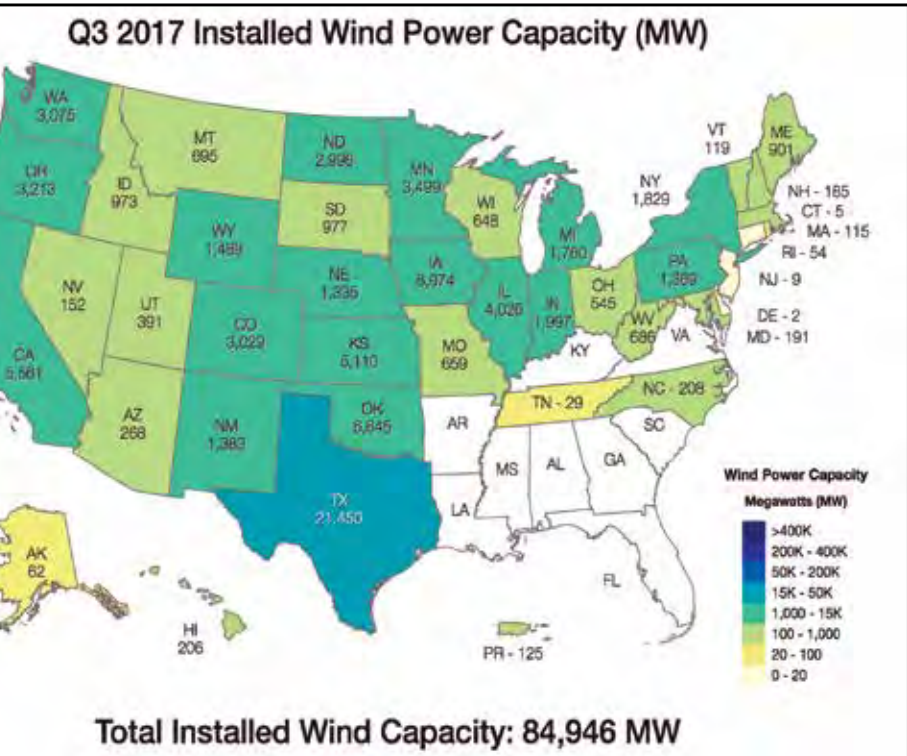
from the last wind project approved in the region.

"We could use at least six or eight wind farms along the spine of the Appalachians," he says.

Offshore wind projects are also promising, according to Crawford, though the expense of constructing turbines in the ocean makes them far more costly.

"Generally, offshore costs twice as much," he says. "Having worked on the water, I know why. Just look at the cost of hiring a truck driver versus the cost of hiring a skipper."

Still, offshore projects are being built. The nation's first offshore wind project came online in 2016, the 30-megawatt Block Island Wind Farm off the coast of Rhode Island. Projects off



Source: American Wind Energy Association Market Report. Map by U.S. Department of Energy WINDEXchange

of Kitty Hawk, N.C., and Virginia Beach are also in the works. There's much more wind potential offshore in the Atlantic than inland in the Southeast.

"Offshore is coming," Crawford

says. "I'm excited. We need wind and solar anywhere we can put it. Even if we pay twice as much for offshore, it's still less than what we'll pay if we don't do it." ♦

## This GREEN House

# A DIY Approach to Wind Energy

After building a backyard wind turbine, Roger Beale advises youth turbine teams

By Dan Radmacher

When retired IT engineer Roger Beale found himself with too much time on his hands, he did what any engineer with an interest in weather would do: he built a 5-kilowatt wind turbine in the backyard of his Bedford County, Va., home.

"I like to stay busy," Beale says. "I enjoy building things, so I decided to build a wind turbine."

In 2009, he started work on the five-kilowatt turbine, which has gone through several iterations. The turbine sits atop a 100-foot tower in his backyard, which Beale has rigged so he can lower the turbine for maintenance and upkeep.

"I maintain everything myself," he says. "I designed it that way on purpose."

In addition to the turbine, Beale has set up a four-kilowatt bank of solar panels in his backyard. Between the two, he's cut his electric bill in half. A sophisticated control room housed in a backyard shed monitors the output and contains the converters that turn the alternating current from the turbine into direct current that charges four sets of batteries under the shed. Together, the batteries can store 325 ampere hours, which is enough to power his home's lighting and many of his appliances for 24 hours.

Another shed contains his workshop, which looks more like a NASA control center. Two mammoth monitors dominate the space, which also contains multiple computers and other electronic gear, a pegboard filled with tools, several workbenches and a scale model turbine.

While Beale gets most passionate discussing the technical aspects of wind and solar energy, he does want to see renewable energy supplant fossil fuels



Roger Beale's passion for renewable energy technology is evident in the sophisticated backyard control room he built to monitor his home power system. At left, Beale stands before his wind turbine in Bedford County, Va. Photos by Dan Radmacher

The Center for Wind Energy at James Madison University, which organizes the regional KidWind Challenge competitions, brought Beale in to talk to all of the teams, according to Remy Pangle, the center's associate director and education and outreach coordinator.

"We wanted to level the playing field," Pangle says.

"We felt bad that only one team had him as an adviser. This year, we're trying to make him a resource that's available for everybody."

After judges saw what a difference it made when Off The Grid built their own generator instead of using an off-the-shelf model, they added an option for teams that want to go that route.

"They decided to make it a separate competition because of this Roger issue," Pangle says. "It's a great thing

as soon as possible.

"Anything we can do to move off fossil fuels is good," he says. "We are going to see wind power coming, and solar power, too."

Beale learned a great deal as he designed and built the turbine and the generator it powers. Lately, he's been passing on that knowledge to middle and high school students involved in the KidWind Challenge, a national competition that involves teams of students building their own wind turbines (Read more on page 13).

Beale first advised Off The Grid, a team of four Lord Botetourt High School students and one James River High School student. The team went on to win the national competition in Anaheim, Calif., last May.

"I taught them about how to carve blades into genuine airfoils," Beale says. "They had been using flat, balsa wood blades."

Beale also worked with the students on how to design their own generator — the unit that rotates magnets around coiled wires to actually generate current.



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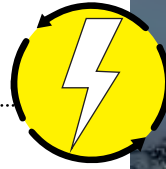
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# Trump's War on Reality

On coal and climate change, the White House hopes dishonesty will win the day



This column is adapted from a post on Appalachian Voices' Front Porch Blog. Read the original at [appvoices.org/trumps-war-on-reality](http://appvoices.org/trumps-war-on-reality)

By Brian Sewell

As President Trump stirs controversy and dictates policy in tweets, decisions at the agency level are drawing attention to his political appointees. That makes for a lot of noise, including on issues related to energy and the environment.

Is it unusual that amid his deregulation spree, U.S. Environmental Protection Agency Administrator Scott Pruitt added a soundproof "privacy booth" to his office? Should we read much into Energy Secretary Rick Perry's speech to a National Mining Association gathering at the Trump International Hotel, where he touted coal's part in the United States' "unprecedented clean energy revolution?"

We should take note of the absurdities offered daily by the president and powerful members of the executive branch — because they fit into a larger pattern. Ten months into Donald Trump's presidency, the through-line of the White House's strategy on coal and climate change is attacking regulations and then scrambling the evidence of why they are needed and what repealing them will accomplish.

The pattern continued in October with Pruitt's repeal of the Clean Power Plan and Perry's defense of a rule that would disrupt power markets in an attempt to keep coal competitive.

## Erasing the Case for Climate Action

President Trump and his political appointees have pronounced the "war on coal" dead on multiple occasions. But, as of Oct. 10, "the war on coal is over" again, as Pruitt told a crowd in Eastern Kentucky. That day, Pruitt unveiled a proposal to repeal the Clean Power Plan, a historic if modest step by the Obama administration to reduce carbon pollution from power plants.

The repeal proposal is based on the legal argument that the EPA had overstepped its authority under the Clean

Air Act. But those arguments are superficial compared to the core position of the Clean Power Plan's most vocal opponents: that carbon dioxide is not a pollutant and should not be regulated — that climate change is a hoax.

"Climate change has occurred over the cycle for decades," Murray Energy CEO Bob Murray, a friend and adviser to the president, told PBS NewsHour the day the repeal was announced. "The Earth has cooled for the last 19 years. It's a natural cycle." But it hasn't, and it's not. Sixteen of the hottest years on record have occurred this century, according to the World Meteorological Association.

A week before Pruitt signed the Clean Power Plan repeal, POLITICO reported that his agency's assessment of the plan's costs and benefits was expected to be fundamentally different than that of Obama's EPA. True to form, Trump's EPA sees a world where some air pollution is safe and the costs of climate change are negligible.

Take the metric known as the "social cost of carbon," an approximate determination of the cost imposed on society per ton of carbon emitted. There is no consensus on such a difficult-to-define number, and most estimates range from around \$30 per ton to as much as \$200. Trump's EPA puts the figure around \$1.

The repeal proposal also downplays the public health benefits of reducing emissions of other air pollutants along with carbon dioxide. According to the repeal, there are no benefits to reducing particulate matter, or soot, below the threshold set by the National Ambient Air Quality Standard. But that limit reflects what is considered permissible, not necessarily what is safe.

Pruitt's motive is clear: inflate the costs and discount the benefits of regulating carbon in order to weaken the economic case for climate action. All the better if people believe that meeting emissions goals would be impossible



Graphic by Cara Adeimy

unless we live in the cold and dark. Of course, that was never the case. Most states are already on track to meet or exceed the targets, according to a Rhodium Group analysis.

## The Cost of Freedom

Over at the Energy Department, Rick Perry is looking beyond regulatory rollbacks to full-on market manipulation. In September, he directed the Federal Energy Regulatory Commission to issue a rule altering how markets value baseload resources — specifically coal and nuclear — to ensure "certain reliability and resilience attributes" are fully valued. Among those attributes is the ability to maintain a 90-day fuel supply, unquestionably ruling out an array of technologies and ignoring their contributions to a reliable and resilient electric grid.

Perry says the rule would address the problem of fuel-supply disruptions, which would be helpful if fuel-supply disruptions were a problem to begin with. He points to the 2014 Polar Vortex, when frigid temperatures forced power plants offline, but he ignores that coal stockpiles froze in the cold snap and the way wind power helped prevent blackouts.

"I don't think any of you want to stand up in front of your constituents and explain why the decision had to be between turning our lights on and keeping our family warm," he told members of the House Energy and Commerce Committee in October. A week later, FERC issued its winter market assessment for the year, which concluded that electric

capacity is adequate in every region.

When the fear of rolling blackouts did not satisfy committee members, Perry invoked freedom. Asked by New York Rep. Paul Tonko if he had considered the rule's cost, Perry replied, "I think you take costs into account, but what's the cost of freedom? What's the cost to keep America free?"

That laughable fallback is becoming familiar. Pruitt has said that utilities need "solid hydrocarbons" on site in the event of an attack on our infrastructure. West Virginia Gov. Jim Justice pitched President Trump a plan to subsidize coal under the guise of national security, fearing the "absolute chaos" that could be in store.

But unlike the cost of freedom, the cost of Perry's proposed rule can be measured. Based on his directive, ratepayers could be on the hook for eligible facilities' operating and maintenance costs, and they could even be forced to guarantee the facilities' owners and investors a profit. Multiple analyses based on different interpretations of the directive all put the annual cost in the billions of dollars.

Comments opposing the directive poured in during the public comment period, while supportive comments were fewer and reflected a much narrower set of interests. Bob Murray urged commissioners to approve the rule, describing his company as "entirely dependent on the continuing viability and operation of coal-fired generation in the United States."

*continued on next page*

## War on Reality

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It's no wonder Murray is on board, since the rule seems designed to appease him. In August, the Associated Press obtained a letter to the White House in which Murray accused the administration of rebuffing his request that it issue an emergency order to keep his mines operating and the coal plants they supply running. He again implored the White House to act.

"Disastrous consequences will occur for President Trump, the electric grid, and tens of thousands of miners [sic] will result if this is not immediately done," Murray's letter concludes.

FERC is unlikely to give in to Perry's clumsy intervention into electricity markets, but the directive and his defense of it will be remembered as acts of service to the White House's coal industry allies.

## Pulling Up the Roots

The ultimate expression of Murray and the Trump administration's shared strategy could still be ahead. For months, Pruitt has hinted at a plan to launch a "red team, blue team" critique of climate research pitting climate scientist against climate skeptic. Perry also supports the idea.

It would be naive to think that such an effort would not further politicize the issue and create false equivalencies between decades of accepted mainstream science and the views of a handful of holdouts. That's the whole point of the exercise.

To be clear, Pruitt and Perry are not calling for a rigorous scientific debate about, say, the role climate change played in fueling wildfires or strengthening this year's back-to-back-to-back hurricanes — though climate science is helping us better understand those forces, too. They are calling into question the fact that carbon dioxide emissions are a primary contributor to rising temperatures around the globe.

"If you're going to make the case that climate change is not happening and that human activities are not influencing climate, you've got a really tough scientific row to hoe there," Thomas Burke, a health professor at Johns Hopkins University and former

EPA science adviser, told HuffPost in June. "This could really be an embarrassment to the agency and to the nation."

Groups such as the Heartland Institute, the nation's preeminent climate-change-denial think tank, are pressuring the administration to go after the legal foundation that obligates the EPA to regulate greenhouse gas emissions. The "endangerment finding," which stems from a 2007 Supreme Court ruling, concludes that excess carbon dioxide levels pose a threat to humans. It could be wielded against Trump's EPA in court by groups that support regulating emissions.

During his Senate confirmation hearing, Pruitt said the endangerment finding "needs to be enforced and respected." Now he doesn't sound so sure. "Did this agency engage in a robust, meaningful discussion with respect to the endangerment that CO2 poses to this country?" Pruitt asked rhetorically in an October interview with TIME. "I think by any definition of that process they didn't."

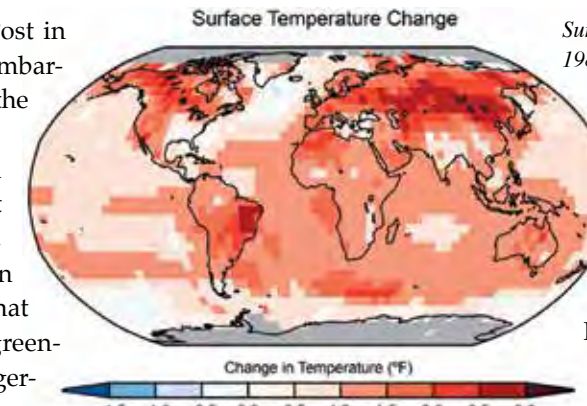
A plot to challenge the endangerment finding would be ambitious, equivalent to pulling up the roots of federal climate regulation planted nearly a decade ago. But overturning it is near the top of Murray's to-do list. In June, he told E&E News that he expected the endangerment finding to come under fire before the end of 2017.

## Clearing the Air

Ending the "war on coal" over and over again works as a talking point and an applause line. But what happens when rules to safeguard clean air and water are undone, communities are left more vulnerable to climate change and coal plants still close?

A new study from the Union of Concerned Scientists found that on top of the plants already slated for retirement, an additional 17 percent of the nation's coal-fired power plants are unviable compared to other sources. The states with the greatest share of coal capacity at risk — West Virginia, Maryland, Georgia, North Carolina and South Carolina — have all historically relied on coal mined from nearby mountains.

Although nationwide coal production and job losses have stabilized compared to recent years, the comeback



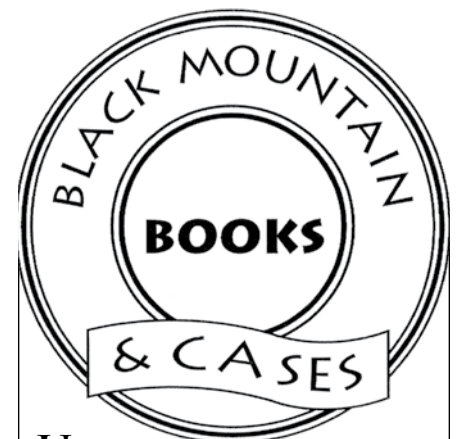
Change in Temperature (°F)

Surface temperature increases for the period 1986-2016 relative to 1901-1960. Produced by the Climate Science Special Report: Fourth National Climate Assessment, U.S. Global Change Research Program

fers guidance to federal agencies and the president on a variety of environmental policy decisions. Hartnett-White is an outspoken critic of the endangerment finding — she's called CO2 a "harmless trace gas" and "plant food."

Aided and abetted by a majority of congressional lawmakers, the Trump administration is insulating itself from a broad range of scientific and economic perspectives. Meanwhile, the scientific and medical communities continue to sound the alarm about present and future climate threats. It's doubtful the message will break through.

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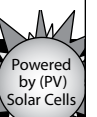


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# Southern Appalachian Mountain Stewards

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but there's a lot of love there."

The region is also changing, as the coal industry declines and some foundations shift their funding priorities. Although SAMS was established to combat mountaintop removal, the organization is now addressing other issues.

"Social justice in general is something that we are looking at, with the

environment being the number one priority," says Terran Young, a SAMS board member who is also serving as a Highlander Transition Fellow with SAMS, the community and scholar organization Livelihoods Knowledge Exchange Network, and Appalachian Voices.

"We're committed to what's right and to having people treated equally," Young continues. "That's something we're willing to take on whether or not everybody agrees on it."

In 2016, SAMS and partners re-

opened a 1979 study that explored Central Appalachian land ownership and taxation of companies that own mineral rights. With approximately 45 percent of the land in Wise County owned by corporate landholding entities, this study has local significance.

Speaking about how SAMS is keeping their momentum, Young says, "I think the land study will be a big part of it, especially as far as recognition for SAMS, because we are a very small, pure grassroots organization. It was

created by the people, and run by the people of this area." ♦

*Azariah Conerly, Ricki Draper and Christian Huerta contributed to this report. The authors are Appalachian State University students and members of the university's Scholar Activist Alliance, a group that links academic institutions and frontline community organizations. They began interviewing current and former SAMS members in 2016 to document the organization's history.*

# Trash to Fuel

continued from page 11

The University of Tennessee is currently studying the effects of Lebanon's biochar on soil and crop yields.

Biochar has been used as an agricultural amendment for at least 8,000 years, according to Albert Bates, a lawyer who has written several books on the benefits of biochar. According to Bates, adding biochar to compost makes both materials a stronger soil amendment.

"It's not a physical process, it's not a chemical process — it's a biological process," Bates says. "What you're really adding to the soil are microbes, nematodes, earthworms, fungi and bacteria. And the way you get all that is from the compost pile."

According to Bates, the high temperature used in the Lebanon plant to break down the toxins in the tires and treated sewage leads to the resulting biochar not being porous enough to provide much benefit to the soil, though it can be used as a replacement for sand in concrete and asphalt.

"It actually helps the concrete self-

heal when it cracks," Bates says. "It has a lot of good applications besides agriculture, all of which have the effect of storing carbon out of the atmosphere."

# Promising Poultry Poop

With roughly 800,000 chickens at his Wardensville, W.Va., poultry farm, Joshua Frye has a lot of poop to deal with — about 660 tons a year. So when Frye was looking to offset propane heating costs for his chicken houses at Frye Poultry, he decided to put the stuff to use. In 2007, he built a \$1.2 million gasification unit right next door, \$550,000 of which was funded by a U.S. Department of Agriculture Conservation Innovation Grant.

According to a USDA report, the project saves Frye between \$20,000 and \$60,000 a year in propane costs. Additionally, since the propane fuel Frye previously used emits 0.8 gallons of water for every gallon of fuel burned, water was mixing with the nitrogen in the manure and causing ammonia emissions when the chicken houses were aired out. Heating with the gasifier is much less humid, leading to healthier chickens and



Joshua Frye stands in front of one of his chicken houses at Frye Poultry. Photo courtesy of Joshua Frye

reduced ammonia emissions.

The report also stated that the only emissions of concern, nitrogen oxides and particulate matter, were easily controlled and "below the need to permit."

While poultry manure is already a nutrient-rich fertilizer, it can also provide soil benefits as biochar since minerals remain after gasification. And with the biochar, Frye says, "the nutrients are locked into the carbon, so they're water insoluble." The nutrients in chicken litter, however, easily wash away and cause water pollution.

Frye still sells chicken litter as fertilizer for \$10 per ton, but can earn between \$500 to \$1,000 per ton for the biochar even though it's 30 percent the mass of the manure.

Joe Kapp, entrepreneur in residence at Eastern West Virginia Community and Technical College, aims to help Frye expand the biochar industry in Appalachia. He says the main challenge is that "there hasn't been a lot of testing for the various functions that it can serve."

According to Frye and Kapp, tests performed by USDA research chemist Isabel Lima have shown promise. Lima's research shows the biochar "shines better" in poor or eroded soils. It also can help soils retain water and

nutrients for longer periods of time.

When Frye's biochar samples were first tested, they came back positive for arsenic. Arsenic was being added to chicken feed in the United States to fight disease — meaning there was possibly arsenic in the chicken meat, the biochar and the gasifier's emissions for a time.

According to Frye, his chicken feed supplier removed arsenic in 2009.

Lima says in the later samples she received, there was "no detection of arsenic whatsoever," and "heavy metals of potential concern were either not found or present in negligible amounts." On the contrary, she found that since the biochar was porous and negatively charged, it could attract heavy metals like a sponge — and thus could treat water polluted by mining runoff.

Blue Ridge Environmental Defense League's Zeller, however, remains skeptical of gasification — even with biochar as part of the equation. "That doesn't get around the fact that you've emitted all this air pollution and other toxic air pollutants into the atmosphere," he says.

Kapp and Frye see potential for gasification and biochar in the region. "People will begin to discover that there's significant resources and opportunities in ... not just chicken biochar but all waste products," Kapp says. "It's an exciting area for Appalachia, especially as we see opportunities in some of the more historic industries declining," he says. "This represents a new growth opportunity that has the potential to be significant for all of Appalachia." ♦

# Appalachia's Political Landscape

## Coal Insider Nominated to Lead Mining Agency

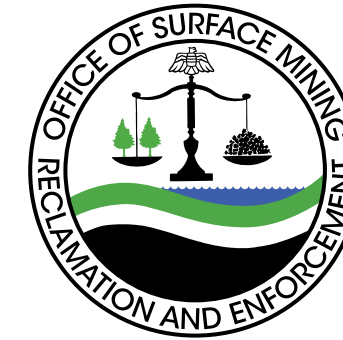
By Molly Moore

In late October, the White House nominated J. Steven Gardner, an engineer and coal industry consultant, to serve as director of the Office of Surface Mining Reclamation and Enforcement.

A bureau within the U.S. Department of Interior, OSMRE is charged with protecting people and the environment from the adverse effects of surface coal mining. In particular, the federal agency oversees state mining agencies and administers cleanup of mines abandoned prior to 1977.

Gardner has worked in the coal industry for more than 40 years and currently serves as president and CEO of ECSI, LLC, an engineering firm based in Lexington, Ky.

Gardner has been an outspoken critic of what he called the Obama administration's "war on coal." He was particularly opposed to the OSMRE's Stream Protection Rule, which was finalized in 2016 and struck down by the Trump administration in early 2017. Gardner's firm was among the subcontractors that produced draft research for the agency on the possible economic impacts of the rule. His firm's findings were the subject of a public dispute with OSMRE staff, and



the agency did not renew his contract.

Gardner's nomination comes as the coal industry is struggling, particularly in Appalachia. Across the region, a range of stakeholders including local governments, entrepreneurs and advocacy organizations see reclamation of former mines as a way to strengthen the economy.

"For better or worse, the OSMRE will play a critical role in shaping Central Appalachia's economic future," read a statement from Erin Savage, Central Appalachian program manager for Appalachian Voices, the publisher of this newspaper. "Mine reclamation, reauthorization of the Abandoned Mine Land Fund, bonding reform and the strict enforcement of environmental laws are crucial tasks in the coming years."

In a Department of Interior press statement, Kentucky Senators Mitch McConnell and Rand Paul, National Mining

Association CEO Hal Quinn and Interior Secretary Ryan Zinke applauded Gardner's nomination.

"Steve is highly regarded in the mining industry for his extensive experience and insight," Zinke said in a press statement. "Steve will help [the Interior Dept.] take the proper steps forward to ensure American Energy dominance is achieved, while also being a responsible steward of American lands."

In August, the Department of Interior halted a National Academy of Sciences review of studies connecting mountaintop removal coal mining to negative impacts on human health.

Gardner's nomination was roundly criticized by environmental groups, including Appalachian Voices.

"How can someone with his focus on defending the industry at all costs be the right choice for the federal agency in charge of overseeing that industry?" asked Davie Ransdell, a member of the progressive grassroots organization Kentuckians For The Commonwealth and a former supervisor at the Kentucky Division of Mine Permits.

"He is not the director Appalachian communities need to protect and advance their future," Savage stated.

## Calls for Action on RECLAIM Act

By Molly Moore

In October, Jim Ward, the judge executive of Letcher County, Ky., spoke at a press conference in Washington, D.C., joining legislators from both sides of the aisle to call for passage of the RECLAIM Act.

The bill, which passed the House Natural Resources Committee in June, would accelerate the disbursement of \$1 billion currently in the Abandoned Mine Land fund over a five-year period.

Committee members also approved an amendment to require projects that receive funding under the bill to spur local economic development.

"We need to use this money strategically so that with the economic development part, not only do we reclaim the land but we also create jobs, and future jobs, something that's sustainable," Ward told the Washington, D.C., audience. "Because we're looking at having to diversify our economies and this money could really put our people back to work."

Ward had traveled to the capital along with RECLAIM Act supporters from across the country to urge legislators to cosponsor the bill and hold a vote before the end of 2017. Appalachian Voices, the publisher of this newspaper, helped organize the citizen lobby week,



Judge Executive Jim Ward of Letcher County, Ky., discusses the RECLAIM Act. Photo by National Wildlife Federation

which included nearly 60 congressional meetings.

Citizens also called on the Senate to adopt the House's version and hold its own vote. Currently, the Senate version does not require that the abandoned mine land projects eligible for RECLAIM Act funding also boost local economies.

Rep. Morgan Griffith (R-Va.), a co-sponsor of the RECLAIM Act, touted the bill's bipartisan support.

"It's Democrats and Republicans coming together to identify a way that we can be helpful, help the country, help make the environment better, help create jobs and [help] people who are skilled but want to stay living in the mountains be able to stay there and pursue something different as we move forward in this country," Griffith said at the press conference.

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## Pipelines Clear Hurdles, Face Resistance

By Kevin Ridder

On Friday, Oct. 13, the Federal Energy Regulatory Commission approved the proposed Mountain Valley and Atlantic Coast Pipelines.

FERC Commissioner Cheryl LaFleur, the lone non-Trump appointee of the three-person commission, dissented.

“Both the ACP and MVP cross hundreds of miles of karst terrain, thousands of waterbodies and many agricultural, residential and commercial areas,” LaFleur said in a statement. “I believe it is appropriate to balance the collective environmental impacts of these projects on the Appalachian region against the economic need for the projects. In so doing, I am not persuaded that both of these projects as proposed are in the public interest.”

The Atlantic Coast Pipeline is still pending state water pollution permits from agencies in Virginia, West Virginia and North Carolina, while the Mountain Valley Pipeline’s water permit is pending approval from Virginia.

In response to the FERC approval, on Oct. 24 the Roanoke County, Va., board of supervisors petitioned FERC for

a rehearing to more closely examine impacts on water quality and historic and cultural resources. The 30-day deadline for FERC to respond could be extended indefinitely, during which construction could still begin on the pipelines.

The call for a rehearing escalated on Nov. 13 when a group of impacted landowners and environmental groups represented by Appalachian Mountain Advocates and the Southern Environmental Law Center filed an official rehearing request with FERC. The group, which includes Appalachian Voices, the publisher of this newspaper, notes that FERC did not adequately review market demand for the pipeline and that most of the \$5.5 billion project will be funded by ratepayers.

“Private property may only be taken, according to the Fifth Amendment to the United States Constitution, when the project is for a public use; an unnecessary pipeline is, by definition, not for a public use or benefit,” said Appalachian Mountain Advocates Senior Attorney Ben Luckett in a press release.

But since the FERC ruling legally declares the two pipelines in the public interest, the developers can now use

eminent domain to obtain land. In early November, over 440 landowners in Virginia and West Virginia were served with a federal lawsuit from Mountain Valley Pipeline, LLC, to obtain easements for their land.

In North Carolina, the Department of Environmental Quality issued a letter of disapproval for the proposed Atlantic Coast Pipeline in October on the grounds that it did not meet the state’s requirements for erosion and sediment control. Atlantic Coast Pipeline, LLC, submitted new plans on Oct. 23, which the agency again disapproved on Nov. 6.

North Carolina regulators also requested additional information for the pipeline’s water pollution permit on Oct. 26 and for the stormwater permits on Nov. 8. The state’s next review is delayed until after new plans are submitted, potentially postponing their decision to 2018.

According to the Associated Press, audio from a September energy conference captured Dan Weekley, vice president of Atlantic Coast Pipeline developer Dominion Energy, telling industry insiders that “everybody knows” the pipeline won’t stop in North Carolina and would likely extend into South Carolina.

In West Virginia, Gov. Jim Justice’s

administration waived their ability to review the water quality impacts of the Mountain Valley Pipeline, reissuing the stormwater pollution permit that was withdrawn in September after several environmental groups filed a lawsuit claiming that the pipeline had not been adequately reviewed.

“We often hear from our political leaders that we don’t need federal agencies to regulate, that the state can handle it,” said West Virginia Rivers Coalition Executive Director Angie Rosser in a press release. “But waiving their authority to do so is no way to handle it.”

In October, a coalition of regional environmental groups sent a 17-page letter to the Virginia Water Control Board stating that the Clean Water Act requires the state to reject the water pollution permits if “the Board lacks ‘reasonable assurance’ that water quality will be protected—including if it does not have the necessary information.”

The final public hearing dates for Virginia pipeline water quality permits are Dec. 6 and 7 for the Mountain Valley Pipeline and Dec. 11 and 12 for the Atlantic Coast Pipeline in Richmond. Visit [appvoices.org/fracking/actions](http://appvoices.org/fracking/actions) for more information.

## Federal Grant Seeks to Extract Elements from Coal Byproducts

The U.S. Department of Energy awarded researchers from Virginia Tech and the University of Kentucky \$6 million to expand a pilot-scale project seeking to extract rare earth elements from coal byproducts.

Rare earth elements are used in many electronic devices but are difficult to mine. According to a Virginia Tech press release, the United States currently has no domestic source for these elements and depends on foreign trade for their supply.

The researchers will partner with Alliance Coal and Blackhawk Mining to operate rare earth extraction plants at two Kentucky coal-washing facilities.

“Funding for a pilot plant means that the possibilities of applying this technology are more promising than ever before. This project has shown great potential for the future of the coalfields and for our economy,” Virginia Representative Morgan Griffith said in a press statement. — Elizabeth E. Payne

## War on Reality

continued from page 17

An expansive report released on Nov. 3 as part of the congressionally mandated National Climate Assessment concludes with confidence that human activities are “the dominant cause of the observed warming since the mid-20th century.”

“There is broad consensus that the further and the faster the Earth system is pushed towards warming, the greater the risk of unanticipated changes and impacts, some of which are potentially large and irreversible,” the report’s authors write in the executive summary. A short response to the report by the White House reads in part, “The climate is changing and has always changed.”

The administration’s warped rhetoric isn’t helping mining communities much, either. For all the stage time he’s

devoted to coal, Trump has not even spared 140 characters to champion efforts to diversify Appalachia’s economic base — despite the inspiring initiatives garnering national attention. When he does speak up for “our great clean coal miners,” the only future he sees is one where they work in the mines.

The bully pulpit can be used to inspire, stunt or send shockwaves through the country’s imagination. Trump is using it to construct an alternate universe where coal is still king, or at least where it can be made great again. In the reality the rest of us live in, the White House’s actions won’t create prosperity nearly as much as they will cause pain.

But coal’s dominance will continue to fade and the transition to cleaner forms of energy will forge ahead in spite of the president’s delusion. We should remember that, too, in case he tries to take credit for it down the road. ♦



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## New N.C. Policies Threaten Solar Investments

By Elizabeth E. Payne

On Oct. 11, the North Carolina Utilities Commission ordered revisions to the state’s solar energy policies. The new order lowers the rates utilities pay developers for the solar energy they produce, and it shortens the period during which the developers can recover their investment.

The federal Public Utility Regulatory Policies Act of 1978 was intended to promote conservation and renewable energy. The law requires utilities to purchase renewable energy if the rates charged match the cost the company would have incurred to produce the same amount of energy.

The new North Carolina policy lowers these costs, thus lowering the rate utilities must pay for renewable energy such as solar.

## Duke Energy, Professors Collaborate in “Independent” Studies

On Nov. 10, news organization WBTV published documentation demonstrating significant collaboration between senior officials at Duke Energy and two professors at the University of North Carolina Charlotte who were hired to do independent analysis of the impact of the utility’s coal ash ponds.

Between February 2013 and August 2016, the professors had seven contracts with Duke that netted the university over \$1 million. One professor, John Daniels, also chaired an independent advisory board that should have precluded his work on associated scientific research.

Documentation published by WBTV shows that Daniels continued to participate in research conducted for Duke by fellow

solar advocates worry this new financial model threatens the economic viability of solar projects, but Duke Energy cheered the news.

“We feel like it generally supported our philosophy of where we should be going with solar,” Duke spokesman Randy Wheelless told the Charlotte Business Journal.

In related news, five solar developers have filed complaints against Duke Energy subsidiaries in South Carolina for acting in bad faith by offering renewable energy contracts they say are too short for the developers to attract financing for the projects. In its response, Duke noted its obligation to purchase renewable energy under PURPA but stated that the terms it offered need not be “reasonably financeable,” according to the Charlotte Business Journal.

professor Bill Langley, and that the utility significantly edited Langley’s final reports. When confronted with the revised text, Langley claimed that he had written the new text, not Duke, according to WBTV.

“Independent scientists? Not so much,” DJ Gerken, an attorney at the Southern Environmental Law Center, told the news agency. “They’re definitely relying on Duke Energy for funding and doing work Duke Energy has asked them to do.”

In separate news, Duke Energy released maps in early October showing that nearly 300 structures across the state could be at risk of flooding if dams at the utility’s coal ash ponds rupture. — Elizabeth E. Payne

## Courts Confirm Citizen Rights to Inspect Mines

In October, a federal district court in Virginia confirmed that citizens have more rights when conducting mine inspections than state and federal regulatory agencies had allowed. The case was filed on behalf of Southern Appalachian Mountain Stewards and the Sierra Club by Matt Hepler, who now works for Appalachian Voices, the publisher

of this paper. He filed the lawsuit after being routinely denied the right to accompany Virginia Department of Mines, Minerals and Energy inspectors to collect water samples at coal mining sites. The recent court case confirmed a citizen’s right to accompany mine inspections as established by state and federal laws. — Elizabeth E. Payne

## Construction Halted on Atlantic Sunrise Pipeline

A federal appeals court stopped construction of the 197-mile Atlantic Sunrise Pipeline in Lancaster County, Penn., on Nov. 6. The temporary stay was issued so the court could consider a challenge raised by environmental groups against the pipeline. An order of nuns have filed a separate suit under the Religious Freedom Restoration

Act because the pipeline crosses their land. “[We] hope that a permanent stay will be entered because environmental science confirms the development of this massive fossil fuel pipeline will only accelerate global warming and harm God’s sacred earth,” the nuns said in a statement. — Elizabeth E. Payne

## Federal Agency Approves Dam Projects Over Objections

On Sept. 29, the Federal Energy Regulatory Commission issued licenses for two hydroelectric power projects along the Monongahela River in West Virginia. The decision was reached over the objections of the state’s Department of Environmental Protection and other local stakeholders.

Opponents of the licenses contend that FERC did not address concerns to the projects raised during the public comment period. In Morgantown, W.Va., the site of one of the proposed

projects, City Manager Paul Brake was particularly concerned about impact to recreational areas along the river such as trails and fisheries, according to The Dominion Post.

The actions come as federal lawmakers are considering a bill that would expand FERC’s power to authorize hydropower projects. In response, Democratic members of the federal House Energy and Commerce Committee have raised concerns about the recent West Virginia licenses. — Elizabeth E. Payne

## Chinese Company Signs 20-Year West Virginia Gas Deal

On Nov. 9, China Energy Investment Corp., Ltd., and West Virginia Commerce Secretary Woody Thrasher signed a 20-year, \$83.7 billion deal for the foreign company to invest in shale gas and chemical manufacturing in the state.

The signing was witnessed by President Donald Trump.

While many state officials have heralded the economic boost such an investment might provide, other state advocates have asked for more details, such as whether local workers will be hired and environmental

protection agencies are up to the task of monitoring the expansion, according to the Charleston Gazette-Mail.

“This is signaling more rapid industrial development ... that I don’t think the state or the region is prepared for,” said Angie Rosser of the West Virginia Rivers Coalition. “What sounds like a quick fix for the economy and jobs has long-term implications written all over it that we are not prepared to handle. It feels like something spinning out of control.” — Elizabeth E. Payne



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## Taking Legal Action to Clean Up Belews Creek Coal Ash

On Oct. 3, the Southern Environmental Law Center sent Duke Energy Carolinas, LLC, a notice of intent to sue for violations of the Clean Water Act at the Belews Creek Steam Station near the predominately African-American community of Walnut Tree, N.C., and nearby homes. The notice was filed on behalf of Appalachian Voices, the North Carolina Conference of NAACP Branches and the Stokes County Branch of the NAACP.

Duke's violations at the site include dumping its coal ash pollution into Belews Lake, Little Belews Creek, the Dan River and groundwater through leaks and seepage, and illegally using the creek as part of its wastewater pol-

lution system, according to the environmental groups. The Clean Water Act requires citizen groups send a 60-day notice prior to filing suit.

Duke is required to excavate its ash and move it to dry, lined storage at 10 of its 16 sites in the two Carolinas — but they've refused to commit to cleaning up Belews Creek and five other coal ash sites in North Carolina.

"The people of Walnut Tree and surrounding communities have suffered the burden of Duke Energy's leaking, unlined coal ash pollution for far too long," says Rev. Gregory Hairston, Stokes County NAACP president. "We've been forced to fight for our right to clean water."

## Southwest Virginia Solar Roadmap Released

Last year, our New Economy team partnered with People, Inc., and the University of Virginia at Wise's Office of Economic Development to form the Solar Workgroup of Southwest Virginia to blaze a trail for solar energy in seven historically coal-producing counties in the state.



Our team is now releasing a Solar Roadmap for Southwest Virginia that identifies 15 residential and commercial sites that would serve as solar "ambassadors" for the region in addition to outlining workforce development needs, policy recommendations and more.

A potential installation at Ridgeway High School could provide \$1.7 million in net energy savings over a 25-year period.

Our goal is to help establish a renewable energy sector that builds community wealth and gives the region a competitive advantage in attracting new business interests that are looking to go green by getting all or a portion of their power from renewables.

To view the Solar Roadmap and learn more about the project, visit [appvoices.org/solar-roadmap](http://appvoices.org/solar-roadmap)

## Welcoming Virginia's New Environmental Justice Council

In October, we were on hand to applaud Virginia Gov. Terry McAuliffe's executive order to create an Environmental Justice Advisory Council.

"The governor's announcement marks an important step towards the inclusion of those most impacted by pollution in decision-making," says Appalachian Voices Deputy Executive Director Kate Boyle, who was chief among those advocating for the creation of this council. "We look forward to working with the Environmental Justice Advisory Council to address the greatest environmental harms facing the commonwealth."

"This Environmental Justice Advisory Council will work to ensure that every Virginian has a voice in protecting



Members of the Virginia Environmental Justice Collaborative, including Kate Boyle at far left, present Secretary of Natural Resources Molly Ward a thank-you for her leadership in establishing an Environmental Justice Advisory Council. Photo courtesy of New Virginia Majority

the quality of our air and water," said Governor McAuliffe in a press release. "This council will provide critical advice on how to protect our natural resources and address environmental pollution in a way that is both inclusive and action-oriented."

According to the release, the governor will appoint people from "a variety of backgrounds and geographic regions."

## Objecting to Duke's Proposed Rate Hikes

We joined hundreds of Duke Energy Progress customers to say no to Duke's outrageous proposed 16.7 percent residential rate hike in North Carolina.

The rate hike would cover the state and federally mandated cleanup of coal ash at Duke's sites across North Carolina, as well as the \$636 million sunk into a cancelled South Carolina nuclear plant and the proposed \$5 billion fracked-gas Atlantic Coast Pipeline. The increase would go into effect next spring if approved.

"These rate hikes would disproportionately affect low and fixed income rate-payers who use less power by increasing the cost just to connect to the grid, as well as ratepayers who have invested in energy efficiency and renewables," says North Carolina Field Coordinator Ridge Graham.

Five hearings for Duke Energy Progress were held this fall. Hearings for the same rate increases for Duke Energy Carolinas will occur in January 2018.

## Volunteer Task Force

Thanks to a gaggle of eager volunteers, our Energy Savings Team is spreading the word about energy efficiency. Every other week this fall, folks from around the Boone, N.C., area gathered for the Energy Efficiency Task Force Volunteer Night to plan and implement creative ways to educate residents in Western North Carolina about decreasing energy waste and increasing the use of renewable resources. Led by AV's 2017-18 AmeriCorps Project Conserve service members, Katie Kienbaum and Rebecca Bauer, volunteers helped brainstorm ideas and phone bank with residents while building leadership skills around an impor-



tant local issue.

Volunteer nights for 2017 wrapped up on Dec. 6, but will start back again on January 24. To get involved, visit [appvoices.org/](http://appvoices.org/) volunteer or email [becca@appvoices.org](mailto:becca@appvoices.org)

## Eberhard and Jean Heide Longtime Supporters Committed to Appalachia and the Environment

### Member Spotlight



To celebrate Appalachian Voices' 20th anniversary in July 2017, we've been honoring many of our longest-running supporters. Eberhard and Jean Heide have been Appalachian Voices members since 2002. After running the Asheville Wine Market for 21 years, Eberhard has retired and plans to begin distributing The Appalachian Voice in his community of Fairview, N.C. Thank you, Eberhard and Jean, for your years of loyal support!

The United States. Appalachian Voices was and remains a clear, honest and factual voice for presenting environmental issues that affect daily life in the region.

**AV: What are some of your favorite places or things to do in Appalachia?**

**EH:** Some of my favorite places are the Highlands of Roan, Mt. Rogers, the Blue Ridge Parkway, and to be honest, the entire mountain region has its charm. I am an avid birder, mountain biker and hiker.

**AV: How did you first hear about Appalachian Voices, and what motivated you to become a contributing member?**

**Eberhard Heide:** I picked up a copy of The Appalachian Voice at Izzy's Coffee Den in Asheville, N.C., years ago and as soon as I read the first page, I knew it was a newspaper that I could connect with. Having seen the horrors of environmental degradation early on growing up in the Midwest, I was an early convert to the nascent environmental movement that was gaining traction in

**AV: Why do you think it's important to protect the region?**

**EH:** The unique biological communities found in this region are a national treasure and are the very foundation of life. America is huge but shrinking due to population pressures which in turn impact all wild and natural areas that offer comfortable living for humans. Habitat destruction is a major issue that needs constant vigilance

and attention.

**AV: What do you appreciate the most about Appalachian Voices and our work?**

**EH:** I appreciate Appalachian Voices for its wide coverage of the whole southern mountain region. It makes one aware of things that need attention elsewhere as well as at home. Environmental degradation is an ongoing problem that needs awareness and a call to action and Appalachian Voices provides that clarion call as well as actual action to stop, fix or mitigate important issues.

## Challenging the Pipelines

Despite federal approval for the Mountain Valley and Atlantic Coast pipelines, the fight isn't over yet. At press time in mid-November, both pipelines were still seeking water pollution permits from Virginia and the Atlantic Coast Pipeline also needed permits from North Carolina and West Virginia (see page 20).

We also joined a coalition of environmental organizations in taking legal steps to call on the Federal Energy Regulatory Commission to reconsider its approval of the Atlantic Coast Pipeline in light of mounting evidence that it is not necessary.

### Virginia

It's up to the Virginia State Water Control Board to determine whether to grant water pollution permits for the two pipelines despite the disastrous impacts the projects would have on the commonwealth's waterways.

The State Water Control Board

will be holding four public meetings. Only those who submitted comments to the Department of Environmental Quality during the official public comment period may speak, but all are welcome to show up in solidarity. For details, visit: [appvoices.org/fracking/actions](http://appvoices.org/fracking/actions)

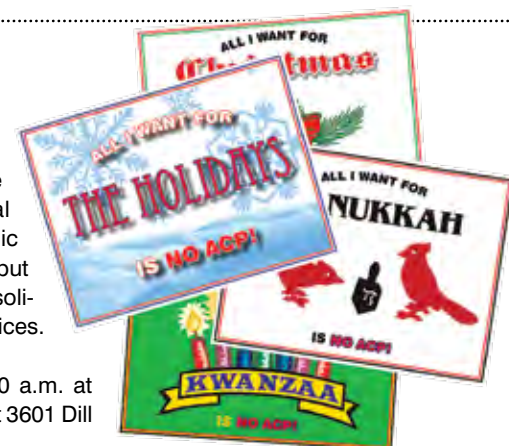
Meetings will start at 9:30 a.m. at the Trinity Family Life Center, at 3601 Dill Road in Richmond.

- Mountain Valley Pipeline: Dec. 6 and 7
- Atlantic Coast Pipeline: Dec. 11 and 12

### North Carolina

We're glad that Gov. Cooper's administration is delaying its decision on Duke and Dominion's Atlantic Coast Pipeline and demanding that the company submit additional information — but that's not enough.

Tell the governor and officials in Raleigh that North Carolina doesn't



**Are you a North Carolina resident? Send a holiday card to Governor Cooper asking for No ACP! Visit [appvoices.org/nc-holiday-cards](http://appvoices.org/nc-holiday-cards)**

want or need this pipeline by sending a holiday-themed NO ACP postcard. You can download and print at home, or we can send one on your behalf. Visit: [appvoices.org/nc-holiday-cards](http://appvoices.org/nc-holiday-cards)

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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The Appalachian Voice team would like to thank our members and readers for your support and for joining us in celebrating and protecting our incredible region. We wish you and yours a joyful holiday season and a just and peaceful New Year! Photograph of trees at the West Virginia Highlands by Kent Mason.



We have a profound responsibility to safeguard our beloved mountains and rivers, our forests and farmland, our neighbors' well-being and our children's future. Together with local citizens, Appalachian Voices is determined to build a future where healthy communities and sustainable local economies thrive in balance with our region's exquisite natural heritage.

To help celebrate we are offering new memberships for only \$20. Your membership helps fund our program work and helps bring you The Appalachian Voice, our bimonthly newspaper. Please join us as we begin our next 20 years of action!

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