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To Dig, Or Not To Dig?

Wyoming's Coal Fields Mark a Federal Carbon Policy Frontier in the Age of Climate Change

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Editor's Note: Tom Haines, a journalist and assistant professor of English at The University of New Hampshire, has walked hundreds of miles across landscapes of fuel while researching a book about energy and the environment that will be published in 2018. He served as a Carsey School Summer Research Scholar in 2015, when he walked 50 miles among the open-pit coal mines of Wyoming's Powder River Basin. That on-the-ground reporting informs this analysis.

Summary

In January 2016, the Department of Interior announced a moratorium on all new federal coal leases while it conducts an in-depth review of the process by which coal owned by the American public is sold to private enterprise for harvest. Nearly 40 percent of all coal produced in the United States comes from federal land, and coal still powers one-third of the nation's electricity grid.¹

The federal coal lease review, the first since the 1980s, considers pricing and competitive bidding practices, but also, for the first time, the environmental impact that burning coal has on a warming planet. In announcing the review, Secretary of the Interior Sally Jewell said: "We need to take into account right now the science of carbon's impact on the environment."

Ten percent of all U.S. greenhouse gas emissions comes from burning coal harvested on public land. Nearly all of that, more than 85 percent, is dug from the Powder River Basin of Wyoming and Montana.² Nowhere else does the U.S. government control such a vast deposit of fossil fuel. So as the lease review—and the climate impacts it considers—plays out over the next few years, the Powder River Basin, home to some of the world's largest open-pit coal mines, looms as a policy frontier: Should this fuel box of America, which has sent coal to power plants in dozens of states for decades, continue to feed our energy appetite?

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Photo by Tom Haines

Lay of the Land

The Powder River Basin stretches across a swath of northeastern Wyoming that is roughly equal in size to Massachusetts, but home to just 1 percent of its population. Only 63,000 people live in three large counties that cover thousands of square miles of open terrain, and most of those residents cluster in and around the city of Gillette. A broad band of open-pit coal mines runs southward 50 miles from Gillette into the Thunder Basin National Grassland, which is also home to antelope, rattlesnakes, and black-tailed prairie dogs. At the southern end of that slice of open earth, just two mines, the North Antelope Rochelle and Black Thunder, produce 20 percent of all coal harvested in the United States. The canyons in the sprawling mine complexes

cover an area that is larger than metropolitan Washington, DC, yet home to no one.

Coal in the Powder River Basin lays in luscious seams 30 or 40 or 50 feet thick, and those are buried only 100 or 200 feet beneath the surface of the prairie. The coal seams began to take shape more than 100 million years ago, as buried plants turned to peat and finally black rock holding energy that needed only to be unburied and burned. The coal stayed beneath the surface until settlers moving westward in the 1800s gave up hopes of more fertile terrain and stopped on the arid grasslands. A few of those settlers began to dig in the dirt, and neighboring homesteaders stopped by with wagons to pick up fuel for their stoves. Despite some early attempts at commercial coal operations, for a century and more, mining fed local markets. Then the passage of the federal Clean Air Act in 1972 required power plants to emit less sulfur. Powder River coal does not burn as hot as coal found elsewhere, in the eastern United States, for example, but it does have lower sulfur content. States around the country looked toward Wyoming, and by the 1980s Powder River Basin coal mines were booming.

On a sun-struck May afternoon, I crossed the Thunder Basin National Grassland on foot, approaching the North Antelope Rochelle and Black Thunder mines from the south. I followed a game trail, not more than six inches wide, into a draw that dipped between arid ridges and opened into a valley traversed by four sets of train tracks. I hopped a fence, hustled across the tracks, and made camp for the night alongside a steep creek

full of still, brown water. There are few trees anywhere in eastern Wyoming, and in the valley the tallest things were waist-high sagebrush bushes framing the serpentine creek. I heard a train and felt its pulse before I saw it, and then it was there, pulling to a stop on the tracks just across the creek from my perch behind the sagebrush bush. Two towering diesel engines stood before more than 100 empty coal cars that trailed around a bend to the west. The engines, idle just 200 feet from me, shuddered electric sighs, as they waited to continue into the North Antelope Rochelle Mine to pick up another load of coal. Just a mile north, miners were operating huge machines—drag lines and bulldozers, dump trucks with rubber tires two stories tall—to clear rock and dirt 24 hours a day, seven days a week. Roughly 80 trains arrive at Powder River Basin mines each day to load coal and head back into America.

I spent three days walking around the expanse of the North Antelope Rochelle Mine, where the canyons evolve constantly. Earth upended at one end can be placed at another, so that canyons, from one year to the next, move. To wander on foot through this world—as miners shuttle in vans from Gillette out to the canyons each shift—is to be in a “Hunger Games” terrain, in which an entire region has been given over to fuel lives elsewhere. As I traversed the edge of the North Antelope Rochelle mine on my third day of walking, I had to cut across mine property, into a new canyon recently created, then out the other side. There I stopped at a rare ranch house, still home to a couple that had bought the century-old homestead 20 years before. The

mine had been moving closer ever since, and each time miners placed explosives into the earth for another blast, an orange cloud of nitric oxide rose into the sky. The ranching family was left to watch and wonder whether the winds would carry the chemicals their way.

Taking Stock

During the Powder River boom, competition among mining companies had decreased, and by 2015 only a handful of multinational corporations—Peabody Energy, Arch Coal, and Cloud Peak Energy among them—operated Wyoming’s dozen mines. Because the scale of such mining is so vast, only existing operators find profit in leasing new land, and that typically is adjacent to already open mines. So for decades, the only federal leases issued for new coal claims have come through a system of applications, which has not produced robust competition for bidders.

Economic fortunes for the mining companies have fallen over the past decade, as demand for coal for electricity generation dropped nearly 30 percent between 2007 and 2015, a trend fueled in part by cheaper and more abundant supplies of natural gas.³ In the first-quarter of 2016, Powder River mines produced less coal than in any three-month-period since 1995.⁴ Arch Coal and Peabody Energy, operators of the Black Thunder and North Antelope Rochelle mines, each filed for bankruptcy protection.

It was in the midst of this market contraction that the Interior Department opened its federal lease review. The department’s Order No. 3338 states that the review is being conducted, in part, to ensure a “fair

return” for the American public on the coal that it owns. But the second goal emphasizes that the order targets “concerns about climate change.” The order notes that the United States has pledged to reduce greenhouse gas emissions by more than 25 percent of 2005 levels by 2025, and it states, in summarizing public feedback on the lease program: “Many stakeholders highlighted the tension between producing very large quantities of Federal coal while pursuing policies to reduce U.S. GHG emissions substantially, including from coal combustion.”

After a series of public hearings in 2016, Bureau of Land Management officials were aiming to release a preliminary ‘scoping document’ this month that should narrow the range of options for Power River Basin coal going forward. Current mine leases cover enough coal to meet expected energy demands until roughly 2035, and there is no short-term impact from the review on existing mining operations. So the real question facing federal regulators is whether, and how much, to curtail the coal harvest 20 years from now, when climate change is expected to have intensified.

The Department of Interior has received hundreds of public comments on the plan, ranging from industry claims to keep the system as it long has operated to environmental groups demanding that all coal be kept in the ground. A report issued by the Center for American Progress called for a compromise approach that would aim to have market forces fix the lease program.⁵ This report recommends that the Bureau of Land Management adopt a credit-based leasing system, in which companies would bid for coal credits. The Bureau of Land



Photo by Tom Haines

Management could then set harvest amounts that are adjusted to be in line with U.S. climate targets. The report, authored by Mary Ellen Kustin, stated that such a five-year cycle credit would allow “for continued coal leasing in the context of U.S. climate goals and therefore has the opportunity to garner sufficient public and political support to be stable, enduring, and effective for many years to come.”

But other analysts think the solution could be simpler. A study co-published by Energy Transition Advisors, Carbon Tracker, and Earth Track uses the Paris Climate Agreement benchmark of keeping warming to 2 degrees Celsius or less as a barometer to measure Powder River Basin coal 20 years from now.⁶ If the U.S. energy system continues to move away from coal, the study finds, then existing leases will more than meet demand for Powder River Basin coal. The study contends that awarding any new leases would only spur billions of dollars of investment in mining claims that should

not be needed. The study notes that if the targets of the Obama Administration’s Clean Power Plan are met, then coal demand will decrease. And if they are not met, then it will be all the more important to limit coal use demand at the source. “Indeed,” the report states, “taking steps to slow production for the Power River Basin would send a strong signal to other parties to the Paris Agreement that the United States is beginning to put its own house in order.”

Much of the future course of American climate policy, and the specific fate of the coal lease review, will be determined as the Trump Administration takes office this month. The administration has the power to alter the scope of the coal lease review, or even cancel the review completely.

Trump has selected Montana Congressman Ryan Zinke to serve as Secretary of the Interior. Zinke proposed one bill to the House that, among other goals, aimed to give coal-mining states a powerful role

in the federal lease review process. The specific fate of the program is likely to become more clear as lower-level political appointments take office within the Interior Department.

Even if new leadership under Trump continues the review, a final decision is not likely to come for at least two more years, after the completion of the Programmatic Environmental Impact Statement.

Meanwhile, at Twilight

On my last day of walking in Powder River coal country, I made camp by a reservoir just west of the Black Thunder Mine. A set of train tracks ran between my camp and the mine. Shortly before nightfall, a fierce hailstorm moved in from the west, and I was driven into my tent for shelter. Quarter-sized hail pelted the tent walls, as 50-mile-per-hour winds whipped everything on the treeless prairie. I lay face down against the storm and in the height of the fury I could hear, too, the moan of a coal train passing on the tracks. The train rumbled on, undaunted, beneath the ice and lightning. It was clear to me, lying on the earth, that the system that feeds our energy appetite is strong enough to keep the coal moving, no matter the obstacle. If we hope to burn less carbon, the federal government must choose to stop leasing public coal.

Endnotes

1. U.S. Energy Information Agency, “Net Generation by Energy Source,” November 29, 2016.
2. Sally Jewell, “Order No. 3338,” Department of the Interior, January 15, 2016.
3. Brian Park, “Power Sector Coal Demand Has Fallen in Nearly Every State Since 2007,” *Today in Energy*, U.S. Energy Information Administration, April 28, 2016.
4. Brian Park, “Quarterly Coal Production Lowest Since the Early 1980s,” *Today in Energy*, U.S. Energy Information Administration, June 10, 2016.
5. Mary Ellen Kustin, “A Market-Based Fix for the Federal Coal Program,” Center for American Progress, October 4, 2016.
6. Mark Fulton, Doug Kaplow, Reid Capalino, Andrew Grant, “Enough Already: Meeting the 2-degree C PRB Coal Demand Without Lifting the Federal Moratorium,” Energy Transition Advisors, Earth Track, Carbon Tracker, July 2016.



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