



By Sara Bernard



The Cost of Clean Coal

A Mississippi power plant promises to create clean energy from our dirtiest fuel. But it will come at a price.



On December 14, 2006, Barbara Correro was at home drinking tea, reading the paper. She had spent the past five years and most of her savings on a long-cherished retirement dream: a small mobile home on 24 acres of pine and hardwood forest, a large organic garden, and a pack of friendly dogs in rural Kemper County, Miss.

The acres once belonged to her grandmother, who kept cows and chickens, sold the hand-churned butter and eggs, and grew a bale of cotton every year to pay the taxes on the land. “It was hard work, and she was a good woman,” says Correro, a former oncology nurse with bright, quizzical blue eyes, a shock of white hair, and an unflinching voice.

By 2006, she’d built 27 raised beds, and was thinking about apple trees. And then, there it was, on the front page of the *Kemper County Messenger*:
“Gasification plant would be ‘world’s largest’: Coal mine could be in future.”

Mississippi Power, the largest utility in the state and a subsidiary of Southern Company, one of the largest electricity producers in the country, had announced its intentions to build a \$1.8 billion power plant fueled by Mississippi lignite coal, dug out of the ground right next to Correro’s homestead. By converting coal into synthetic gas, the plant would be much safer and cleaner than traditional coal-burning power plants. It would also (although this came out later) be designed to capture 65 percent of its carbon emissions.

But to Correro, coal is coal. “I just absolutely did not know what to do with

myself,” she says. “Here I’ve spent my whole retirement – I’m having a well dug, I just got electricity, I just built all these raised beds – all this labor! And here is a coal mine? This just can’t be real.”



Over the next eight years, Correro went to every public meeting she could; she organized her own town hall meetings; she regularly showed up at her

neighbors' doors, uninvited, and often shunned. ("If looks could kill," she says of one encounter with a local man and his wife, "I would have been dead on the spot.") She teamed up with a cohort of like-minded neighbors to speak, organize, and call elected representatives; she worked hand in glove with the Mississippi chapter of the Sierra Club on its four-year legal battle against the plant; she cooked meals for executives from the U.S. Department of Energy and hosted reporters from all over the globe, offering them sweet tea on her porch and Southern meals in her kitchen.

Correro became the Chicken Little of Kemper County: strident, relentless, passionate. "Just look at West Virginia," she says, angrily. "Look at the destruction."

Today, though, it looks like she's lost her war. Construction is nearly complete, and, despite delays and cost overruns, the facility is slated for a full launch by mid-2016.

Coal-fired power plants are responsible for 44 percent of global carbon emissions. They also produce about 40 percent of the world's (and the United States') electricity – and that's growing, according to an International Energy Agency report released in December 2014. Because one of the planet's dirtiest fuel sources is also its cheapest, many industry experts and world leaders – including members of the Intergovernmental Panel on Climate Change – say we've no choice but to force coal to clean up its act.

And, so far, the plant in Correro's backyard is as clean as coal comes: Its design meets the Environmental Protection Agency's proposed carbon pollution standards for new power plants, set to be finalized in summer 2015. If the EPA

gets its way, every new coal plant in the United States would look a lot like this one.

To Correro, “clean coal” is an oxymoron. To many engineers, politicians, and policymakers across the country and the globe, it’s the best chance we’ve got.



With a mean per capita income of \$13,795 and a third of its residents living below the poverty line, Kemper County is one of the poorest counties in what has long been the poorest state in the union. Some 10,000 residents are spread across roughly 750 square miles of rolling pasture, rambling creeks, and thick timberland full of yellow pine and sweet gum that runs up to and across the Alabama border. Many locals have had land in their families for generations – 100 years, 120 years – and have eked out a living from cotton plantations, cattle ranches, logging operations, and, more recently, industrial or manufacturing jobs outside of the county. Many rely on hunting and fishing for survival.

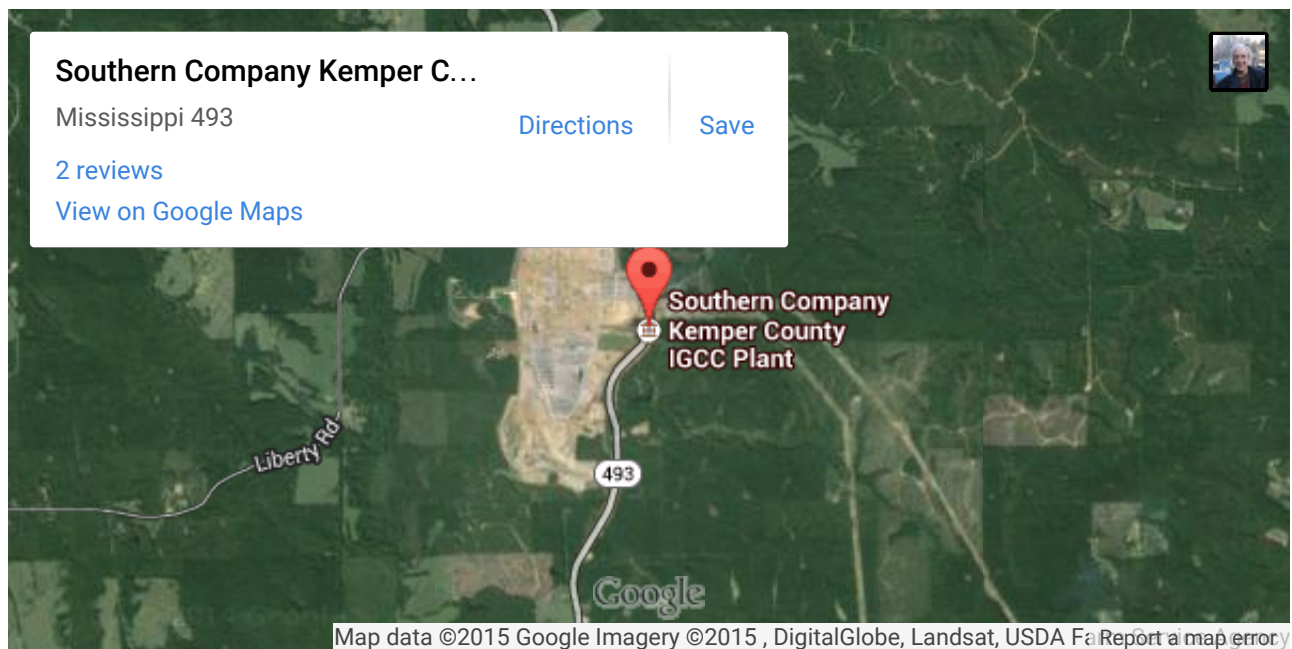
But underneath the pine woods and cattle pastures lies a shallow bed of lignite coal. It's the same bed that stretches northward to Choctaw County, where the 15-year-old Red Hills Mine feeds a power plant that provides electricity to the Knoxville-based Tennessee Valley Authority.

Lignite, also known as “young,” “brown,” or “dirty” coal, is the lowest-ranked of all coal types in terms of its energy density, water content, and associated pollutants. Traditional lignite-fired power plants produce 5 percent more CO₂ emissions than those that burn higher-ranking bituminous coal. Most everyone – from Mississippi Power spokespeople to Kemper County locals to high-level engineers – compares the stuff to mud.

“It’s very cheap; people joke that lignite is just a step above dirt,” says Howard Herzog, a senior research engineer at the Massachusetts Institute of Technology’s Energy Initiative. “It has a lot of ash, a lot of moisture, a lot of things that don’t burn.”

That may be partly why, although U.S. lignite reserves are among the highest in the world (there are an estimated 4 billion tons in Mississippi alone), and a quarter of global recoverable coal is lignite, it makes up just 7 percent of U.S. coal production.

But wet, crumbly lignite, it turns out, is exactly what Southern Company was looking for. It owns a vast fleet of coal, gas, and nuclear power plants throughout the Southeast; one of its coal plants, in Juliette, Ga., is the United States’ largest single source of carbon dioxide emissions. Over the past few decades, however, as climate regulations have stacked up and fuel reserves have dwindled – including the country’s recoverable deposits of higher-ranked coals – Southern Company has turned its attention to what it calls “21st Century coal”: a gasification technology specifically designed for low-rank coals. It’s a way to turn a previously unreliable fuel source into a wellspring of energy production for decades to come. Or, as Southern Company’s chief executive, Thomas Fanning, put it, it’s “like waking up and finding money in your attic.”



Southern Company and the global engineering firm KBR spent a decade perfecting the gasification process, called Transport Integrated Gasification, or TRIG™, at a U.S. Department of Energy-sponsored research facility near Wilsonville, Ala. Gasification is a more controlled kind of combustion; instead of burning the coal directly, it breaks it down into basic, chemical components. The process creates a cleaner-burning fuel – made up of mostly hydrogen and carbon monoxide – and makes it far easier to strip out nitrogen, mercury, sulfur dioxide, and hydrogen sulfide, rather than releasing them into the air.

As it happens, coal gasification plants are also easier to outfit with an important tool for fighting climate change: carbon capture and sequestration, or CCS, a high-tech process that scrubs carbon dioxide from industrial facilities, compresses it for transport, and stores it deep underground. CCS research has been in the works for several decades (the Carbon Capture and Sequestration Technologies Program at MIT began in 1989), but only recently, with higher stakes and better technologies, has the world begun to see some of the first large-scale CCS projects go live. The first commercial-scale CCS coal plant in the

world, a retrofitted facility in rural Saskatchewan, joined the Canadian power grid in October 2014.

“From a technological standpoint, it’s fairly unique and quite interesting,” says MIT’s Howard Herzog. “There are good reasons to believe that this technology could have some impact in the future.”

In the early 2000s, looking for a way to scale up its gasification process, Southern Company turned to the Department of Energy’s Clean Coal Power Initiative – a federal grant program begun in the late 1980s and revamped a dozen years later to tackle the coal industry’s climate impacts. By outfitting the green-leaning gasification process with carbon-capturing technology, the company hoped to secure hundreds of millions of dollars in federal funds.

When its first proposal for a 285-megawatt facility near Orlando, Fla., was cancelled due to what the DOE called “state regulations

uncertainties,” the utility turned its sights to rural Mississippi. There, the project won the blessing of the federal government even before it secured its grants: Former Secretary of Energy Steven Chu sent a personal letter to the Mississippi Public Service Commission in 2010 urging it to support the nation’s first coal-powered CCS experiment. The project was also aided by then-Mississippi

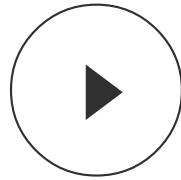
governor Haley Barbour – who is a founding partner of BGR Group, a firm that has been lobbying for Southern Company since 1999 – and by the 2008 Baseload Act, a state law that gave Mississippi Power the go-ahead to charge its customers for a portion of the construction costs, even if the plant is never completed.

The project has since attracted the attention of federal officials, of United Nations representatives, of engineers and industry professionals and journalists from across the world, who've flocked here (like I did) to see what is slated to be one of the first commercial-scale coal gasification plants ever built in the United States, and – most dramatically – the country's very first coal plant designed to capture and sequester a portion of its carbon emissions.

The plant has other green features, too, including a state-of-the-art system for storing its ash and recovering water from the damp lignite. It also plans to recycle treated sewage water from the nearby town of Meridian to cool its equipment. It will capture carbon dioxide and other chemical byproducts prior to combustion – and generate revenue from their sale. After all is said and done, the 582-megawatt facility's carbon output should more or less be “comparable,” as Mississippi Power regularly asserts in its quarterly reports, “to a similarly-sized natural gas plant.” Comparing the Kemper facility to a regular coal-fired power plant is “like putting a rotary dial phone next to a cell phone,” says Mississippi Power spokesman Lee Youngblood.

“From a technological standpoint, it's fairly unique and quite interesting,” says MIT's Herzog. “There are good reasons to believe that this technology could have some impact in the future.”

But to a number of local residents, the future of coal looks an awful lot like its past. The story I heard is a familiar one: An impoverished rural area. A smattering of locals without money or resources. An enticing promise of jobs, an economic boom, and even – or so the rumor goes in Kemper County – of "black gold." But this isn't 1914. This isn't West Virginia. And "black gold"? It depends on whom you ask.



Kenny Miles: "I guess I ain't supposed to know stuff like that."

It was a mild November day when I pulled up to Kenny Miles' house – a sturdy pine home he built himself with leafy walnut trees and wind chimes and a few dogs out front, cows and horses in the barn out back. Miles has lived on this dirt road in Kemper County all his life. Barrel-chested, with a massive beard and dusty overalls, he grew up tending animals, tilling land, hunting deer. For cash, he runs a small sawmill and blacksmithing business. "I haven't worked a public job since 1988 or '89," he told me. "I ain't

got no money, but I ain't missed no meals, neither!"

The land Miles lives on belongs to his father, and it's taken him 50 years to get his home "similar" to how he'd like it. "This was the most peaceful place on earth until they started that plant," he says.

Miles remembers getting a knock at the door half a dozen years ago from a man offering to lease his father's land. The man worked for Kemper Natural Resources, LLC, a short-term land acquisition arm of Mississippi Power that, in 2006, began quietly clearing the way for the project by sending representatives to walk the dirt roads and persuade locals to sign 20- to 25-year mineral leases.

To feed the coal plant over its projected 40-year life span, Mississippi Power has enlisted Liberty Fuels Co., a subsidiary of the North American Coal Corporation, to excavate 200 million tons of lignite by strip-mining up to 48 square miles of timber and pasture land. The plan, according to the project's environmental impact statement, is to systematically restore sections of the land as the mining operation proceeds. According to an email from Mississippi Power, "the company works closely with landowners to reach lease or purchase agreements which benefit both parties" and "when mining is complete, the land is reclaimed to its original approximate contour."

Miles doesn't remember how much the company offered him as a signing bonus, but it wasn't much – and royalties would be just 50 cents a ton for any coal the company extracted. "The way I read the contract, the money that they give you up front, whatever amount you get, they take that money back, before you get one penny," he says. "So you're actually just giving them your stuff. And you getting 50 cents a ton!"

On the open market, lignite goes for about \$19 a ton, a quarter of the cost of anthracite. But since this mine is also what's known as a "captive" mine – the lignite has no other market than the Kemper County energy facility – it's easier for Mississippi Power to name its price. Robert Wiygul, an attorney who has worked extensively for the Mississippi Sierra Club, adds that a 2006 lease obtained by the club does not, in fact, bind Mississippi Power to restoring the land afterward. Page 6 reads, in part: "Lessee shall not be required to restore the Premises to its original contour or elevation."

"These people around here was such poor people, you know, and when somebody offered 'em a way of getting money, they took it."

"It don't make sense to me," Miles says, "and I'm just old country folks, you know."

He sent the man packing. After a few more visits, Miles told him that if he wanted to lease the land, he'd let the man know: "That pretty much stopped him from coming by and bothering me," Miles says.

"Daddy still gets a letter once in a while. He don't let that bother him.

He says by the time this thing gets going, he'll be dead, anyway."

By now, of course, Miles and his father are exceptions to the rule. According to the project's environmental impact statement, by May 2010, 1,400 acres north and east of the site had already been "acquired, optioned, or identified for acquisition" for use as a "buffer zone." Many more acres have been leased for

mining, although Mississippi Power declined to say how many. These days, many local residents in the immediate vicinity are selling their homes outright and moving away – even those who, like Miles, have been here all their lives. Along Highway 493, where the plant sits, homes are shuttered, and, in some cases, razed.

“A lot of people has jumped at the money,” says Miles, in a slow drawl. “These people around here was such poor people, you know, and when somebody offered ‘em a way of getting money, they took it.”

Today, there’s just a thin stand of trees left between Miles’ home and the plant. His partner, Billy Jean, took me for a ride in their rattling red truck to see it: From a sandy pullout just a few hundred yards down the road, there's an easy view of the plant across a clear-cut valley. It stands like a shimmering city in the middle of the dark woods, with the whirr of industrial activity, airport-grade floodlights, and daily gridlock traffic clogging the two-lane highways in and out. A million tons of lignite have already been mined; black piles and bulldozers dot the red earth. Miles and Billy Jean hear sirens every day at noon. They call it the “dinner bell.” The rest of the time, Miles says, it’s a “continuous roar.”





James Hurtt: "Too many questions that no one will answer."

The Kemper County energy facility was intended to juice the local economy, and bring “great wonders,” Miles told me, even for those who had no land to lease. And, to some extent, it has: According to Mississippi Power, nearly 12,000 direct and indirect jobs have been or will be created during construction. At its peak in late 2012, the project employed approximately 6,000 people, making it one of the biggest employers in the state. Once the facility opens, it will support roughly 450 direct, permanent jobs, split evenly between the plant and the coal mine.

The plant has also brought an influx of tax revenue – roughly \$8 million in 2013, according to Kemper County officials – allowing the county to decrease residents' property and other taxes. Mississippi Power reports that it's helped the statewide economy, too: 500 Mississippi companies have had some kind of role in the construction of the plant. According to company spokesman Lee Youngblood, who points out that he, himself, is a Mississippi native, “The balance of folks around here, from my perspective, are certainly glad it's here.”

While that may be, I didn't find them -- not at a local church, at a local community college, or in the local neighborhood. At best, some locals feel

resigned to the changes. Others feel the plant has done little for them, or for the county's economy. That includes independent contractors like James Hurtt, who seems like the kind of guy who would be thrilled to have the plant around.



I got lost on the way to Hurtt's house; it was early evening, and already dark. After passing a small church and cemetery and making a wrong turn, I found

myself bumping along an unpaved road of sticky, red mud, and nearly got the wheels of the rental car stuck in a rut the size of a wheelbarrow. When I finally pulled up to a collection of trucks and trailers in front of a thin-walled, ranch-style home strung with Christmas lights, Hurtt appeared on the front stoop, calling out with a hearty laugh: "You're in the sticks now!"

Hurtt, a dark-eyed 53-year-old, has lived in Kemper County on and off his whole life. A licensed plumber and skilled pipefitter, he says he's worked on all kinds of power plant and chemical plant construction projects across the country. At first, when his own business was slow, Hurtt thought he'd take a stab at a gig at the new plant. He asked one of the head men at Brasfield & Gorrie (one of the

largest private construction firms in the country, with offices across the Southeast, but not in Mississippi), “if I go over there and work, what would y’all pay me?” After describing his qualifications, a company rep told him he could get a job making \$12 an hour. “I said, ‘I haven’t worked for \$12 an hour since 1987,’” Hurtt says. “That’s a spit in the face.”

Hurtt’s brother has a similar story: He was hired onto a multimillion-dollar contract at the plant, making less money than James paid him to plumb houses; after working for almost two years, he quit out of frustration that he wasn’t being compensated fairly. “They brought all this labor from Alabama and way overpaid them,” says Hurtt, “but the ones from around here local had to leave home and go off to go to work because they didn’t pay them what they should’ve been paying them.”

There’s no question that the plant has brought in many thousands of workers from out of town and out of state; Texas, Louisiana, and Alabama license plates pepper the roads and the temporary trailer parks and RV camps springing up everywhere. An RV park called Kamp Kemper makes the deal plain: “Within 3 miles of the Power Plant,” reads its website, “we are here to give you the convenience to your workplace that will save you hundreds of dollars in transportation costs.”

Liberty Baptist Church, which has stood next to Highway 493 since 1842 and is now catacorner from the plant’s main entrance, features a large banner next to its brick marquee with the words “Workers Welcome.” According to Pastor Burt Cade, its congregation fluctuates according to the ebb and flow of workers coming and going from across the United States – usually, so the rumor goes,

with a \$100 per diem on top of their wages.

Meanwhile, the unemployment rate in Kemper County has climbed since the coal plant came in. In February 2008, several years before construction



started, it was at 5.9 percent; in June 2011, when plant workers were digging its foundation -- a job that required few specialized skills -- it was at 16.1 percent. It has shot up and down since as of November 2014, it was at 9.4 percent.

Mississippi Power points out that there are indirect benefits to having so many workers in town -- a tiny grocery store that served hamburgers for a few dollars a pop, for instance, upped its output and raised its prices, thanks to the lunchtime traffic from the coal plant. But some argue these perks are small and fleeting. "It's generated a little bit," says Kenny Miles, who makes a little money renting an RV spot to temp workers, and claims he can't name a single, local person who works at the plant, "but it's been a precious little bit."

Dexter Thedford, a student at Meridian Community College and resident of Porterville, a town in West Kemper County, about 20 miles away, says he's had relatives work there doing short-term contract jobs. But one uncle was laid off last July from the coal plant, after having worked there two years. "The money is good," Thedford says. "At the same time, after it's over, what are you going to fall back on?"

The influx of workers creates traffic problems on winding country roads, too – not just the sudden, intense gridlock during a shift change, but also brutal, and sometimes fatal, traffic accidents. People drive too fast, locals insist, and pass on curves and double yellow lines. (Thedford says two of his relatives were in car accidents on their way to work.)

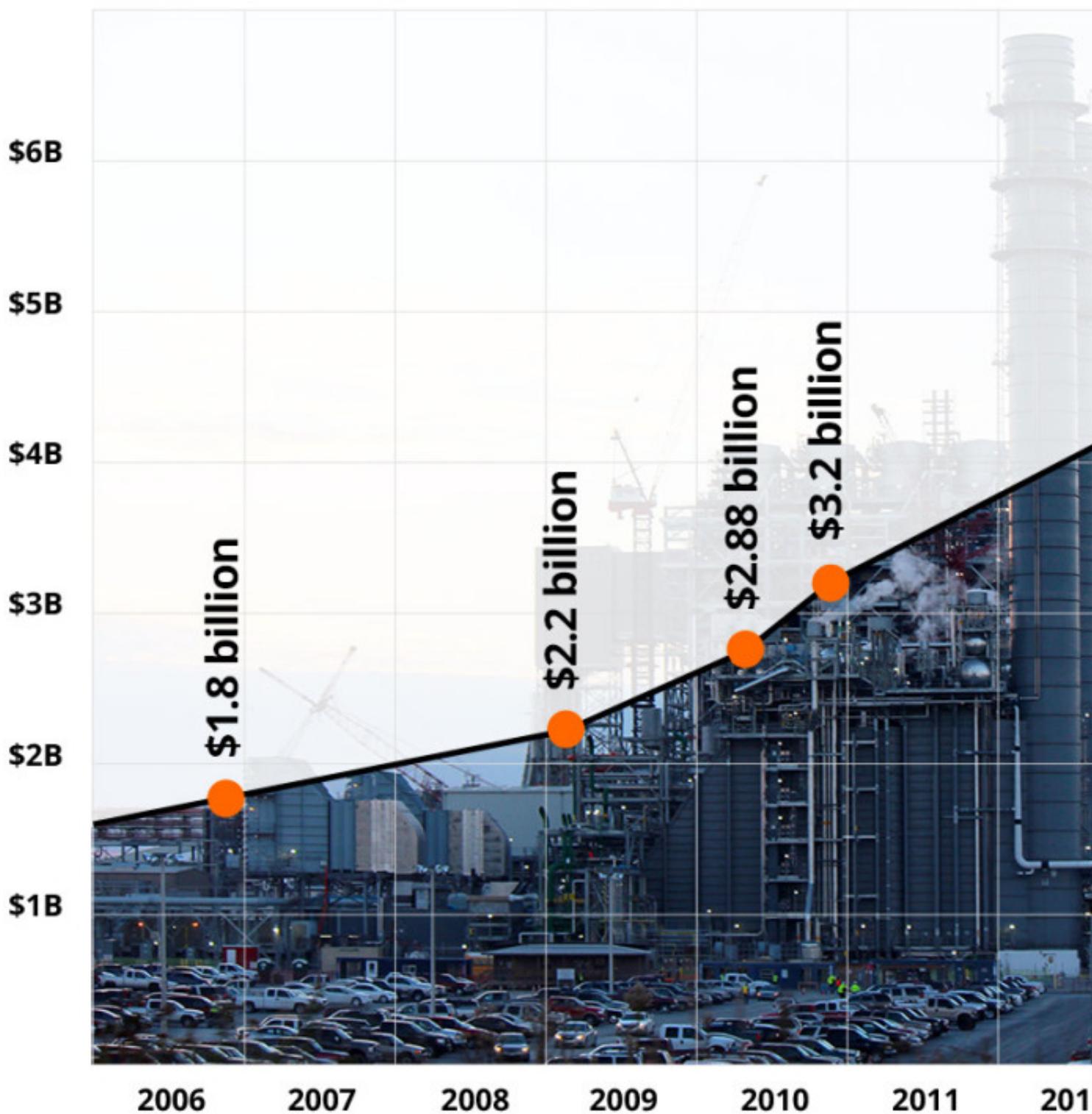
There's also been an uptick in crime: According to Kemper County Sheriff James Moore, the rate of property and drug-related crimes has shot up 25 percent in the past few years. Rural residents who used to keep their doors unlocked, even when they left town, no longer feel safe.

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And as construction costs snowballed, year after year, and expenses increasingly rolled to ratepayers, the feeling across Mississippi turned sour. When the project was first floated in 2006, without carbon capture, Mississippi Power estimated that it would cost \$1.8 billion; in January

2009, it had grown to \$2.2 billion; by the time the Mississippi Public Service Commission officially greenlighted the project in May 2010, that number was \$2.88 billion. Over the next four years, thanks in part to a massive underestimation of labor and materials costs, and alleged mismanagement and safety issues, it shot up to \$3.2 billion, then to \$4.7 billion, then to over \$5.6 billion. Today, at \$6.17 billion (and counting), the Kemper facility is one of the most expensive power plants ever built in the United States.

Southern Company is picking up a lot of the tab for these colossal overruns, but it is finding creative ways to pass on some of the costs. Thanks to the Baseload Act – the legislation that allows Mississippi Power to charge its customers up front for the costs of construction – ratepayers are already seeing an 18 percent increase in their electric bills, and may see up to 26 percent through 2020. (That's according to Mississippi Power; some analysts predict it could climb far higher.) In February 2013, the Mississippi legislature passed a bill that would allow Mississippi Power to issue up to \$1 billion in bonds; this, the utility claims, will keep its customers' bills from growing by as much as 33 percent.



And although Mississippi Power ostensibly serves just 23 counties in the southern half of the state and not Kemper, some locals here, and residents of other rural counties, say they've seen their bills go up, too – likely because other electric providers buy a portion of their electricity from Mississippi Power. The East Mississippi Electric Power Association, a utility serving five counties south

of Kemper, issued a press release in April 2013 specifically pegging a 9.3 percent rate increase to the construction of the Kemper plant.

Across the state, cafes have struggled to keep afloat as their electric bills have jumped hundreds of dollars a month; poultry and seafood industries on the Gulf Coast have been forced to raise their prices; the University of Southern Mississippi, in Hattiesburg, saw its rates go up by \$1 million in less than a year, and subsequently raised tuition by \$236 per student.

Thomas Blanton, an outspoken oilman and activist who ran for the state's Public Service Commission in 2011, has launched a lawsuit to overturn the Baseload Act, arguing that Mississippi Power should refund all construction costs that have been passed on to ratepayers. "I've started calling it kleptocracy," he told me: "Steal from the public to give to the rich."



It's a frigid day for Mississippi, and Barbara Correro's oven-warmed kitchen is packed with women – neighbors who've gathered to share their opinions and dish the latest gossip. Correro does her community organizing the Southern way: a hearty meal, complete with gold-rimmed china plates and pitchers of sweet tea; there's also coconut cake, pecan pie, and pralines.

It's a small army of naysayers and rabble-rousers, and some feel a little concerned about giving me their names. (“This is where I'm getting all the oranges and eggs thrown at me in town,” said local resident Claudia Rowland with a nervous laugh.) Other locals I meet email me later to request anonymity. Now that the Kemper County landscape is so radically transformed, resistance can feel futile – and unpopular: There's just no stopping it now.

Still, these locals have their doubts. Water, for instance, is on everyone's mind: “Kemper County is known for its water,” Correro says. Mississippi Power's property butts up against Chickasawhay Creek, which runs through her backyard. Chickasawhay Creek runs to Okatibbee Lake, a nearby reservoir where many Kemper County residents fish. Mississippi Power maintains that the plant is a “zero liquid discharge facility” and that “none of the water used to generate electricity will end up in surrounding streams and rivers.” That does not apply to rainwater that falls on site, however, and the Mississippi Department of

Environmental Quality (MDEQ) has nevertheless granted the facility water discharge permits naming those very bodies of water.



"This permit is just an emergency permit for extraordinary situations," says Harry Wilson, who does permitting for the MDEQ. "They're a consumer of water -- they don't need to release water. I would consider the coal entity's permits to be quite restrictive."

But nobody in the room believes that any time there's a heavy rain, it won't just wash the plant's byproducts into the river. Nobody in the room believes that the hazardous chemicals to be isolated at the plant – sulfuric acid, anhydrous ammonia – are being effectively captured prior to combustion; they only know the chemicals are going to be manufactured and trucked along local roads, and that anhydrous ammonia is a key ingredient in both fertilizer and powerful homemade bombs. And many express misgivings about the land reclamation practices at the Red Hills lignite mine to the north, pointing to puny pine trees and desert-like conditions. "No matter how much topsoil they put back, it will be contaminated," argues resident Ginger McKee.

The company has done little to assuage their fears. There were a handful of safety meetings and there were hearings in Jackson, but, says local resident Jennifer Pletcher, “It’s like, ‘Thank you very much, your three minutes are up, we appreciate you telling us how you feel, and see you later.’”

And none of this touches the broader concerns about the plant that have nothing to do with its impacts on local land, air, and water. Pletcher points out that Mississippi Power’s federal grants and tax write-offs only require it to attempt to build the carbon-capturing equipment. According to an analysis by carbon policy consulting group Element VI, both the DOE’s Clean Coal Power Initiative and IRS code section 48A, under which the plant has received \$412 million in tax breaks, use vague language such as “intent to capture and geologically sequester,” “plans to capture and sequester,” and “includes equipment which separates and sequesters.” If the price of CO₂ sales doesn’t exceed the cost of carbon capture, analysts argue, Southern Company has very little incentive to keep its promises; it only has to prove that it tried. (“We are both confident in and committed to our plan to capture 65 percent of CO₂ produced by the plant,” a Mississippi Power representative wrote in an email.)

It takes about 20 to 30 percent more coal, in the end, to power a coal plant that aims to clean up after itself.

Then, there’s what many critics – including oilman Thomas Blanton – call the project’s biggest irony: The carbon captured from the plant will be used to extract more fossil fuels. An integral part of the Kemper project’s financial plan is to sell its captured CO₂ to

companies that will use it to coax oil out of decades-old wells using a process called "enhanced oil recovery." According to Mississippi Power's website, it has contracted with two companies, Denbury Resources and Midstream Treetop Services, to send the CO₂ down a 61-mile pipeline. The plan: "to find oil that was previously unreachable."

So far, nearly every CCS power plant in the world bases its financial survival on this tactic. According to a Denbury Resources petroleum engineer, enhanced oil recovery can keep more CO₂ under the ground than a barrel of oil will put back into the atmosphere. But even his calculation leaves slim margins: at best, about 65 percent of what's gained from carbon storage is cancelled out by burning the additional oil.

Complicating all this, too, is the fact that capturing carbon requires energy, which means producing more carbon. It takes about 20 to 30 percent more coal, in the end, to power a coal plant that aims to clean up after itself. ([Click here](#) for more on the math of carbon capture and sequestration.)

Carbon dioxide should, theoretically, stay in the ground where it is "sequestered." Geologists have been researching carbon storage for some time, and feel confident that CO₂ can be safely stored in the tiny pores of sandy, salty rock that are tucked under impermeable shale formations thousands of feet underground. "The first concern people have is, 'isn't it all going to leak back out?'" says Curtis Oldenburg, a senior scientist and program lead for the Geologic Carbon Sequestration Program at the Lawrence Berkeley National Laboratory. "But that's really, really unlikely. If done properly, safe sites can be

found and CO₂ can be stored effectively and indefinitely – I have no doubt about that.”

Some researchers are nevertheless beginning to doubt: In January, geophysicists at MIT found that CO₂ injected deep underground stays in a “more tenuous form” than previously thought, which means “it remains mobile and it can possibly return back to the atmosphere.”

The devil is in the details, Oldenburg concedes, particularly when those details are man-made. “The big concern when it comes to leakage is not the natural system,” he says. “It’s the wells.”

When it mixes with water, carbon dioxide is corrosive – it dissolves iron and steel. Industry giants such as Baker Hughes have developed corrosion inhibitors to prevent leaks and blowouts, but Thomas Blanton, who owns several oilfields, thinks it’s pointless. “All these applications leak,” he says. “Carbon dioxide sequestration in an oil field is science fiction standing squarely on the shoulders of a myth.”

In Mississippi, one of the largest fines the Department of Environmental Quality leveraged in the last decade was against Denbury Resources for an uncontrolled carbon dioxide blowout in 2011. The metal casing on an abandoned well in an oilfield near Yazoo City, about 40 miles north of Jackson, had been stripped, and the 2,000-foot hole spewed carbon dioxide, drilling mud, and other chemicals for 37 days. The CO₂, heavier than air, settled in adjacent valleys and suffocated deer and other wildlife. Local neighborhoods were evacuated, several workers were sent to area hospitals, and Denbury placed a 24-hour ambulance on site while workers toiled to clean up the mess.

Denbury Resources has been responsible for a handful of similar blowouts in Louisiana and elsewhere in Mississippi. In 2013, carbon dioxide bubbled up in a water well near the Heidelberg oil field, where the Kemper facility's CO₂ is to be pumped. The field is in the center of town, and butts up against the fenceline at Heidelberg High School.



Claudia Rowland, Ginger McKee, and others: "What happens here in Kemper will make a worldwide difference."

It's early evening by the time I walk out of Barbara
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ers to people..." She flips through the binder, showing me photos, notes,
 articles, document after document. She pulls out the 2006 article in the *Kemper
 County Messenger*, now a yellowed newspaper she's held onto like a harbinger
 of doom. "When I saw that," she says, "my life was never the same."

There's not much left for Correro to do now, except to keep speaking out, writing
 letters, and decrying the fact that she and her neighbors are collateral damage.
 When this thing first started, she says, "One of my children said, 'You know,
 mother, you have always been in control. You have lost control.' And I said,
 'You're right.'"

While Corerro may not be collecting them, other headlines have piled up since
 that fateful day in 2006, taking on a sense of urgency: "Carbon capture must be
 fast-tracked as global coal growth deemed unsustainable." "Thousands of
 carbon-capture plants needed to curb warming." "Has carbon capture's time
 finally come?" "Can carbon capture and storage save the world?"

Many government officials and industry professionals across the globe have
 their fingers crossed that the Kemper facility will, despite its delays, be a
 resounding success -- that it will effectively capture its carbon emissions,

manage to keep its particulates out of the air and water, and figure out a way to replicate its systems at a far lower cost than this trial run. If this technology works, it could turn the dirtiest, lowest-ranking form of coal into relatively clean energy.

It could also create a thriving global market for this type of coal and maintain our reliance on fossil for decades to come. This, at a time when climate scientists warn that if we are to stem the tide of climate change, we need to leave vast quantities of coal and other fuels in the ground.

Correro, for her part, prays that none of this will ever come to pass. She still holds on, fiercely, to her deepest hope: that the plant never runs at all. “That’s what we’re praying for,” she says. “That it never works.”

Meanwhile, Southern Company has already formed alliances with some of China's biggest energy providers. And 16 more coal-fired CCS power plants, similar to Kemper’s, are on their way – including five in China, six in Europe, and two in the United States.

Update: On February 12, the day we published this story, Thomas Blanton got the news that he had won his lawsuit. The Mississippi Supreme Court's decision invalidated the rate increases Mississippi Power has been charging its customers to help pay for the Kemper facility's construction costs. Mississippi Power will have to refund roughly \$281 million to 186,000 ratepayers. In a press statement, the company said it was reviewing the ruling, adding that the rate increases had been designed to avoid even larger rate hikes once the plant is up and running.



Photography, audio, writing, and video: Sara Bernard

Music: "Won't Grow a Garden No More," performed by Cary

Hudson; lyrics by Thomas Blanton

