

# **EXHIBIT F**

## Advertisement



- News
- The Magazine
- Maps
- Science
- Education
- Games
- Events
- Blogs
- Movies
- Explorers
- Apps
- Trips

National Geographic News

# Coal-Dependent Arkansas Faces Stiff Emissions Target and a Running Clock

*State officials are pondering a formidable task under proposed EPA rule.*



A coal train passes the White Bluff power plant near Redfield, Arkansas. The plant may be forced to close in the wake of proposed carbon regulations.

*PHOTOGRAPH BY DANNY JOHNSTON, AP*

**By Christina Nunez**  
National Geographic

PUBLISHED AUGUST 19, 2014

**LITTLE ROCK, Arkansas—At the end of 2012, at a time when many states were replacing their aging coal plants, Arkansas switched on a new \$1.8-billion coal plant, one of two the state has fired up in the past five years.**

**The state saw emissions from its power plants rise 35 percent between 2005 and 2012, even as other states**

**turned to cleaner-burning natural gas and the nation's overall power plant emissions trended downward.**

**Share**

Like 379

135

 2

Email

More »

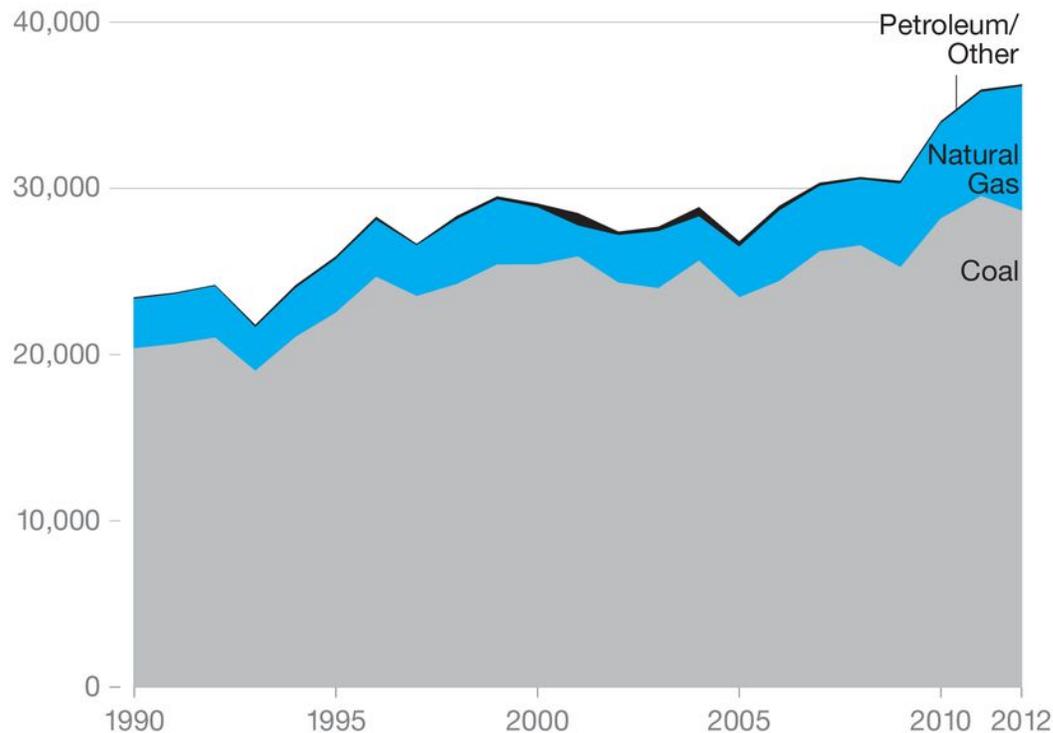
"We know we're a coal-heavy state," said Teresa Marks, director of the Arkansas Department of Environmental Quality, sitting in the agency's seven-year-old, energy-efficient headquarters, where floor-to-ceiling windows offer sweeping views of greenery and a hiking trail leading to the Arkansas River.

Marks has to confront that coal legacy as Arkansas decides how to comply with the power plant regulations the U.S. Environmental Protection Agency announced in June. By 2030, those proposed rules aim to reduce the U.S. power sector's carbon emissions by 30 percent from 2005 levels. As part of that goal, several states will have to cut even more. The target for Arkansas is a big one: a 44.5 percent reduction.

The nationwide reductions, opponents of the plan like to point out, will not make much of a dent in global carbon emissions. But the stakes are high for President Barack Obama and the EPA, whose ability to lead on climate change and push meaningful change in the power sector will rest largely on the success of the rule.

## Arkansas carbon emissions from the power sector

*Emission type in thousands of metric tons*



State officials and utilities are now poring over the proposed regulations, attempting to grasp their implications and preparing to file formal responses before the public comment period closes on October 16. The federal agency aims to finalize the rule by June 2015. Arkansas, with one of the highest targets for reductions, offers a look at the challenges state officials will face in addressing some of the most far-reaching U.S. environmental regulations proposed in decades. (See related: "4 Key Takeaways From EPA's New Rules for Power Plants")

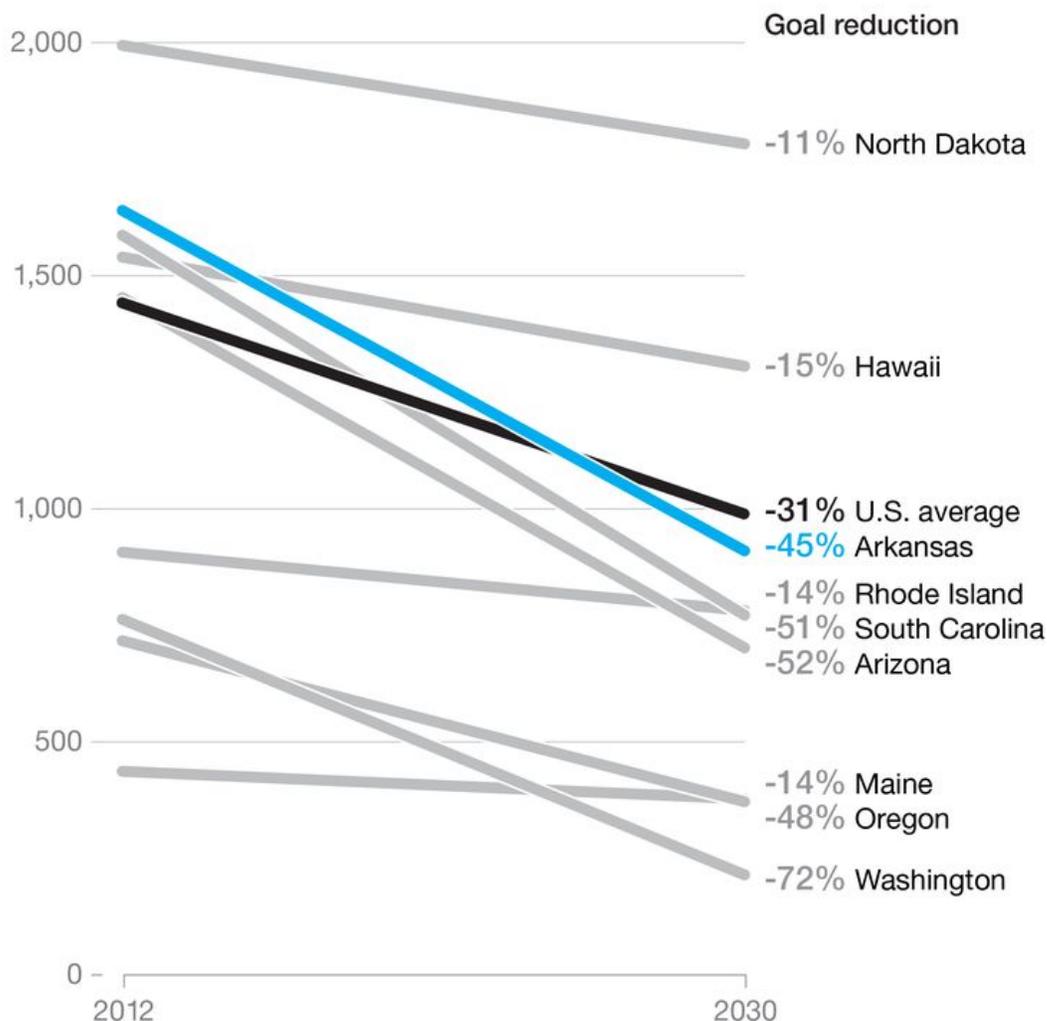
Marks said the rule had "huge" potential ramifications for Arkansas. "Actually, it was a little more stringent than I expected it to be," said Marks, who began consulting with the state's public utility commission well before the regulations were announced. "We were going to need to really spend a lot of time on preparing a plan. That's one reason we got started early."

### Invested in Coal

Arkansas's situation seems rather bleak on the surface. It gets more than half its electricity from coal. It's also the rare state with no formal plan to invest in more renewable energy such as wind and solar.

## Electric energy emissions targets, 2030

Emissions in pounds per megawatt hour\*



\*500 pounds per megawatt hour is equivalent to the greenhouse gas emissions from 3.1 million passenger cars driving 11,300 miles each annually.

*EMILY M. ENG, NG STAFF; JAMIE HAWK; JOEY FENING. SOURCES: U.S. ENERGY INFORMATION ADMINISTRATION; EPA; PLATTS, MCGRAW HILL FINANCIAL*

Instead, it has remained committed to coal, which produces the cheapest, but also the dirtiest, electricity. Some believe that the state's newest plant, the John W. Turk Jr. facility near the southwestern border with Texas, might be the last conventional coal plant ever built in the United States. It's the only "ultra supercritical" coal plant in the country, meaning it has advanced technology to burn coal highly efficiently. Southwestern Electric Power Company brought it online at a cost of \$1.8 billion at the end of 2012, when utilities in many other states were moving to natural gas that had been made cheap and plentiful by advances in fracking technology. (See related: "Clean Coal Test: Power Plants Prepare to Capture Carbon" and "Can Coal Ever Be Clean?")

Glen Hooks was among those who fought the Turk plant. Hooks is director of the Sierra Club's Arkansas headquarters, which he opened 12 years ago in a modest converted house on the edge of downtown. He worked for years on the organization's Beyond Coal campaign, which has played a role in stopping more than 170 coal projects nationwide—but not Turk.

"The one that I wasn't able to stop was this one, in my home state, and it drives me bananas," Hooks said.

To achieve the proposed emissions reductions, Arkansas would likely need to turn to cleaner-burning natural gas power plants as well as ramp down the power coming from five coal-fired plants around the state. (The remainder of the state's electricity generation comes from a nuclear plant, hydroelectric dams, and biomass.)

"We're not going to be able to meet those goals unless we shut down some coal plants in Arkansas—bottom line," Hooks said. He noted that Entergy's 35-year-old White Bluff coal plant, about 30 miles south of Little Rock, is near the end of its life cycle and would likely need expensive retrofits to comply with a pending implementation plan for the EPA's regional haze rule. "So I see that one as a big target."

Chuck Barlow, vice president of environmental policy for Entergy, would not say whether White Bluff was vulnerable because of the new power plant rule. "You can't just look at a coal unit and say, 'Well, OK, let's close that one, or let's close this one.' You've got to look at things like transmission constraints," he said, noting that many plants, including White Bluff, have multiple owners and answer to regional transmission organizations, the groups that ensure reliability across the grid. "There are just a lot of things to consider," he said.

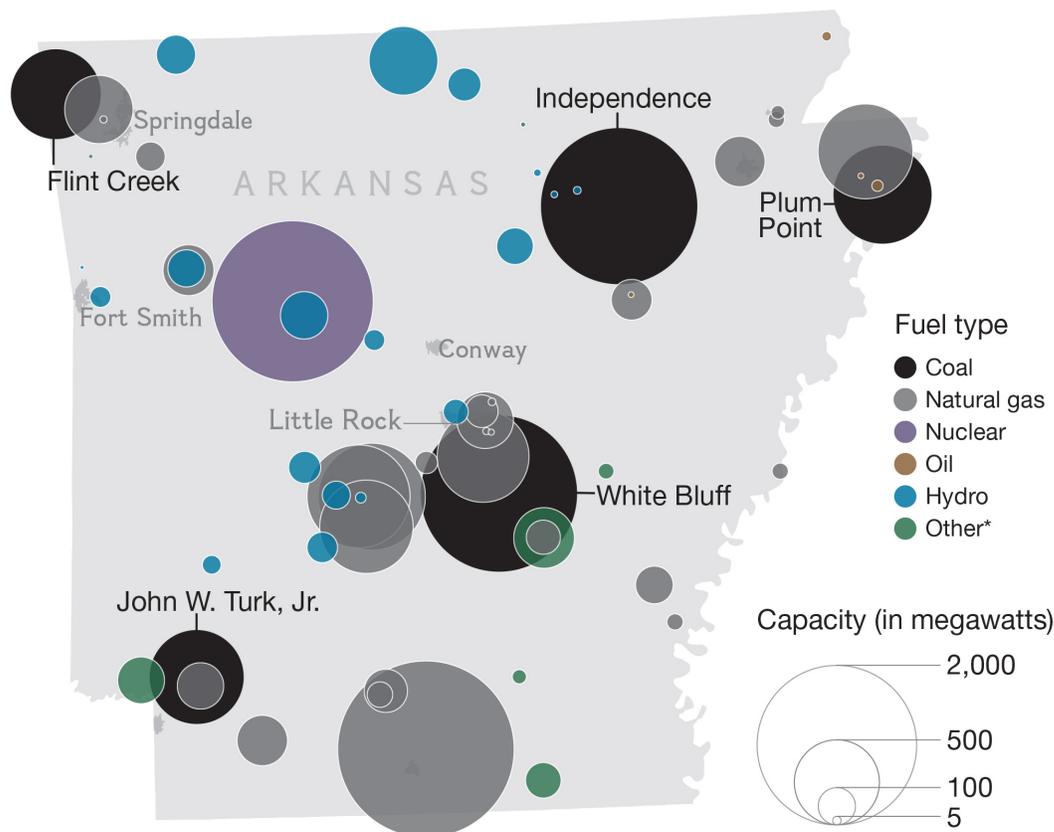
## Natural Gas Complications

Teresa Marks and others in Arkansas point to many questions that still need to be answered before the state can make fundamental changes in its energy mix. Transmission lines might need to be built to accommodate regional shifts in power generation, and state legislation might be needed to move ahead with any plan.

"I'm not sure we can convert to natural gas as quickly as perhaps as EPA's rule had anticipated we could," Marks said.

Executives at Entergy and Southwestern Electric Power (a unit of American Electric Power) said they were still evaluating the implications of the rule. But John McManus, vice president of environmental services for American Electric Power, which operates in 11 states, said, "Arkansas is near the top of our list as a state that we're concerned about because of the level of reduction."

The Arkansas Electric Cooperative Corporation, which supplies power to 17 customer-owned utilities serving mostly rural residents, many of whom live in persistent poverty, was more direct about its concerns. The cooperative has an ownership stake in four of the state's five coal plants, and about 70 percent of its electricity comes from coal. The White Bluff plant, said Duane Highley, AECC's president and CEO, is "very likely to close" under the clean power plan.



*\*INCLUDES WIND POWER, BIOMASS AND BLACK LIQUOR*

Highley estimated that prices for his customers would go up by at least \$20 a month, or 20 percent, because gas is "still about twice the price" of coal. He spoke at the Woodruff Electric Cooperative, a member-owned utility in the eastern part of the state, where a drive-through window for payments is open to help customers who sometimes must choose between paying for electricity or, say, medication, according to Woodruff's president and CEO, Billy Martin.

If the state bets on natural gas, and then prices rise, Highley predicted, the results could be grim. "You'll see heat-related deaths," he said. "It won't be because the planet got warmer. It'll be because people can't pay their electric bill in the summer. People die when they don't pay for air conditioning, they really do. We see it."

The Arkansas Electric Cooperative serves more than a third of the state's electricity consumers, but its territory encompasses more than 60 percent of the land area. More than half of Arkansas—nicknamed the Natural State—is

covered by forests, 16 percent of them owned by the paper and timber industries.

Arkansas does extract a lot of natural gas from the Fayetteville Shale, making it eighth among the top-producing states. A rise in demand for natural gas, the price of which spiked last winter during the freezing weather, would benefit the state economy, a point made in an analysis released last month by the Center for Strategic and International Studies and the Rhodium Group.

But Arkansas needs significant investment in pipelines and storage, Highley said, to take full advantage of its abundant natural gas: "There's not a delivery network yet robust enough to deliver that when it's needed."

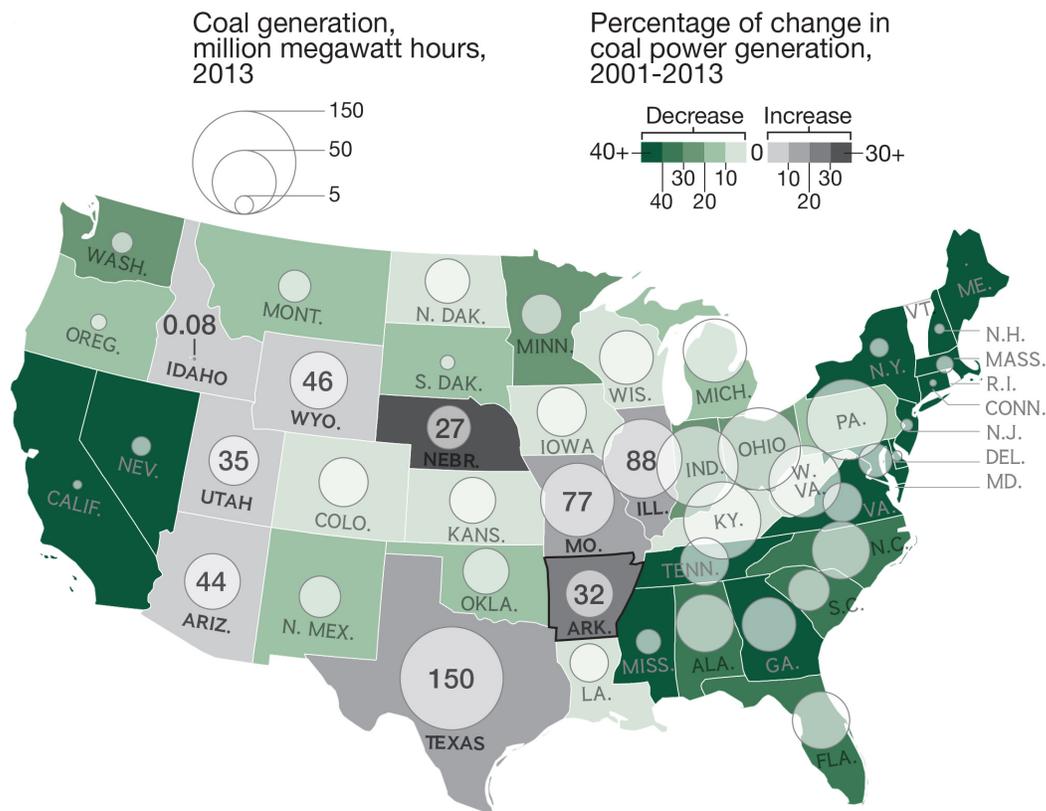
### **Other Levers to Pull**

The prospective switch from coal to natural gas dominates the conversation about carbon reductions in Arkansas, but the state has other options, according to Ken Smith, policy director at the Arkansas Advanced Energy Association, which advocates for efficiency and cleaner energy.

The timeline for the proposed reduction, Smith acknowledged, is "very compressed. It's going to be very tough." But, he said, Arkansas is in a better position than many other southern states that are just now starting to evaluate the rule.

Smith, who worked on natural resources policy when Bill Clinton and Jim Guy Tucker were in the governor's mansion, also advises other southern states on energy policy. He acknowledged that, when it comes to environmentalism, "it's a thin green line across the South."

Still, Arkansas is a leader in energy efficiency programs in the Southeast, Smith said, and it has many other assets it can deploy to reduce emissions. The state's robust timber and paper industries already generate more than 400 megawatts by capturing waste heat generated from burning natural gas, wood, and biomass. The state could probably increase that by at least 700 megawatts. "That's a power plant," he said. "That's actually *two* power plants."



Smith also pointed to the possibility of upgrading the state's existing hydroelectric facilities and boosting solar power. As for wind, Arkansas's modest breezes have not attracted much investment for turbine farms; it's importing wind power from other states.

An increased demand for wind power would have a secondary economic benefit for Arkansas: The state has been home to at least two large wind turbine manufacturing companies, though one pulled out last year, citing uncertainty in the U.S. market.

The wind energy that Arkansas imports is the result of the settlement of a lawsuit that environmentalists, including the Sierra Club's Hooks, brought to stop the John Turk coal plant. Though the plant went forward, the owners agreed to buy 400 megawatts of wind capacity from other states.

"The funny thing is, we really scrapped with them for years and forced that settlement," Hooks said, adding that the utilities now boast about quadrupling their wind energy portfolio. "It was in their Earth Day release, and I just lost

my mind."

Hooks and others hope that the EPA rule will drive more investment in renewables. "Of course, we're set up to burn coal," said Marks, the state's environmental director. "I think that we just haven't had the public outcry to move forward with renewable energy at this point. This rule is likely to push that more to the forefront."

### **Ticking Clock**

The state's environmental quality department is continuing to hold meetings on the EPA rule and is hiring a professional facilitator to help manage the planning. However, the effort is likely to be complicated by the gubernatorial election. Marks, an appointee of the outgoing governor, Mike Beebe, announced that she will retire this fall; her successor will be determined by whoever prevails in November.

Although states technically have until 2030 to achieve their carbon reduction targets, the EPA laid out interim goals that begin in 2020. Between 2020 and 2029, Arkansas will need to demonstrate an average reduction of 41 percent—in other words, most of its target. The state will have a year, possibly two or three if an extension is granted, after the rule is finalized to submit an implementation plan.

"I just don't think that's long enough, that we really are going to need more time than that," said Marks. "I'm thinking three years if it's just a state plan. If it's a regional plan, it may have to be five."

The EPA, which has already concluded public hearings in four cities, has promised to take comments into account as it finalizes the rule. Arkansas might get the break it's hoping for, but for now, it must evaluate the proposal at hand. (See related interactive map: [The Global Electricity Mix](#).)

Smith expressed optimism about the state's ability to make significant carbon cuts, but he echoed the nervousness that Marks expressed about the tight time frame. "We will get there, but will it be in time?" he said. "That's what scares the bejesus out of me."

*The story is part of a special series that explores energy issues. For more, visit [The Great Energy Challenge](#).*