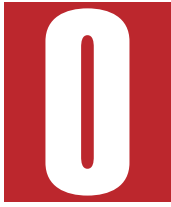


# From Coal to Gas

Regulatory and environmental challenges  
for power plant conversions.

BY STEPHEN E. LUTTRELL, PAUL R. MCINTYRE, AND STEPHEN C. JONES



Over the last several years the electric utility grid has been transitioning away from coal-fired power plants to natural gas. Among the factors responsible for this shift are the low prices of natural gas resulting from the boom in shale gas production, the development of more efficient gas-fired generators, the advanced age of many coal-fired plants, and the increasing cost of mandated emissions controls and environmental compliance.<sup>1</sup> The impact is already evident in the reduction of coal-fired generators across the United States. The Energy Information Administration (“EIA”) estimates that 175 coal-fired generators in the United States, representing 8.5% of total coal generating capacity, will be retired between 2012 and 2016.<sup>2</sup> By 2020, EIA estimates that roughly one-sixth of all coal plants currently operating will close.<sup>3</sup>

While the benefits of conversion are clear and gas-fired plants are generally cleaner and cheaper to construct and operate than coal-fired plants, converting a power plant from coal to natural gas triggers a host of environmental challenges and regulatory issues that must be evaluated carefully. Significant regulatory obligations can be triggered in the closure or fuel conversion process, requiring new analyses, permits, air quality concerns, and waste management requirements. These potential liabilities need to be planned for and managed carefully.

The closure of a coal plant for redevelopment also raises costs and concerns for developers and investors. The environmental and regulatory issues that need to be considered include air permitting and emissions controls, the management of Coal Combustion Residue (“CCR”), and structurally deficient CCR impoundments.

Unfortunately, given the current uncertainty regarding potential air permitting requirements and the management of CCR, operators could be trading one set of regulatory obligations, liabilities, and costs for another, equally problematic, set of liabilities and costs. One thing is certain, the closure, conversion and construction of facilities in the utility sector will be the subject of intense legal, regulatory, and political scrutiny for the foreseeable future.

### Air Emissions

Under the Clean Air Act (“CAA”), the Environmental Protection Agency (“EPA”) has the authority to identify air emissions that “cause or contribute to air pollution which may reasonably be

## Converting from coal to gas is not a simple switch. Costs won’t fall immediately.

anticipated to endanger public health or welfare,” and to set air quality standards for each identified emission.<sup>4</sup> Over the past three years, the EPA has announced new and stricter emissions regulations pursuant to this authority; specifically, the

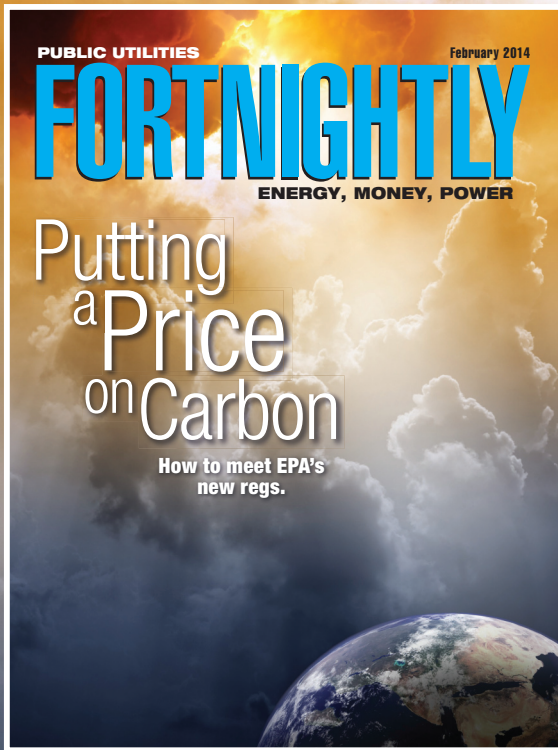
Mercury Air Toxic Standards (“MATS”), the Cross State Air Pollution Rules (“CSPAR”), and the recently announced Clean Power Plan rulemaking. These regulations will further restrict emissions from power plants, impacting coal-fired plants most significantly, by further increasing operation costs.

MATS is a new federal program that forces electricity generators to limit emissions of certain key toxic air pollutants, including mercury, arsenic, and other metals. The rule sets technology based standards for all coal- and oil-fired power plants, requiring emission reductions equal to those achieved by the average top-12 percent best-controlled sources. Subject plants must meet these standards by 2016. The EPA estimates that MATS compliance costs will total \$9.6 billion, and has projected that such costs will render 2 percent of coal-fired plants economically obsolete. Industry groups, on the other hand, estimate that the real impact will be significantly greater, rendering approximately 10 percent of all coal-fired plants economically unviable. Executives from FirstEnergy Corporation, a mid-Atlantic energy producer, recently informed Pennsylvania lawmakers that compliance costs would total approximately \$270 million at its coal-fired plants in Greene

1. See *27 Gigawatts of Coal-fired Capacity to Retire Over the Next Five Years*, U.S. Energy Information Agency, <http://www.eia.gov/todayinenergy/detail.cfm?id=7290> (last visited July 31, 2014).  
 2. *27 Gigawatts of Coal-fired Capacity to Retire Over the Next Five Years*.  
 3. *Projected Retirements of Coal-Fired Power Plants*, U.S. Energy Information Agency, <http://www.eia.gov/todayinenergy/detail.cfm?id=7330> (last visited July 31, 2014).

4. 42 U.S.C. 7408(a)(1)-(2).

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and Washington Counties, and that because of these costs, it plans to close those plants.<sup>5</sup>

CSPAR regulates upwind emissions of sulfur dioxide, nitrogen dioxide, particulate matter, and mercury. Under CSPAR, states are required to cut emissions of these pollutants at coal-fired plants to the extent that such emissions contribute to non-attainment of air quality standards in downwind states. After many years of litigation, the Supreme Court recently rejected industry-group

challenges claiming that the EPA lacked authority under the CAA to set emissions standards without first allowing the States to develop their own plans for attaining air quality targets<sup>6</sup>. The EPA estimates that compliance with CSPAR will cost the power industry approximately \$2.2 billion during the first three years of its implementation.<sup>7</sup>

On June 2, 2014, the EPA announced its politically conten-

5. Kristen Butler, *Two Coal-Fired Power Plants in PA Shut Down, Some 380 Jobs Lost*, UPI (October 4, 2013, 4:45 PM), <http://www.upi.com/blog/2013/10/04/Two-coal-fired-power-plants-in-PA-shut-down-some-380-jobs-lost/3561380919411/>.

6. *EPA v. EME Homer City Generation*, No. 12-1182, Slip Op. (S. Ct. April 29, 2014).  
7. *Regulatory Impact Analysis for the Federal Implementation Plans to Reduce Interstate Transport of Fine* EPA's initial cost estimate was published in 2011 under the assumption the rule would go into effect 2012. Estimates were modeled in 2007 dollars.

tious Clean Power Plan initiative, a proposed rulemaking that will regulate emissions of greenhouse gases by power plants.<sup>8</sup> The goal of the plan is to reduce greenhouse gas emissions from power plants by 30 percent below 2005 emissions levels by 2030. To achieve its emission reduction goals, the EPA proposes a two-step process whereby the agency will set emission reduction goals for each State, and then issue guidelines to the States dictating how to develop plans to meet those goals. Based on these guidelines, each State will develop its own implementation plan to meet the goals set by the agency. The costs of the proposed rule are not yet clear; however, the rule is expected to impose new significant and burdensome compliance costs on coal-fired power plant operators. Depending on the outcome of various legal challenges, the EPA's emission reduction goals could take effect within a year.<sup>9</sup> Already, the country's largest privately held coal mining company, Murray Energy Corp., and a coalition of 12 coal dependent states, have filed suit against the EPA challenging its authority to impose the regulations. During a recent EPA public hearing in Pittsburgh, opponents of the proposed regulations asserted that the emission reduction goals will make coal-fired power economically unviable, forcing more coal-fired plants to close and eliminating jobs.<sup>10</sup> Given that EPA Administrator Gina McCarthy has publically implied that the EPA is waging a "war on coal,"<sup>11</sup> those claims may have merit.

It is all but certain that the stricter air emissions regulations being promulgated by the EPA will increase the cost of operating coal-fired plants, leading many to close or convert to a different fuel source over the next several years. The fuel conversion process raises unique regulatory concerns, costs, and potential liabilities. Among other things, converting a coal plant to natural gas requires the operator to submit new air permitting applications. While gas plants emit fewer air emissions than coal plants and thus are theoretically less expensive to operate in compliance with new emissions regulations, conversion from coal to gas-fired generators could potentially trigger costly and burdensome requirements under the EPA's Prevention of Significant Deterioration ("PSD") program. If conversion to gas-fired power production is considered a "major modification," for example, plant owners

would be required to install Best Available Control Technology ("BACT"), conduct air quality and impact analyses, and solicit public comments and involvement in the permitting process. Additional state permitting requirements can also increase the regulatory burden. Thus, converting from coal to natural gas as a fuel source for power generation is not a simple switch, and will not immediately reduce an operator's regulatory burden and compliance costs.

### Waste Regulations

In addition to imposing new, stricter regulations under the CAA, the EPA also is considering tightening regulation of coal power generation by-products.<sup>12</sup> Coal power generation creates

## Administrator Gina McCarthy has publically implied that EPA is waging a war on coal.

by-products, such as coal ash or coal combustion residue, which are often held in surface impoundments at the plant site. CCR impoundments hold a mixture of CCR and water that is the by-product of flushing coal generating power equipment such as air pollution control devices. CCR contains a wide range of heavy metals that EPA considers toxic, including arsenic, selenium, and cadmium. However, the concentrations of metals in the CCR rarely exceed leachability thresholds that would trigger regulation as a Hazardous Waste under the Resource Conservation and Recovery Act ("RCRA"). The EPA has long waived on whether and how to regulate CCR. However, because of several recent high profile CCR impoundment failures and resulting environmental and private property damages (most notably a 2008 release of more than one billion gallons of coal ash slurry from an impoundment failure in Kingston, Tennessee), EPA rulemaking is now on the horizon.

In January 2014, as a settlement of several lawsuits filed against EPA Administrator Gina McCarthy, the EPA and a coalition of non-profit environmental organizations entered into a Consent Decree that requires the agency, by December 19, 2014, to issue regulations regulating CCR.<sup>13</sup> In connection with the Consent Order, the EPA is considering regulating CCR under one of two proposed rules.<sup>14</sup> One proposal would regulate CCR under

8. See Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units. 79 Fed. Reg. 348958 (proposed June 18, 2014) (to be codified at 40 C.F.R. pt. 60).
9. See Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units. 79 Fed. Reg. 348958 (proposed June 18, 2014) (to be codified at 40 C.F.R. pt. 60).
10. Reid Frazer, EPA Hearings Put Pittsburgh in the Cross-hairs of Climate War, StateImpact PA, (July 31, 2014, 5:49 PM), <http://stateimpact.npr.org/pennsylvania/2014/07/31/epa-hearings-put-pittsburgh-in-the-crosshairs-of-climate-war/>
11. Brandon Baker, EPA Administrator Declares War on Coal on "Real Time with Bill Maher, EcoWatch (June 17, 2014 9:53 AM), <http://ecowatch.com/2014/06/17/epa-administrator-war-on-coal-bill-maher/>.

12. Hazardous and Solid Waste Management System: Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals from Electric Utilities, 75 Fed. Reg. 35128 (proposed June 21, 2010) (to be codified at 40 C.F.R. pts. 257, 261, 264, 265, 268, 271, and 302). More information regarding the EPA's proposed rulemaking on CCR is available at: <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-RCRA-2009-0640-0352> (last viewed July 31, 2014).
13. Case 1:12-cv-00523-RBW Document 44-1; <http://earthjustice.org/sites/default/files/files/044-1-Consent-Decree.pdf>.
14. Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals From Electric


RCRA Subtitle C as a special waste when destined for landfills or impoundments. The alternative proposal would regulate CCR under Subtitle D as a non-hazardous waste. Under either regulatory approach, regardless of whether an operator closes an existing coal-fired plant or converts to a new fuel source, it will have to address the residual byproducts of coal power generation.

Should the EPA decide to regulate CCR as a special waste under RCRA Subtitle C, coal power generators would be subject to significant new waste-management requirements and federal regulatory oversight. CCR destined for landfills or impoundments would be regulated from the point of generation to the point of disposal. This likely would include requirements for new liner modifications to surface impoundments, run-on and run-off controls, groundwater monitoring, financial assurance, and corrective action obligations related to the closure of impoundment units. Costs of managing CCR wastes are expected to increase significantly, and facilities that handle CCR would be required to apply for and comply with new permits. If an owner/operator closes a facility, it will be required to submit a closure plan to a designated state agency 60 days before it closes or, in some instances, 30 days after the last shipment of waste is received. Although not required under the current proposal, the EPA also could elect to develop specific standards for the closure of CCR impoundments.

The second option that the EPA is considering is to regulate CCR as non-hazardous waste under RCRA Subtitle D. Under this approach, the agency would establish national criteria for the disposal of CCR in surface impoundments or landfills. The surface impoundments and landfills would be subject to location standards, a composite liner requirement, groundwater monitoring, corrective action standards for releases, and closure

and post-closure care requirements. This proposed rule would not require operators to obtain new permits, nor would it directly regulate the generation, storage, or treatment of CCR. However, as proposed, the states or their citizens, though citizen suit provisions, could sue to enforce the requirements of the rule. This approach could lead to a flurry of costly environmental citizen suits seeking to enforce the new regulations, and therefore would likely become another significant consideration regarding the decision to construct, close or convert coal-fired plants.

## **EIA estimates 175 coal-plant closings by 2016 – and one-sixth of the fleet by 2020.**

In addition to triggering proposals for the regulation of CCR, recent well-publicized impoundment failures have led the EPA to focus on the structural integrity of CCR impoundments maintained by power generators. Most coal-fired plants have impoundments to manage CCR generated on-site. Thus, such impoundments must be addressed if a coal-fired plant site is converted to natural gas or otherwise closed or redeveloped. A recent EPA survey found that of 676 CCR impoundments at various coal power facilities, 45 were classified as “High Hazard Potential,” meaning that a failure of the impoundment likely would result in loss of human life and substantial economic and environmental damages. Following completion of the survey, the EPA contractors prepared reports for CCR impoundments beginning with those that received either a “high” or “significant” hazard potential designation. The reports included recommendations for action plans that impoundment operators should develop and submit to the agency. This issue is likely to remain an important priority for the EPA and, as such, an area of concern and potential cost for coal energy producers, for those attempting to convert coal-fired plants to natural gas, and for those investing in or redeveloping former coal plant sites. 

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Utilities, 75 Fed. Reg. 35128 (proposed June 21, 2010)(to be codified at 40 C.F.R. pts. 257, 261, 264, 265, 268, 271, and 302).