

COAL AND THE U.S. ECONOMY

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INTRODUCTION

On July 21, billionaire Mike Bloomberg shook the world of environmental philanthropy with a \$50 million gift to the Sierra Club's "Beyond Coal" campaign.¹ The gift was remarkable not only for its size, but also for its radical purpose: to shut down, and not merely "clean up" the country's dirtiest and least efficient coal-fired power plants.²

Why pick this very public fight with such a powerful industry in the midst of so much economic anxiety, especially in the U.S. heartland where coal is mined and burned? For many, towering smokestacks, the rumble of coal trains, and grainy photos of sooty miners in hardhats evoke memories of a golden age when America muscled its way to the top of the economic world order and the future seemed more secure for working men and women. Coal undoubtedly helped to shape our industrial landscape with its aluminum plants, steel mills, and other monuments to manufacturing that, in the late John Updike's words, looked like they were "built by a race of giants."³

But nostalgia is no substitute for the cold hard facts:

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1. John M. Broder, *Mayor Gives \$50 Million to Anti-Coal Campaign*, N.Y. TIMES, July 21, 2011, at A17, available at <http://www.nytimes.com/2011/07/22/nyregion/bloomberg-donates-50-million-to-sierra-club-coal-campaign.html>.

2. *Id.*

3. JOHN UPDIKE, *Telephone Poles*, in TELEPHONE POLES AND OTHER POEMS 43 (1963).

- We have paid a terrible price, measured in the damage to human health and the environment, for our coal habit.
- What industry lobbyists are calling the “war on coal” is largely an effort to enforce standards that were supposed to have been put in place decades ago.
- Coal is no longer the rational economic choice for our energy future or for the rebirth of American manufacturing. A firm deadline for complying with laws that have been on the books since at least 1990 will give power companies incentive to retire plants to avoid higher cleanup costs and to invest in the cleaner alternatives we need for a more sustainable economy.

I. ENVIRONMENTAL FOOTPRINT OF COAL

It is hard to exaggerate the size of coal’s environmental footprint, starting with its outsized contribution to global warming. The National Academy of Sciences has warned that fossil fuel combustion is accelerating the formation of greenhouse gases that trap the earth’s heat in the lower atmosphere, raising temperatures in ways that could prove to be catastrophic.⁴ Carbon dioxide is the most significant among the pollutants that drive global warming, and approximately 37% of the carbon dioxide released from fuel consumption by all sources in the U.S. comes from about 400 coal-fired power plants.⁵

Air pollution from power plants is also a silent killer. The Environmental Protection Agency (EPA) estimates that reducing power plant sulfur dioxide emissions by 73% and nitrogen oxide emissions by 54% from 2005 levels will prevent between 13,000 and 34,000 premature deaths annually caused by long-term exposure to fine particle pollution from coal-burning electric generators.⁶ These fine particles are formed when sulfur and nitrogen oxides react with ammonia in the atmosphere, and also from the unburned carbon (soot) released directly from power plant stacks. Coal contains arsenic, cadmium, mercury, and other toxic metals

4. NAT’L RESEARCH COUNCIL OF THE NAT’L ACADEMIES, AMERICA’S CLIMATE CHOICES 15–16 (2011), available at <http://dels.nas.edu/Report/Americas-Climate-Choices/12781>.

5. U.S. ENERGY INFORMATION ADMIN., ANNUAL ENERGY OUTLOOK 2011, 4 fig.4 (2011), available at <http://www.eia.gov/forecasts/aeo/>.

6. *Cross-State Air Pollution Rule*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/airtransport/> (last visited June 10, 2012).

that are not destroyed during combustion.⁷ Rather, these toxic metals exit the stack as air pollution, or concentrate in the ash or scrubber sludge that is left behind.⁸ Not surprisingly, given the huge trainloads of fuel burned to feed our insatiable appetite for electricity, coal generators emit more mercury than any other source, and produce the second largest amount of metal and metal compounds.⁹

Mercury is a potent neurotoxin, especially dangerous to developing embryos and very young children; the EPA estimates that 7% of women of childbearing age have more mercury in their bloodstream than is considered safe during pregnancy or nursing.¹⁰ The deposition of other heavy metals further adds further to environmental loadings and, because these pollutants adhere to soot, may contribute to some of the ill effects of exposure to fine particles.

What happens to these pollutants when they are stripped from exhaust gas by the emission controls that are being installed (belatedly) under the Clean Air Act (CAA)? Coal burning generates nearly 140 million tons of scrubber sludge and ash every year, and more than 60% of that is dumped into ponds, landfills, or abandoned mines.¹¹ Toxic metals leach from these wastes over time, infiltrating aquifers with arsenic, chromium, and other pollutants that make water unsafe to drink. They also bleed into nearby creeks or wetlands at levels that can be toxic to fish and wildlife. The EPA has identified at least 70 coal ash disposal sites that have damaged groundwater or surface water with pollutants that exceed limits established under the Safe Drinking Water and Clean Water Acts to protect human health or aquatic life.¹² The Environmental Integrity Project has identified at least 25 more damaged sites based on the EPA's criteria, though, from the

7. National Emission Standards for Hazardous Air Pollutants From Coal-and Oil-Fired Electric Utility Steam Generating Units, 76 Fed. Reg. 24,976, 24,978 (May 3, 2011).

8. *Id.*

9. Env'tl. Prot. Agency, Toxics Release Inventory, <http://www.epa.gov/tri/> (last visited June 10, 2012) (data obtained through Toxics Release Inventory database system).

10. ENVTL. PROT. AGENCY, MERCURY STUDY REPORT TO CONGRESS—VOLUME VII: CHARACTERIZATION OF HUMAN HEALTH AND WILDLIFE RISKS FROM MERCURY EXPOSURE IN THE UNITED STATES, 7-2 (1997), *available at* <http://www.epa.gov/ttn/atw/112nmerc/volume7.pdf>.

11. AMERICAN COAL ASH ASS'N, 2008 COAL COMBUSTION PRODUCT (CCP) PRODUCTION & USE SURVEY REPORT (2008), *available at* http://acaaffiniscape.com/associations/8003/files/2008_ACAA_CCP_Survey_Report_FINAL_100509.pdf.

12. ENVTL. PROT. AGENCY, STEAM ELECTRIC POWER GENERATING POINT SOURCE CATEGORY: FINAL DETAILED STUDY REPORT, 6-7 tbl.6-2 (2009), *available at* http://water.epa.gov/lawsregs/guidance/cwa/304m/archive/upload/2009_10_26_guide_steam_finalreport.pdf.

absence of monitoring data at many sites, one could infer that this problem is even larger.¹³

Wastewater and leachates are periodically pumped out of ash and scrubber sludge impoundments and released into rivers with little or no treatment, making power plants the second largest source of heavy metal discharges in the U.S.—and perhaps the largest, if the sites that lack monitoring data are taken into account.¹⁴ But many of these discharges escape detection, as contaminants migrate from disposal pits through shallow aquifers that flow into nearby creeks or rivers. Although courts are divided, many of these “hydrological discharges” are prohibited under the Clean Water Act.¹⁵

Perhaps the coal industry’s saddest legacy is the damage it has done over time to the health of its own workforce. The methane fueled explosion at the Massey mine in West Virginia reminded us that coal mining is dangerous work and safety laws are poorly enforced.¹⁶ And last year, the National Institutes of Occupational Safety and Health estimated that over 10,000 former coal miners died in the 1990s after contracting black lung disease caused by exposure to coal dust.¹⁷ In 2011, the Center for Health and the Global Environment in the Harvard Medical School estimated that health and environmental harms from mining and burning coal cost the public as much as \$345.3 billion a year, while acknowledging that much additional damage, e.g., to habitat or fisheries, had not yet been quantified.¹⁸

13. See Press Release, Env’tl. Integrity Project, 25 Indiana and Virginia Coal-Ash Impoundment Sites are in Immediate Need of Repair and Evaluation in Latest EPA Inspections (Feb. 15, 2011), http://www.environmentalintegrity.org/02_15_2011.php (discussing 25 damaged sites without reference to monitoring data).

14. Env’tl. Prot. Agency, Toxics Release Inventory, <http://www.epa.gov/tri/> (last visited June 10, 2012) (data obtained through Toxics Release Inventory database system). The electric utility industry is second to the paper industry. *Id.*

15. *Hernandez v. Esso Standard Oil Co.*, 599 F. Supp. 2d 175, 180 (D. Puerto Rico 2009) (“[W]hether pollution is introduced by a visible, above-ground conduit or enters the surface water through the aquifer matters little to the fish, waterfowl, and recreational users which are affected by the degradation to our nation’s rivers and streams.” (quoting *Idaho Rural Council v. Bosma*, 143 F. Supp. 2d 1169, 1179–80 (D. Idaho 2001))).

16. *Upper Big Branch Mine Disaster was ‘Preventable’: Feds*, HUFFINGTON POST, Oct. 13, 2011, http://www.huffingtonpost.com/2011/06/29/upper-big-branch-mine-disaster-preventable_n_886953.html.

17. NAT’L INST. FOR OCCUPATIONAL SAFETY AND HEALTH, WHAT’S NEW IN THE CWHSP (2008), available at <http://www.cdc.gov/niosh/topics/surveillance/ords/pdfs/CWHSP-News-Fall2008.pdf>. The prevalence of black lung disease in miners who have worked for twenty or more years has more than doubled since 1995, and “since 1990 coal workers’ [black lung disease] has killed over 200,000 in the United States. *Id.*”

18. Paul R. Epstein et al., *Full Cost Accounting for the Life Cycle of Coal*, 1219 ANN. N.Y. ACAD. SCI. 73, 93 (2011).

II. PUSH BACK BY THE COAL INDUSTRY

It is fair to say that the coal industry—with occasional honorable exceptions¹⁹—has fought environmental laws from the very beginning by opposing their enactment, trying to stop or at least delay the regulations that follow, and by undermining their enforcement where necessary.²⁰ These efforts reached a fever pitch ten years ago when the White House (led by Vice-President Cheney) tried to stop the EPA from enforcing “New Source Review” rules that require power plants to upgrade pollution controls during major modifications.²¹ While these efforts ultimately faltered after a public outcry, the Administration did succeed in bending other CAA rules to soften their impact and make them harder to enforce. For example, in a recent federal decision, a judge applied one of the Bush era standards to reject the EPA’s enforcement action by ruling that the Agency would have to wait until *after* illegal emissions occurred to determine whether the utility had violated its requirement to obtain a New Source Review permit. The law formerly allowed the EPA to enforce these rules if it could demonstrate the new project had the potential to significantly increase emissions.²²

It is true that coal plant emissions of sulfur dioxide have declined from 15 million tons in 1990 to slightly more than 5 million tons today, while nitrogen oxide emissions have dropped from 5.8 million tons to 2 million tons over the same 20-year period.²³ That is a significant (and hard won) improvement, realized through a combination of rules designed to control acid rain and interstate transport of ozone,²⁴ state regulation,²⁵ and New Source Review lawsuits.²⁶ However, the health cost of pollution from remaining plants that have not yet installed controls is still too high, and not enough has been done in many states to meet air quality standards for fine

19. See Ned Heime & Chris Neme, *The Problem*, 17 EPAJ. 18, 20 (1991) (describing CBS “60 Minutes” special where coal producers continue to argue against the necessity of the CAA Amendments of 1990).

20. *Id.*

21. Bruce Barcott, *Changing All the Rules*, N.Y. TIMES, Apr. 4, 2004, available at <http://www.nytimes.com/2004/04/04/magazine/04BUSH.html?pagewanted=all>.

22. *United States v. DTE Energy Company, et al.*, Civ. No. 10-13101, 2011 WL 3706585 (E.D. Mich. Aug. 23, 2011).

23. Env’tl. Prot. Agency, Clean Air Markets—Data and Maps, <http://camddataandmaps.epa.gov/gdm/> (last visited June 10, 2012) (emissions data was gathered using the “Emissions” tool on the “Data and Maps” website).

24. 40 C.F.R. 72.1 et seq. (2000).

25. N.Y. Comp. Codes R. & Regs. tit. 6, § 238-1 et seq. (2005).

26. See *United States v. Ohio Edison Co.*, 276 F.Supp.2d 829 (S.D. Ohio 2003); *Sierra Club v. Portland General Elec. Co.*, 663 F.Supp.2d 983, 987 (D. Oregon 2009).

particles that have been in effect since 1997. The EPA has been struggling for most of the past decade to finish a rule that would cut sulfur dioxide emissions another two million tons, but has not yet taken final action.²⁷

The Bush Administration also proposed a “cap and trade” program for mercury that would have allowed a plant in one state to buy the right to release more of this toxic pollutant from another plant hundreds of miles away which had reduced emissions below a certain threshold.²⁸ Predictably, the DC Circuit Court of Appeals rejected this approach as inconsistent with a statutory requirement that industry-wide emission standards be based on “maximum achievable control technology” that would have to be met at each plant.²⁹ In other cases, the EPA has ignored the law altogether by, for example, failing to set standards for toxic wastewater discharges from power plants under the Clean Water Act, or failing to establish standards for safe disposal of coal ash under the Solid Waste Disposal Act.

Coal state interests in the new Republican Congress have rallied behind arguments that efforts by the Obama Administration to deal with the backlog of rules left behind by the Bush Administration amount to a “war” on coal that will result in a “train wreck” of higher prices, power blackouts, and greater unemployment.³⁰ Taking advantage of the economic climate to argue for further delays, the House of Representatives has already approved a bill to delay the promulgation of any significant environmental regulation of power plant emissions until at least 2013 (with compliance deadlines moved to well after that date).³¹

In fact, the cluster of proposed rules at the heart of this battle were supposed to have been promulgated long ago, and several of these are proceeding under court-ordered deadlines after the EPA either ignored statutory time limits, or tried to weaken standards in ways that were rejected by the DC Circuit Court of Appeals. It is worth examining just how long ago some of the more controversial regulations were supposed to have been put in place:

1. After years of study, the EPA determined on December 20, 2000, that power plants, the largest source of

27. JAMES E. MCCARTHY, CLEAN AIR ISSUES IN THE 111TH CONGRESS, CONGRESSIONAL RESEARCH SERVICE (Sept. 1, 2010), *available at* <http://www.cnire.org/NLE/CRSreports/10Sep/R40145.pdf>.

28. *New Jersey v. Env'tl. Prot. Agency*, 517 F.3d 574 (D.C. Cir. 2008).

29. *Id.*

30. *See, e.g.*, Representative Bill Johnson, *EPA's Train Wreck of Regulations Approaches*, THE MARIETTA TIMES, Oct. 1, 2011, <http://www.mariettatimes.com/page/content.detail/id/539025.html>.

31. Transparency in Regulatory Analysis of Impacts to the Nation Act (“TRAIN”), H.R. 2401, 112th Cong (2011).

hazardous air pollution in the U.S., were subject to technology based limits under section 112 of the CAA that were established to control such emissions.³² Section 112(i)(3)(A) required that industry comply with those standards no later than three years after promulgation of a new limitation.³³ Instead, assuming the EPA meets its court-ordered deadline of December 20, 2011, utilities will have until the end of 2015 to meet the new standards—twelve years after the statutory limit.

2. As noted earlier, the EPA set standards to limit exposure to fine particle pollution in 1997 and determined that power plants would need to reduce sulfur dioxide emissions another two million tons to meet that standard. Emission limits under the EPA's current proposal, reshaped to address the DC Circuit's remand in 2005, would not take effect until 2016.³⁴
3. The 1980 Solid Waste Disposal Act Amendments required the EPA to determine how best to regulate coal ash hazards no later than two years after the amendment was enacted.³⁵ After several false starts, the EPA promised, in May of 2000, to develop disposal standards under subtitle D of that law, which is supposed to cover nonhazardous waste, but took no further action for eight years.³⁶ In December of 2008, a crumbling ash pond at a Tennessee Valley Authority power plant burst its banks, dumping 300 million gallons of sludge into the adjacent river and surrounding property.³⁷ The EPA proposed several options for regulation in June of 2010, but opposition from Congress and White House anxiety about

32. Regulatory Finding on the Emissions of Hazardous Air Pollutants from Electric Utility Steam Generating Units, 65 Fed. Reg. 79,825, 79,826 (Dec. 20, 2000).

33. Clean Air Act, 42 U.S.C. § 7412(i)(3)(A) (2004).

34. National Emissions Standards for Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units, 76 Fed. Reg. 24,976 (proposed May 3, 2011) (to be codified at 40 C.F.R. pt. 60, 63).

35. Resource Conservation and Recovery Act, 42 U.S.C. § 6982(n) (2010).

36. Notice of Regulatory Determination on Wastes from the Combustion of Fossil Fuels, 65 Fed. Reg. 32,214 (May 22, 2000) (codified at 40 C.F.R. pt. 261).

37. Shaila Dewan, *Coal Ash Spill Revives Issue of Its Hazards*, N.Y. TIMES, Dec. 24, 2008, at A1, available at <http://www.nytimes.com/2008/12/25/us/25sludge.html?pagewanted=all>.

reelection prospects in coal states has brought the rulemaking to a standstill.³⁸

4. Toxic wastewater discharges from ash scrubber sludge treatment and storage systems should have been established in 1989 under section 301 of the Clean Water Act.³⁹ After the Environmental Integrity Project, Earthjustice, and several other organizations threatened a lawsuit, the EPA agreed to a consent decree schedule with a deadline of 2014 for the final rule and (as the statute requires) 2017 for compliance—thirty-five years after the deadline for meeting these effluent limitations.⁴⁰

These regulations are now converging not because of some conspiracy by the Obama Administration—which is proving to be hyper-sensitive to coal interests⁴¹—but because they have been delayed for so many years.

III. COAL AND THE U.S. ECONOMY

The industry has mounted a furious attack on not only the regulations, but also the very legitimacy of the EPA. So far this year, the House of Representatives has voted to block the EPA from setting limits on emissions of mercury and other hazardous air pollutants, establishing federally enforceable standards for coal ash disposal, and regulating the dumping of spoils from mountaintop mining.⁴² 16 Senators, including Senator John McCain, have sponsored legislation to abolish the EPA by merging it with the Department of Energy.⁴³

Predictably, the coal lobby and supporting politicians are arguing that implementing the CAA and other standards will drag down an economy that is already on the brink of recession.⁴⁴ But the available data belie

38. Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals from Electric Utilities, 75 Fed. Reg. 35,128 (June 21, 2010).

39. Clean Water Act, 33 U.S.C. § 1311 (2010).

40. PR NEWswire, <http://www.prnewswire.com/news-releases/groups-applaud-epa-action-to-reduce-water-pollution-from-power-plants-106957693.html> (last visited June 10, 2012).

41. Tom Hamburger and Peter Wallsten, *Obama walks a fine line over mining*, L.A. TIMES, May 31, 2009, <http://articles.latimes.com/2009/may/31/nation/na-mountaintop-mining31>.

42. H.R. 1, 112th Cong. (2011).

43. Consolidation of Department of Energy and Environmental Protection Agency Act of 2011, S. 892, 112th Cong. (2011).

44. See, e.g., Representative Bill Johnson, *EPA's train wreck of regulations approaches*, THE MARIETTA TIMES, Oct. 1, 2011, <http://www.mariettatimes.com/page/content.detail/id/539025.html>.

claims that relaxing pollution standards for coal plants will create more jobs. A recent “study” by the Utility Solid Waste Activities Group predicted that EPA standards under subtitle C of the Resource Conservation and Recovery Act would cost more than 300,000 jobs, largely by assuming that no workers would be required for the closure and cleanup of ash dumps, the conversion of ash ponds to dry storage, the installation of liners and groundwater monitoring wells, and the switch to non-coal alternatives at some sites.⁴⁵ Economist Frank Ackerman points out that, when the work *created* by new coal ash standards is taken into account, the new rules would actually result in net job creation.⁴⁶

According to the National Mining Association, coal mining employed about 88,000 workers in 2010, compared to a payroll of about 169,281 25 years ago (when the U.S. workforce was considerably smaller), even though production crept up by about eight percent over the same time period.⁴⁷ Employment has increased slightly over the past several years, but extracting coal from the ground is no longer labor-intensive, especially in surface mines and in mountaintop removal operations, and the U.S. job recovery is simply not going to be led by a flood of new jobs in coal mines. Coal prices also rose by nearly 50% between 2000 and 2009, and it will cost more to recover coal from our remaining reserves.⁴⁸ Declining natural gas prices have also made it much harder for coal-fired power plants to compete in recent years, a problem that companies are beginning to acknowledge in annual 10-K reports filed with the Securities and Exchange Commission.⁴⁹

The decline in coal’s importance to either electricity generation or the U.S. economy was acknowledged by no less an authority than the late Senator Robert Byrd of West Virginia in an editorial he authored just before his death in 2010:

45. VERITAS ECONOMIC CONSULTING, AN ECONOMIC ASSESSMENT OF NET EMPLOYMENT IMPACTS FROM REGULATING COAL COMBUSTION RESIDUALS 1–2 (June 2011), *available at* <http://www.recyclingfirst.org/pdfs/101.pdf>.

46. FRANK ACKERMAN, STOCKHOLM ENVIRONMENT INSTITUTE–U.S. CENTER, TUFTS UNIVERSITY, EMPLOYMENT EFFECTS OF COAL ASH REGULATION 3 (2011), *available at* http://sei-us.org/Publications_PDF/Ackerman-coal-ash-jobs-Oct2011.pdf.

47. NAT’L MINING ASS’N, TRENDS IN U.S. COAL MINING 1923-2010 (2011), http://www.nma.org/pdf/c_trends_mining.pdf.

48. U.S. ENERGY INFORMATION ADMIN., ANNUAL ENERGY OUTLOOK 2011, 86 fig.103 (2011), *available at* <http://www.eia.gov/forecasts/aeo/>.

49. Energy Future Competitive Holdings Co., Annual Report (Form 10-K), at 2–3 (Feb. 18, 2010), *available at* http://www.faqs.org/sec-filings/100219/Energy-Future-Competitive-Holdings-CO_10-K/.

The increased use of mountaintop removal mining means that fewer miners are needed to meet company production goals. Meanwhile the Central Appalachian coal seams that remain to be mined are becoming thinner and more costly to mine. Mountaintop removal mining, a declining national demand for energy, rising mining costs and erratic spot market prices all add up to fewer jobs in the coal fields. . . . The greatest threats to the future of coal do not come from possible constraints on mountaintop removal mining or other environmental regulations, but rather from rigid mindsets, depleting coal reserves, and the declining demand for coal as more power plants begin shifting to biomass and natural gas as a way to reduce emissions.⁵⁰

There is no better acknowledgment of the coal industry's dilemma than this remarkable statement from a Senator who was perhaps its most stalwart supporter in Congress for fifty years.

CONCLUSION

We cannot count on coal to exit the stage quietly, and its lobbyists have a well-earned reputation for bending the political system—especially environmental regulations—to preserve its position, no matter what the cost to public health or the environment. And we can recognize the role that this fuel has played in America's industrial development in the early and middle part of the last century, and in the historical connection that some parts of the U.S. still feel to the coal industry, even if mines closed up shop long ago.

But we have more efficient and cleaner ways to generate electricity than we did in the 1950s, including wind, solar, and (if development is done responsibly) natural gas. And, increasingly, these low carbon options will be the better economic choice, especially if coal plants are required to comply with long-standing environmental standards that require the industry to assume responsibility for its own pollution. Our coal plants are aging, and their environmental bills are finally coming due. Let us hope we find the political will to retire this outdated infrastructure and the pollution that comes with it.

50. Senator Robert Byrd, *Coal Must Embrace the Future*, METRO NEWS, Dec. 3, 2009, <http://www.wvmetronews.com/index.cfm?func=displayfullstory&storyid=33928>.