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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. 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.”

But nostalgia is no substitute for the cold hard facts:

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2. Id.
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. 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.

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. 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.

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that are not destroyed during combustion.\textsuperscript{7} Rather, these toxic metals exit the stack as air pollution, or concentrate in the ash or scrubber sludge that is left behind.\textsuperscript{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.\textsuperscript{9}

Mercury is a potent neurotoxin, especially dangerous to developing embryos and very young children; the EPA estimates that \textfrac{7}{100} of women of childbearing age have more mercury in their bloodstream than is considered safe during pregnancy or nursing.\textsuperscript{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 \textfrac{60}{100} of that is dumped into ponds, landfills, or abandoned mines.\textsuperscript{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.\textsuperscript{12} The Environmental Integrity Project has identified at least 25 more damaged sites based on the EPA’s criteria, though, from the

\textsuperscript{8} Id.
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


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))).


II. PUSH BACK BY THE COAL INDUSTRY

It is fair to say that the coal industry—with occasional honorable exceptions—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. 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. 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.

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. That is a significant (and hard won) improvement, realized through a combination of rules designed to control acid rain and interstate transport of ozone, state regulation, and New Source Review lawsuits. 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


20. Id.


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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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).\textsuperscript{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


\textsuperscript{29} \textit{Id.}


\textsuperscript{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.\textsuperscript{32} Section 112(i)(3)(A) required that industry comply with those standards no later than three years after promulgation of a new limitation.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{37} The EPA proposed several options for regulation in June of 2010, but opposition from Congress and White House anxiety about

\begin{itemize}
\item \textsuperscript{33} Clean Air Act, 42 U.S.C. § 7412(i)(3)(A) (2004).
\item \textsuperscript{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).
\item \textsuperscript{35} Resource Conservation and Recovery Act, 42 U.S.C. § 6982(n) (2010).
reelection prospects in coal states has brought the rulemaking to a standstill.  

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. 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.

These regulations are now converging not because of some conspiracy by the Obama Administration—which is proving to be hyper-sensitive to coal interests—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. 16 Senators, including Senator John McCain, have sponsored legislation to abolish the EPA by merging it with the Department of Energy.  

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. But the available data belie

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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:

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.

The American Coal Miner, the Forgotten Natural Resource: Why Legislative Reforms are a Viable Solution to Solving the Case Backlog Before the Federal Mine Safety and Health Review Commission Sparked by Tougher Enforcement of New Coal Mining Health and Safety Laws and Regulations

Patrick R. Baker

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* Patrick R. Baker is an Assistant Professor of Law and Chair of Natural Resources Program Development Committee at the Appalachian School of Law, where he teaches Legal Process and Virginia Procedure. Before joining the faculty, Professor Baker practiced at the law offices of Penn, Stuart & Eskridge in Abingdon, Virginia, where he represented the mineral and energy industry in a wide array of matters. A special thanks to Jessica Jackson, ASL Class of 2010, and Katie Madon, ASL Class of 2012, for their hard work, dedication, perseverance, and patience. You both will have wonderful careers in the law.
INTRODUCTION: A SYSTEM IN CRISIS

On January 2, 2006, twelve miners tragically lost their lives at Wolf River Mining Company’s Sago Mine in West Virginia. As rescuers scrambled to free the trapped miners, the nation became captivated by the miners’ struggle and outraged by the perceived lack of regulatory oversight, enforcement, and rescue response coordination. While lightning was determined to be the most likely ignition source, an investigation revealed that the mine had received dozens of safety citations prior to the disaster. As a result, congressional hearings ensued—along with several state and federal investigations. Consequently, the Sago disaster brought about sweeping legislative changes and the first major amendment to federal mine safety laws in approximately thirty years. On June 15th, 2006, the Mine Improvement and New Emergency Response Act of 2006 (New Miner Act) was signed into law. After President George W. Bush signed the new legislation into law, he profoundly stated, “‘[w]e make this promise to American miners and their families: we’ll do everything possible to prevent mine accidents and make sure you’re able to return safely to your loved ones.’”

The new legislation dramatically increased penalties for safety violations, forced mine operators to install emergency underground shelters with oxygen and supplies, required installation of updated communication devices, and mandated new guidelines for flame retardant equipment.

2. Id.
4. Id.
9. Mark Guarino, West Virginia disaster: Will Congress take on coal mining companies?, Christian Science Monitor (April 7, 2010), http://www.csmonitor.com/layout/set/print/content/view/print/293176 (stating that, “[o]nly 14 percent of mines have complied with the New Miner Act requirements to install improved communication systems,” and only 34 of 491 coal mines have complied with the 2006 mandate requiring installation of
However, the New Miner Act did little to substantively address accident prevention and, instead, focused primarily on oversight, enforcement, post-accident safety technology, and accident response. While bureaucrats, labor leaders, politicians, and pundits argued over the new law’s effectiveness and broad reforms, one major unforeseen omission was the new law’s inability to cope with the likely increase in court challenges to the new legislation. Essentially, lawmakers failed to ask themselves the following question: If we dramatically increase penalties, create new violations, and toughen enforcement, will coal operators challenge it?

The spike in court challenges to the new legislation and regulations tells the story. In 2007, a total of 130,134 violations were assessed against coal mine operators and 19,581 of those violations were contested, totaling a 15% appeal rate. By 2009, a total of 173,710 violations were assessed, a 28% increase from 2007. The 2009 appeal data shows that 47,314 violations were contested, equaling an appeal rate of 27.4%. Converting violations into penalties (dollars) tells an even more compelling story. In 2006, civil penalties assessed by the Mine Health and Safety Administration (MSHA) and contested by the coal industry totaled $30 million. That figure skyrocketed to $193 million in 2008, before retreating to $139 million in 2009, and $134 million in 2010. As of April 2011, $45

“improved communication systems, such as two-way wireless devices that can talk with and locate trapped miners”).

11. Id.
14. Id.
15. Id.
16. Id.
17. § 1, 120 Stat. at 493 (MSHA is the regulatory body charged with enforcing violations of the New Miner Act).
18. MINE SAFETY AND HEALTH ADMINISTRATION, supra note 13. See also, http://www.msha.gov/MSHAINFO/FactSheets/MSHABytheNumbers/CalendarYear/Assessm.
19. Id.
20. Id.
21. Id.
million\textsuperscript{22} has been assessed in civil penalties and, at that pace, assessed penalties will likely exceed $136 million.

Some experts estimate that mine owners, many of them located in the Appalachian coal basin, are litigating 67% of all major violations and penalties.\textsuperscript{23} The backlog of cases is evident: in 2006, there were 2,100 cases under review and now that number exceeds 16,000.\textsuperscript{24}

Currently, the incentives to litigate and the cost-benefit analysis associated with those decisions have contributed to a record number of appeals and rapidly growing case backlog. Consequently, the system is in peril as inefficiency and frustration reach historic levels. However, lawmakers can take steps to reduce the backlog and ease tensions and, therefore, create a process that encourages compliance and fosters a more collaborative approach to miner safety.

This article proposes procedural and statutory reforms that are an affordable and efficient solution to reduce the case backlog. First, MSHA should be mandated to increase the current ten percent good faith abatement provision\textsuperscript{25} as an incentive to encourage operator cooperation and compliance with the law. Second, coal operators should be required to prepay penalties as a condition to challenge violations by adopting a similar approach already imposed and accepted by the coal industry.\textsuperscript{26} Finally, Congress should redefine the current underutilized and misappropriated “Enhanced Safety and Health Conference”\textsuperscript{27} (Enhanced Conference) as a viable and legitimate means of alternative dispute resolution (ADR).

These statutory and procedural reforms will result in a more even-handed approach to enforcement and create a civil penalty system that encourages industry compliance, instead of perpetuating and fueling the current stalemate. Second, the proposed reforms will encourage more efficient settlement and resolution of cases, and they will deter lengthy and
costly litigation. Government inaction, industry tactics, and the failed procedural framework of the past have resulted in a trench warfare strategy that embraces hardball litigation tactics and fails the American miner. As a result, the parties are more concerned with litigating every issue to the bitter end, instead of working together to create the safest possible working conditions for an inherently dangerous profession. Finally, statutory and procedural reforms present the most prudent solution when confronted with a slow economic recovery, shrinking federal and state revenues, looming austerity measures, and high unemployment.

In the end, the American miner is the one who ultimately suffers in this modern day conundrum. 2005 was a benchmark year in safety, as the number of coal-related fatalities dropped to only 23 nationally.28 The mining tragedies in 2006 that led to 47 deaths29 sparked the new legislation that catapulted MSHA and the industry into deadlock. In 2007, mining deaths dropped to 3430 before hitting a record low of 1531 in 2009. Initially, the new law and MSHA's increased enforcement efforts were paying clear dividends, and it was not apparent the case backlog was negatively impacting miner safety. However, in 2010, four years after the passage of the New Miner Act,32 the country was forced to endure 48 fatalities and witness the unfortunate circumstances surrounding the Upper Big Branch Mine accident.33 This raises the issue of whether more regulations and oversight have correlated with a safer workplace. One thing is certain: the new law has thrust the parties into a clear adversarial relationship with no signs of compromise. The new legislation and regulations were clearly intended to benefit the miner and create a safer workplace. However, the new laws, without further legislative and regulatory action, undermine miner safety. The stalemate prevents the efficient implementation of effective safety measures and defeats any hope of a cooperative and collaborative environment toward safety. In order to ensure that every miner has the best possible chance to return home safely after each shift, the civil penalty system must be reformed to encourage cooperation, settlement, and collaboration.

29. Id.
30. Id.
31. Id.
32. MINER Act § 1, 120 Stat. at 493.
33. COAL MINING FATALITIES BY STATE, supra note 28.
I. AN IN-DEPTH EXAMINATION OF MINE SAFETY AND HEALTH LEGISLATION

The American mining industry has been regulated by a patchwork system of state, local, and federal laws for over a century. The first comprehensive federal legislation emerged in 1910 with the creation of the Bureau of Mines within the Department of the Interior.\(^34\) However, over the next 60 years, enforcement and safety advances within the industry remained relatively modest and ineffective. The public’s inattention significantly changed on November 20, 1968, when a mine explosion in Farmington, West Virginia took the lives of 78 miners.\(^35\) During the next 11 months, 170 additional miners lost their lives while making a modest, hard-earned living.\(^36\) Between 1967 and 1968, a total of 533 miners lost their lives in mining disasters.\(^37\) Finally, public outrage prompted broad, swift congressional action.\(^38\)

In 1969, Congress enacted the Federal Coal Mine Health and Safety Act (1969 Coal Act), representing the first comprehensive and authoritative step by the federal government to regulate and police the industry.\(^39\) The 1969 Coal Act charged the Mine Enforcement and Safety Administration (MESA), an agency within the Department of the Interior, with broadened investigatory and enforcement powers.\(^40\) Most notably, the 1969 Coal Act permitted random and mandatory inspections, increased inspections within hazardous operations, and permitted inspectors to order miners out of areas deemed hazardous until the condition could be abated.\(^41\) Despite the 1969 Coal Act’s success, more regulation and enforcement was needed.

In 1977, the Senate Committee on Human Resources determined that allowing MESA to operate under the auspices of the Department of the Interior was rife with conflicts that prevented complete and effective enforcement.\(^42\) Congress attempted to remedy these inherent conflicts with the passage of the Federal Mine Safety and Health Act of 1977 (Mine

\(^{35}\) Id. at 1–3.
\(^{36}\) Id. at 1, 3.
\(^{37}\) Id. at 3.
\(^{39}\) See id.
\(^{40}\) S. REP. NO. 95-181, at 56 (1977).
\(^{41}\) Id.
\(^{42}\) Id. at 5.
As part of the Mine Act, Congress created the Mine Safety and Health Administration (MSHA), an independent regulatory body charged with enforcement of the Act. The Mine Act adopted a split-enforcement model whereby safety and health standards are promulgated and enforced by the Secretary of Labor through MSHA. Industry challenges to MSHA’s enforcement are then decided by an independent administrative adjudicative body, the Federal Mine Safety and Health Review Commission (Commission). Congress designed the split-enforcement model to overhaul the 1969 Coal Act framework that permitted the agency to settle penalties for small, and sometimes unjustifiable, fractions of the original assessment and to prevent the inherent conflicts that emerge when regulators become too familiar with industry. Consequently, the Mine Act’s split-enforcement model was intended to serve as an impediment to settlement and is clearly unequipped to handle the voluminous amount of cases that exist in today’s high stakes litigation.

Over the next thirty years, the Mine Act underwent few substantive changes despite significant engineering, technological, and safety advancements. Coincidentally, in 2005, coal-related fatalities dropped to twenty-three nationwide. Many within the industry and MSHA credited the record-low mine fatalities to advancements in mine safety technology and a new corporate culture that encouraged safety over production and profits. After a century of development, a more collaborative and cooperative relationship between MSHA and industry had facilitated a safer workplace.

However, history once again repeated itself in 2006, when three mining tragedies within five months served as the precipitating events for ground-
breaking legislation.54 The events surrounding the Sago55 disaster captivated the nation. Then, just seventeen short days later, on January 19, 2006, West Virginia and the country mourned the loss of two miners tragically killed in another underground mine fire at the Aracoma Alma Mine Number 1.56 MSHA determined the fire started due to a conveyor belt misalignment that ignited accumulated and combustible materials.57 Finally, four months later, on May 19, 2006, Kentucky witnessed the death of five miners at the Darby Mine Number 1 in Harlan County.58 Evidence showed the explosion was caused by methane ignited by an acetylene torch,59 which resulted in the immediate death of two miners.60 Unfortunately, three evacuating miners succumbed to carbon monoxide and soot inhalation while escaping.61

These tragedies captured the attention of the public and once again forced the government’s hand to scrutinize the effectiveness of mine safety laws, regulations, and enforcement. As one former MSHA official stated, “it’s unfortunate it took a disaster to bring renewed attention to the issue: ‘[t]hat’s the history of coal mining legislation in the U.S.—it’s always born out of disaster and as it’s said the safety laws are written with the blood of miners[, t]hat’s what it takes.’”62 Clearly, the events surrounding Sago,63 the subsequent mine tragedies, and the current case backlog demonstrate that this symbiotic relationship to mine safety is now extinct.

On June 15, 2006, the New Miner Act became law.64 The heart of the New Miner Act requires each mine to develop an Emergency Response Plan (ERP).65 The ERP addresses such areas as post-accident communication and employee tracking, self-contained rescue devices, post-accident breathable air, post-accident lifelines, and increased escape training standards.66 The New Miner Act further imposed new requirements

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55. REPORT OF INVESTIGATION I, supra note 1, at 1–3.
56. Underground Coal Mining Disasters and Fatalities, supra note 54, at 1379.
57. Id. at 1380.
58. Id. at 1381.
59. REPORT OF INVESTIGATION I, supra note 1, at 1.
60. Id.
61. Underground Coal Mining Disasters and Fatalities, supra note 54, at 1380.
63. See REPORT OF INVESTIGATION I, supra note 1, at 1–3 (reporting the results of an investigation into the Sago mine explosion and rescue operation).
64. MINER Act § 1, 120 Stat. at 493.
65. § 2, 120 Stat. at 493.
on each mine’s designated mine rescue team.\textsuperscript{67} The New Miner Act also required MSHA to promulgate new rules for sealing off abandoned areas.\textsuperscript{68} While the Act did not specifically change the law with respect to refuge chambers,\textsuperscript{69} it did require the National Institute of Occupational Safety and Health to report on the “utility, practicality, survivability, and cost of refuge chambers.”\textsuperscript{70} The Act also required the Technical Study Panel to conduct studies and provide recommendations with respect to the utilization of belt air and the composition and fire retardant properties of conveyor belt materials in coal mining.\textsuperscript{71} Most notably, the Act dramatically increased some civil and criminal penalties,\textsuperscript{72} which prompted MSHA to promulgate new rules that further increased penalties and created new categories of violations.\textsuperscript{73}

Despite significant strides to create a safer workplace, the full benefits of the New Miner Act will not be completely realized by the miner until a more efficient and collaborative approach is implemented. On April 5, 2010, 29 miners tragically died in an underground explosion at the Upper Big Branch Mine (UBB) in Montcoal, West Virginia.\textsuperscript{74} In 2010, the mine had received 124 safety violations, including dozens of citations evidencing problems with ventilation and accumulation of combustibles.\textsuperscript{75} Massey Energy Company (Massey),\textsuperscript{76} operator of the UBB, had allegedly “contested 97 percent of the serious violations against it in 2007.”\textsuperscript{77} Even more telling, Massey went on the offensive after the explosion in an attempt to thwart MSHA’s regulatory ability and stem the tide of public disapproval

\begin{itemize}
  \item \textsuperscript{67} § 4, 120 Stat. at 497–98.
  \item \textsuperscript{68} § 10, 120 Stat. at 501.
  \item \textsuperscript{69} See Kentucky Foundation, Modern Coal Related Technology, Safety Related Equipment: Refuge Chambers, KENTUCKY COAL EDUCATION, http://www.coaleducation.org/technology/Safety/Refuge_Chambers.htm (last visited June 6, 2012) (“The refuge chamber is extensively equipped and designed to keep miners as safe as possible for up to 96 hours, or until rescue teams can reach them. An artificial environment has been created to provide adequate air, food and water and sanitary needs of miners.”).
  \item \textsuperscript{70} MINER Act § 13, 120 Stat. at 504.
  \item \textsuperscript{71} § 11, 120 Stat. at 501.
  \item \textsuperscript{72} § 8, 120 Stat. at 500–01.
  \item \textsuperscript{74} Coal Mine Fatality, MINE SAFETY AND HEALTH ADMINISTRATION, http://www.msha.gov/FATALS/2010/FAB10c0331.asp (last visited June 6, 2012).
  \item \textsuperscript{75} Id.
  \item \textsuperscript{77} Naylor, supra note 8.
\end{itemize}
and political scrutiny. Massey sent letters to the governors of Kentucky, West Virginia, Virginia, and Illinois alleging that MSHA requirements may have contributed to the explosion. However, the letter stopped short of blaming the ventilation plan developed by MSHA as the cause of the explosion. Massey’s CEO, Don Blankenship, stated: “Our investigation into the UBB accident is continuing. While we do not yet know the cause of the explosion, we have developed grave and serious concerns about the MSHA imposed ventilation system employed at UBB.”

On May 19, 2011, MSHA released a press release in response to the Governor’s Independent Investigation Panel’s report (GIIP) detailing the cause of the UBB accident. The GIIP report noted the UBB accident was preventable because basic safety practices were ignored by Massey Energy. The report attributed the explosion to a methane gas buildup that was ignited due to faulty water sprayers, thus contributing to a major coal dust explosion. The GIIP report detailed that Massey knew it had compliance problems, but it failed to effectively address the issues. The report added that Massey promoted a culture that prized “production over safety” and where “wrongdoing became acceptable.” Though the GIIP report was not binding on MSHA, MSHA stated: “[w]hile our own investigation is ongoing, it is fair to say that MSHA is in agreement with

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79. Letter from Don L. Blankeship, Chairman & CEO, Massey Energy, to Stephen L. Beshear, Governor of Ky.; Joseph Manchin, Governor of W. Va; Rovert F. McDonnel, Governor of Va.; Patrick J. Quinn, Governor of Ill., (June 7, 2010), available at http://media.kentucky.com/smedia/2010/06/08/16/masseylettertoky.source.prod_affiliate.79.pdf.
80. Id.
82. Letter from Don L. Blankenship, supra note 79.
83. M CATEER, supra note 6, at 5 (“The Governor of West Virginia has the authority to appoint one person to lead an independent panel to investigate the cause of various mining disasters and tragedies.”).
84. Id. at 5.
85. Id. at 99, 108.
86. Id. at 67, 73, 99.
87. Id. at 51, 53, 72.
88. Id. at 99, 101.
many of the GIIP findings. The panel’s report echoes many of the findings that MSHA has been sharing with victims’ families and the public.  

As lawmakers and regulators conduct their investigations into the UBB disaster, political momentum and traction are building on both sides of the aisle for increased oversight and additional legislation. In the House, the “Robert C. Byrd Miner Safety and Health Act of 2010” is being circulated. In the Senate, a competing bill, the “Robert C. Byrd Mine and Workplace Safety Act of 2010” is currently being considered. It remains uncertain if a compromise bill can be reached or if any action will be taken before the 2012 elections. However, with the balance of power shifting in the House from Democrat to Republican and the Senate remaining in Democratic hands, one can safely assume legislative deadlock and political inaction.

An in depth examination of the proposed legislation shows that it takes bold steps to increase MSHA’s investigatory power by calling for an independent investigation team for accidents involving three or more deaths. It expands MSHA’s enforcement authority by expanding Section 104(d)(1) of the Mine Act to include “any provision of the Act,” compared to the current law which limits liability to “violation[s] of any mandatory health and safety standard[s].” Additionally, the legislation aggressively targets mines found to be in “pattern of recurring noncompliance or accidents.” It also, once again, heightens civil penalties, as well as expands personal and criminal liability. Interestingly enough, the Mine Act makes one feeble attempt to stem the growing surge of litigation by requiring operators to pay pre-judgment interest on any amount of contested

92. See S. 3671; H.R. 5663 (noting that the last action taken on both Bills occurred on July 29, 2010, as S. 3671 was referred to the Committee on Health, Education, Labor, and Pensions; and HR 5663 was placed on the Union Calendar as Calendar No. 334. Neither bill became law).
94. Id. § 201.
97. Id. §§ 301, 305.
98. Id. § 302.
99. Id. § 302.
penalty not reduced by the Commission.100 In the end, the legislation does nothing substantive to address the current case backlog.

As the emerging legislation proves, the arguments for more oversight, expanded liability, and higher penalties are the politically popular solution.101 However, one question that should be posed to regulators and legislators is: “[I]f more regulations and enforcement were the answer, why did the tragedy at Upper Big Branch Mine happen?”102 While part of the solution may rest in the current regulatory and oversight approach, safety “[r]egulations alone are not sufficient to see continued improvement,” and, instead, there needs to be a more cooperative and collaborative approach between regulators and the industry when dealing with human life.103

Regardless of which philosophy one embraces, one potential problem recognized by both the mining industry and regulators is a clear lack of alternatives to the backlogged appeals process for contesting safety violations.104 As recently evidenced by Hilda Solis, the Secretary to the Department of Labor, the Department and MSHA have no plans to fold under industry pressure.105 However, the industry argues the case backlog is attributable to a wave of new hires at MSHA who, they say, subjectively apply the law, issue numerous violations, and slow the process.106 Clearly, the parties have drawn a line in the proverbial sand with no sign of surrender. Thus, it is safe to assume the coal industry will continue to experience increased regulation, oversight, and pressure. In response, the operators will continue to file voluminous amounts of appeals in order to stifle, frustrate, and delay an already broken system. In the end, the American miner and workplace safety are the victims.

100. Id. § 305(a).
102. Heath, supra note 52, at § 10.01.
103. Id.
104. Id.
105. Hilda L. Solis, Make Mines Safe: Fatalities Hit an All-Time Low Last Year But Coal Miners Need More Protection, PITTSBURGH POST-GAZETTE, Jan. 26, 2010, http://www.post-gazette.com/pg/10026/1030997-109.stm. (“I and MSHA Assistant Secretary Joseph Main are redoubling the department of labor’s commitment to ensure that every miner can return home at the end of each shift – safe and healthy. For only the second time ever, MSHA last year completed 100 percent of its mandated inspections of all surface and underground mines. Robust hiring of mine inspectors will enable us to continue this.”).
106. Id.
II. A CLOSER ANALYSIS OF THE CIVIL PENALTY SYSTEM AND ENFORCEMENT, INSPECTION, AND LITIGATION PROCESSES

A. The Civil Penalty System and Enforcement

The Mine Act created a civil penalty system for violations. The assessed penalty is determined by a set of factors: (1) operator size, (2) violation history, (3) negligence of the operator, (4) gravity of the violation, (5) good faith ability to rapidly abate the violation, and (6) the effect on operator’s ability to continue in business. After the violations are calculated, the total points are then converted into dollars, and a proposed assessment or penalty is lodged against the operator. However, the Mine Act provides no guidance on how to weigh the factors when assessing penalties and bolsters the industry’s argument that the law is being applied subjectively and inconsistently.

The events of 2006 and subsequent legislative action led MSHA to completely overhaul the violation-to-penalty conversion table. Under the previous system, a violation assigned eighty points under the Mine Act’s civil penalty system resulted in an $11,535 penalty. Under the New Miner Act regulations, a violation assigned eighty points yields only a $555 penalty. At first glance, this new conversion table seems to dramatically favor the operator and greatly reduce possible exposure. However, the points assigned to each factor were significantly adjusted, making it impossible to compare the previous violation-penalty totals to the new violation-penalty totals for the same violation. For instance, under the new regulations, one operator’s violations totaled 138 points and yielded a proposed penalty assessment of $48,472. Under the old regulations the same violations would have received seventy-one points and a proposed

108. § 110(i), 91 Stat. 1311–12.
109. See 30 C.F.R. § 100, tbl. XIV (2010) (showing that the table converts violations into the proposed penalty).
110. Id.
112. Id.
114. Williams, supra note 112, at 308–09.
115. Id.
penalty assessment of $6,374.116 This scenario is not an isolated event; it plays out every day.117

In addition to the conversion table reforms, the New Miner Act substantially increased operator penalties in several different ways. First, under the prior law a “willful violation” resulted in a maximum $25,000 penalty;118 however, the New Miner Act increased the “willful violation” penalty to $250,000,119 a ten-fold increase. Second, the New Miner Act created a “flagrant violation” category with a maximum penalty of $220,000.120 Lastly, the new law mandated that MSHA promulgate new regulations with respect to penalties and violations.121 This is simply a sampling of the dramatic and sizeable increases thrust onto the industry.

On March 22, 2007, MSHA released the new regulations and the revised penalties that substantially increased some existing penalties.122 The maximum penalty for Section 104123 violations of the Mine Act increased from $50,000 to $60,000.124 Further, on March 10, 2008, MSHA increased the Section 104 penalty to $70,000, and the maximum per-day penalty for failure to abate a Section 104(a) violation increased to $7,500.125 MSHA also promulgated a new notification penalty with a maximum of $70,000 for failure to timely notify MSHA of a death, injury, or entrapment with reasonable potential to cause death.126

In addition to overhauling the civil penalty process, MSHA has started to enforce the underutilized Pattern of Violations (POV)127 that was initially included in the 1977 Mine Act.128 However, MSHA did not begin POV

116. Id.
117. Id.
119. MINER Act § 8, 120 Stat. at 500.
120. § 8, 120 Stat. at 500–01.
121. § 8(b), 120 Stat. at 500.
123. A Section 104(a) violation is any a violation of a mandatory health and safety standard. Mandatory standards are those health and safety regulations promulgated by the Secretary under Section 101 of the Mine Act. 30 U.S.C. § 820(a) (2006).
124. 30 C.F.R. § 100.3(c)(2) (2010).
126. Id. at 7209.
127. See 30 C.F.R. § 104.1 (2010) (stating that the purpose is to implement “section 104(e) of the Federal Mine Safety and Health Act of 1977 (Act) by addressing mines with an inspection history of recurrent S&S violations of mandatory safety or health standards that demonstrate a mine operator's disregard for the health and safety of miners. The purpose of the procedures in this part is the restoration of effective safe and healthful conditions at such mines.”).
enforcement until after the passage of the New Miner Act in 2006. The pattern process requires annual industry-wide reviews to determine which mines should be considered for a “pattern of violations” under Section 104(e) of the Mine Act. The purpose of the procedure is to identify those mines that exhibit poor safety records and either compel compliance or force closure. Today, the threat of being placed on POV status and MSHA’s enforcement of the law have become two of MSHA’s most powerful compliance tools.

Pursuant to a regulatory criteria and mathematical formula, MSHA determines whether a mine should be placed on POV status for monitoring and improvement. MSHA examines the mine’s history with regard to “(1) significant and substantial (“S&S”) violations; (2) section 104(b) closure orders resulting from S&S violations; (3) section 107(a) imminent danger orders; (4) other enforcement measures (other than 104(e)) that have been applied by MSHA to the mine; (5) evidence of lack of good faith by operator in correcting problems that result in recurrent S&S violations; (6) any accident, injury, or illness record that shows a serious safety or health management problem at the mine; and (7) mitigating factors.” The more violations and penalties that are assessed, the greater likelihood the mine will find itself on POV status, which will consequently force mine closures, cause production delays and disruptions, and result in job loss.

Once a POV is found to exist, MSHA then requires the mine to enter into an S&S reduction plan and undergo close monitoring for a 90-day period. During the 90-day period, if an inspector finds any S&S violations of a mandatory health and safety standard, the inspector is required to issue a “withdrawal order” requiring closure of that specific area of the mine. The order stays in effect until MSHA determines the

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130. 30 C.F.R. §§ 104.1–104.2 (2010).
131. Id.
132. For a violation to be considered significant and substantial: (1) there must be a violation of mandatory safety standard; (2) the violation must contribute to a safety hazard; (3) there must be a reasonable likelihood of an injury; (4) the prospective injury must be of a reasonably serious nature. Mathies Coal Company, 6 FMSHRC 1 3-4 (1984).
133. 30 C.F.R. § 104.2 (2010).
134. Id. §§ 104.2–104.3.
135. Id. § 104.4(a)(4).
violation has been corrected. Therefore, if a mine is not removed from pattern status, it will be forced to close.

MSHA’s use of the POV process has dramatically increased in the past year, and the additional enforcement can be directly attributed to the UBB tragedy. Following the explosion, Secretary Solis called for scrapping and replacing this “badly broken’ process for identifying the nation’s most dangerous mines.” Her initiative was sparked because of a computer error that allowed the UBB to avoid closer scrutiny that may have saved lives.

On November 5, 2010, revised POV criteria for monitoring the mining industry for habitual offenders went into effect. Assistant Secretary Joe Main stated:

> MSHA’s changes to the screening process are designed to meet [the] statutory and regulatory objectives [of the Mine Act]. The new screening criteria will draw more attention to the so-called “bad actors” than did the old criteria. [The new criteria] will focus on mines that exhibit chronic failures to maintain safe working conditions, have repeated significant and substantial violations, and have not responded to other enforcement tools.

Under the new screening criteria, the operator has a stronger incentive to contest every violation that could be factored into the revised POV criteria.

Logically, as the scope of the POV process expanded, the mining industry soon began to feel the effects. On November 19, 2010, MSHA put 13 mines on notice of possible POV status. On April 12, 2011, two mines were placed on POV status—an “unprecedented enforcement” move in
coal mining.\textsuperscript{146} The POV process is quickly becoming one of MHSA’s most potent and effective enforcement tools. On February 2, 2011, MSHA released a proposed rule that would further revise the existing POV regulations.\textsuperscript{147} The comment period for the proposed rule closed on April 18, 2011.\textsuperscript{148} MSHA argues the revisions would “simplify the existing POV criteria, improve consistency in applying the POV criteria, and more adequately achieve the statutory intent.”\textsuperscript{149} While everyone can agree that habitual offenders and unsafe mining conditions should face stiffer penalties and potential closure, the reality is that as the POV process is ratcheted up, the case backlog and burden on the system will likely parallel these increased enforcement efforts.

\textbf{B. The Inspection Process}

The Mine Act states that representatives of the Department of Labor “shall make frequent inspections and investigations.”\textsuperscript{150} The Act requires underground mines to undergo at least four inspections per year and surface mines twice per year.\textsuperscript{151} MSHA interprets this requirement to mean that each underground mine should be inspected quarterly and each surface mine at least once every six months.\textsuperscript{152} In addition to the mandatory inspections, if dangerous or life threatening conditions are detected at the mine, then MSHA generally conducts more frequent inspections.\textsuperscript{153} MSHA is not required to notify a mine before inspection.\textsuperscript{154} Some large underground mines have inspectors on hand every day conducting inspections and insuring a safe workplace.\textsuperscript{155} Additionally, the Mine Act gives the miner the authority to report possible violations and to require

\begin{footnotesize}
\textsuperscript{146} Manager, Mine Safety and Health Administration, to Johnny Smiddy, Superintendent, National Coal Corporation, (Nov. 18, 2010), \textit{available at} http://www.msha.gov/pov/2010Letters/PPOV%20Letter%20to%20National%20Coal%20April%202010.pdf.


\textsuperscript{149} Pattern of Violations, 76 Fed. Reg. 5719.


\textsuperscript{151} \textit{Id}.

\textsuperscript{152} \textit{Id}.

\textsuperscript{153} Federal Mine Safety and Health Act of 1977 § 103(a), 91 Stat. 1290, 1297.

\textsuperscript{154} \textit{Id}.

\textsuperscript{155} \textit{Id}.
\end{footnotesize}
“immediate” inspections if the miner reasonably believes that an “imminent danger exists.”

During the inspection process, the MSHA inspector uses a check-the-box form to issue citations and violations. The inspector has the sole discretion to rate the violations based on the level of operator negligence from “no negligence,” a lower level of culpability, to the highest level of negligence, “reckless disregard.” If the inspector determines the violation is a “reckless or repeated failure to make reasonable efforts to eliminate a known violation of a mandatory safety or health standard that substantially and proximately caused, or reasonably could have been expected to cause, death or serious bodily injury,” then he can designate the infraction as “flagrant,” which carries with it a maximum penalty of $220,000. More violations coupled with more severe designations leads to more violation points, which are then converted into a much greater proposed penalty. Thus, operators often appeal and attack the inspector’s discretion and inspection reports in hopes of mitigating their proposed penalties. After each inspection, the inspector is required to complete a report and issue a citation and order for each violation. Once the operator is presented with citations and violations, the litigation process generally ensues.

C. The Litigation and Appellate Process

Once the inspector provides the operator with notice of the proposed violations and citations, the operator has 30 days to file a notice of contest to the proposed citations or ten days to request an Enhanced Conference. MSHA is then notified of the citations and violations and a

156.  Id. § 103(g)(1), 91 Stat. 1290, 1298–99.
158.  Id.
159.  Id.
161.  Id.
163.  See C.C. Coal Co., 23 FMSHRC 11822 (2001) (upholding the commission’s finding of a violation despite the fact that other MSHA inspectors had not cited those same conditions in 18 years); see also U.S. Steel Mining Co. Inc., 15 FMSHRC 1541, 1546–47 (1993) (holding that an inconsistent enforcement pattern by its inspectors does not estop MSHA from proceeding under an interpretation of the standard that it concludes is correct); see also TwentyMile Coal Co., 27 FMSHRC 260 (2005) (holding that inspector’s actions did not rise to the level of “arbitrary” to support an abuse of discretion claim).
164.  § 104(a), 91 Stat. 1300.
165.  30 U.S.C § 815(d).
166.  Id.
notice of proposed penalty is provided to the operator. Once again, the operator has 30 days to respond to the proposed penalty and has two procedural choices.

First, the operator can accept the proposed penalty assessment and issue payment, effectively ending the case. Alternatively, the operator may file a written intention to contest the proposed penalty assessment. Once the operator files its written notice to contest the proposed penalty, MSHA notifies the Commission and its jurisdiction is officially invoked over the case. Instantly, MSHA is transformed from regulator to adversary, undermining any hope for an efficient and collaborative outcome. As a result, the controversy is removed from parties who are in the best position to reach a fair and efficient solution, MSHA and the operator. Thus, the parties become entrenched in their positions and the administrative process grinds to a halt.

Once the Commission invokes jurisdiction, the case receives a docket number and is assigned to an attorney at the solicitor’s office or a Conference and Litigation Representative (“CLR”). The government then drafts a petition of civil penalty and notifies the operator. The operator has 30 days to file an answer to the petition.

In most cases, operators neither pay the proposed penalty nor contest the occurrence of the violation. Instead, most operators attack the gravity of the violation itself with hopes of mitigating and reducing the proposed penalty. Once the matter is removed from MSHA’s jurisdiction, the Commission has exclusive jurisdiction, and the law requires that “[n]o proposed penalty which has been contested before the Commission shall be compromised, mitigated, or settled except with the approval of the Commission.” Consequently, the controversy is removed from the best possible setting for compromise and settlement, and it becomes bogged down at the Commission level.

167. 30 C.F.R. § 100.7(a) (2010)
168. 30 C.F.R. § 100.7(b)-(c).
169. Id.
170. Id.
171. Id.
172. Id.
173. 30 C.F.R. § 100.6 (2010).
174. 30 C.F.R. § 100.7(a).
175. 30 C.F.R. § 100.7(b).
176. Id.
As the case backlog stifles the system, what has become apparent is that an enforcement model crafted in the 1970’s and intended to prevent settlement while handling a very small case load is ill-equipped to function in the current regulatory and adversarial landscape. Thus, as additional regulation and more stringent enforcement become the norm, the volume of cases litigated will steadily, if not dramatically, increase. As a result, the system may collapse under the weight of its own arcane and inadequate processes and policies.

Currently, the focus appears to be on changes within the Commission and its handling of cases. This strategy signifies that any hope of improvement and collaboration between MSHA and the operator has been simply ignored or deemed hopeless. There has been little attention focused on changes that could be made before Commission involvement. There are possible statutory and procedural reforms that could aid in stemming the stalemate and provide solutions for reducing the case backlog. Continuing to act as if the emperor has no clothes is no longer a viable option.

III. Production and Statutory Reforms that Avoid Litigation, Facilitate a More Efficient Handling of Cases and Settlements, and Offer a Cost Effective Option in Recessionary Times

A. Increasing the Discount for Good Faith Abatement of Violations

Today, the regulations provide for a “10% reduction in the penalty amount of a regular assessment when the operator abates the violation within the time set by the inspector.” 178 Under the former regulations, operators were entitled to a 30% good faith abatement reduction if the violation was corrected within the time set by the inspector. 179 The Mine Act requires MSHA to weigh the operator’s good faith abatement when assessing a proposed penalty. 180 However, there is no statutory requirement that the operator is entitled to a meaningful or significant discount for timely abatement. Thus, in the face of rapidly increasing violations and penalties, the discount has been reduced to a point where it is no longer a valued incentive for compliance or compromise.

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178. 30 C.F.R. § 100.3(f) (2010).
179. Id.
Based on MSHA’s reduction, one can understand why this development has fueled the operators’ vigilance in contesting violations. Violations and penalties were dramatically overhauled and increased; however, the incentive to quickly abate the violation and voluntarily comply was, by some estimates, unforeseeably decreased. A legitimate argument can be made that an individual or corporation should not receive a discount or bonus for compliance with the law. The citizenry receives no bonuses or discounts when complying with state or federal law but complies because of enforcement and the threat of possible punishment. Contrarily, the public is acutely aware of the benefits received by criminal and civil defendants who quickly comply with the law and settle their disputes in order to avoid trial and litigation. To simply remove or ban this unspoken public incentive would be to arbitrarily omit reason and weigh the criminal and civil system down with voluminous challenges and appeals.

A meaningful good faith abatement discount should be the embodiment of timely compliance and settlement. However, this tool plays a much more important role than a routine discount of operator liability. The discount serves as a bargaining chip for both the regulator and the regulated. Used properly, the good faith abatement discount should serve as a catalyst for prompt corrective action and incentivize timely settlement. Unfortunately, MSHA’s unilateral reduction from 30% to 10% rendered the incentive *de minimus* at best and inflammatory at worst, especially when viewed through the prism of dramatically increased violations and penalties.

An example best illustrates how the new regulation fails to incentivize compliance and, instead, incentivizes delay, avoidance, and litigation. Hypothetically, under the previous law, the operator who was assessed a $25,000 penalty for a willful violation would receive a 30% reduction of $7,500 if the violation was corrected in a timely manner. Clearly, a $7,500 discount creates a meaningful incentive to swiftly abate the violation and pay the remaining $17,500 penalty without contesting the underlying violation while avoiding the risk of incurring costly litigation fees and expenses.

Now, examine the same scenario under the new regulations and penalties. The operator is cited for a “willful violation” and is assessed a proposed penalty assessment of $250,000. The current 10% reduction provides only a $25,000 discount to swiftly abate the violation and still requires the operator to pay the remaining $225,000 penalty. Consequently, the operator faces a very significant penalty and receives only a minimal reduction. Even though the operator receives a much larger discount under the new regulations, the discount does not reduce the penalty to a level that discourages litigation when compared to the old regulations. Thus, the
operator has a clear incentive to simply avoid payment or settlement and contest the violation and proposed penalty. Thus, MSHA’s 2007 adjustment has clearly rendered the good faith abatement discount meaningless. A civil penalty system should encourage compliance instead of incentivizing litigation. However, instead of encouraging compliance, MSHA has decided to shrink the size of the carrot and dramatically increase the size of the stick.

Instead of using the discount mechanism to incentivize compliance, MSHA relies on the threat and force of the “withdrawal order.” The “withdrawal order” remains the strongest incentive for timely abatement of violations. The law requires the inspector to set a “reasonable time” for the abatement of all violations regardless of severity. In setting a time frame, the inspector examines the nature of the hazard and what corrective actions are needed to solve the issue. If the operator fails to abate the violation within the required time frame, then the inspector issues a “withdrawal order” closing that area of the mine or the entire mine until the violation is corrected. Additionally, operators can, and often do, face daily penalties for failure to abate violations in a timely manner. In most cases violations are abated on the same day the inspector issues the citation.

To help reduce the case backlog and improve the current system, the good faith abatement reduction should be substantially increased or, at a minimum, returned to its pre-2007 level of 30%. However, the operator should choose which avenue to pursue: discount and settlement or forfeiture of the discount and litigation. Civil litigants, the government, and criminal defendants weigh the following options every day: settle and receive a reduced sentence or liability or litigate the issue and face uncertain or possible increased liability.

A revised examination of our previous example will help shed light on the issue. For argument’s sake, assume a 50% good faith abatement incentive to avoid litigation and compliance. Under the new regulation the operator is assessed a “willful violation” totaling $250,000. The operator can abate the violation in a timely manner and receive the 50% discount totaling $125,000. The operator would still be required to pay the $125,000 penalty, which is clearly a substantial sum. However, if the operator decided to challenge the violation and penalty, then the operator would forfeit the
discount and face $250,000 in exposure. Regardless of the operator’s election, the operator would still be forced to abate the violation in a timely manner or risk further penalties and a possible “withdrawal order.” Thus, even after the case is settled or a final decision is reached by the Commission, the operator may only realize a small penalty reduction instead of the initial $125,000 discount. Conversely, the operator could challenge the violation and receive a greater penalty reduction depending on the strength of the operator’s case. Regardless of the end result, the increased discount and incentive to settle will force the operator to conduct a more thorough cost-benefit analysis, start a dialogue between the parties, and require a more extensive review of each case’s strengths and weaknesses.

MSHA would receive several benefits as well. An increased discount to avoid litigation would save personnel time and resources in light of an inevitably shrinking federal budget. MSHA could allocate more resources to safety compliance and enforcement rather than litigation. In the end, an environment that fosters compliance is encouraged to ensure a safer workplace.

Also, the increased good faith abatement discount would reduce the case backlog as it forces the operator to conduct a more extensive cost-benefit analysis when contesting violations and penalties. As the system stands today, the operator’s incentive is to simply appeal every violation, no matter how trivial, and let the process play out over a period of months or even years. A legitimate and meaningful good faith discount is needed to help resolve the current case backlog and restore confidence in the system. The increased discount would serve as an incentive for the operator to work with MSHA to swiftly abate violations and voluntarily comply with the law. Also, this important incentive would bring the operator to the negotiating table and facilitate a more collaborative and efficient approach to mine safety. Finally, the risk-reward option would force the operator to conduct a more meaningful, well-reasoned cost-benefit analysis in deciding whether to contest today’s heightened violations and penalties or to face the uncertainties of litigation.

B. Prepayment of Penalties as a Condition to Challenge Violations

Currently, mine operators can, and often do, appeal almost every major and substantial violation and citation. 186 Currently, there is no requirement

186. Abdullah, supra note 23.
that the mine operator prepay the amount of proposed penalties it intends to contest. Instead, the current system enables the operator to simply conduct a wholesale appellate approach to all violations in an attempt to delay and frustrate the system. There is a push among some lawmakers to make the operator invest more in the litigation process, as evidenced in the Robert C. Byrd Miner Safety and Health Act of 2010.\(^{187}\) The proposed law requires operators to pay pre-judgment interest on any contested penalty amount not reduced by the Commission in its final order.\(^{188}\) However, with the current political stalemate, there is little hope the pending legislation will become law.\(^{189}\) Additionally, the proposed legislation arguably fails to go far enough as it only requires pre-judgment interest to be paid after a final order has been entered by the Commission.\(^{190}\) Thus, the operator faces an additional penalty,\(^{191}\) but this does little to prevent litigation and reduce the case. Ultimately, this proposed solution still enables the operator the unfettered ability to challenge and appeal almost every violation. These failed and inadequate solutions have systematically contributed to the crisis. What the parties need now is a swift and effective departure from the failed policies of the past.

Alternatively, to help stem the tide of dilatory tactics and blanket appeals, the operator should be required to prepay the entire proposed penalty for each violation and citation it intends to challenge. Operators should be forced to invest more than their litigation expenses in delaying the efficient and timely implementation of safety laws, regulations, and corrective action. Lawmakers have a viable solution at their fingertips; they should simply adopt the current approach found under the Surface Mining Control and Reclamation Act (SMCRA).\(^{192}\) Under SMCRA, the operator is compelled to prepay the entire proposed penalty before appealing a violation.\(^{193}\)

\(^{188}\) Id.
\(^{190}\) Robert C. Byrd Miner Safety and Health Act of 2010, H.R. 5663, 111th Cong. § 305(a) (2010).
\(^{191}\) Id.
\(^{193}\) Id.
SMCRA was implemented by Congress in 1977 to “protect society and the environment from the adverse effects of surface mining operations.”\textsuperscript{194} The purpose of SMCRA is to establish an effective and efficient comprehensive “program involving both federal and state regulatory authorities aimed at controlling the adverse effects of surface mining.”\textsuperscript{195} One interesting facet of SMCRA, known as “state primacy,” allows “states [to] assume primary responsibility for regulating surface coal mining activities within their borders by applying to the Secretary of the Interior for permanent program approval.”\textsuperscript{196} Therefore, if a state’s program is not approved or the state does not apply\textsuperscript{197} to the Department of the Interior, surface mining is solely governed by the federal system through the Office of Surface Mining (OSM).\textsuperscript{198} Regardless of whether a state falls under the auspices of exclusive federal control or has a comparable state regulatory system, OSM has the authority to compel compliance through inspections, “issuance of federal notices of violation, cessation orders,\textsuperscript{199} and the imposition of federal civil penalties.”\textsuperscript{200} OSM’s enforcement system is similar to the factor-point system utilized by MSHA.\textsuperscript{201} In assessing points, OSM considers: (1) history of previous violations, (2) seriousness of the violation, (3) negligence of the operator, and (4) operator’s good faith abatement of the violation.\textsuperscript{202} The amount of violations and severity are then assigned points, which are converted into civil penalties.\textsuperscript{203} The maximum penalty for a violation of SMCRA is $7,500 per day, per violation.\textsuperscript{204} Consequently, SMCRA penalties are very modest when compared to their

\textsuperscript{194} SMCRA § 202(a), 30 USC § 1202(a).


\textsuperscript{196} Id. at 245.

\textsuperscript{197} SMCRA § 504(a),(b),(c); 30 U.S.C. § 1253(a),(b); 30 U.S.C. § 1254(a),(b),(c) (Tennessee and Washington are currently the only coal producing states without privacy and that there are 24 primacy states: Alabama, Alaska, Arkansas, Colorado, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Mississippi, Missouri, Montana, New Mexico, North Dakota, Ohio, Oklahoma, Pennsylvania, Texas, Utah, Virginia, West Virginia, Wyoming.\textsuperscript{198} See Substituted Federal Enforcement of Portions of the Tennessee Permanent Regulatory Program and Director’s Findings on Status, 49 Fed. Reg. 15,496 (1984) (finding that Tennessee’s program failed to receive necessary approval).

\textsuperscript{199} See Zaluski & Davis, supra note 195, at 246 (arguing that, similar to NOV, a cessation order is one of the most important OSM enforcement tools since it allows OSM to shut down an operation and order the worksite closed until the operator comes into compliance with the law).

\textsuperscript{200} Id.

\textsuperscript{201} 30 C.F.R. § 845.13 (2010).

\textsuperscript{202} Id.

\textsuperscript{203} 30 C.F.R. § 845.14.

\textsuperscript{204} Id.
counterpart within MSHA's statutory and regulatory framework. However, the possibility exists for operators to incur significant penalties under the current SMCRA and regulatory framework.205

Once a proposed civil penalty is issued to the surface mine operator, the operator has a choice to either pay the proposed penalty or contest it.206 However, if the operator chooses to contest the penalty, it must forward the entire amount of the proposed penalty to the Treasury Department for placement in escrow.207 If the operator prevails, then the operator receives the prepayment back in full, plus six percent interest or the prevailing Treasury rate, whichever is greater, within 30 days.208

Under this proposed amendment, the operator will have a greater incentive to conduct a more thorough and well-reasoned cost-benefit analysis before challenging almost every violation. As previously discussed, an illustration best shows how the prepayment condition will force the operator to conduct a meaningful cost-benefit analysis when contesting proposed penalties after earning a meaningful discount for timely abatement. For instance, assume the operator is assessed a proposed penalty of $250,000. Instead of paying the $125,000 penalty after realizing a discount of $125,000 for good faith abatement, the operator decides to challenge the violation.

First, the operator would be required to prepay the entire $250,000 proposed penalty in order to appeal the violation. The operator’s willingness to contest large penalties would significantly reduce liquidity and deplete corporate balance sheets. Therefore, the operator’s ability to purchase equipment, acquire leaseholds and mineral rights, pay dividends or judgments, or simply reinvest would be negatively affected.

For simplicity, a hypothetical examination of a simple investment will yield the benefits of avoiding pre-payment and litigation and receiving the 50% good faith abatement reduction. Instead of contesting the $250,000 “willful violation” penalty and being compelled to pre-pay the entire amount, the operator receives the 50% discount for compliance and avoids litigation. Thus, the operator saves $125,000 and could then invest the savings. This $125,000 conservatively invested over a three-year period, with a seven percent return compounded annually, grosses $153,130.38 and a subsequent profit of $28,130.38. A modest profit of approximately $28,000 will most likely not halt the operator in its litigation tracks.

205. Id.
206. 30 C.F.R § 845.19(a) (2010).
207. Surface Mining Control and Reclamation Act of 1977 § 518(c), 30 USC § 1268(c) (1977).
208. Id.
However, when the model is applied to millions of dollars in contested penalties, a significant amount of capital is placed at risk. Excluding the proposed amendment to increase the good faith abatement discount, if the operator decides to contest the $250,000 violation, the operator will be compelled to pre-pay the entire penalty as a condition to file a notice of contest. This $250,000 invested over three years at seven percent interest compounded annually yields a gross amount of $306,206.75 and a profit of $56,260.75. Conversely, the operator could still receive a return on the penalty prepayment if the operator prevailed before the Commission. Thus, the operator has recourse that provides a gain that is dependent upon the strength of its case and likelihood of success. However, the profit received from the prevailing Treasury rate would most likely be less than that yielded through private sector investment. Regardless of the costs or potential gains, the effects of a pre-payment requirement would significantly impact the decision-making process of large operators like Massey who were, by some estimates, contesting 97% of all major violations.

Additionally, adoption of the SMCRA prepayment requirement would greatly reduce potential court challenges and facilitate a more timely and effective implementation on the coal industry. Despite SMCRA’s modest penalties, the law has been challenged and has survived operator challenges. SMCRA’s prepayment condition to appeal alleged violations has withstood several Constitutional and court challenges. In United States v. Finley, the court found that prepayment was not a violation of the operator’s due process rights. In Hodel v. Indiana, the Court held the conditional prepayment did not constitute a “taking” under the Fifth Amendment. Finally, in United States v. Hill and Graham v. Office of

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209. Legislation or regulation could allow exceptions for indigent and small operators who are unable to prepay large proposed penalties in order to alleviate due process concerns and permit access to the courts. The small operator could be forced to prepay a percentage of the penalty determined by annual revenues and profits. This information could be easily obtained and provided based on Internal Revenue Service (IRS) filings.


211. See e.g., Graham v. Office of Surface Mining Reclamation and Enforcement, 722 F.2d 1106 (3rd Cir. 1983) (upholding the constitutionality of the escrow deposit provision as applied to operators).

212. United States v. Finley, 835 F.2d 134, 137–38 (4th Cir. 1987) (finding that the prepayment requirement does not violate procedural due process as the operator still has the right to contest the violation; prepayment is merely conditional).


Surface Mining Reclamation & Enforcement,\textsuperscript{215} the courts found the legislation did not violate the equal protection of the law.

A prepayment requirement would also aid in improving the judgment of some MSHA inspectors who sometimes issue unreasonable or unsubstantiated violations.\textsuperscript{216} If the operator is required to invest substantially in the litigation process, it is only fair that the federal government and regulators be required to invest precious resources in the process as well. Once the federal government is forced to issue costly repayments with interest, regulators may feel the pressure to apply a more analytic and well-reasoned approach to writing citations and violations. This simple and relatively inexpensive procedural reform would help refocus MSHA's approach to working with the operator, especially once violations are overturned or reduced and an already underfunded system sees greater budgetary reductions. Ultimately, the prepayment requirement would serve as a motivational tool for both parties to work together to reach a compromise and avoid litigation.

C. Redefining the Role of the Safety and Health Conference as a Viable Means of Alternative Dispute Resolution

Once the operator challenges the proposed penalty assessment, Commission jurisdiction is invoked and no informal resolution can be reached without Commission approval.\textsuperscript{217} The Commission is required to approve any compromise, mitigation, or settlement reached between MSHA and the operator.\textsuperscript{218} Under the current procedure, the parties have difficulty informally settling claims because there are few, if any, avenues for settlement other than formal litigation before the Commission. As originally conceived, the “Informal Safety and Health Conference”\textsuperscript{219} (“Informal Conference”), now known as the “Enhanced Conference,”\textsuperscript{220} was intended

\textsuperscript{215} Graham v. Office of Surface Mining Reclamation & Enforcement, 722 F.2d 1106, 1114 (3d Cir. 1983).

\textsuperscript{216} See Sewell Coal Co., 1 FMSHRC 864, 865, 872, 873 (1979) (determining whether the Secretary was authorized, without obtaining a warrant, to examine a mine operator’s personnel records, which contained information both related and unrelated to reporting requirements under Part 50. Recognizing that the Mine Act “does not authorize wholesale warrantless, non-consensual searches of files and records in a mine office,” then-Chief Administrative Law Judge Broderick held that 30 C.F.R. § 50.41 does not authorize the Secretary to inspect without a warrant).


\textsuperscript{218} Id.

\textsuperscript{219} Procedure Instruction Letter, No. I08-III-01, Mine Safety and Health Administration (2008).

\textsuperscript{220} Id.
to serve as a litigation “escape valve,” allowing MSHA and the operator to mitigate, vacate, or settle an alleged citation without Commission involvement and formal litigation. In reality, the Informal Conference has historically played an extremely limited role, but it now serves as a beacon for underutilization and mismanagement.

Currently, there are 16,000 cases, consisting of more than 80,000 violations, pending before the Commission. The initial conferencing system was eliminated in 2008. Prior to February 2008, MSHA held the Informal Conference before the assessment of the civil penalty and Commission jurisdiction. After the Informal Conference, MSHA would assign a proposed penalty based on modifications and reductions to the amount and the severity of the alleged violations. Thus, the Informal Conference was held much earlier in the process: after the inspector’s citation, but before MSHA issued a proposed penalty. This pre-penalty process allowed MSHA and the operator to conceivably settle and mitigate disputes in an efficient manner.

In March 2009, MSHA reformed this process and instituted the new Enhanced Conference. Consequently, operators are required to file a notice of contest before MSHA will grant the operator’s request for an Enhanced Conference. Once the notice is filed, the Commission has jurisdiction over the matter and the Commission’s approval is required for all settlement agreements. Thus, MSHA’s procedural and policy shift, coupled with Commission jurisdiction, has compounded the case backlog. After a close examination of both conferencing options, the most

222. Id.
223. BELL, supra note 27, at 1.
226. Id. at 224.
227. Id.
229. Id. at 1.
230. Id.
231. Id.
232. § 106(a)(1), 91 Stat. at 1306.
233. Id. at 224.
effective alternative would be to hold the conference before MSHA issues any proposed penalty and the operator is compelled to file its notice of contest.234

Under the Enhanced Conference system, the parties are given the opportunity to review each citation issued during an inspection with MSHA.235 However, MSHA has the discretion to grant the request and determine the scope of the conference.236 As a result, even if the operator wants to settle the claim and avoid formal litigation, the decision to grant the Enhanced Conference rests solely with MSHA, one of the litigants. Thus, a clear conflict emerges and undermines the integrity of the process. Ideally, a fair and legitimate alternative dispute resolution (ADR) procedure cannot rest solely within one party’s discretion, especially when that litigant has complete control over the process.

Despite the ineffective timing of the Enhanced Conference, other issues also serve as impediments. First, the mine inspector rarely attends the conference;237 the individual in the most advantageous position to educate the parties as to the legitimacy and nature of the violations is absent.238 As a consequence of the inspector’s absence, the operator often receives a penalty reduction or abatement of the violation.239 Clearly, under this protocol the outcome is tarnished. Even though the operator may receive a reduction and leave with some sense of satisfaction, this sentiment is not attributable to any form of collaboration or understanding. Instead, the sentiment is due to miscommunication and a lack of information. Therefore, the parties enter the conference with a wait-and-see strategy as to whether the inspector will attend rather than a genuine motivation to mediate. Obviously, a system that encourages this type of ADR strategy will rarely produce meaningful outcomes for the parties and is most likely doomed for failure.

In a recent MSHA “Procedure Instruction Letter,” the agency stated: “District Managers and Conference and Litigation Representatives (CLRs) have discretion regarding the timing of safety and health conferences and are encouraged to defer conferences until after the civil penalties have been proposed and timely contested.”240 Informal conferences have been replaced

234. Id.
235. 30 C.F.R. § 100.6(a) (2010).
236. Id.
237. Rivlin, supra note 228, at 3.
238. Id.
239. Id.
by time consuming and costly litigation. Under the current system, MSHA assesses all citations immediately. The operator then has ten days to request a conference and contest all proposed penalties in writing. MSHA assigns a CLR to the file, who then files a request with the Commission for a 90-day period within which to conduct the conference. If a settlement is reached, the CLR files the proposed settlement with the Commission for approval. However, if a settlement is not reached, the parties proceed to “formal” litigation, a place all too familiar for the parties, and a track they have been on for several months before the procedural event.

Knowing the current conferencing system is badly broken, MSHA unveiled a “Pilot Mediation” procedure on August 20, 2010. The pilot procedure commenced on August 31, 2010, and was set to run for a 90-day test period. MSHA stated the goal of the pilot program was to “alter [the] ‘safety and health conferences’ so that mine operators can informally dispute citations before filing a formal appeal with the [Commission].” Due to the case backlog and the need for a legitimate mediation procedure, MSHA is “considering reinstituting a conferencing system that was eliminated in 2007 partly in response to criticism that too many citations were being thrown out in a manner too friendly to the industry.” Currently, the program is being conducted in three district offices: Coal District Two in Mount Pleasant, Pennsylvania; Coal District Six in Pikeville, Kentucky; and the Metal/Nonmetal Southeast District in Birmingham, Alabama. However, the rise or fall of the Pilot program is statistically unclear at this time.

At first glance, this appears to be a welcome move to all the stakeholders. In reality, this Pilot program, like its predecessors, is premised upon the failed policies and procedures of the past. However, in a rare agreement between the Obama Administration and the coal industry, MSHA head Joe Main conceded, “[i]t is clear . . . the current conferencing structure is not working,” and “[b]y resolving factual disputes before a violation is contested, these citations will not be added to the enormous backlog of
cases that have bogged down the judicial system.”250 Despite the fact that the mining industry, the Obama Administration, and MSHA appear to agree about the need for a legitimate mediation process, the United Mine Workers of America (“UMWA”) has expressed concerns over the proposed mediation system. A UMWA spokesperson recently noted that, if the proposed pilot mediation program is a return to the 2007 program, the pilot would mark a “step backwards” for miner safety.251

While there is clearly a need for the parties to have the right to elect mediation as an alternative to the current stalemate, simply turning back the clock in some vain attempt to restore the lost symbiotic relationship between MSHA and the operator will not work in today’s civil penalty arena. The benefits of litigation clearly outweigh the incentives to find a compromise.

The Informal Conference system, while procedurally positioned at a more advantageous time to reach settlement, was still largely ineffective.252 Similar to the Enhanced Conference, the operator was required to request the Informal Conference within ten days of receipt of the citation.253 However, MSHA was under no statutory requirement to conduct the conference within a prescribed time frame.254 Thus, the operator would request the conference and then wait to see if MSHA would unilaterally grant the request. This was especially problematic as the 30-day statute of limitations to contest a citation or violation to the Commission continued to run.255 Consequently, the operator would file a “‘protective’ notice of contest” pending the outcome of the Informal Conference.256 This raised three very problematic issues.257 First, once the protective notice of contest was filed, the threat of formal litigation greatly diminished MSHA’s willingness to conduct the Informal Conference, jeopardizing an opportunity for settlement.258 Consequently, MSHA would then elect to have all discussions with the operator through legal counsel,259 thereby reducing communication and transforming the Informal Conference into a more adversarial process. Second, there was always uncertainty as to

250. Id.
251. Id.
252. Id.
253. Savit & Duffy, supra note 221.
254. Id.
255. Id.
256. Id.
257. Id.
258. Id.
259. Savit & Duffy, supra note 221.
whether or not Commission approval was required for outcomes reached during the Informal Conference once the protective notice of contest was filed.\textsuperscript{260} This jurisdictional quandary only propelled the parties further toward formal litigation and reduced any willingness to reach settlement during the Informal Conference. Third, in previous cases, conferencing officers were used to help expedite the process.\textsuperscript{261} While the use of conferencing officers helped avoid the timing issues, the conference officer was not always “fully trained, prepared, or authorized to deal with the wide array of legal, factual, and technical arguments he or she may face.”\textsuperscript{262} In the end, the Informal Conferencing structure, “when available, stymie[d] the efforts of . . . the parties to resolve conflicts without” formal litigation.\textsuperscript{263} As a result, cases ripe for settlement were contested and appealed in an attempt to find a legitimate forum to conduct settlement negotiations.\textsuperscript{264}

A legitimate and successful ADR process will require more transparency and procedural safeguards to ensure that all the parties arrive at the conference with a willingness to come to a fair, reasonable, and justifiable outcome. A new approach is desperately needed. Simply reinstituting the prior conferencing structure and labeling it “Pilot,” with no substantive reforms to the process, will be unsuccessful. Therefore, the conference structure and procedure surrounding it must be completely overhauled so that the parties are willing to participate and invest in mediation.

First, the timing of the conference needs to be reformed so the operator and MSHA can mediate controversies without Commission involvement. The Enhanced Conference should ideally take place before any proposed penalty is assessed against the operator.\textsuperscript{265} Additionally, all filing deadlines should be tolled until the conference is conducted,\textsuperscript{266} thus forestalling formal litigation and allowing the parties to attempt mediation.

\textsuperscript{260} Id.
\textsuperscript{261} Id.
\textsuperscript{262} Id.
\textsuperscript{263} Id.
\textsuperscript{264} Id.
\textsuperscript{266} See Savit & Duffy, note 221 (offering solutions to incentivize mediation of disputes).
Currently, there is no requirement for MSHA to conduct the Enhanced Conference. Instead, the decision to grant the operator’s request rests safely within the confines of MSHA’s regulatory powers. MSHA’s unilateral decision-making power only serves to undermine the process and fuel the operator’s frustration. Therefore, a deadline and requirement should be imposed on MSHA. As long as the operator requests the conference within ten days following the inspection, MSHA should be compelled to grant the conference and conduct it within 60 days of the operator’s request. MSHA’s failure to hold a timely conference would result in the dismissal of violations and citations against the operator. This procedural reform would bring both parties to the negotiation table and facilitate a meaningful dialogue. While discernment cannot be mandated, procedural mechanisms can be instituted that facilitate compromise and settlement. This policy shift would relieve the operator’s frustration at not being heard while implementing a formal procedure that thwarts arbitrary and inconsistent decision making. Thus, a more bright-line, consistent process would be laid out for the parties.

Further, the role and expectations of each party must be clearly defined. As the current conferencing system stands, the expectations and requirements are unclear and undefined. First, the mine inspector should be required to attend the conference. The inspector has the ability to provide the CLR, hearing officer, and operator with an explanation267 as to why the citation was issued. This crucial piece of evidence would help both parties gain a better understanding of the strengths and weaknesses of each other’s case. Additionally, the inspector’s attendance would have the added bonus of allowing him or her to gain a new perspective regarding enforcement and inspection issues from both sides. This will also create more consistency during the inspection process while fostering a more collaborative and cooperative relationship between the operator and inspector.

Also, a neutral third party should be incorporated to work with the operator and CLR. The CLR or the solicitor’s office should continue its representation of MSHA. However, the role of the hearing officer should be reformed to that of a mediator or neutral third party. One option that has been proposed is to retain retired and former ALJs, solicitors, or attorneys268 to serve as mediators during the Enhanced Conference. Those individuals familiar with mine safety and the regulatory issues facing today’s inspectors

267. Rivlin, supra note 228, at 4.
268. See Heenan, supra note 265 (suggesting that former solicitors, former judges, or other attorneys may be willing to mediate cases and the parties would be willing to share the cost).
would require less training and avoid unnecessary delay or expense. However, mediation and negotiation training will be an essential step even though these professionals may have extensive substantive knowledge.

Additionally, the mine operator and CLR must come to the negotiating table in good faith with a willingness to work toward a resolution. Congress cannot compel good faith and discernment. However, a more transparent and open discovery process during the Enhanced Conference would serve to expose each party’s strengths and weaknesses and facilitate a more fruitful, focused, and candid negotiation. The exchange of information would take place before discovery rules attach; however, the parties would have to exercise good faith.269 Additionally, this open pre-litigation exchange of evidence and information would inform and educate the mediator about the issues and disagreement. A more transparent process and an earlier exchange of evidence will be essential to the success of the reformed Enhanced Conference. With these reforms, the Enhanced Conference will finally serve its intended role as an escape valve to formal litigation. More importantly, the informal conference will become a viable means of ADR that can legitimately and efficiently serve the parties, settle disputes, and reduce the case backlog.

CONCLUSION

A civil penalty system should encourage compliance rather than litigation, delay, frustration, and avoidance. MSHA and the industry have become entrenched in their positions where economics and principles, rather than a safer workplace, are the driving forces of compliance. Procedural reforms must be implemented in order to save a system ill-equipped to efficiently navigate today’s regulatory and litigation landscape. These procedural reforms will provide incentives to avoid litigation and encourage the parties to come to the negotiating table. Also, the reforms will facilitate a dialogue that will focus on solving today’s safety issues and ensure a safer workplace. Choosing to ignore the case backlog and relying on outdated legislation, policies, and strategies will only enable the system to fail. America will once again be forced to endure a tragedy that could have been prevented by these procedural reforms aimed at transforming the present adversarial system into one that encourages and fosters collaboration toward workplace safety.

269. Id.
MANAGING COAL: HOW TO ACHIEVE REASONABLE RISK WITH AN ESSENTIAL RESOURCE

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INTRODUCTION

Can the future of world energy production occur without coal? 1 Coal as an energy source laid the foundation for the modern industrial era. In the twentieth century, the ability to broadly and efficiently turn coal into electricity made possible the major technology developments that have defined modern society, and led to rising standards of living and longer life spans throughout the world. 2 The U.S. Academy of Engineering called this societal electrification the “greatest engineering achievement” of the past century, 3 a century that saw population growth of over four billion people, the rise of the metropolis, dramatic improvements in diet and health, and emergence of a vast system of electronic communication.

Today, electricity generation still relies heavily on coal-burning power plants, which provide forty-six percent of electricity production in the United States 4 and approximately forty percent of electricity worldwide. 5 America’s coal reserves have also been estimated to contain more energy value than Saudi Arabia’s oil. So, what does the future hold? One thing is for certain: demand for electricity is going to continue to rise. Net U.S. electricity demand is expected to increase by thirty-one percent between

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2. Robert Mann, Another Day Older and Deeper in Debt: How Tax Incentives Encourage Burning Coal and The Consequences for Global Warming, 20 PAC. MCGEORGE GLOBAL BUS. & DEV. L.J. 111 (208). (stating that coal has “kept us warm, fired our factories, fed our trains and lit our world”).


2009 and 2035, with similar increases around the world. Thus, given current production and reserves, it seems clear that if the United States is and other countries are going to meet this rapidly increasing demand for electricity, coal is going to continue to be an essential resource.

At the same time, coal has been increasingly facing environmental opposition stemming from allegations related to mining operations, coal’s impacts on air and water quality, and climate change. These allegations are the driving force behind several high-profile lawsuits, including three reaching the Supreme Court of the United States, a “cap and trade” proposal that received significant legislative consideration, and new Environmental Protection Agency regulations of coal mining, water quality impacts, and emissions of conventional pollutants as well as carbon dioxide and other gases collectively referred to as “greenhouse gases” (GHGs).

As U.S. policymakers continue to develop America’s energy policy and seek to assure the American people that they will continue to have stable, affordable sources of electricity, one of the most important questions has become, what principles should guide the nation’s decisions for managing risks and maximizing the benefits of coal?

The answer to this question cannot be derived in a vacuum. It must be informed by a comparable examination of other forms of energy that also will be important to electricity generation in the twenty-first century. These other energy sources include nuclear plants, natural gas, hydroelectric dams, wind, solar and biomass. As Julio Friedmann of Lawrence Livermore National Laboratory has explained, each one of these energy forms is “limited by cost, limited by scale, limited by physics and chemistry, [or] limited by thermodynamics.” The goal for U.S. energy policymakers,
therefore, is to weave together cogent strategies for managing the risks, benefits and capabilities of all of these energy sources.

This article seeks to assist policymakers with this task by facilitating an honest debate and focusing on sound scientific and traditional legal principles. Part I lays a foundation for the discussion by providing an historical perspective on coal use and production. Part II evaluates the potential and limitations of the other electricity generation resources. Part III begins by factually debunking five prominent myths in the public domain about coal production and conversion. It then sets forth five core principles for policies and regulations that can facilitate coal’s continued use, along with the other energy sources, as a reliable, inexpensive, and environmentally sound source of global electricity.

I. COAL PRODUCTION AND USE IN THE UNITED STATES: INDUSTRIAL REVOLUTION, ELECTRIFICATION, AND MODERN INDUSTRY

A. Coal and the Industrial Revolution

The first recorded commercial shipment of coal in the United States occurred in 1758, when thirty-two tons were exported from the James River district in Virginia to New York. At that time, and through the early 1800s, America lagged behind Europe in the development of factories. American manufacturing was powered by water from small streams, which was not sufficient to develop an iron trade, leaving industry to use flimsier wooden machines. Metal products and machinery were manufactured in small shops, not mass produced. Sources of fuel for heating and cooking were primarily charcoal or wood.

Coal was discovered in the United States in Pennsylvania, and by 1830, Pittsburgh was the only industrial center with sufficient bituminous coal (“soft coal”) for household and industrial use. Transporting coal across Pennsylvania’s Appalachian mountains was prohibitively expensive. The

15. Id. at 142, 147, 176. See also BARBARA FRESE, COAL: A HUMAN HISTORY 110 (Perseus Publishing ed. 2003) (noting that, in 1832, outside of Pittsburgh, which had access to coal, nearly all of the nation’s large factories were powered by water).
17. Id. at 152–53.
18. Id. at 150.
small amount of anthracite coal ("hard coal") that American industry used came from Great Britain and Nova Scotia.\textsuperscript{19} The ability to transport coal is what led to the revolution in steam power, iron making, and factory growth.\textsuperscript{20} Three major coal canals were completed in the early 1830s,\textsuperscript{21} after which annual output of the Pennsylvania fields\textsuperscript{22} rose from 210,000 tons in 1830 to 1.2 million tons in 1837, to 3.3 million tons in 1847.\textsuperscript{23} Nationwide coal production increased from 900,000 tons in 1830 to 8.4 million tons in 1850.\textsuperscript{24} Completion of the Pennsylvania Railroad in 1853 further expanded coal availability throughout the United States.\textsuperscript{25}

This affordable Pennsylvania anthracite coal provided sufficient heat, through steam power, to fuel manufacturing in the Northeast.\textsuperscript{26} As a result, American consumption of high-grade iron tripled,\textsuperscript{27} which led to increased production of high-quality stoves, furnaces, agricultural equipment, machine tools, glass, and paper.\textsuperscript{28} Iron production also powered factories that made rails, wheels, locomotives, and engines.\textsuperscript{29} In rural areas, steam engines replaced wood-burning engines to process sugar, rice, flour, cotton, and other crops.\textsuperscript{30} Within twenty years, factories had more than 500 workers,\textsuperscript{31} and by the turn of the century, coal satisfied three-quarters of America’s demand for energy.\textsuperscript{32} Coal became so integral to the shift to an industrialized society that the 1902 miners strike marked the first time a U.S. President, Theodore Roosevelt, intervened in a major labor dispute on the side of workers.\textsuperscript{33}

\textsuperscript{19} See id. at 151 (explaining that anthracite coal has higher carbon content and greater energy yield per ton than bituminous coal. Anthracite coal gained use in domestic heating and cooking, as well as a source of heat for manufacturers, blacksmiths, bakers, and brewers. Bituminous coal was primarily used for railroad locomotives, steam engines, to make coke for steel.).
\textsuperscript{20} Id. at 150.
\textsuperscript{21} See id. at 155–56; see also Freese, supra note 15, at 118-21.
\textsuperscript{22} More than three-quarters of the nation's coal production was concentrated in Pennsylvania in 1850. See Schurr & Netschert, supra note 13, at 63. Slightly more than half of total coal production was anthracite, mined in northeastern Pennsylvania, while the remainder was bituminous coal, most of which was produced in western Pennsylvania. Id.
\textsuperscript{23} Chandler, supra note 14, at 158.
\textsuperscript{24} Schurr & Netschert, supra note 13, at 62.
\textsuperscript{26} See Chandler, supra note 14, at 165. In the 1840s alone, manufacturing rose from 17 percent to 30 percent of the national product. Freese, supra note 15, at 126.
\textsuperscript{27} Chandler, supra note 14, at 159–65.
\textsuperscript{28} Id. at 168–69.
\textsuperscript{29} Id. at 168.
\textsuperscript{30} Id. at 166.
\textsuperscript{31} Id. at 177–78.
\textsuperscript{32} Schurr & Netschert, supra note 13, at 67–69.
\textsuperscript{33} Freese, supra note 15, at 140-41.
B. Coal's Role in Lighting and Electrification

The first coal-fired electric generating station, Pearl Street Station, went into operation in New York City in 1882. Designed by Thomas Edison, it supplied electricity for households in lower Manhattan.34 In 1917, American Gas & Electric (AG&E), now American Electric Power, established the first long-distance, high-voltage, transmission line.35 AG&E built its Windsor, West Virginia steam plant at the mouth of a coal mine to eliminate transportation costs.36 One year later, the Oneida Street Plant in Milwaukee used pulverized coal for the first time, paving the way for more efficient use of fuel.37 Further developments in technology allowed coal-fired plants to produce more energy with less coal.38 By 1920, coal provided 90 percent of the fuel used at these plants.39 By 1955, coal use quadrupled in electricity-generating plants, where the amount of power generated increased from 24 billion to 434 billion kwh.40

This electrification led to significant rises in living standards and life expectancies. Electricity made homes safer because it reduced the number of open fires in homes. Modern refrigeration allowed Americans to have fresh meat and produce throughout the year and reduced numerous gastrointestinal threats by preventing meat from spoiling. Better ventilation in homes and workplaces lessened exposure to disease and other airborne threats. By 1930, nearly 90 percent of residents living in urban areas had electricity in their homes.41 Electrification had a major effect on domestic

34. History of Pearl Street, CONEDISON, http://www.coned.com/pearlstreet125/ (last visited June 1, 2012). Before the Pearl Street Station was constructed, gas light, which became common for lighting streets and homes in cities and large towns by the late 1860s, was powered by gas made from coal and piped beneath streets. FRESE, supra note 15, at 147. Following the Civil War, kerosene provided an alternative lighting source and was used largely in rural areas. Before the use of coal and oil for interior lighting, sperm whale oil provided the dominant source. As Freese, a critic of the potential environment impacts of coal acknowledges, coal and oil thus helped save the whales, just as coal had for centuries helped save the remaining forests.” Id.


36. Id.


38. See SCHURR & NETSCHERT, supra note 13, at 81 (noting it took seven pounds of coal to generate one kwh of electricity in 1900, twenty years later, three pounds of coal produced the same output, and by 1954, generating one kwh of electricity required only one pound of coal).

39. Id. at 80.

40. See id. at 80–81. Between 1920 and 1955, reliance on coal for electric power declined as a share of fuel used from 90 percent to 70 percent, yet, given the dramatic increase in demand for electricity, coal consumption by the plants significantly increased. Id.

life. Households also benefited from new labor-saving appliances, such as washing machines, vacuum cleaners, and ironing machines.42

Americans living in rural areas largely gained electrification two decades later.43 Electricity helped power farm machinery, facilitating an increase in owner-operated farms.44 Rural America also shared the same quality of life benefits as city dwellers. They could attend educational meetings and entertainment at night, school children would have lights, heat, and ventilation, and stores could better serve customers.45 In fact, rural electrification, which incorporated both coal-fired generation and hydroelectric power, led to perhaps the greatest advancement in living standards in the history of the United States.

C. COAL PRODUCTION IN THE POST-WORLD WAR II ERA

Until 1950, coal served as America’s primary energy source.46 But, after World War II, the use of petroleum for automobiles and natural gas for other purposes rose and the use of coal for rail and water transportation, as well as heating, waned.47 During the 1970s, a turning point occurred when several interests began tugging at America’s energy policy. Environmental concerns generally rose in prominence, with enactment of the Clean Air Act in 1970, the Federal Water Pollution Control Amendments of 1972 (commonly known as the Clean Water Act), the Clean Air Act Amendments

43. See Robert T. Beall, Rural Electrification, in YEARBOOK OF AGRICULTURE, 1940 790, 793 (U.S. Dep’t of Agriculture, 1940) (stating that in 1935, only one in ten farms had electricity). See also id. at 801 (establishing the Rural Electrification Administration and appropriating substantial funding to the project caused this percentage to rise to 25 percent); Exec. Order 7037 (May 11, 1935), available at http://www.presidency.ucsb.edu/ws/index.php?pid=15057 (establishing the Rural Electrification Administration); Rural Electrification Act of 1936, Pub. L. No. 74-605, 49 Stat. 1363 (1936) (empowering the REA to make loans for rural electrification and the furnishing of electric energy to persons in rural areas who were not receiving central station service, and appropriating $40 million annually for nine years for such purposes); HISTORICAL STATISTICS, supra note 41 (showing by the mid 1950s, rural electrification had caught up to urban electrification).
44. See Beall, supra note 43, at 806–09 (highlighting uses and benefits of rural electrification).
45. See id.
47. See id. at 327 (finding “the history of federal energy policy and from 1945 to 1973 can be read as a series of successful battles waged by the oil and gas industry to keep coal use subordinated to use of oil and gas. With respect to coal, federal energy policies can be reduced to a simple rule: Whatever the government does, coal loses.”); U.S. ENERGY INFO. ADMIN., COAL PRODUCTION IN THE UNITED STATES – AN HISTORIC OVERVIEW 1 (2006), available at http://www.eia.gov/cneaf/coal/page/coal_production_review.pdf [hereinafter COAL PRODUCTION].
of 1977, and other environmental statutes. Also, discussions began about the possible impact of carbon dioxide on the earth’s climate.

At the same time, because of the 1973 Oil Embargo and the 1979 oil crisis, policymakers put a renewed emphasis on developing domestic energy sources. Concerns about energy independence and the importance of oil and gas for residential and industrial uses led Congress to enact legislation prohibiting power plants from relying on petroleum or natural gas as their primary source of power. Four years later, Congress restricted construction of new power plants using oil or natural gas as a base load fuel, encouraging reliance on coal and nuclear energy. As a result, national energy and economic policy led America to build a greater number of new coal plants and convert existing plants to coal-fired electricity generation. Thus, even as Congress and EPA began to act on environmental issues and Congress authorized initial studies into climate change allegations, energy planners “turned back to coal as an intermediate term (fifty to 100 years) or long-term (more than 100 years) energy source.”

D. The Shift Westward

Coal production also began to shift geographically. Since the mid-1970s, production of coal in western states increased almost ten-fold, from 60 millions of short tons (MMst) to 549 MMst. Domestic coal production doubled as this expansion occurred. The reason for this shift is that western states have abundant reserves of low sulfur coal, and switching to low sulfur coal became a principal strategy for utilities to comply with Clean Air Act requirements to reduce sulfur dioxide emissions. At the same time, coal mines became extremely efficient in producing, and railroads became extremely efficient in transporting, this coal. As a result, dedicated “unit trains” of as many as 135 cars, each carrying about 115 tons of coal, cycle back and forth between coal mines and distant generating stations 24 hours per day, 365 days per year. By 2010, the United States produced 1,085.3

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51. Tarlock, supra note 46, 318.
52. COAL PRODUCTION, supra note 47, at 2.
MMst, 54 percent of which came from Western States, 31 percent came from Appalachia, and 14 percent came from interior states. Wyoming and Montana joined West Virginia, Kentucky, and Pennsylvania, as the main coal-producing states. This westward shift also caused mining techniques to change. Early “eastern” coal production was characterized by labor intensive, expensive underground mining. The majority of modern “western” coal production comes from surface mining. In western states, such as Wyoming, and in particular the massive coal fields of the Powder River Basin, coal is largely found in thick seams near the surface, enabling low cost and efficient mining. This difference in mining techniques led to a significant decrease in total coal mining employment, which fell from its national peak of 175,642 in 1983 to 71,023 by 2003. Daily underground employment had the most decline during this period – falling by two-thirds from 112,000 to approximately 40,000. In West Virginia, the former leader in coal production, mining jobs peaked in 1940 at 130,457; today, mine employment stands at about 28,000.

Because western coal was cheap and easy to mine, it became known at one time as “six-pack coal” – a ton of coal cost less than a six-pack of beer.

54. See William Watson et al., U.S. Energy Info. Admin., U.S. Coal Supply and Demand: 2010 Year in Review 5, tbl. 2 (2011), available at http://www.eia.gov/coal/review/ [hereinafter Coal Supply and Demand]. The states comprising “Appalachia,” in the order of quantity of coal produced include West Virginia, Kentucky, Pennsylvania, Ohio, Virginia, Alabama, Maryland, and Tennessee. Id. The interior region, in the order of quantity of coal produced includes Texas, Kentucky, Indiana, Mississippi, Louisiana, Oklahoma and Missouri. Id. at 5. Over the last six years, western Kentucky has experienced the largest growth in coal, increasing its production each year. Id. The Western region in the order of coal produced includes Wyoming, Montana, North Dakota, Colorado, New Mexico, Utah, Arizona, and Alaska. Id.

55. Coal Supply and Demand, supra note 54, at 5–6. See also Coal Production, supra note 47, at 2 (noting the largest U.S. coal mine is Wyoming’s North Antelope Rochelle Complex).

56. See Coal Production, supra note 47, at 3.5. In 1950, underground mining accounted for 75% of coal production; by 1973, production from underground mining and surface mining was about equal, at which point, surface mining became the more predominant method. Id. By 2003, surface mining accounted for two-thirds of coal production, the majority from western states. Id. at 5.

57. Coal Production, supra note 47, at 10.

58. Id. at 8, tbl. 2, and 11.

59. Id. at 11.

E. Coal Use Today

Today, coal is mostly used for electricity generation in power plants, which collectively purchase more than ninety percent of the coal consumed in this country. The two other principal uses of coal in the United States are metallurgical use for steel production and industrial use in manufacturing plants, paper mills, and food processors. In addition, coal is critical to cement, chemical and pharmaceutical industries. It also is an ingredient in products such as carbon water filters, kidney dialysis machines, and carbon fiber, such as that used in lightweight bicycles and tennis rackets. Coal also has seen a steady decline in its price. In inflation-adjusted dollars, coal costs half of what it did in 1950 and is significantly cheaper than other fuel sources in terms of dollars per Btu.

Over the last 15 years, America has seen somewhat of a new “coal rush,” led by renewed concern over the country’s reliance on foreign oil, continued economic growth, and volatility in natural gas prices. Several new coal-fired power plants, with a combined capacity totaling 11.5 gigawatts, are scheduled to come on line by 2012. As this article will discuss in greater detail, the development of these coal plants has resulted in significant advances in efficiency and air emissions control technology, leading to far lower environmental impacts, particularly on a per megawatt basis. New coal projects have virtually ceased in the last couple of years,

61. The United States has more than 1,400 coal-fired electricity generating units at more than 600 power plants across the country. U.S. Energy Info. Admin., What is the Role of Coal in the United States?, http://205.254.135.24/energy_in_brief/role_coal_us.cfm (last updated May 27, 2011); see also COAL SUPPLY AND DEMAND, supra note 54, at 2 (reporting that in 2010, 975.6 MMst of coal production (93%) was consumed by electric power, while the remaining 72.7 MMst (7%) was consumed among coke plants, other industrial plants, and other residential or consumer uses).
63. COAL RESOURCE, supra note 25, at 25.
64. Id.
65. COAL PRODUCTION, supra note 47, at 15.
66. Id.
67. See id. (finding one million Btu of coal sold for $0.87 compared with $4.41 for natural gas and $4.75 for crude oil in 2003).
69. ANNUAL ENERGY OUTLOOK 2011, supra note 6, at 63.
70. Id. at 87 (predicting that coal’s share of CO₂ emissions are expected to remain stable through 2035 and not reach 2005 levels (reflecting pre-recession energy consumption) until 2027, even assuming no explicit regulatory limits on green house gases).
given the economic downturn, reducing growth in consumer electric demand, plummeting natural gas prices, and environmental opposition.

Coal supply continues to be abundant. It was recently estimated that, at present mining levels, currently known and recoverable domestic coal reserves will last for more than two hundred years.\(^7\)

II. COMPARATIVE ASSESSMENT OF RISKS AND BENEFITS OF MODERN ENERGY SOURCES

Strategically assessing where this abundance of coal fits in the mix of national energy resources going forward requires a comparison of the strengths and limitations, including the potential environmental impacts, of the other sources of electricity generation. As indicated above, these sources include nuclear, natural gas, hydroelectric power, wind, solar, and biomass.\(^7\) None of them are fungible. Each presents its own characteristics and challenges, making each suitable in specific situations. For example, some of these energy sources are “dispatchable,” meaning that they can provide energy on demand. Others are available only under certain conditions and at certain times. Some forms of energy present special storage and transmission issues. Others impose higher capital and decommissioning costs. Finally, some energy sources have a higher energy density than others, affecting the amount of land, water, or other collateral resources required to produce usable forms of power.

In practical terms, coal, nuclear, and, to a limited but growing extent, natural gas, form the backbone of electricity generation. Coal and nuclear are “base-load fuels,” meaning that coal and nuclear power plants operate around the clock to provide a steady, inexpensive output of energy that provides the “base” amount of electricity the public needs throughout the day. Power plants use natural gas and, to a far lesser extent, oil to supplement this “base” usage when consumer demand spikes during afternoon peak hours, as well as during “shoulder” hours of the day, which fall between the peak and minimum electricity usage hours. As this article discusses, natural gas may assume more of a base-load role in the future. Renewable sources of electricity, namely solar and wind, are intermittent and, therefore, only provide supplemental power to the electric grid.


\(^7\) See Gregory Rigano, The Solution to the United States’ Energy Troubles is Blowing in the Wind, 39 HOFSTRA L. REV. 201, 201 (2011) (“Wind energy provided by offshore wind turbines is an emission free, domestic source of energy that can supplement traditional fuel sources.”).
A. Nuclear Power

Nuclear power is a principle source of base-load generation. The United States has 103 nuclear power plants generating twenty percent of American electricity production. Nuclear plants have very high capital costs, but their operating costs and, in particular, fuel costs, are relatively low. For these and certain safety reasons, nuclear plants operate at or near capacity. Therefore, nuclear is the first form of energy to be dispatched to meet electricity generation demands. To the extent nuclear power provides excess capacity at time of low demand, this excess power can be stored by converting electricity into potential kinetic energy. From an environmental perspective, nuclear power plants can have a lower impact than other sources of electricity because they do not produce significant air emissions. Safety issues are infrequent, but have the potential for catastrophic consequences when they occur.

The heyday for nuclear energy growth in the United States occurred between the 1950s and 1970s. This period ended with the 1979 Three Mile Island incident. New construction of nuclear power plants slowed and then stopped, with increasing concerns about the safety of nuclear energy, despite a track record, particularly in the United States, of safe operation. The melt-down in Chernobyl, Ukraine and the recent failure of cooling systems of nuclear reactors following the 2011 earthquake in Japan are the highest profile examples of risks associated with nuclear generation.

Since the Japan incident, many global policymakers have begun reassessing nuclear power. Germany, for example, announced that it intends to totally abandon nuclear power in the future. Also, after the incident, a poll in the U.S. found that about half of Americans, up fourteen percent from 2009, oppose development of new nuclear power plants, leading

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some U.S. officials to call for a moratorium on new plants.\textsuperscript{77} This scrutiny increased even more when, six months after the Japanese incident, a 5.8 magnitude earthquake in Virginia was centered twelve miles from the North Anna nuclear power plant.\textsuperscript{78} The Virginia quake caused the plant to shake within its design limits, cut off its external source of electricity, and led it to temporarily shut down.\textsuperscript{79} These protective systems functioned as planned and no damage or radionuclide releases were reported,\textsuperscript{80} but the incident brought heightened attention to existing and proposed new facilities.

Another issue affecting the growth of nuclear power in the United States is managing spent fuel rod waste. Some countries, such as France, reprocess nuclear fuel and recycle the plutonium to create additional reactor fuel. The United States banned reprocessing in the 1970s because reprocessing is extraordinarily expensive and raises security concerns. By chemically separating uranium and plutonium and purifying them, reprocessing spent fuel rods creates material that can be used in nuclear weapons, thereby potentially contributing to nuclear proliferation and nuclear terrorism.\textsuperscript{81} As a result, the U.S. is struggling to manage a continuing and significant stream of spent fuel rod waste.

Currently, nuclear power plants generate about 2,000 metric tons of spent fuel rod waste per year, and the Department of Energy (DOE) estimates that by 2055, there will be 153,000 tons of nuclear waste.\textsuperscript{82} These spent fuel rods cannot generate enough heat to make electricity, but are still extremely radioactive and will remain so, for the foreseeable future.\textsuperscript{83} Thus, the rods must be stored for the long-term in safe, protected areas. A final


\textsuperscript{79} See id. (describing that the earthquake was within .4 magnitudes of facility’s maximum).

\textsuperscript{80} See id.

\textsuperscript{81} See Editorial, \textit{Adieu to Nuclear Recycling}, 460 NATURE 152 (2009) (reporting on President Obama’s decision to cancel a review underway for determining whether and how to resume commercial nuclear reprocessing in the United States).


solution for the fuel rod storage issue has proven to be controversial and elusive. For years, the federal government sought to establish a permanent national repository of spent fuel rods at Yucca Mountain, Nevada, but that project has been suspended due to local and other political concerns. The decision to terminate these long-term disposal plans led the utilities to seek a termination of the federally-imposed nuclear fuel surcharge of $0.001 per kilowatt hour (amounting to $750 million per year) intended to cover the cost of long-term spent fuel storage.

The net result is that America’s nuclear power plants are aging and producing at full capacity, and there has not been a consistent investment in constructing new facilities. The costs associated with decommissioning nuclear power plants, as demonstrated at Three Mile Island and Fukushima, as well as constructing new sources of nuclear energy are substantial. For that reason, the Nuclear Regulatory Commission, the states, and the public are struggling to decide whether to extend the lifetime of nuclear power plants beyond the forty-year period for which they were originally licensed. Some utilities have begun to move forward with plans to build new units at existing plants. Even these new sources of nuclear energy require a long regulatory process and very high capital costs, thereby putting nuclear power expansion beyond the financial and managerial capabilities of all but the largest electric utilities. Indeed, development of new nuclear plants will likely require groups of companies to share costs.

Accordingly, the ability for nuclear-generated electricity to expand significantly, such that it can take on a greater share of American electricity generation, is being increasingly challenged.

B. Natural Gas

Natural gas produces a greater share of American electricity than nuclear power—approximately 24 percent—but it has not yet become a consistent base-load fuel. Until a few years ago, natural gas was favored by


environmentalists because combusting natural gas produces fewer emissions per megawatt than coal. Natural gas prices, however, are prone to significant fluctuations, and over the past twenty years conventional production in the United States has declined.\footnote{88. \textit{Annual Energy Outlook} 2011, \textit{supra} note 6, at 79.} For these reasons, efforts were under way to build facilities along the coasts to import liquefied natural gas (LNG) from Russia, Venezuela, and Middle Eastern countries.\footnote{89. See Federal Energy Regulatory Comm’n, North American LNG Import/Export Terminals: Proposed/Potential, Nov. 1, 2011, \textit{available at} \url{http://www.ferc.gov/industries/gas/indus-act/lng/LNG-proposed-potential.pdf}.}

LNG facilities have run into heavy community opposition, and policymakers have expressed concern that a reliance on imported LNG would frustrate national energy independence goals. Much like petroleum, the main international sources of LNG are countries whose interests are not necessarily aligned with those of the United States.\footnote{90. See \textit{The LNG Industry} 5 (2010), \textit{available at} \url{http://www.giignl.org/fileadmin/user_upload/pdf/A_PUBLIC_INFORMATION/Publications/GNL_2010.pdf} (finding that more than one-third of LNG exports came from the Middle East in 2010, and that the largest exporters of LNG that year were Qatar (25.5%), Indonesia (10.6%), and Malaysia (10.5%)).} The possibility of an “OPEC for natural gas,” or natural gas cartel,\footnote{91. Brian Wingfield, \textit{An OPEC For Natural Gas?}, \textit{Forbes}, Apr. 6, 2007, \textit{http://www.forbes.com/2007/04/06/gas-cartel-doha-biz-energy-cx_bw_0406business1.html}.} and concerns that the United States would be competing for LNG with emerging nations and Europe affected natural gas prices in the United States. Given these numerous supply and demand factors, natural gas prices in the 1990s and 2000s were on an upward course and highly volatile. After Hurricanes Katrina and Rita damaged a number of natural gas processing facilities on the Gulf Coast in 2005, natural gas prices spiked from $6/Mcf to more than $14/Mcf over the course of one year.\footnote{92. U.S. Energy Info. Admin., \textit{EIA Report on Hurricane Impacts on U.S. Energy} (Dec. 27, 2005), \textit{http://www.eia.gov/oog/special/eia1_katrina.html} (last visited June 1, 2012). Mcf is a unit of measure used for natural gas that equals 1,000 cubic feet.} This volatility was of particular concern because natural gas has become the primary fuel used for residential and commercial heating in many areas of the country.\footnote{93. See U.S. Energy Info. Admin., \textit{Annual Energy Review} 2009, at 51 tbl. 2.4 (2010), \textit{available at} \url{http://www.eia.gov/totalenergy/data/annual/pdf/aer.pdf} (providing household energy consumption by census region, selected years, 1978-2005).} The dynamics for natural gas, though, may be in the process of fundamentally changing given the recent development of “shale” gas.\footnote{94. See, \textit{e.g.}, \textit{Kenneth B. Medlock et al., Shale Gas and U.S. National Security} 13 (Baker Inst. for Pub. Pol’y at Rice Univ., 2011), \textit{available at} \url{http://bakerinstitute.org/publications/EF-pub-DOEShaleGas-07192011.pdf} (last visited June 1, 2012).} Shale gas is developed by injecting water and chemicals under pressure into deep shale gas formations. The pressure fractures the shale and liberates the
gas, which is then pumped to the surface. Advances in horizontal drilling and computer modeling of geological formations have made it economical to develop natural gas from deep underground shale gas formations. The development of shale gas has been referred to by shale gas advocates as a “paradigm shift” and “game changer” for energy policy in providing a “bridge” to a clean energy future.

One of the largest known potential reservoirs of shale gas is in the Marcellus Field located near and along the Appalachian Mountain ranges in New York, Pennsylvania, Ohio, Maryland, and West Virginia. This shale gas is not only important because of the vast quantities that are potentially available, but also because it is located relatively close to major population centers. If the forecasts claiming that shale gas will provide an abundant, low cost source of energy are true—a claim that is subject to significant controversy—then natural gas may become a base-load fuel. If this occurs, additional infrastructure to store and transport gas safely will be required, which can be costly, and, if history is a guide, contentious.

Some have voiced environmental concerns with hydraulic fracturing, particularly with respect to the use of chemicals and vast quantities of water in the fracturing process and the potential contamination of drinking water aquifers. The Secretary of Energy Advisory Board (SEAB), in a ninety-day report on the environmental impact and improved safety of shale gas production, explained those concerns. First, because that water is pumped deep into rock formations, it may not re-enter the water cycle and be available for later consumption. This is a significant concern where there is a scarcity of water resources. Second, the committee expressed great concern for the potential of methane leakage from producing wells into surrounding drinking water. As the New York City Department of


99. Id. at 19.

100. See id. at 19-20.
Environmental Protection stated, “[b]ecause of the vast volumes of water utilized in hydraulic fracturing, 1 percent concentration of chemical additives to the fracking fluids results in 160 tons of ‘chemistry’ [per well]; some of it benign, some of it hazardous, and much of it unknown and undisclosed.” The EPA is examining these issues, as understanding and managing the risks and benefits of hydraulic fracturing is still in its infancy. One recent EPA study raised controversy by concluding that groundwater in an aquifer around Pavillion, Wyoming contained “compounds likely associated with gas production practices, including hydraulic fracturing.”

Risks posed by natural gas, including shale gas, with respect to climate change allegations are also being studied. A new natural gas electric station produces about half the CO₂ of an equivalent coal plant, though this statistical gap narrows when comparing the two on a life-cycle basis. Robert Howarth, the David R. Atkinson Professor of Ecology and Environmental Biology at Cornell University, found that when one accounts for “leaking” natural gas in the production process, pipelines, or other modes of transportation, the life cycle carbon dioxide-equivalent emissions of gas may be greater than those of coal. As Howarth found, “The take-home message of our study is that if you do an integration of 20 years following the development of the gas, shale gas is worse than conventional gas and is, in fact, worse than coal and worse than oil.”

Tom Wigley, senior research associate at the National Center for Atmospheric Research, reached a similar conclusion in his paper to be published in the journal Climatic Change Letters. He writes that “switching over coal-fired power plants to natural gas would have a negligible effect on the changing climate.” A study sponsored by the natural gas industry reached a
different conclusion, saying that life cycle natural gas emissions have been overstated.  

The larger question of whether natural gas can become a stable, reliable source of base-load fuel has yet to be answered. Utilities and regulators have expressed concern that, without long-term fixed-price contracts to manage financial risk, the price volatility of natural gas is still a significant obstacle. Gas producers have been unwilling to provide such contractual terms, though, because the price volatility of natural gas is a product of weather, pipeline and storage facility reliability, and other factors beyond a natural gas company’s control. It is also unclear how utilities would manage temporary spikes in prices. In the past, utilities passed on higher costs to ratepayers, but in the recent age of deregulation, reetration, and increased rate scrutiny, there is less certainty as to how companies will manage such cost fluctuations. Natural gas will also have to overcome the experience some states, namely Florida, Texas, California, and those in the Northeast, have had with “high levels of dependence on natural gas for electricity,” which “have increased the bulk power system’s exposure to interruptions in fuel supply and delivery.”

Some have speculated that to price natural gas so that it can become a base-load fuel, in addition to finding ways to create additional supply—either through shale gas or imports—companies may have to vertically integrate or pursue other structural changes to the industry. Each of these options could raise regulatory and competition concerns. The bottom line is that a shift in American energy policy to emphasize natural gas as a base-load fuel is potentially on the horizon, but it will first require answers to these and other environmental, economic, and energy questions.

C. Hydroelectric Power

Hydroelectric power provides a significant regional source of renewable energy in the United States, accounting for six to eight percent of electricity generation. Here, energy is generated by converting kinetic energy of flowing or falling water into electricity, typically through the

109. U.S. ENERGY INFO. ADMIN., SHORT-TERM ENERGY OUTLOOK, supra note 87, at tbl. 7D.
release of river water held in a dam reservoir through a turbine. Benefits of this electricity generation method are that it does not result in the emission of wastewater, and, once a facility is online, it can generate electricity at comparatively low cost. The great hydroelectric dams built in the 1920s and 1930s—Hoover Dam, Grand Coulee Dam, and the early TVA dams—were instrumental in fostering rural electrification and the development of the West.

The country’s dam building days, however, are largely behind it. The chief limitation for hydroelectric power, which prevents it from substantially increasing its share of electricity generation, is the relative shortage of water resources available to build or expand hydroelectric capacity. In the 1920s, hydroelectric plants supplied as much as forty percent of the nation’s electric energy. Few new facilities have been built over the past several decades given the lack of suitable new sites. In part, the lack of new hydroelectric capacity reflects the comparatively high-capital costs of constructing a dam—an outlay that is prohibitive to all but the largest companies and the federal government—and the fact that hydroelectric power has inherent reliability limitations because water availability varies “dramatically” from year to year.

New dam building also has been opposed in the environmental community, as hydroelectric power production carries environmental risks. Most prominently, the large land and water flow requirements can displace human populations and adversely impact riparian habitats. Hydroelectric turbines can harm fish populations, frustrate fish migrations, and reduce oxygen levels in downstream water, damaging plants and other


113. See id.

114. See id. See also ANNUAL ENERGY OUTLOOK 2011, supra note 6, at 74.


indigenousness species. With regard to GHGs, it was believed that hydroelectric power does not generate carbon dioxide and methane, but recent studies suggest that these gases form in man-made dam reservoirs and are emitted into the atmosphere. Such theories need closer study.

Today, the focus of the nation’s efforts regarding hydroelectric power is to decommission and remove existing, smaller dams. The absolute number of dams has been declining, and only three percent of U.S. dams generate electricity. With nearly sixty percent of hydroelectric capacity concentrated in just four states – Washington, Oregon, California, and New York – the outlook for hydroelectric power production is relatively flat.

D. Wind

Wind is a clean, renewable energy source. It can provide a significant source of electricity, particularly in the “wind belt” region from the Dakotas to Texas. Since 2006, wind has quickly risen from four to eleven percent of total renewable energy generation. Overall, it accounts for about two percent of power generation in the United States.

As with all renewable energy sources, wind has limitations that prevent it from serving as a base-load source of electricity. First and foremost, wind is intermittent and cannot consistently meet demand. As a result, it is difficult to put wind power on the grid, even during peak times (early morning, late evening, and during hot and cold extremes) because wind is

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118. See id. at 493-97 (outlining the negative effects hydroelectric dams may have on river ecosystems); Janet M. Hager, Tension Between Hydroelectric Energy’s Benefits as a Renewable and its Detrimental Effects on Endangered Species, 10 Sustainable Dev. L. & Pol’y 50 (2009).
119. See Clemons, supra note 111, at 492 (stating Brazil’s National Research Institute “estimate that large dams may be responsible for worldwide annual emissions of 800 million tons of carbon dioxide whereas the United Kingdom’s total greenhouse gas emissions in 2006 was around 660 million tons”); U.S. Energy Info. Admin., Hydropower and the Environment, at http://www.eia.gov/energyexplained/index.cfm?page=hydropower_environment (last visited June 1, 2012) (“Greenhouse gases, carbon dioxide and methane, may also form in reservoirs and be emitted to the atmosphere.”).
120. See Hydropower Explained: Energy From Moving Water, supra note 110 (“The exact amount of greenhouse gases produced from hydropower plant reservoirs is uncertain.”).
121. Two-hundred forty-one dams were demolished between 2006 and 2010, more than a forty percent increase over the prior five years. Those demolished were mostly smaller dams that powered everything from textile to paper production. See Juliet Eilperin, Elwha Dam Removal Illustrates Growing Movement, WASH. POST, Sept. 16, 2011.
122. See Hager, supra note 118, at 50.
125. Id.
generally strongest overnight. For instance, on hot summer days, when air conditioner use is highest, winds tend to be calm. Second, not all states have the capacity to generate significant wind energy. Texas currently accounts for more than one-quarter of the nation’s energy generation from wind, and the Great Plains states have the highest concentration of wind turbines. Yet, Texans can count on less than ten percent of that capacity to be available during periods of peak electricity usage.

Wind energy has received considerable government support, including a renewable tax credit that funds about one-third of the cost of wind energy. In addition, a number of states have “renewable portfolio” requirements, forcing utilities to purchase defined amounts of wind energy. The ability of wind to survive without this government support is unproven. The federal government has not authorized permanent or long-term renewable tax credits, and each time the credits have expired before renewal, wind construction has plummeted.

Wind energy also faces several other obstacles. From an environmental perspective, these challenges include bird kills and the endangered species and other land use issues that arise from the construction of large wind projects. Additionally, wind projects have to be backed up by fossil fuel generation that can ramp operations up and down quickly to match the

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127. See RENEWABLE ENERGY AND ELECTRICITY STATISTICS, supra note 123, at 11 (wind generation in Texas in 2010 was 26,132,202 thousand kilowatt-hours compared to the national total of 96,646,778 thousand kilowatt-hours). See also Increasing Wind Capacity Requires New Approaches to Electricity Planning and Operations, supra note 126 (highlighting problems with variability in wind energy production); Margaret Bryant, Wind Energy in Texas: An Argument for Developing Offshore Wind Farms, 4 ENV’T & ENERGY L. & POLICY J. 127, 128-29 (2009) (explaining Texas’ inability to rely on wind power resulting from variability in wind power production).

128. See Declaration of Warren Lasher, Manager of Long-Term Planning and Policy of the Electricity Coordinating Council of Texas, in Texas v. EPA, No. 11-1338 (D.C. Cir.) (stating the ERCOT region of Texas, representing most of the state, has 9,452 MW of wind generation, but counts on only 822 MW of that generation, or 8.7%, as “firm” capacity).


intermittent nature of wind generation. These fossil fuel generators emit GHGs; thus, there is no such thing as a carbon-free wind project. Further, because wind farms in the “wind belt” are located far from major metropolitan areas, long-line transmission projects to bring the power to the customers are needed, which are costly and difficult to build. These transmission projects also can create intractable issues, including where to locate the projects, landowner opposition, and determining who should pay for these projects. Further, off-shore wind farms, which can be closer to people, require high capital costs for installation.132 An installed offshore wind farm can cost as much as $4,600 per kilowatt, which is higher than electricity generated from almost any other source.133

In addition, wind development has been opposed by communities that do not want wind farms and associated transmission lines near their homes or marring the landscape.134 For example, the best wind resources in the eastern United States are on the ridge lines of the Appalachian Mountains and in the Atlantic Ocean just off the coast. Coastal wind farms must be placed close enough to the shoreline so that the wind harnessed by the turbines can be transmitted back to the mainland via underwater cables. In Massachusetts, the wind farm planned for off the coast of Cape Cod, known as “Cape Wind,” has drawn the ire of the local community because of concerns over aesthetics, noise, safety, navigation, property values, and environmental issues – disturbances to marine animal and migratory bird populations, changes to the seascape, and the impact on tourism.135 In an effort to overcome these complaints, the developers, federal government and state governments are considering the feasibility of building affordable offshore wind farms beyond visual range.136

Optimistically, if wind farms are built and backed up with natural gas, there is a potential that wind energy can shoulder a greater share of the market. Such progress will largely depend on the price and availability of natural gas and continued government support. It remains unlikely, though, that wind will be able to compete as a base-load source of electricity.

133. Id. at 1152.
134. Rigano, supra note 72, at 213.
E. Solar

Solar energy, as a share of the nation’s energy consumption, has steadily risen each of the past five years; it currently fulfills more than one percent of America’s electricity needs. Three states (California, Nevada, and Florida) provide the bulk of solar energy generation that is placed on the grid; other areas have shown far less potential. This is because solar energy has some of the same basic limitations as wind with respect to satisfying a meaningful share of electricity demand. Just as wind energy can be created only when the wind blows, solar energy can be generated only when and where the sun shines. Solar energy also has limited storage abilities, primarily through rechargeable batteries and molten salts. It also is not “dispatchable.” These shortcomings are exacerbated in the winter when the temperatures are the coldest, the days are shortest, and the demand for electricity at night is highest.

Three other factors limiting solar energy from increasing its contribution to the grid are: the amount of acreage needed for the mass generation of electricity from solar plants, the amount of water resources needed to generate solar energy, and its cost. Solar projects require approximately five to ten acres of land per megawatt of capacity. Therefore, an area as large as 29,000 acres may be required for a single utility-scale solar plant. This makes locating large solar energy installations near population centers particularly difficult. For example, the solar mirror field proposed for just outside the Mojave National Preserve will consume some 3,400 acres (5.3 square miles). Land and wildlife conservation


138. California, Nevada, and Florida account for 88 percent of solar power generation, followed by Colorado, New Jersey, Ohio, Illinois, Arizona, North Carolina, and Pennsylvania. See RENEWABLE ENERGY AND ELECTRICITY STATISTICS, supra note 123, at 11 (finding California, Nevada, and Florida each provide more than five times as much solar energy generation as any other state). Solar power generation is negligible in most other states. See id.


140. Pizzo, supra note 137, at 135-36.

groups have vocally opposed this project because of the impact it will have on endangered species and migration corridors.  

Thermal solar energy also strains water resources. It requires up to 1,000 gallons of water per megawatt hour of electricity produced, which exceeds the amount of water used at a nuclear or coal plant. Water is primarily used to produce steam, which generates electricity. Maintaining these water temperatures when the sun does not shine can require the combustion of fossil fuels. Water is also needed for cooling and regular cleaning of the panels and reflectors. In 2009, the National Park Service sent the Bureau of Land Management a memorandum informing the Bureau that “approving dozens of solar power plants in southern Nevada could dramatically impact water supply across the arid region.”

Finally, the cost of solar power is higher than conventional power sources, even with about one-third of solar power’s cost subsidized through federal tax credits. Such government support of solar power may be undermined by recent events with Solyndra, a solar-panel company supported by more than $500 million in government loan guarantees that filed for bankruptcy protection. Without those subsidies, the average price of solar electricity will reflect its true cost, which is roughly double that of coal-fired generation.

Solar energy has established itself, though, as a means for governments, businesses, and individuals to supplement electricity received from power companies. It is well-suited to provide needed electricity for specific tasks, such as generating electricity for street lights, homes, and office buildings. However, as discussed above, the advantages of solar power diminish when used on a large scale or to produce power for the grid.


143. Pizzo, supra note 137, at 138.

144. In addition, spills can contaminate nearby water sources. Id.


146. Solyndra was considered the “hallmark of the President’s green jobs program” that was part of the stimulus package. See Joe Stephens & Carol D. Leonnig, Solyndra Loan: White House Pressed on Review of Solar Company Now Under Investigation, WASH. POST, Sept. 13, 2011, at A1. See also Matthew L. Wald & Charlie Savage, Furor Over Loans to Failed Solar Firm, N.Y. TIMES, Sept. 14, 2011. Indeed, the House of Representatives reacted by seeking reallocation of $1.5 billion allocated to the Department of Energy’s green auto loan program to disaster relief funding. See Amy Harder, Solyndra is Silent: Lawmakers Make Noise, NAT’L J., Sept. 23, 2011.

147. See Pizzo, supra note 137, at 132 (comparing the difference in production cost of energy from solar sources to that of industrial sources).
Biomass energy is derived largely from organic and agricultural waste, such as bark, wood, and sugar cane. It has a long history of use in pulp and paper industry boilers. In fact, it is commonly called “[t]he oldest and most prevalent source of renewable energy known to man.” 148 Biomass is a dispatchable form of energy and produces about one percent of the American electricity supply. Additionally, it can be converted into other usable forms of energy, including methane gas, ethanol, and bio-diesel.

Since the early 1990s, the federal government has promoted biomass energy production through renewable energy credits, 149 as biomass is considered “carbon neutral.” Some have questioned this assertion, however, because a tree’s carbon dioxide is released in one “shot” during the production of biomass energy rather than as if the same tree were allowed to rot over decades. A larger issue for environmentalists is that in “closed loop” operations where plants are harvested to be burned, the plants tend to be wet, burn inefficiently, and emit more carbon dioxide per unit of energy than are associated with other sources, including coal. 150 This led certain environmental groups to argue that switching to biomass can increase GHG emissions 151 and challenge EPA’s decision to treat biomass as carbon-neutral in issuing Clean Air Act preconstruction permits. 152

If biomass is to contribute more to America’s national energy supply, then “closed loop” facilities will need to rise in prominence. “Open loop” plants—those that take waste from whatever sources are available, including wood waste from construction and manufacturing industries—are limited by the amount of waste available for burning. In the United States, approximately 100 million tons of forest residue is generated each year. Even if half of all of this waste were burned, biomass’s percentage of national energy production would only increase a few percentage points. In addition, there are concerns that burning these “open loop” items will emit

149. Deferral for CO₂ Emissions From Bioenergy and Other Biogenic Sources Under the Prevention of Significant Deterioration (PSD) and Title V Programs, 76 Fed. Reg. 43,490 (July 20, 2011).
151. See id.
a variety of conventional pollutants, including particulate matter, carbon monoxide, nitrogen oxides, and volatile organic compounds.\footnote{Five Groups Sue EPA over Punt on Biogenic Greenhouse Gas Regulation, PARTNERSHIP FOR POLICY INTEGRITY (Aug. 16, 2011), http://www.pfpi.net/five-groups-sue-epa-over-punt-on-biogenic-greenhouse-gas-regulation (last visited June 1, 2012).}

The current focus, therefore, is to build small biomass-fueled electric generating plants in the Southeast and Midwest that can be constructive pieces in America’s energy puzzle.

\section*{G. Demand-Side Management}

In addition to alternative sources of energy, the other aspect of America’s energy policy that may improve the energy industry’s environmental profile is to find ways to manage energy consumption more efficiently. This can be done through technology innovation or behavioral changes in consumer energy consumption. Such “demand-side management” (DSM) efforts have been part of national and state energy policy for decades and have recently received renewed emphasis.\footnote{See Steven D. Czajkowski, Note, Focusing on Demand Side Management in the Future of the Electric Grid, 4 PITT. J. ENVTL PUB. HEALTH L. 115, 129 (2010) (noting demand-side management originated in the energy crisis of the 1970s and early 1980s). See also Steven Ferrey, Restructuring A Green Grid: Legal Challenges to Accommodate New Renewable Energy Infrastructure, 39 ENVTL. L. 977, 983 (2009) (stating President Obama’s stimulus plan increased funding to DSM by 1,000%).}

One widely-discussed energy efficiency effort involves the development of an efficient system of energy transmission through what is called the “Smart Grid.”\footnote{See Alison C. Graab, The Smart Grid: A Smart Solution to a Complicated Problem, 52 WM. & MARY L. REV. 2051, 2052-54 (2011) (Congress under the Energy Independence and Security Act of 2007 “delegated authority to federal agencies to implement the Smart Grid”).} Congress focused on this issue in enacting the Energy Independence and Security Act of 2007.\footnote{Energy Independence and Security Act of 2007, Pub. L. No. 110-140, §§ 1301–1309, 121 Stat. 1492, 1783–1794 (2007) (to be codified in scattered titles of the U.S.C.).} The Smart Grid system integrates “sophisticated sensing and monitoring technology” and “cutting-edge power engineering”\footnote{ENERGY FUTURE COALITION, CHALLENGE AND OPPORTUNITY: CHARTERING A NEW ENERGY FUTURE 24 (2003), available at http://www.energyfuturecoalition.org/files/webfmuploads/EFC_Report/EFCReport.pdf.} to maximize how efficiently electric energy is stored and transferred. It identifies and responds in “real time” to congestion problems, disturbances, and variations in energy consumption that ordinarily result in electricity loss.\footnote{See STAN MARK KAPLAN, CONG. RESEARCH SERV., ELECTRIC POWER TRANSMISSION: BACKGROUND AND POLICY ISSUES 23 (2009), available at http://fpc.state.gov/documents/organization/122949.pdf (“[T]he smart grid can be viewed as a suite of technologies that give the grid the characteristics of a computer network in which information and control flows between and is shared by individual customers and utility control centers.”).}

The Smart Grid is intended to
replace the current electric energy transmission grid that has been in
operation since the 1970s, but the investment required will be massive
and stimulus funds provided for Smart Grid in the American Recovery and
Reinvestment Act were only a small down payment.

Smart Grid technology is also intended to promote energy-efficient
choices on the customer’s side of the meter. “Smart meters” are more
advanced than traditional meters installed at homes and used by utilities to
measure consumer electricity use; they “track energy use daily, hourly,
monthly and even instantaneously.” When demand is particularly high or
electricity expensive, such as during peak times, smart meters allow utility
companies to communicate with consumers, for example, via e-mail.
Better-informed consumers can then reduce their electricity use and costs,
and decrease overall consumption. Consumers looking to conserve
energy will also be able to monitor their electricity use online. Although
the utility industry believes strongly in the ability of a “smart grid” to make
the transmission and distribution of electricity more efficient, opinion is
more divided on whether “smart meters” will lead customers to
significantly reduce electricity usage. In particular, unless utilities move to
“time-of-day” pricing, where electricity is priced at higher rates during peak
usage, customers may not have sufficient incentive to reduce electric
consumption at the times when they want electricity the most. State utility
regulators have shown reluctance to move to time-of-day pricing, and they
have also been reluctant to approve funding of the large investments needed
to make “smart grid” a reality on the utility side of the meter.

Traditional DSM efforts have produced significant results in some
states. In California, DSM programs spanning four decades have helped
stabilize the state’s per capita electricity consumption. Although other
factors (such as high electric rates and mild climate) dominate the reasons
for this trend, estimates suggest that policy measures and public awareness
campaigns regarding energy use and efficiency account for a quarter of that

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159. See Massoud Amin & Phillip F. Schewe, Preventing Blackouts, Sci. Am., May 2007, at 61,
available at http://central.tli.umn.edu/Amin/SciAm_0507_pp60-67.pdf, (arguing the energy grid, which
has been in place since the 1970’s must be made “smarter”).
160. KAPLAN, supra note 158, at 23.
161. Graab, supra note 155, at 2056 (quoting Elizabeth Shogren, All Things Considered: Smart
Meter Saves Big Bucks for Pa. Family (NPR radio broadcast Apr. 28, 2009)).
162. See KAPLAN, supra note 158, at 23 (noting utilities will seek to use indicators via the
internet, email and computer software to inform customers demand and cost spikes).
163. See id.
164. Michael P. Vandenbergh et al., Regulation in the Behavioral Era, 95 MINN. L.
result. Similarly, a General Electric study estimated that increasing consumer awareness of electricity costs could result in a 10 to 20 percent reduction in demand due to deceased consumption. Also, a recent U.S. Energy Information Administration (EIA) report stated that between 1989 and 2005 electric efficiency efforts saved 860 billion kilowatt-hours, or enough electric energy to power over 76 million homes for an entire year.

III. GUIDANCE FOR MANAGING BENEFITS AND RISKS OF COAL

Determining how each energy source fits into America’s national energy policy for electricity generation requires accurate and complete information, as well as honest assessments. At least with respect to coal, there has been significant misinformation put into the public domain by those seeking to curtail coal’s use as a base-load fuel. This opposition is in large part based on outdated information or emotional rhetoric. This section of the article seeks to assist policymakers by factually debunking five prominent myths about the impacts of coal production and use. It then offers policymakers five principles for how coal’s benefits can be maximized and its risks managed as part of this national energy policy.

A. Myths that Should be Dispelled When Regulating Coal

1. Myth #1: Coal Production Is Loosely Regulated

One rationale often cited for increased regulation of coal is that coal is loosely regulated. This is a myth. Because of its long history, coal has become “one of the most heavily regulated industries in the United States.” Government regulation begins with mining operations, which are required to have permits under the Surface Mining Control and Reclamation Act (SMCRA) and parallel state laws. SMRCA, which regulates all aspects of mining, operations, and reclamation, is administered
by the U.S. Department of the Interior’s Office of Surface Mining (OSM). OSM sets detailed standards of performance for mining and reclamation projects, sets minimum standards for state programs, and requires operators to develop and adhere to specific mining plans. It funds state regulatory and reclamation efforts and assures consistency among state permitting and regulatory programs. The agency also requires bonding to ensure payment of reclamation costs, provides for a program of inspection and enforcement, and restricts mining on certain environmentally sensitive lands. In addition, mine operators must secure permits pursuant to the Clean Air Act, Clean Water Act and state law to control environmental impacts.

The shipment of coal, generally by rail, is regulated by three government agencies. The Surface Transportation Board regulates construction of new railroads, including spurs that connect mining facilities with the network of railroads around the country. The National Environmental Policy Act (NEPA) requires environmental impact statements for any significant railway construction. The Federal Railroad Administration regulates all movements of cargo on those railways. Both of these agencies are housed within the U.S. Department of Transportation. Air quality impacts from diesel locomotives are regulated by EPA.

Coal combustion is extensively regulated under the Clean Air Act (CAA). The National Ambient Air Quality Standards (NAAQS) program, which prohibits accumulation in the air of the six most ubiquitous pollutants at levels that pose a threat to human health and welfare, limits emissions through facility-specific emission standards in state implementation plans. These and other public health and welfare-based regulations are implemented through programs requiring permits for new power plant construction, major renovation activity, and power plant operation. EPA is also proceeding on a broad front to subject coal-fired power plants to more stringent NAAQS. Within the last two years, EPA has promulgated new NAAQS for sulfur dioxide and nitrogen dioxide, new requirements for interstate transport of sulfur dioxide and nitrogen.

172. Id. at §§ 7502(c)(5), 7503, 7661–7661f.
oxides emissions,\textsuperscript{176} and new pre-construction permit and operating permit standards for GHGs.\textsuperscript{177} EPA is also contemplating tightening the ozone\textsuperscript{178} and particulate matter NAAQS.\textsuperscript{179}

EPA has also proposed new standards for power plant emissions of hazardous air pollutants,\textsuperscript{180} intake structures for water used by power plants for cooling,\textsuperscript{181} and the handling and disposal of coal combustion residuals.\textsuperscript{182} It is promulgating new standards of performance for emissions of GHGs from new, modified, and potentially existing power plants.\textsuperscript{183}

2. Myth #2: Coal mining is unsafe.

Coal mining has come a long way from its dangerous beginnings. Early miners faced a daily threat of being buried alive in a collapse, drowned in sudden floods, or burned in a fire.\textsuperscript{184} Without modern ventilation, they were at risk of death from inhalation of coal dust (“black lung” disease) and from exposure to three gases: carbon dioxide, carbon monoxide, and methane.\textsuperscript{185} The first could suffocate them without warning, the second could lead to a slow poisoning, and the third could lead to catastrophic explosions, which were so common in the 1700s that newspapers did not cover them.\textsuperscript{186} The “canary in the coal mine” originated from the miners’ use of the bird; when the canary fell off its perch, it was a warning sign of carbon monoxide.\textsuperscript{187} In

\textsuperscript{176}. Id.
\textsuperscript{183}. Proposed Settlement Agreement, Clean Air Act Citizen Suit, 75 Fed. Reg. 82,392-01 (Dec. 30, 2010).
\textsuperscript{184}. F R E E S E, supra note 15, at 47-53.
\textsuperscript{185}. Id.
\textsuperscript{186}. Id.
\textsuperscript{187}. Id. at 49.
the early 1900s, American miners relied on the instincts of mine rats, who would scurry away when they sensed subtle shifts in mine workings.\textsuperscript{188} Given this history, it is easy to understand the concern about mine safety.

Mining today is very different. Injuries have dropped dramatically in the United States from a peak of 3,242 work-related fatalities in 1907, when the nation had its single deadliest mine disaster,\textsuperscript{189} to a low-point of eighteen work-related fatalities in 2009.\textsuperscript{190} This decline is due to several reasons, most notably much greater safety measures, a cultural shift among workers and operators, and the substantial reduction in the number of miners, particularly those working underground. For instance, between 1931 and 1977, even as coal production increased substantially, annual fatal mining injuries fell from 1,456 to 100,\textsuperscript{191} and the fatal injury-frequency rate per million man-hours declined by nearly 75 percent.\textsuperscript{192} Coal miners were also less likely to suffer nonfatal injuries, as the number of such injuries declined from 77,193 to 11,724 during this period,\textsuperscript{193} and the frequency rate of injuries fell by 43 percent.\textsuperscript{194}

Enactment of the Federal Mine Safety and Health Act of 1977 (FMSHA),\textsuperscript{195} which governs the Mine Safety and Health Administration’s (MSHA) activities, and some recent laws,\textsuperscript{196} have further increased mining safety. The number of fatal injuries, nonfatal injuries, and injury rates has continued to steadily decline.\textsuperscript{197} The majority of coal mines in the United States.

\begin{itemize}
  \item \textsuperscript{188} Id. at 139. An 1891 law, which set ventilation requirements and prohibited operators from employing children under twelve years of age, marked the first federal intervention in mine safety. \textit{See} Mine Safety & Health Admin., History of Mine Safety and Health Legislation, http://www.msha.gov/mshainfo/mshainf2.htm (last visited June 1, 2012) (describing lack of safety legislation for miners).
  \item \textsuperscript{189} \textit{See} Assoc. Press, \textit{Deadliest Recent U.S. Mine Accidents}, MSNBC.MSN.COM, (Apr. 6, 2010), http://www.msnbc.msn.com/id/36192868/ns/us_news-life/t/deadliest-recent-us-mine-accidents/ (noting that 362 miners were killed in an explosion near Monongah, West Virginia in 1907).
  \item \textsuperscript{190} Mine Safety & Health Admin., \textit{Coal Fatalities for 1900 Through 2010}, http://www.msha.gov/stats/centurystats/coalstats.asp (last visited June 1, 2012).
  \item \textsuperscript{192} \textit{Historical Data 1931–1977}, supra note 191, at tbl. 5, available at http://www.msha.gov/STATS/PART50/WQ/1931/wq31cl05.asp.
  \item \textsuperscript{194} \textit{Historical Data 1931–1977}, supra note 191, at tbl. 6 available at http://www.msha.gov/STATS/PART50/WQ/1931/wq31cl06.asp.
  \item \textsuperscript{196} Mine Improvement and New Emergency Response Act of 2006, Pub. L. 109-236, §§ 2(C), 5(a) (June 15, 2006).
  \item \textsuperscript{197} \textit{See} Injury Experience and Worktime Data at All Coal Mines in the United States, MINE SAFETY & HEALTH ADMIN., http://www.msha.gov/STATS/PART50/WQ/1978/wq78cl09.asp (last visited June 1, 2012).
\end{itemize}
States operate each year without any lost work time due to injury. Such improvements in the safety record of coal mining demonstrate that this activity can be and is performed in a safe manner.

Certainly, coal mining today is not without risk. In 2010, following a record low number of mining fatalities, a West Virginia coal mine explosion killed 29 miners, contributing to a total of 48 fatalities that year. The recent dramatic rescue of 33 Chilean miners after 69 days underground, and other reports of mining tragedies abroad, may reinforce the image of mining as a highly dangerous profession. They are to be taken seriously, and the importance of miner safety cannot be understated.

By and large, however, the horror stories associated with coal mining are relics of a by-gone era. The United States, along with the United Kingdom and Australia, lead the world in reducing miner fatality rates. There were 21 coal mining-related fatalities in 2011, a level just above the 2009 historic low. As one commentator noted, even in years when the number of coal mining fatalities is uncharacteristically high, “the rate at which coal miners died on the job was a little more than the fatality rate for garbage collectors and a little less than the fatality rate for iron workers.”

3. Myth #3: Coal mining will continue to leave “scars” on the earth’s surface when the mines are abandoned.

Complaints about abandoned coal mines scarring the earth’s surface or causing permanent hazards is an anachronism. Since 1978, all companies that operate coal mines have been required to reclaim land that they have

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mined, and to maintain adequate financial security to assure that resources are available for those reclamation projects.\(^{206}\) In addition, mining companies must pay into an abandoned mine fund to pay for reclaiming mines abandoned by other operators.\(^{207}\) This reclamation system is working. U.S. coal operations have reclaimed more than 2.3 million acres of mined land over the past 25 years.\(^{208}\) They also have paid more than $7 billion to reclaim mines that were abandoned prior to laws requiring reclamation.\(^{209}\) “Approximately 5 million acres of land have been mined in the U.S. to produce coal; most of the land not under active mining has been or is being reclaimed to the standards set by law.”\(^{210}\)

These reclaimed mines are being returned to productive uses: recreation areas, economic development parks, farms, golf courses, housing developments, wildlife areas and wetlands. One reclamation technique involves saving the plant growth and topsoil when new surface mines are developed, and then transporting them for use in reclaiming other mines. With underground mines, reclamation projects involve stabilizing tailings ponds during the mining process and reclaiming the area when the mining is completed. Further, any surface subsidence must be included in mining plans, and surface and groundwater must be protected.

Reclamation is also an integral aspect to “mountaintop mining,” a controversial mining technique used in Appalachia where the steep terrain and narrow valleys make mining there otherwise not economically viable. For mountains with low sulfur coal lying in horizontal layers relatively near the surface, the dirt and rock above the coal are removed to expose the coal seams and placed into the adjacent valley. These “valley fills” are carefully engineered and constructed to safely and permanently convert the dirt and rocks into plateaus where communities and access roads can be built. They create valuable level land above the flood plain for schools, government facilities, housing and recreational areas.

Valley fills are closely regulated by the Corps of Engineers (COE) and the EPA based on provisions of SMCRA and Section 404 of the Clean Water Act. The COE and EPA must issue a permit prior to the commencement of any valley fill activity. Valley fills must also meet a series of federal and state regulatory requirements designed to protect water resources. In order to receive a permit, a fill design must consider site-

\(^{207}\) See 30 U.S.C. §§ 1231 et seq.
\(^{209}\) Id.
\(^{210}\) Id.
specific soil characteristics, geology, physical and chemical properties of the material going into the fill, locations of springs or seeps, among other things. The structure must be free draining, and the fill design must provide a permanent factor of safety that ensures stability. In 1998, the U.S. Department of Energy estimated that 28.5 billion tons of high-quality coal is available to be mined because of these techniques.

Unquestionably, mountaintop mining entails choices. There is local public and political support for such mining, and the jobs and economic development that follow remain strong. Mountaintop mining in Appalachia currently represents approximately 10% of all coal mined in the United States and roughly 40% of the coal mined in West Virginia and Kentucky.211

4. Myth #4: There is no such thing as “Clean Coal”

Modern coal production should change people’s perception of coal. The “Coal Rush” of the last decade in the United States yielded significant developments in “clean coal” technology during all stages of coal production: pre-combustion, combustion, post-combustion and conversion.

As an initial matter, coal production is significantly more efficient than in the past due to improvements in the precision of the equipment. For instance, where underground miners once used picks and shovels to gather coal, longwall mining now makes use of an electrically-powered tracked vehicle called a continuous miner that isolates, cuts, and collects huge panels of coal.212 The continuous miner is calibrated to shave the coal in the seam while leaving the rock in the floor and ceiling behind, thus reducing the amount of energy used in the production process and the amount of waste produced. Longwall mining, which requires only three workers to operate the machinery, currently accounts for one-third of all underground coal production.213 Longwall mining may result in the subsidence or sinking down of the land above the mine due to the removal of panels,214 but provides significant environmental and safety improvements over traditional mining. These and other improved coal mining techniques have also increased the amount of organic carbon that is mined, which minimizes the amount of inorganic ash released into the environment.

211. Id.
213. Id.
214. See id.
The burning of coal at power plants has also become much cleaner. New power plants emit 90 percent less pollutants, such as SO$_2$, NO$_x$, particulates and mercury, than the plants they replace. So, while coal use has tripled since the 1970s, regulated emissions from coal-based electricity has decreased by nearly 40 percent. This reduction in pollutants is attributable to advances in clean coal technology. One of the most important developments has been the new “supercritical” combustion technology, which uses superheated steam to produce electricity and has much higher efficiency than the conventional pulverized coal technology that had been widely used for decades. This increase in the amount of electricity produced from each unit of coal also means that emissions per unit of output have decreased. Research is under way for development of “ultrasupercritical” units that operate at even higher efficiency levels.

In addition, improvements in boiler design have significantly reduced emissions per unit of electrical output. The development of fluidized bed combustion, where in a circulating fluidized bed boiler coal is combusted while suspended by jets of air in a bed of limestone, allows the emission control process to occur simultaneously with combustion. This process has reduced SO$_2$ and NO$_x$ during the coal-burning process. A further advance, known as a “pressurized” fluidized bed boiler, increases the efficiency of burning coal by generating a high pressure stream of combustion gases that spins a gas turbine, generating electricity during the burning process itself. Boiler manufactures have worked with air pollution control equipment manufactures to integrate these designs. The result is far more compatible and highly performing equipment. For example, low NO$_x$ burners coupled with selective catalytic reduction (SCRs) technology have substantially reduced NO$_x$ emissions. By combusting coal in stages, low NO$_x$ burners can reduce the amount of NO$_x$ released into the air by more than half. Three-quarters of large coal-fired boilers now employ this technology. SCRs, which are more expensive

216. Id.
218. See id.
219. See id.
220. See id.
221. See id.
223. Id.
than the low NO\textsubscript{x} burners, can remove 90 percent of NO\textsubscript{x} pollutants by breaking apart the NO\textsubscript{x} into nonpolluting gases.\textsuperscript{224}

Finally, modern power plants built after 1978 have devices known as “scrubbers” to remove the sulfur, particulate matter, and other impurities from coal’s combustion gases before they are released through the smokestack.\textsuperscript{225} Scrubbers typically rely on limestone, which is crushed and processed into a white powder to absorb sulfur gases. The effectiveness and reliability of scrubbers have also significantly increased over time.\textsuperscript{226}

Looking ahead, one of the most promising technologies is called Integrated Gasification Combined Cycle (IGCC). IGCC turns coal into gas, removes impurities from the coal gas before combustion, and turns the pollutants into reusable byproducts.\textsuperscript{227} This process reduces emissions of sulfur dioxide, particulates, and mercury. IGCC also has the potential to increase coal’s efficiency rate by 50 percent.\textsuperscript{228} Two IGCC electricity generation plants are already in operation in the United States.\textsuperscript{229}

Another developing technology for managing carbon dioxide is called carbon capture and storage (or sequestration). During this process, carbon dioxide is captured and stored in deep geological formations and other places that prevent it from entering the atmosphere. Capturing and compressing the carbon dioxide for this purpose is currently expensive and inefficient because the process consumes a significant amount of energy itself – estimated to be on the order of 20 to 30 percent of the electricity generated. The focus of current research and development efforts is on methods that will not impose such high energy costs. The carbon sequestration part is better understood; the oil and gas industry has used CO\textsubscript{2} injection for years to enhance production from existing wells.

Reflecting these technology developments, Tenaska committed to capture 85 percent of the carbon generated from its proposed Trailblazer Generating Project, near Sweetwater, Texas, which would also use 90 percent less water for cooling than a traditional plant.\textsuperscript{230} Carbon dioxide

\textsuperscript{224}. Id.
\textsuperscript{225}. The technical name for these “scrubbers” is “flue gas desulfurization units.”
\textsuperscript{228}. National Mining Ass’n, supra note 215.
\textsuperscript{229}. Id.
\textsuperscript{230}. See Randy Lee Loftis, Agreement to Trap CO\textsubscript{2} Wins Green Support for Coal Plant, DALLAS MORNING NEWS, Apr. 20, 2010, at 2010 WLNR 8150036. If Trailblazer attains 85% carbon capture, it will emit 70% less CO\textsubscript{2} than the cleanest natural gas plants, according to Arch Coal which is
captured there will be used for enhanced oil recovery in the Permian Basin of Texas. Environmentalists have acknowledged that the Trailblazer plant, if successful, could be a “game-changer” and some groups dropped opposition to the plant’s permit. Texas regulators approved air quality permits for the $3.5 billion project in late 2010.

Since the mid-1980s, the federal government has invested $3 billion in developing and testing clean coal technologies. Even in an era of partisanship, the importance of developing clean-coal technology finds support on both sides of the aisle. President Barack Obama declared in his 2010 State of the Union address that his energy policy includes continued investment in clean coal technology. He subsequently issued a presidential memorandum instructing federal officials to work toward “[r]apid commercial development and deployment of clean coal technologies, particularly carbon capture and storage (CCS),” which “will help position the United States as a leader in the global clean energy race.” In February 2009, the American Recovery and Reinvestment Act (known as the stimulus package) designated $3.4 billion for research, development, and demonstration of CCS technologies. This funding was an owner of the project. See Arch Coal to Buy 35% Stake in Tenaska’s Trailblazer Energy Center, St. Louis Bus. Daily, Mar. 11, 2010, at 2010 WLNR 5077413.


232. Smith, supra note 231 (quoting Tom “Smitty” Smith, Texas Director for Public Citizen).


allocated to three major projects: $1.52 billion for a competitive bidding for industrial CCS projects;\textsuperscript{239}$800 million for the Clean Coal Power Initiative (CCPI), a program initiated during the Bush Administration;\textsuperscript{240} and $1 billion to help revive FutureGen, a public-private partnership with the goal of developing a zero-emission coal plant.\textsuperscript{241}

As these and other new technologies develop, this progress will continue. With respect to carbon dioxide, U.S. emissions have remained relatively stable for a decade,\textsuperscript{242} declining significantly between 2007 and 2009 (in part due to the recession). As the next section discusses, given the significant increases in coal use in the developing world, future technological breakthroughs for coal combustion and emissions are not only critically needed – the developing world is where they may take place.

5. Myth #5: Given the end of the recent American “Coal Rush,” new coal plant technology that can reduce emissions is not advancing

The American “Coal Rush” of the last decade has slowed, but clean coal progress has not. In an influential article in the \textit{Atlantic}, James Fallows noted that China is opening a new coal plant every week, making China the focal point for new coal technologies.\textsuperscript{243} The Chinese are working closely with U.S. companies to develop and demonstrate newer, cleaner technologies for coal production and conversion. As a result, China and other nations, including India and potentially Germany with its recent renouncement of nuclear power, will likely lead the way into a new generation of coal as an even lower-emitting form of electricity generation.


\textsuperscript{240} See U.S. Dep’t of Energy, Clean Coal Technology & The Clean Coal Power Initiative, at http://www.fossil.energy.gov/programs/powersystems/cleancoal/ (last visited June 1, 2012) (announcing that DOE is selecting a third round of clean coal projects for funding, focusing on development carbon sequestration technologies).


In Japan, Denmark, Germany, and other countries, the newly constructed plants are using “ultra-supercritical” combustion technology. Like their immediate predecessors, these units operate at very high pressures and steam temperatures, which results in conversion of energy stored in coal into electricity at a higher efficiency than conventional combustion technologies. Ultra-supercritical designs currently have a net efficiency in the mid-forty percent range, with a goal of achieving efficiencies of up to around fifty percent. The net thermal efficiency of ultra-supercritical technology is approximately five percent higher than that of supercritical units, and about ten percent higher than traditional pulverized coal-fired boilers, which offer thirty-five percent efficiency. In Yuhuan, China, four 1,000 MW coal-fired ultra-supercritical pressure boilers began operations in 2007. Yuhuan Units 1 and 2 are claimed to be the cleanest, most efficient and advanced ultra-supercritical units in the world. They incorporate a high-efficiency combustion design that reduces emissions per unit of power output, and high-efficiency pollution control technologies. The units reportedly have a forty-five percent combustion efficiency and generate about 22 billion kwh of electricity a year.

Ultra-supercritical technology also enhances operational performance, which decreases coal consumption per kwh of electricity and reduces CO₂ emissions. Thus, there is vast potential for emission reductions over the lifetime of an ultra-supercritical coal unit. A major vendor of coal-fired combustion technology, for example, claims that a “1% gain in efficiency for a 700 MW plant reduces 30-year lifetime emissions by 2,000 tons of NOₓ, 500 tons particulates and 2.5 million tons CO₂.”

Other countries are also investing resources in innovative processes to address environmental impacts of coal mining and combustion. In addition to carbon capture and storage technology, which is discussed above, they are retrofitting existing pulverized coal-fired boilers with improved designs for turbines, burners, and other combustion equipment. Enhanced means of

248. Id.
249. Id.
coal beneficiation, which refers to various methods for cleaning coal to remove sulfur, ash, and other undesirable constituents before it is combusted, are also being explored. This allows coal to be burned more efficiently while reducing CO$_2$ emissions during transportation and handling. Finally, underground coal gasification, a new mining technique that also reduces the environmental impact of the coal, is receiving careful attention. Coal gasification can be used when coal would be otherwise unrecoverable. It involves injecting steam and oxygen into a coal seam through surface wells.\textsuperscript{250} The seam is ignited and partially burned, which produces fuel-grade gases. The cavities created can then become CO$_2$ storage locations for the carbon capture and sequestration procedures discussed above. These and other similar efforts developed abroad can be imported to the United States if they prove to be successful and worthwhile.

B. Principles for Regulating Coal in the Context of a National Energy Policy

1. Principle #1: Congress is the proper government body to determine whether and how GHG emissions should be regulated.

As America formulates its national energy policy for electricity generation in the twenty-first century, a key controversy has arisen over which policymakers can make which decisions. This has played out most prominently over whether to limit GHG emissions, and, if so, to what levels. For this issue, the answers must come from Congress.\textsuperscript{251}

Fossil fuels, the target of GHG emission caps, represent 85% of energy use in the United States. Because the economy, not just electricity generation, runs on fossil fuel energy, setting caps on emissions for fossil fuels will affect cost and availability of energy for most families and businesses. Thus, these decisions cannot be determined without making fundamental decisions about U.S. economic and social policy. Only Congress can make those decisions. Moreover, as this article has demonstrated, there are many moving parts that go into deciding the proper balance of energy use in America. Concerns over GHG emissions with respect to fossil fuels are only one aspect of the entire energy puzzle.

\textsuperscript{250} Id.

\textsuperscript{251} See James L. Arnoff et al., Global Climate Change Litigation, in ENVIRONMENTAL LITIGATION: LAW AND STRATEGY 11-12 (Cary R. Perlman ed., 2009) (noting Massachusetts v. EPA supports the conclusion that Congress and the Executive are the branches of government responsible for the regulation of greenhouse gases); Victor E. Schwartz, Phil Goldberg & Corey Schaecher, Why Trial Courts Have Been Quick to Cool “Global Warming” Suits, 77 TENN. L. REV. 803 (2010).
Since 2003, certain public and private groups have sought to circumvent Congress by asking courts to establish GHG emission limits for fossil fuels, including coal. These lawsuits, largely born out of frustration with Congress and presidential administrations, have come in the form of tort actions against utilities, coal producers, and oil and gas companies. In these tort actions, the plaintiffs allege that the industry’s GHG emissions are the cause of the “public nuisance” of global climate change. Therefore, these companies should be responsible for any undesired environmental condition the plaintiffs say are caused by climate change. To date, four such lawsuits have been filed with each case being dismissed or key aspects of the case rejected. Most notably, the Supreme Court of the United States in *AEP v. Connecticut* held that federal common law tort actions, which include public nuisance claims, were displaced by Congress’s delegation of authority to the EPA to decide whether or how to set GHG emission limits under the CAA.

In reaching its decision, the Court made clear that regulating GHG emissions in the United States is a federal issue and that courts do not have the institutional competence to issue rulings that would, in effect, limit those emissions. The unanimous Court stated plainly that “judges lack the scientific, economic, and technological resources an agency can utilize in coping with issues of this order.” Judges “may not commission scientific studies or convene groups of experts for advice, or issue rules under notice-and-comment procedures inviting input by any interested person, or seek the counsel of regulators” in reaching their decisions. Rather, judges are “confined by a record comprising the evidence the

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255. *See id. at 2538. (Prior to the *AEP* decision, the Court in *Massachusetts v. EPA*, 549 U.S. 497, 531 (2007) rejected EPA’s denial of a rulemaking petition to regulate emissions of four gases commonly characterized as GHGs under section 202 of the Clean Air Act).*

256. *See id. at 2539–40 (concluding the complex nature of GHG emissions requires agency expertise and broad policy, compared to judges confined to the record before the court).*

257. The Court rendered an 8-0 decision. Justice Sotomayor did not participate in the decision because she was a member of the panel that heard the case in the Second Circuit.

258. *Id. at 2539–40.*

259. *Id. at 2540.*
These considerations led the Court to conclude, “[i]t is altogether fitting that Congress designated an expert agency, here, EPA, as best suited to serve as primary regulator of greenhouse gas emissions . . . The expert agency is surely better equipped to do the job than individual district judges issuing ad hoc, case-by-case injunctions.”

Federal trial courts dismissed the other emissions-related tort cases, also reasoning that the judiciary is not an appropriate forum to set GHG emission standards. As one court noted, claims asking the judiciary to set GHG emission limits were not cases or controversies, but embodiments of the ongoing “debate” over global climate change policy; “[t]hese policy decisions are best left to the executive and legislative branches of the government, who are not only in the best position to make those decisions but are constitutionally empowered to do so.” Another trial court explained that no judicially discoverable and manageable standards existed to decide such cases in a manner that would permit courts to “render[] a decision that is principled, rational, and based upon reasoned distinctions.” Rather, these cases call on courts to establish emission caps “by judicial fiat,” which is unconstitutional.

Further, while GHGs may be “air pollutant[s]” under the CAA, it is generally recognized that the CAA represents an inefficient vehicle under which national climate change policy should be decided. The CAA was designed to address local and regional sources of air pollution, not concerns about the impact of GHG emissions on global climate change, with GHGs emitted by innumerable sources worldwide and mixing uniformly in the global atmosphere. As a result, EPA has had to stretch the statute beyond its breaking point to try to accommodate GHG regulation.

For example, the CAA’s preconstruction permit program requires that permits be obtained for new and “modified” facilities that potentially emit 100 or 250 tons per year (depending on the type of facility) of an air pollutant. These thresholds were established in the statute because only large industrial facilities emit traditional pollutants above these thresholds and hence only these large facilities are required to obtain permits. By contrast, EPA estimates that more than 6 million facilities emit more than 100 tons per year of carbon dioxide, mostly because they use natural gas or

260. Id.
261. Id. at 2539.
262. Comer, 585 F.3d at 860 n.2.
263. Kivalina, 663 F. Supp.2d at 875 (citing Alperin v. Vatican Bank, 410 F.3d 532, 552 (9th Cir. 2005)).
265. 42 U.S.C. §§ 7475, 7479(1).
oil for heating. To prevent the permitting program from becoming so overwhelmed with permit applications as to cause gridlock, EPA issued regulations that increased the statutory thresholds to 100,000 tons, with subsequent phases to come that may never bring the threshold to within hailing distance of what the statute requires. The statutory validity of EPA’s action in this regard has been appealed. EPA also faces a petition to establish NAAQS for GHGs. If the petition is granted, then potentially the entire country would be in violation of the CAA subject to severe sanctions. Also, because it would be impossible to lower CO₂ emissions sufficiently, no state could “cure” this violation to avoid the penalties.

Rather than rely on EPA to shoe-horn GHGs into the CAA’s regulatory regime, Congress should address GHG policy separately and anew. Cap-and-trade legislation, however, has proven to lack sufficient political support to pass. There also can be no real “solution” to GHG emissions that does not involve emerging economies. Whereas the United States and developed nations’ GHG emissions are relatively stable, it is in the developing nations where emissions are rapidly increasing. Other, and more global, means of addressing this issue will have to be found.

2. Principle #2: Policymakers should focus on facilitating the upgrade or replacement of old, inefficient coal plants with new, low-emitting ones.

As discussed earlier, significant advances have been made in coal-fired combustion technology and more are around the corner. Widespread commercial application of these technologies, here and abroad, will increase the efficiency of electricity generation and make coal better from an environmental standpoint. The key is to identify and reduce the regulatory hurdles preventing modernization of the coal fleet.

First, the starting point for increasing the efficiency of coal generation is a comprehensive overhaul of the permitting process for industrial facilities in the United States. The CAA pre-construction permitting process is extraordinarily complicated, creating undue delay, uncertainty and burdensome costs. As a result, it creates an impediment to the utilities’ self-
interest of investing in efficiency projects and is the primary reason utilities have been unable to modernize or replace older coal plants, some of which are more than a half a century old. Even when issued, environmental groups strongly oppose the permits, generally filing lawsuits to delay them or make the process so costly that utilities abandon their plans. Groups such as the Sierra Club, as part of their anti-coal campaign, have challenged dozens of coal plant permit applications across the United States.\(^\text{271}\)

The experience of the Sandy Creek Energy Associates’ attempt to build a plant in Texas shows how tortured and uncertain the permitting process has become.\(^\text{272}\) When Sandy Creek applied for its permit, it included an assessment of its compliance with the Clean Air Act’s “Maximum Achievement Control Technology” (MACT) emission standard.\(^\text{273}\) While the application was pending, the EPA issued a rule removing coal and oil-fired electric utilities from the MACT program, and instead issuing a stringent control technology-based standard under the NSPS program.\(^\text{274}\) As a result, when the Texas Commission on Environmental Quality (TCEQ) approved Sandy Creek’s application fourteen months later, it did not include a MACT standard, but rather an NSPS standard.\(^\text{275}\) A month after Sandy Creek broke ground, however, the D.C. Circuit invalidated the EPA’s decision to regulate under NSPS instead of MACT,\(^\text{276}\) thereby giving environmental groups a hook to challenge the Sandy Creek permit.\(^\text{277}\) The district court dismissed the case on summary judgment, but, nearly three years after construction was underway, the U.S. Court of Appeals for the Fifth Circuit reversed, finding the TCEQ permit invalid.\(^\text{278}\) The case is now before the U.S. Supreme Court.\(^\text{279}\)

Regulatory obstacles to meeting the expanding demand for energy are not limited to coal. A recent study catalogued over three hundred energy projects delayed or cancelled due to regulatory barriers and legal

274. 627 F.3d at 137.
275. Id.
276. See New Jersey v. EPA, 517 F.3d 574, 583 (D.C. Cir. 2008).
277. See 627 F.3d at 138.
278. Id. at 145.
279. Sandy Creek Energy Associates, L.P. v. Sierra Club, Inc. and Public Citizen, Inc., No. 10-
challenges. In addition to 111 stymied coal projects, these included 22 nuclear and 38 gas and platform projects, as well as 140 renewable energy projects. A recent case in point is the Avenal project in California. This is not a coal plant, but a modern, efficient natural gas plant. One would have expected this project to sail through the permitting process. Quite the contrary, despite the requirement in the Clean Air Act that EPA issue permits within one year after a completed permit application is filed, this project took more than three times that amount and was only issued after the developer obtained a court order requiring the agency to act. Even after the court order, EPA's headquarters office had to take the extraordinary step of revoking the authority of the EPA regional office over the project because personnel in the regional office continued to cause delays.

Within a revamped permitting process, improving the efficiency of the existing fleet of coal-fired boilers should be considered “low hanging fruit”; it is the easiest way to gain quick emission reductions for both conventional air pollutants and GHGs. Some efficiency improvements at existing coal-fired boilers might be viewed by some as plant “modifications,” though, which can trigger new source permitting. Therefore, to encourage electric utilities to undertake the capital expenditures to retrofit efficiency-improving technologies at existing coal-based generating units, EPA should clarify its regulations and change its enforcement policies to make clear that projects that improve plant efficiency without expanding fuel burning capability are not modifications subject to pre-construction permitting.

Policymakers should also focus on removing barriers to the development of new coal technologies and the construction of new plants in the United States. Even under current technology, estimates suggest that a gradual turnover of the fleet of existing coal-fired plants for new plants would reduce CO₂ emissions by as much as twenty-five to thirty-three percent. In addition to the impediment caused by permitting burdens and delays are lawsuits that NGOs file under the CAA, Clean Water Act, and

281. Id. at 4. The delayed renewable energy projects included 89 wind, 29 ethanol/biomass, 10 solar, 7 hydropower, 4 wave, and 1 geothermal project. Id.
Endangered Species Act. Therefore, Congress, the agencies, and the courts should focus on two efforts with respect to encouraging the construction of modern, high-efficiency plants: (1) address in a coordinated inter-agency fashion the amount of time it takes to permit new industrial facilities, and (2) find ways to continue the important environmental protections included in the above statutes while reducing the opportunities for litigation designed to delay and to drive up the costs of new plant construction.

Second, regulators must assess the cumulative impact of environmental regulations that are currently being pursued for coal-fueled electric generation. The issue here is not whether coal plant emissions should decline in the future; as described above, electric sector emissions have been on a downward slope for decades, and that progress will assuredly continue in the future. The issue is EPA’s “too much, too quickly” regulatory approach for existing plants that will force numerous coal plants into retirement without an adequate opportunity for utilities to bring substitute modern generation online. The result could be increased electricity costs and impaired reliability of the electric grid, with associated disincentives for development and use of new, clean coal technologies.

Third, policymakers should consider economic incentives to quicken the commercial application of carbon capture and sequestration (CCS), which is an important step toward controlling carbon emissions from new and existing coal-fired power plants. Research is needed to find ways to reduce the energy required to capture carbon, to support early commercial demonstrations including underground injection and storage of the captured CO$_2$ to identify and estimate available geological storage capacity, and to enhance the understanding of the effects CO$_2$ storage can have on geological formations. Incentives are needed to facilitate the availability of insurance products that provide certainty to investors gauging custody and liability issues associated with the operation and long-term storage of CO$_2$ at sequestration sites. Further, EPA and the states need to provide a consistent and understandable regulatory framework for CO$_2$ injection and storage. CCS must be regulated in a manner that is protective of human


health and the environment, while permitting projects to be financed, developed, and operated without unnecessary legal impediments. Also, programs along the lines of the CCPI should be expanded to integrate and demonstrate the range of coal-based technologies in a commercial setting.

These incentives, in addition to environmental benefits, will spur economic development and be “repaid” in job growth. Such “green jobs” have been touted as a justification for substantial federal support for alternative technologies that are much more expensive, have less widespread application than coal-fired generation, and would produce far fewer jobs. Given that coal generates nearly fifty percent of America’s electricity, these and other strategies will have a much greater impact on reducing emissions while creating jobs than by doubling or tripling the use of wind, solar or other sources of renewable energy.

3. Principle #3: Policymakers should ensure that electricity for average American consumers remains available and affordable.

All potential regulations with respect to coal and other sources of electricity should be first viewed through the lens of their impact on consumer affordability. For two centuries, affordable electricity has been a significant factor in increasing standards of living. People of average means have been able to use the electricity they need to sustain a basic quality of life and have more disposable income to spend on food, health care and other goods and services that improve the quality of their lives.

This progress will be stunted or, potentially, reversed should regulations artificially inflate the cost of electricity. Advocates for the poor and elderly, some of whom joined under the group Affordable Power Alliance, demonstrated that, if this were to happen, individuals with lower incomes will be disproportionately affected and their health and welfare will be


289 In March 2010, the Alliance found that emission regulations discussed at the time could cause gasoline and residential electricity prices to increase by fifty percent and industry electricity and natural gas prices to go up by seventy-five percent by 2030. 290 “Lower-income families [would be] forced to allocate larger shares of the family budget for energy expenditures, and minority families [would be] significantly more likely to be found among the lower-income brackets.”

Others have studied the vulnerability of average Americans to increased energy costs. 292 They have found the following:

- For the half of American households whose average pre-tax annual income is less than $50,000, the amount they are spending on energy costs has risen dramatically. In 2001, these families spent an average of 12% of their after-tax income on residential and transportation energy. By 2005, those costs rose to 16% of their average after-tax income, and in 2011, these households are projected to spend 20% of their after-tax income on energy.
- The 23% of U.S. households earning between $10,000 and $30,000 will allocate 23% of their 2011 after-tax income to energy – over twice the national average.
- Household gasoline costs have more than doubled, from an average of $1,680 in 2001 to a projected $3,601 in 2011. Electricity, because it is fueled by domestic, stable sources, has seen lower annual price increases: the average household electric bill has increased from $938 in 2001 to a projected $1,368 in 2011.
- Households of senior citizens on fixed incomes, Hispanics and blacks are particularly vulnerable to energy prices. In 2009, the average Social Security income of 31.5 million senior households was $15,443. Also, 62% of Hispanic households and 67% of black households had average

291. Id.
annual incomes below $50,000, compared with 46% of white and 39% of Asian households.

- Poverty rates also have increased due to the recession, with 10.5% of all families and 14.3% of the overall population in 2009 living below the poverty level. Government’s assistance programs, namely the Low Income Home Energy Assistance Program, can assist some families, but 2011 funding levels are estimated to represent only 2% of total U.S. residential energy costs in 2011.

The National Economic Research Associates (NERA) recently prepared a report analyzing the impact of regulations currently being considered by the EPA on these and other sectors of the American community. These regulations include two major air emission policies—the Cross-State Air Pollution Rule and regulation of mercury and other hazardous emissions—as well as policies to regulate coal combustion residuals under the Resource Conservation and Recovery Act and to regulate cooling water intake under the Clean Water Act. The Report found that “[o]ver the period from 2012 to 2020, about 183,000 jobs per year are predicted to be lost on net due to the effect of the four regulations . . . U.S. disposable personal income would be reduced by $34 billion each year on average . . . [and] the average annual loss in disposable personal income per household is $270.” Just two of these rules will increase average U.S. retail electricity prices in 2016 by about 12%, with regional increases as much as 24%, and natural gas prices, as set at Louisiana’s Henry Hub facility, by about 17%.

Part of the job loss figures result from the fact that this country has historically enjoyed a cost advantage in manufacturing as compared to Europe and, more recently Japan, due to lower electricity prices. While this advantage has eroded somewhat in recent years due to increased competition from China, this advantage led to U.S. job growth during the 1980s and 1990s, particularly in the automobile industry, as many Japanese car manufacturers opened U.S. plants. The high-tech industries are similarly reliant on affordable power.

As is the theme throughout this article, affordable electricity need not require that we sacrifice environmental goals. As discussed above, financial

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294. Id. at E-5.
incentives and smart regulation can create an appropriate environment for innovation and commercial application of clean generation technologies. Sufficient time must be provided for any cost-effective transition to new technologies and new energy sources.

4. Principle #4: Policymakers should emphasize domestic sources of electricity to avoid undue influence by foreign governments over the availability and pricing of U.S. electricity.

American policymakers should not divert from the decades-long effort to rely largely on home-grown sources of American electricity. Coal, nuclear, natural gas, and all of the renewable energy sources have traditionally been mined, produced, or generated in the United States. This stands in stark contrast to America’s dependence on foreign sources of petroleum-based energy, which has created decades of instability for consumers and driven significant foreign policy decisions, including being a factor in major diplomatic and military actions in the Middle East. In the 1970s, the United States made a conscious decision not to subject its base-load electricity demands to these same whims and forces.

As indicated, coal is not the only domestic source of base-load fuel, but it is the most abundant. Some estimate that the United States has more energy value in U.S. coal than Saudi Arabia has in its oil. As discussed above, while the United States is not planning to build enough new nuclear power plants to meaningfully impact America’s electricity needs, natural gas may become a secondary stable, abundant source for electricity. New fracturing technology and increased infrastructure for transportation and storage may result in a strong, steady supply of shale gas. Market forces will determine how much base-load capacity can be generated by natural gas and whether it can reduce the use of coal. For now, though, regulators should not act prematurely and artificially reduce the use of coal based on expectations of huge shale gas deposits and necessary infrastructure development. If Congress and regulators force utilities to invest in gas plants at the expense of coal plants and their forecasts as to shale gas availability prove wrong, America would become dependent on imports of LNG. This would undermine the nation’s energy independence and likely bring back and potentially worsen the price and supply issues that residents and businesses have experienced. This is the reason natural gas has not served as a base-load fuel in the past.

295. See Clayton, supra note 68.
Without shale gas, and given declines in conventional production, the spread between the nation’s need for natural gas and the available North American supply by 2020 already would be more than 4 TCF—which is more than the total production of both the Gulf of Mexico and Oklahoma. Thus, additional natural gas would have to be imported to close this gap.\textsuperscript{296} As indicated above, countries that have large natural gas deposits to export are not traditional U.S. allies. For example, Venezuela leader Hugo Chavez reportedly is seeking to create “something similar to OPEC with gas.”\textsuperscript{297}

5. Principle #5: Policymakers should focus their efforts on maximizing the utility and minimize risks of coal, not eliminating its use.

As policymakers shape America’s energy policy so that consumers and businesses can affordably and efficiently meet their current and future electricity needs, there is no doubt that coal will remain a significant part of that energy picture for the foreseeable future.

Consider the findings of the U.S. Energy Information Administration (EIA), which has estimated the relative contributions that each energy source will make by 2035. Generation from nuclear power, for example, will likely increase by 9 percent, but its share of total power generation will fall from 20 to 17 percent.\textsuperscript{298} If domestic shale gas reserves prove to be an additional, significant energy resource for this country, those reserves will supplement, not displace coal-fired generation. Use of renewable energy sources are expected to increase 72 percent, raising their share from 11 to 14 percent.\textsuperscript{299} Hydroelectric capacity will grow a half of a percent annually through 2035, and that growth is likely to come as existing facilities become more efficient by replacing older equipment with new technologies.\textsuperscript{300} The bottom line is that even if these numbers are reached, coal’s share of electricity generation will fall only from 45 to 43 percent.\textsuperscript{301}

Further, if demand side management is aggressively pursued, a reduction in energy consumption of 5 to 10 percent on top of these shifts would still leave the country reliant on coal as its principal source of base-load

\begin{thebibliography}{99}
\bibitem{296} See\textit{ Annual Energy Outlook 2011, supra} note 6 at 2 (providing statistics on shale gas production and domestic consumption).
\bibitem{298} \textit{Annual Energy Outlook, supra} note 6, at 73.
\bibitem{299} Id.
\bibitem{300} See id. at 115, 146.
\bibitem{301} Id. at 3.
\end{thebibliography}
generation. Outside the United States, demand for electricity is rapidly increasing with fewer offsets, which will cause the use of coal to expand. As a result, policymakers must remain focused on maximizing coal’s benefits and managing its risks. Any effort to eliminate coal or significantly reduce its viability will be a fool’s errand; it will waste significant time and resources, create the wrong incentives, and impose significant costs. As discussed above, policies that discourage investment in research, development and commercialization of clean coal technologies will directly and adversely impact economic growth and job creation. Conversely, incentives created for the development and demonstration of clean-burning technology will not only help emissions within the United States, they will help assure that coal is used around the world more efficiently as well, which will have a significant additional impact on reducing global emissions. After all, because air pollution does not respect national boundaries, America has a national interest in ensuring that coal burned around the world is burned in as clean a manner as possible.

CONCLUSION

As with all energy sources, coal comes with risks. It also has significant benefits; particularly in the United States where it is an abundant, inexpensive domestic source of energy for meeting America’s increasing needs for electricity. U.S. policymakers, in setting future energy policy, should embrace coal as part of the future. They should then strategically set forth a broad vision for managing the risks of each energy source that generates electricity so that all of their many benefits can be maximized.
THE INEFFICIENCIES AND DEFICIENCIES OF WASTE COAL

Jonathan Skinner* & Michael Brown**

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INTRODUCTION


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** Michael Brown received his J.D. from Boston College Law School and graduated from Williams College. The authors submitted written comment on behalf of the Clean Air Council to the Environmental Protection Agency’s proposed Mercury and Air Toxics Standards for power plants at EPA-HQ-OAR-2009-0234-15884. The views expressed in this article do not necessarily represent the views or position of the Council.
as an Alternative Energy Source Day. The bill passed with significant bipartisan support and celebrated the efforts of the Anthracite Region Independent Power Producers Association (ARIPPA) in promoting waste coal as an alternative energy source for Pennsylvania. Three years earlier, however, waste coal power generated vigorous debate and outrage between industry supporters and environmental coalitions as the Commonwealth of Pennsylvania considered an energy portfolio standard for electric utilities operating within the state.

The debate and outrage centered on Senate Bill 1030, introduced on March 15, 2004, and signed into law as Act 213 on November 30, 2004, for the inclusion of waste coal as an alternative fuel. Proponents argued that the Pennsylvania waste coal industry generates nearly 1,000 megawatts of electricity, or enough to power one-million homes, and reclaimed more


than 3,400 acres of abandoned mine land since 1990.\textsuperscript{7} Opponents argued that waste coal power generation caused significant air pollution and merely converted abandoned waste coal piles into concentrated toxic ash.\textsuperscript{8}

Since the Senate Bill was signed into law by then Governor Edward G. Rendell, many economic and environmental studies questioned the assumptions underlying the Bill’s legislative justification. This article reconsiders the debate in light of these studies, in consideration of the U.S. Environmental Protection Agency’s proposed rules regulating mercury and air toxics emissions as well as greenhouse gas emissions under the Clean Air Act, and in view of the proposed rule for coal ash categorization under the Resource Conservation and Recovery Act.

This article is divided, generally, into two parts: first, the economic inefficiencies of waste coal as a viable alternative energy source and, second, the environmental deficiencies of combusting waste coal. The first section challenges the economic sustainability of waste coal and fluidized bed combustion power plants, the only industrial boilers currently capable of utilizing waste coal fuel, and analyzes the state and federal programs aimed at promoting waste coal technology. The second section discusses the environmental liabilities created by federal environmental laws and critiques the beneficial justifications for burning waste coal. But before addressing the technical arguments of this article: a primer on the waste coal dilemma.

Waste coal, also known as “gob,” “boney,” or “culm,”\textsuperscript{9} is the low-grade, residual coal remaining at the sites of past or abandoned coal mining operations. Most of these legacy piles accumulated between 1900 and the late 1970s and look like dark and barren mountains.\textsuperscript{10} Estimates suggest that, in the central Appalachian region alone, tens of thousands of legacy piles blemish the landscape and contain hundreds of millions of tons of


\textsuperscript{8} These groups included: ActionPA, Citizen Power, Pennsylvania Environmental Network, Student Environmental Action Coalition, Green Party of Pennsylvania (and various county Green Party groups), Sierra Club-Pennsylvania Chapter, PennEnvironment, State PIRGs, and the Clean Air Council.\textsuperscript{7} Pennsylvania’s “Alternative” Energy Law, supra note 4.

\textsuperscript{9} See, U.S. ENVTL. PROT. AGENCY, EPA-HQ-RCRA-2008-0329-1816, MATERIALS CHARACTERIZATION PAPER IN SUPPORT OF THE FINAL RULEMAKING: IDENTIFICATION OF NONHAZARDOUS SECONDARY MATERIALS THAT ARE SOLID WASTE COAL REFUSE 1 (2011) (“Gob” or “boney” is mined from the bituminous coal regions of western Pennsylvania, West Virginia, and elsewhere. Waste coal mined from the anthracite coal region of eastern Pennsylvania is called “culm.”).

waste coal.\textsuperscript{11} Across the United States, waste coal mounds leach aluminum, arsenic, iron, lead, manganese, and mercury pollution and cause substantial acid drainage.\textsuperscript{12} Additional pollution is created by dust storms of uncontained particulates and by the spontaneous combustion of volatile fuels.

Beginning in 1977, laws were enacted that required the stabilization and reclamation of mining sites, including new waste coal disposal piles and fills\textsuperscript{13}—this curtailed the practice of abandoning coal mining sites but did not stop the growth of new waste coal mounds. In fact, U.S. coal mines continue to generate 109 million metric tons of waste coal from 600 coal preparation plants in twenty-one coal-producing states each year.\textsuperscript{14} And, according to the U.S. Environmental Protection Agency, the Council of Industrial Boiler Owners reported that 1.1 billion tons of waste coal is located throughout the United States.\textsuperscript{15} Legacy piles, however, remain an abandoned liability to the states.

In Pennsylvania, there are more than 5,000 abandoned, un-reclaimed waste mounds encompassing more than 189,000 acres.\textsuperscript{16} The Pennsylvania Department of Environmental Protection (PaDEP) Bureau of Abandoned Mine Reclamation (BAMR) estimated that the state suffers from acid mine drainage in nearly 3,100 miles of streams as a result of abandoned mines.\textsuperscript{17} BAMR estimated that $14.6 billion would be needed to eliminate Pennsylvania’s abandoned mine land (AML) problems.\textsuperscript{18}

Since 1967, Pennsylvania authorized the expenditure of more than $200 million for AML reclamation projects under the Operation Scarlift Program.\textsuperscript{19} Today, the state operates “Growing Greener,” a program that funds environmental clean-up efforts through state and federal grants to

\begin{thebibliography}{99}
\bibitem{12} \textit{See} Burning Waste Coal is Much More Polluting than Burning Coal, Energy Justice Network, http://www.energyjustice.net/coal/wastecoal (last visited June 1, 2012) (waste coal piles impact nearby waterways, and may even catch fire, becoming a source of air pollution).
\bibitem{13} \textit{See} Surface Mining Control and Reclamation Act of 1977, 30 U.S.C. §§ 1201–1328 (2006). (This legislation decreased the number of abandoned waste coal piles in the United States).
\bibitem{15} Id.
\bibitem{17} Id.
\bibitem{18} Id.
\bibitem{19} Id.
\end{thebibliography}
nonprofit groups and municipal governments. At the federal level, the U.S Office of Surface Mining (OSM)—created by the Surface Mining Control and Reclamation Act (SMCRA) of 1977—has allocated to BAMR nearly $587 million for AML projects and currently averages about $30 million annually obtained from a per-ton fee paid to OSM from active mine operators that is then distributed to states with AML problems. Together, state and federal expenditures have, nevertheless, only dented the $14.6 billion needed to reclaim Pennsylvania’s scarred landscape—because of this private management of the waste coal problem appeared attractive.

I. ECONOMIC INEFFICIENCIES OF WASTE COAL AS A VIABLE ALTERNATIVE ENERGY SOURCE

For many years, waste coal was abandoned across the United States because it contains low levels of energy per unit of volume and requires significant processing to make it an economical fuel for most conventional pulverized coal-fired power plants. Unlike conventional power plants, fluidized bed combustor (FBC) power plants can utilize lower-quality fuels like waste coal—the technology, however, is not independently viable.

The vast majority of FBC power plants came online during the late 1980s and early 1990s, and only one FBC technology power plant has been built this century. Although waste coal accumulated since the early development of coal, the late development of FBC technology was a result of significant government assistance. In 1978, Congress passed the Public

20. Id.
21. Id. at 2.
22. In general, waste coal means any by-product of coal mining or coal cleaning operations with an ash content greater than 50% (by weight) and a heating value less than 13,900 kilojoules per kilogram (kJ/kg) or 6,000 British thermal units per pound (Btu/lb). Nationally, waste coal has an average of 60% of the Btu value of conventionally used coal. U.S. ENVTL. PROT. AGENCY, OFFICE OF AIR AND RADIATION, AVAILABLE AND EMERGING TECHNOLOGIES FOR REDUCING GREENHOUSE GAS EMISSIONS FROM COAL-FIRED ELECTRIC GENERATING UNITS 8 (2010), http://www.epa.gov/nsr/ghgdocs/electricgeneration.pdf.
23. Niemi, et. al., supra note 11, at 5. Conventional coal fired power plants first appeared in the 1920s and rely on pulverized high quality coal powder that is fed into an industrial boiler where it is burned to create heat and steam that is used to spin turbines to generate electricity. Pulverized coal power plants currently serve over fifty percent of the U.S. electricity industry but only operate at 37–45 percent efficiency depending on the pressure and temperature levels of the boilers, where higher pressures and temperatures increase efficiency. Pulverized Coal Power, WORLD RESOURCES INST., http://www.wri.org/publication/content/10338 (last visited June 1, 2012).
Utility Regulatory Policies Act (PURPA), which aimed to promote greater use of alternative energy, including waste coal, but also compelled electric utilities to purchase power from efficient producers.\(^{25}\) Congress believed that renewable and alternative fuel sources would reduce the demand for traditional fossil fuels and recognized that “electric utilities had traditionally been ‘reluctant to purchase power from, and to sell power to, the nontraditional facilities.’”\(^{26}\) Through PURPA, the Federal Energy Regulatory Commission (FERC) is authorized to set rates for nontraditional sources of energy and require utilities to purchase electricity from qualifying facilities at a rate equal to the utility’s full avoided cost—the electric utility’s cost of energy generation.\(^{27}\) Under PURPA, electric utilities entered into guaranteed, long-term contracts with qualifying facilities, stimulating research and development of alternative energy technologies. One such technology was the circulating fluidized-bed boiler, also known as the fluidized bed combustor boiler.

**A. Fluidized Bed Combustion Technology**

Overall, most waste coal FBC boilers can only be economically built where huge volumes of waste coal exist and many require substantial government aid to stay in business.\(^{28}\) In the United States, there are currently nineteen waste coal burning power plants in operation, fifteen of which are located in Pennsylvania (see Table 1).\(^{29}\) Pennsylvania alone has 820 abandoned mounds amounting to approximately 328 million tons of waste coal in the state.\(^{30}\) According to one industry association, waste coal plants in Pennsylvania consumed 88.5 million tons of waste coal, mostly from legacy piles, and burned an average of 7.5 million tons of waste coal per year from 1987 to 2003.\(^{31}\)


\(^{27}\) See Am. Paper Inst., 461 U.S. at 406 (regarding FERC’s role under PURPA).

\(^{28}\) Historically, the cost of electricity generated by fluidized bed combustor power plants has been higher per megawatt than conventional coal plants, conventional hydropower, and power generated from landfill gas and wood wastes. See Calvin Kent & Christine Risch, Innovative Energy Opportunities in West Virginia 4 (2006), http://www.marshall.edu/cber/research/Final%20Report%20Innovative%20Energy%20Opportunities%20In%20WV.pdf.


\(^{30}\) Dalberto et al, supra note 16.

\(^{31}\) Id. at 5.
Thirteen additional plants burn waste coal as a secondary fuel with bituminous coal serving as the primary fuel, but only two currently operate in Pennsylvania. As of August 2011, twenty new waste coal facilities have been proposed across the country; some companies, however, have withdrawn plans because of unsecured financing or escalating costs (see Table 1).

<table>
<thead>
<tr>
<th>Location</th>
<th>Capacity (MW)</th>
<th>Primary Fuel</th>
<th>Secondary Fuel</th>
<th>Year Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chester, PA</td>
<td>67.0</td>
<td>Culm</td>
<td>Pet Coke</td>
<td>1986</td>
</tr>
<tr>
<td>Tremont, PA</td>
<td>30.0</td>
<td>Culm</td>
<td>Diesel/Fuel Oil</td>
<td>1987</td>
</tr>
<tr>
<td>Frackville, PA</td>
<td>80.0</td>
<td>Culm</td>
<td>Diesel/Fuel Oil</td>
<td>1988</td>
</tr>
<tr>
<td>Frackville, PA</td>
<td>43.0</td>
<td>Culm</td>
<td>Diesel/Fuel Oil</td>
<td>1988</td>
</tr>
<tr>
<td>McAdoo, PA</td>
<td>50.0</td>
<td>Culm</td>
<td>Diesel/Fuel Oil</td>
<td>1989</td>
</tr>
<tr>
<td>Ebensburg, PA</td>
<td>49.5</td>
<td>Gob</td>
<td></td>
<td>1990</td>
</tr>
<tr>
<td>Marion Heights, PA</td>
<td>43.0</td>
<td>Culm</td>
<td></td>
<td>1990</td>
</tr>
<tr>
<td>Shenandoah, PA</td>
<td>88.6</td>
<td>Culm</td>
<td></td>
<td>1990</td>
</tr>
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<td>Ebensburg, PA</td>
<td>88.0</td>
<td>Gob</td>
<td></td>
<td>1991</td>
</tr>
<tr>
<td>Morgantown, WV</td>
<td>50.0</td>
<td>Gob</td>
<td>Bituminous Coal</td>
<td>1991</td>
</tr>
<tr>
<td>Bayard, WV</td>
<td>74.0</td>
<td>Gob</td>
<td>Bituminous Coal</td>
<td>1992</td>
</tr>
<tr>
<td>Clairion, PA</td>
<td>32.5</td>
<td>Gob</td>
<td>Diesel/Fuel Oil</td>
<td>1992</td>
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<td>Marion, WV</td>
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<td>Gob</td>
<td>Tires</td>
<td>1992</td>
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<td>Nesquehoning, PA</td>
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<td>Culm</td>
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<td>Kennerdell, PA</td>
<td>85.0</td>
<td>Gob</td>
<td>Bituminous</td>
<td>1993</td>
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</table>

32. Waste Coal Facilities in the U.S., supra note 29; see also ENVTL. PROT. AGENCY, MATERIALS CHARACTERIZATION PAPER, supra note 9 at 3.
33. Id.
34. Id.
<table>
<thead>
<tr>
<th>Location</th>
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<th>Proposed Date</th>
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<tr>
<td>Colver, PA</td>
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<td>Northampton, PA</td>
<td>Culm, Petroleum Coke</td>
<td>1995</td>
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<tr>
<td>Seward, PA</td>
<td>Gob</td>
<td>2004</td>
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<tr>
<td>Calvert City, KY</td>
<td>Coal/Waste Coal</td>
<td>Proposed</td>
</tr>
<tr>
<td>Irvine, KY</td>
<td>Waste Coal</td>
<td>Proposed</td>
</tr>
<tr>
<td>Knott, KY</td>
<td>Coal/Waste Coal</td>
<td>Proposed</td>
</tr>
<tr>
<td>Gilberton, PA</td>
<td>Coke/Waste Coal</td>
<td>Proposed</td>
</tr>
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<td>Cumberland, PA</td>
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</tr>
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<td>Robinson, PA</td>
<td>Waste Coal</td>
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</tr>
<tr>
<td>Karthaus, PA</td>
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<td>Curwensville, PA</td>
<td>Waste Coal</td>
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<td>Aliquippa, PA</td>
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<td>Proposed</td>
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<td>Shade, PA</td>
<td>Waste Coal</td>
<td>Withdrawn 38</td>
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<td>Wise Co., VA</td>
<td>Coal/Waste Coal</td>
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<td>Coal/Waste Coal</td>
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<td>Greenbrier Co., WV</td>
<td>Waste Coal</td>
<td>Withdrawn 39</td>
</tr>
<tr>
<td>Upshur Co., WV</td>
<td>Coal/Waste Coal</td>
<td>Proposed</td>
</tr>
</tbody>
</table>

Indeed, a West Virginia energy resources study shows that FBC power plants are ultimately not competitive with conventional coal power, conventional gas, or even wind energy. Operating costs for FBCs are in the range of $8 to $12 per ton of fuel, which, for high Btu waste coal, results in

35. Stopping the Coal Rush, SIERRA CLUB, http://www.sierrclub.org/environmentallaw/coal/plantlist.aspx (follow “Name” to see location name)(last visited June 1, 2012).
36. Id.
37. Id.
38. Id.
39. Id.
a favorable overall cost relative to current coal prices—however, as noted above, most waste coal has low Btu values relative to traditional coal fuel.\textsuperscript{40} The study shows that the cost of electricity (COE) is the cost per megawatt-hour (MWh) to produce electricity and includes the cost of capital, construction, and variable and fixed operation and maintenance costs. According to the study, most resources cannot produce electricity at the prevailing wholesale price of $36 to $42/MWh, and that, accounting for the lower Btu levels of waste coal, FBCs are no more competitive than wind energy (see Table 2).

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>MW</th>
<th>MWh</th>
<th>Capital Costs</th>
<th>COE $/MWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste Coal (FBC)</td>
<td>100.0</td>
<td>700-800,000</td>
<td>$260-275 mil.</td>
<td>$52-63\textsuperscript{42}</td>
</tr>
<tr>
<td>Conv. Coal</td>
<td>600.0</td>
<td>3.7-4.5 mil.</td>
<td>$750 mil.</td>
<td>$26-29</td>
</tr>
<tr>
<td>Conv. Gas</td>
<td>160.0</td>
<td>70,000-240,000</td>
<td>$64 mil.</td>
<td>$38-121</td>
</tr>
<tr>
<td>Conv. Hydro.</td>
<td>25.0</td>
<td>110,000</td>
<td>$36 mil.</td>
<td>$40</td>
</tr>
<tr>
<td>Wind\textsuperscript{43}</td>
<td>100.0</td>
<td>240-265,000</td>
<td>$120-160 mil.</td>
<td>$53-81</td>
</tr>
</tbody>
</table>

In Pennsylvania, with many PURPA-era power purchasing contracts nearing expiration, some waste coal power plants reported to the state legislature that open market competition would cause $4 million in loses per year. And so, in 2004, the Pennsylvania legislature passed Act No. 213, the state’s Alternative Energy Portfolio Standard (AEPS),\textsuperscript{44} which schedules two tiers of alternative energy sources to displace a percentage of traditional coal by 2020. Under Tier II, Act 213 promotes waste coal as a viable “alternative fuel” to traditional coal.

\textsuperscript{40} KENT & RISCH, supra note 28, at 17.

\textsuperscript{41} Id. at 5.

\textsuperscript{42} Id. This figure assumes a capacity factor of 80-90%.

\textsuperscript{43} Id. This calculation does not account for the federal production tax credit, which allows wind facilities to be competitive with nearly all fossil fuels except conventional coal and landfill gas Id.

\textsuperscript{44} See S.B. 1030, 188th Sess., Printer’s No. 1912 (Pa. 2004), available at http://www.legis.state.pa.us/cfdocs/legis/PN/Public/btCheck.cfm?txType=HTM&sessYr=2003&sessInd =0&billBody=&billTyp=B&billNr=1030&p=1912 (When first introduced, Senate Bill 1030 was titled the “Renewable and Environmentally Beneficial Portfolio Standards Act.” “Renewable and Environmentally Beneficial” was deemed by environmental groups in Pennsylvania to be code for “waste coal.” The term was later replaced with “alternative energy.”).
B. Pennsylvania’s Alternative Energy Portfolio Standard

Alternative energy credits provide a source of additional revenue that can help provide long term financing for qualifying facilities and help reduce the payback period. Credit owners can choose to sell their energy credits to a broker, aggregator, or load serving entity who must buy alternative energy credits to meet a state’s alternative energy portfolio standard obligation. Some project developers will offer to buy the credits as part of the project financing, thereby reducing the amount of capital needed up front to finance a new installation.

The Pennsylvania AEPS, or Act 213, designates two tiers of alternative energy sources and requires that an annually increasing percentage of qualifying alternative energy be used by retail electricity customers in Pennsylvania. The sources listed under Tier 1 include: solar photovoltaic energy; solar thermal; wind power; low-impact hydropower; geothermal energy; biologically derived methane gas (including landfill gas); fuel cells; biomass energy; coal mine methane; black liquor; and large-scale hydropower (certain restrictions apply). These sources are generally accepted to be renewable energy sources. Waste coal, however, is listed as a Tier 2 energy source, along with distributed generation systems; demand-side management; large-scale hydropower; municipal solid waste; generation of electricity utilizing byproducts of the pulping process and wood; and integrated combined coal gasification technologies. Through this second tier, the Pennsylvania legislature encourages the development of non-renewable alternative fuels.

Electric Distribution Companies (EDCs) and Electric Generation Suppliers (EGSs) can comply with Act 213 by purchasing Alternative Energy Credits (AECs) from qualified alternative energy resource facilities. Companies purchase individual AECs for each megawatt hour (equal to 1000 kilowatt-hours) of generation from a qualified Tier 1 or Tier 2 alternative energy system. AECs can be sold or traded by EDCs or EGSs, but only within the specific tier from which they qualify. By 2020, Pennsylvania retail electricity sellers must acquire eight percent of energy

46. Id.
47. Id.
48. Id.
through Tier 1 sources, and ten percent through Tier 2 sources, which includes waste coal burning.50

Many facilities that qualify for AECs register with credit aggregators and brokers that arrange trades with EDCs and EGSs; others enter into direct partnerships to secure longer term financing for new alternative energy projects. By qualifying under Tier II, waste coal burning FBCs secure energy credits, which can be sold and traded in a registered energy market, such as the PJM-GATS.51 This market is connected to the largest regional transmission organization in the United States, the PJM Interconnection.52

C. Federal and State Grant Programs

Federal and State grant programs are another avenue for the implementation of waste coal as a viable energy source within Pennsylvania. The Pennsylvania Energy Development Authority (PEDA) is an independent public financing authority that was created in 1982 by the Pennsylvania Energy Development Authority and Emergency Powers Act and that was revitalized by Governor Rendell through an April 8, 2004 Executive Order.53 The Authority's mission is to finance clean, advanced energy projects in Pennsylvania, and any facilities which qualify under the AEPS may apply for funding from the state. The Authority presently can award grants, loans, and loan guarantees and can develop a variety of other types of funding programs.54 Tax-exempt and taxable bond financing for energy projects are also available through PEDA’s partnership with the Pennsylvania Economic Development Financing Authority (PEDFA).

For example, PEDA awarded PFBC Environmental Energy Technology, Inc. a $1,000,000 grant for a waste coal project in Allegheny County, Pennsylvania. The project uses a carbon dioxide separation technology for

50. Pennsylvania AEPS Alternative Energy Credit Program, supra note 45.
54. Id. at 2.
the pressurized FBC generation technology. PEDA has also awarded close to $300,000 to Breen Energy Solutions for a waste coal project in Allegheny County, and over $70,000 to the University of Pittsburgh for waste coal research. The average PEDA grant is $500,000.

According to the U.S. Department of Energy, continued investment and development in FBC technology will likely increase the efficiency of FBC generators and reduce the cost of power generation. Indeed, the Department of Energy has occasionally committed significant funds for the development of new FBC technology facilities. But while cleaner than conventional coal-fired power plants, FBC power plants generate significant amounts of coal combustion ash and emissions, and even with federal and state aid, these projects do not always come to fruition.

D. A Case Study—The Western Greenbrier Co-Generation Facility

An example of the economic inefficiencies surrounding waste coal and FBC technology is the failed Western Greenbrier Co-Generation Facility.

55. Id.
60. See GEORGE KAZONICH & ANN G. KIM, RELEASE OF TRACE METALS FROM FBC ASH DURING LEACHING WITH ACIDIC SOLUTIONS, NATIONAL ENERGY TECHNOLOGY LABORATORY, available at http://www.flyash.org/2003/ashpdf/86kaz.pdf (Outlining the methods used by researchers in collecting data to support the idea that FBC plants generate less harmful by-products than conventional technologies). In fact, waste coal power plants are not as clean as newer integrated gasification combined cycle, or IGCC, power plants. WORLD RESOURCES INSTITUTE, IGCC WITH CARBON CAPTURE SEQUESTERATION, http://www.wri.org/publication/content/8125 (last visited June 1, 2012). IGCC, power plants produce electricity combine gas and steam turbines for increased efficiency and are significantly cleaner than conventional pulverized coal power plants, especially when outfitted with carbon capture and storage (CCS) technologies. Id. With CCS, IGCC power plants could capture 85–95% of their emissions. Id. IGCC technology in the United States, however, is not yet considered commercially practical. Taylor Moore, Coal-Based Generation at the Crossroads, EPRI JOURNAL (2005), available at http://mydocs.epri.com/docs/CorporateDocuments/EPRI_Journal/2005-Summer/1012149_CoalBasedGeneration.pdf.
project. The facility, which was to be located in Rainelle, West Virginia, was a proposed joint-venture, co-generation plant that would have produced 100 megawatts of energy (electricity and thermal), up to 30,000 pounds of steam per hour, and about 340 million Btu per hour, while processing 3,000-4,000 tons/day of waste coal. In its Department of Energy (DOE) fund application, the project developer claimed the new design would reduce construction costs by 40%. The proposed power plant would have been the first commercial application, within the United States, of a circulating fluidized-bed (CFB) combustor featuring a compact inverted cyclone design.

The DOE planned on providing financial assistance for development through President Bush’s Clean Coal Power Initiative, a component of the Energy Policy Act of 2002, covering 50% of the total cost (DOE estimated the plant would cost $215 million and its share would be $107 million). The new design would also, allegedly, reduce the boiler construction time by up to 10 percent and the boiler footprint by up to 40 percent.

On June 14, 2008, however, the proposed project was discontinued after project administrators received word that the DOE was pulling all funding from the project. Costs for the proposed project had skyrocketed in the time since the DOE funding agreement, and financial problems ran rampant, including a Western Greenbrier Co-Generation project loan default.

The economic inefficiency of the project was obvious by its ultimate failure, but there was also evidence of environmental deficiencies associated with the project. On November 6, 2007, the DOE released its Environmental Impact Statement (EIS) for the proposed project. The DOE EIS identified the maximum potential to emit for various pollutants

62. Id.
65. Western Greenbrier Co. Demonstration Project: EIS Purpose and Need, supra note 61.
including SO\textsubscript{2}, NO\textsubscript{x}, CO, VOC, Pb, H\textsubscript{2}SO\textsubscript{4}, and Hg compounds.\textsuperscript{67} While the DOE EIS concluded that the proposed project would not exceed allowable emissions levels, result in objectionable odors, or cause an exceedance of air quality standards as outline by the criteria used in the impact analysis,\textsuperscript{68} numerous groups challenged the findings of both the DOE EIS and the West Virginia Department of Environmental Protection’s ruling that the project would not harm air quality.

The Sierra Club, the West Virginia Highlands Conservancy, and the Greenbrier River Watershed Association sued after the project was issued permits. Notably, the petitioners claimed that the permits failed to require best available control technology (BACT) for SO\textsubscript{2} and NO\textsubscript{x} emissions. While the suit was ultimately rejected by the West Virginia Air Quality Board, it may have been a major reason behind the pulling of funding from the DOE, and the eventual failure of the project.\textsuperscript{69} The suit also recognized the serious uncertainties surrounding the environmental legitimacy of waste coal combustion.

II. ENVIRONMENTAL DEFICIENCIES OF COMBUSTING WASTE COAL

As with traditional coal, the chemical properties of waste coal vary with its geographic origins. The EPA identified in a materials characterization report released on February 3, 2011, that West Virginia and Virginia waste coal contained less than 10 parts per million (ppm) of arsenic, 0.3 ppm of mercury, and 15.8–20 ppm of lead.\textsuperscript{70} Waste coal from Pennsylvania, on the other hand, contains an average 50.5 ppm of arsenic, 0.668 ppm of mercury, and 33.8 ppm of lead.\textsuperscript{71} Compared to traditional coal, waste coal tends to

\textsuperscript{67} Record of Decision and Floodplain Statement of Findings, supra note 63, at 2316 (The EIS did not address emissions of N\textsubscript{2}O, a potent greenhouse gas. Greenhouse gases were not, at the time, regulated under the Clean Air Act); WESTERN GREENBRIER CO. DEMONSTRATION PROJECT: EIS ENVIRONMENTAL CONSEQUENCES, 4.3-3 (2007), available at http://www.netl.doe.gov/technologies/coalpower/cts/EIS/wgreenbrier_pdf/WGC_FEIS_Chapter%204%20-%20Environmental%20Consequences.pdf.

\textsuperscript{68} Id.

\textsuperscript{69} See Pam Kasey, Feds Pull Plug on Greenbrier Co-Gen Plant, WTRF 7 (Sept. 11, 2008), http://www.highbeam.com/doc/1P3-1564607961.html.

\textsuperscript{70} ENVTL. PROT. AGENCY, MATERIALS CHARACTERIZATION PAPER, supra note 9, at 8 (citing R.S. Lee & W. Lee Daniels, Reclamation of Coal Refuse with a Papermill Sludge Amendment, 281 (1997)).

have a higher concentration of mercury. In West Virginia, gob has four times more mercury than bituminous coal; in Pennsylvania, gob has 3.5 times more mercury. Culm has nineteen percent more mercury than anthracite coal. Bituminous rejects have higher levels of sulfur. Pennsylvania culm and gob also have about four times more chromium and three times more lead.

To burn waste coal in FBC boilers, waste coal is crushed (3/8in to 3in in size) and injected into a boiler above a grate-like air distributor. FBC boilers use strong jets of hot air to suspend pulverized waste coal, biomass, and other poor quality fuels including tires and municipal waste. During the combustion process, the suspension gives the bed a liquid-like characteristic—hence, the fluidized state of FBC boilers. At the top of the combustion chamber, gasses and particles of burned fuel enter a solids separation device called a cyclone. By using centrifugal force, the larger particles are separated and returned, or circulated, to the bottom of the combustion chamber where they are reheated with any remaining carbon; this cycle may repeat many times over several hours and contributes to the complete combustion of any carbon in the combustion chamber.

FBC technology burns fuel at temperatures of 1,400 to 1,700 degrees Fahrenheit, well below the 2,100 to 2,800 degrees Fahrenheit of pulverized coal combustion boilers, and below the oxidation temperature for NOx and NO2. Utilizing a fluidized bed also allows limestone particles to be injected with the waste coal to react with SO2, forming calcium sulfite and carbon dioxide. Calcium sulfite is an inert substance and the calcium sulfite particles either settle and are removed with bottom ash, or are captured downstream by a fabric filter. Calcium sulfite is an inert substance that can be converted into gypsum.

But due to the lower firing temperatures of waste coal, FBC plants generate nitrous oxide (N2O), a greenhouse gas approximately 300 times more powerful in terms of global warming potential than carbon dioxide—
effectively emitting fifteen percent more greenhouse gas pollution than conventional boilers.\textsuperscript{77} Burning at lower temperatures also causes increased carbon monoxide and polycyclic aromatic hydrocarbon (PAC) emissions.\textsuperscript{78}

According to an analysis by the U.S. Department of Energy’s National Energy Technology Laboratory, FBC plants typically generate more sulfur dioxide,\textsuperscript{79} carbon dioxide, hydrochloric acid, hydrofluoric acid, and ash byproducts than IGCC power plants.\textsuperscript{80} Pennsylvania continues to suffer from one of the nation’s worst acid rain problems,\textsuperscript{81} and exempting waste coal power plants from adequate regulations will adversely affect human health and contribute to acidification.

\textit{A. Clean Air Act New Source Performance Standards Exemptions (Air Toxics and Mercury Rulemaking)}

A principal concern with the construction of new coal derived power is the emission of mercury pollution, and the use of waste coal as an energy source will produce a significant amount of mercury emissions. As noted above, Pennsylvania gob has 3.5 times more mercury than traditional coal, while West Virginia gob has 4 times the amount of mercury.

Mercury in the air has numerous negative environmental and public health effects.\textsuperscript{82} After mercury falls from the air, it can end up in streams, lakes, or estuaries, where it can be transformed into methylmercury through microbial activity.\textsuperscript{83} Methylmercury can harm fish and other animals

\textsuperscript{77} Id. at 44.


\textsuperscript{79} EPA acknowledges it is because waste coal has higher sulfur content than higher quality coals that EPA intends to exempt waste coal power plants from meeting the proposed sulfur dioxide standard. See U.S. ENVTL. PROT. AGENCY, NOTICE OF PROPOSED RULE, NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FROM COAL- AND OIL-FIRED ELECTRIC UTILITY STEAM GENERATING UNITS 505 (2011), available at http://www.epa.gov/airquality/powerplanttoxics/pdfs/proposal.pdf.


exposed to it, with effects including mortality, reduced fertility, and diminished survival skills.\textsuperscript{84} Methylmercury also has negative effects on humans—most notably, impaired neurological development. Regulation of mercury emissions is critical to mitigating environmental and public health impacts.

The U.S. Clean Air Act Section 111 establishes mechanisms for controlling emissions of pollutants from stationary sources and provides authority for EPA to promulgate New Source Performance Standards that apply to new and modified sources. Specifically, Section 111(b) requires EPA to establish emission standards for any category of new and modified sources that “causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare.”\textsuperscript{85} Currently, EPA has developed NSPS for more than 70 source categories and subcategories. EPA has significant discretion, however, to identify the facilities within a source category and determine the appropriate level for the standards.\textsuperscript{86} Under Section 111(a)(1), EPA should take into account the cost of achieving emission reductions and any non-air quality health and environmental impact and energy requirements—this level of control is known as best demonstrated technology, or BDT.\textsuperscript{87} In determining BDT, EPA conducts a technology review and evaluates each emissions limit in conjunction with costs, secondary air benefits, and non-air quality impacts such as solid waste generation.

EPA’s proposed air toxics rule for mercury and other hazardous air pollutants would, however, exempt waste coal plants from meeting more stringent sulfur dioxide standards because “these units warrant special consideration so as to prevent the amended [new source performance standards] NSPS from discouraging the construction of future waste coal-fired [electric utility steam generating units] EGUs in the U.S.”\textsuperscript{88} The Environmental Protection Agency is also considering subcategorizing waste coal-fired EGUs and maintaining the existing NO\textsubscript{x} standard.\textsuperscript{89}

By encouraging the development of waste coal burning facilities, EPA encourages the construction of new mercury emitting facilities. But even discounting the additional emissions, EPA fails to consider the negative

\textsuperscript{84} Id.
\textsuperscript{87} 42 U.S.C. § 7411(a)(1).
\textsuperscript{88} U.S. ENVTL. PROT. AGENCY, NOTICE OF PROPOSED RULE, supra note 71, at 505.
\textsuperscript{89} Id. at 537.
effects of burning waste coal because it does not account for coal ash. For instance, an EPA support paper regarding final rulemaking on waste coal largely ignores the negative impacts of coal ash and instead focuses solely on the avoided impacts of using waste coal. The support paper concludes by stating that there is no available data to determine environmental impacts associated with extracting waste coal from waste coal piles and processing such materials.

B. Coal Ash

Coal Combustion Products (CCPs), or coal combustion residuals (CCRs), are created by the combustion of coal for energy and predominately consist of fly ash, bottom ash, boiler slag, and flue gas desulfurization residue. The precise environmental hazards associated with CCRs are determined by the particular composition of toxic metals and metalloids, generally reflect the chemical composition of the parent coal, and can vary based on geography and the type of coal. Approximately five million tons of coal ash is generated in Pennsylvania plants which use waste coal as a key ingredient in their fuels.

Coal ash is, however, currently considered an exempt waste under an amendment to the Resource Conservation and Recovery Act (RCRA), despite EPA twice evaluating CCRs in 1993 and 2000. Coal ash’s exemption stems from the “Bevill Amendments,” which were a part of the Solid Waste Disposal Act Amendments of 1980. The Bevill Amendments exempted “special wastes” from regulation under subtitle C of RCRA until further study and assessment of risk could be performed. A May 2000 regulatory determination ruled that the Bevill Amendments applied to “beneficial” uses of coal ash, therefore exempting those uses from federal regulation. A beneficial use is considered the use of a material that provides a functional benefit, meaning that it replaces the use of an

90. See generally, ENVTL. PROT. AGENCY, MATERIALS CHARACTERIZATION PAPER, supra note 9 (Explaining what coal waste is, and how it is currently being used in energy generation).
91. Id.
92. Id. at 7.
alternative material or conserves natural resources that would have been extracted and used for such process.96

Annually, the United States generates 109 million metric tons of coal ash.97 Of all the mining production within the United States, up to fifty percent of the product may end up as refuse depending on the particular impurities of the coal.98 Currently, coal ash is used for both combustion and non-combustion purposes. In terms of combustion, coal ash is third behind coal and biomass in terms of the primary sources used by CFBs.99 Non-combustion uses of coal ash include its being used as a granular base, in mine reclamation projects, and for stockpile remediation. Stockpile remediation often utilizes beach grass, which can grow in the coal piles and rebuild organic matter; this allows for plant cover and native species to eventually resurface.100

Unfortunately, the absence of regulatory oversight received considerable attention following the 2008 coal ash spill at the Tennessee Valley Authority’s Kingston Plant in eastern Tennessee. The tragic spill flooded more than 3,000 acres of land with coal ash and flowed into the Emory and Clinch rivers.101 The Kingston disaster may have been the critical moment in pushing EPA to reconsider coal ash classification under RCRA.

1. EPA’s proposed RCRA rule

For the first time, EPA is proposing to regulate coal ash in order to address the risks from the disposal of the wastes generated by electric utilities. EPA is considering two possible options for the management of coal ash for public comment; both options fall under RCRA.102 Under the

96. Id. For a detailed description of the particular uses of waste coal that are considered “beneficial” in Pennsylvania, See also IEP – Coal Utilization By-Products – Pennsylvania, NATIONAL ENERGY TECHNOLOGY LABORATORY, http://www.netl.doe.gov/technologies/coalpower/ewr/coal_utilization_byproducts/states/pennsylvania.html (last visited June 1, 2012).
97. ENVTL. PROT. AGENCY, MATERIALS CHARACTERIZATION PAPER, supra note 9, at 2.
98. Id.
99. Id. at 4.
100. Id.
first proposal, EPA would list these residual products as special wastes subject to regulation under Subtitle C of RCRA, when destined for disposal in landfills or surface impoundments. Under the second proposal, EPA would regulate coal ash under Subtitle D of RCRA, the section for non-hazardous wastes. The Agency considers each proposal to have its advantages and disadvantages.

EPA’s two-pronged consideration for regulation was designed to ensure that the ultimate decision was based on the best available data with the maximum amount of public input taken into the consideration. While both proposals will require that liners and ground water monitoring be established at landfills handling coal ash, there are differences surrounding implementation and regulation. For instance, regulation under Subtitle C will require the development of federal or state permit programs, as well as allowing for direct federal enforcement. However, enforcement under Subtitle D will be through citizen suits.

Subtitle C regulation is the favored approach by many environmental groups because it ensures federal enforcement and standards, while providing EPA with enforcement and inspection authority. Many states and industry groups favor regulation under Subtitle D however, believing that states should be the sole regulator of coal ash, with current regulations being sufficient.

2. RCRA Exemption: Beneficial Use Under State Law

Under Pennsylvania law, coal ash is regulated as a solid waste under the state’s Solid Waste Management Act and residual waste management regulations. Coal ash is defined under Pennsylvania law as fly ash, bottom ash, or boiler slag resulting from the combustion of coal, and it may be beneficially used. There are numerous uses of coal ash under

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103. Id.
104. Id.
105. Frequent Questions, supra note 95.
106. Id.
107. Id.
108. Coal Combustion Residuals, supra note 102. It is important to note that states can act as citizens for the purpose of citizen suit enforcement under Subtitle D.
109. Id.
110. Id.
Pennsylvania law currently considered “beneficial,” including, but not limited to: coal mine reclamation projects; as a structural fill; in the manufacture of concrete; and as a raw material for a product with commercial value, including the use of bottom ash in construction aggregate.112

In New Jersey, regulators judge beneficial use applications on a case-by-case basis, with no uses explicitly ruled out. However, New Jersey does not allow the beneficial use exemption to be used for any materials which constitute hazardous waste as defined under RCRA. Therefore, a federal determination of waste coal constituents, including coal ash being labeled as hazardous wastes, will significantly close the beneficial use loophole.

While numerous uses are currently established for the use of coal ash and other coal residuals, there is debate about the environmental efficiency of specific “beneficial uses.” For instance, while it is true that burning waste coal and injecting limestone produces limestone ash, which can cover mounds, this process does not necessarily stop leaching of materials underneath the limestone ash layer.115 Also, when waste coal is burned, it leaves behind heavy metals (Pb, Hg, etc.) that will collect and become concentrated and mixed with ash that are not neutralized with the addition of limestone.116

In 2004, PaDEP released a book on the beneficial uses of coal ash in mine reclamation and mine drainage remediation in Pennsylvania. This book, clearly favoring the use of coal ash, found that almost all coal ash beneficial uses were clear success stories. In the cases where acid mine drainage was worsened after the use of coal ash, the study concluded that coal ash was not to blame and faulted the lack of causality in the determination. It should be noted that this study, whether skewed or not, was heavily relied upon in the EPA's Final Rulemaking paper regarding waste coal refuse.

112. Id.
114. Id.
116. Id.
118. Id. at 345.
A subsequent National Resource Council study illustrated the extent of uncertainty regarding the environmental ramifications of numerous waste coal beneficial uses. The report states:

Based on its review of CCR post-placement monitoring, the committee concludes that the number of monitoring wells, the spatial coverage of wells, and the duration of monitoring at CCR minefills are generally insufficient to accurately assess the migration of contaminants. Additionally, the committee found quality assurance and control and information management procedures for water quality data at CCR mine placement sites to be inadequate.119

The report went on to conclude that the Committee had a “poor understanding” of the field conditions influencing the behavior of CCRs; that “comparatively little is known” about the potential for mine filling to degrade the quality of groundwater and/or surface waters; and that there is “insufficient data” to make accurate human risk assessments.120

In another criticism, the Public Employees for Environmental Responsibility (PEER) argued that Pennsylvania turned a blind eye to the environmental and health risks associated with using waste coal in coal mine reclamation projects.121 PEER took exception to a Pennsylvania state report used to gain approval of the beneficial use of coal wastes by minimizing environmental concerns. PEER compared filling abandoned coal mines with coal ash to “letting nuclear reactors throw their spent fuel rods down abandoned uranium mines and calling it a beneficial use.”122 PEER also discredited a preliminary finding regarding the use of coal ash at Bark Camp Run, a tributary to the Bennett Branch of the Sinnemahoning Creek in west-central Pennsylvania. The report claimed that adding and mixing dredged material with coal ash had no negative impacts on surface or groundwater quality.123 Moreover, a hydro-geologic expert, Robert Gadinski, filed a formal complaint with the Pennsylvania Department of

120. Id. at 79, 105.
122. Id.
State in April 2008 about the lack of qualifications of the author of the Bark Camp report, under laws requiring state licensure for geologic consulting work in Pennsylvania. Two years later, however, the Commonwealth has not responded.  

PEER also explained that, during the Bush administration, EPA entered into a formal partnership with the American Coal Ash Association to promote coal combustion wastes for industrial, agricultural, and consumer product uses. Since engaging the rulemaking process, however, EPA has suspended participation in the Coal Combustion Products Partnership, or C2P2.  

C. Greenhouse Gases—Tailoring Rule  

The use of waste coal could also trigger the requirements of the newly implemented greenhouse gas tailoring rule. As of January 1, 2011, facilities that were already required to obtain New Source Review permits for other pollutants are required to include greenhouse gases in their permits if the increase of such emissions was at least 75,000 tons of carbon dioxide equivalent per year. Since July 2011, the tailoring extends to new construction projects that emit at least 100,000 tons of greenhouse gases and to existing facilities that emit over 75,000 tons of greenhouse gases, even if these facilities don’t trip federal thresholds for other pollutants.  

In the United States, the generation of electricity is the single largest source of CO₂ emissions, representing 39 percent of total CO₂ emissions from all CO₂ emissions sources across the country. Methane and N₂O account for a smaller portion of emissions and in 2009, represented less than 0.1 percent and 0.4 percent, respectively. However, FBC plants...
operate at lower temperatures than conventional coal power plants and create far greater emissions of nitrous oxide (N₂O), which is a potent global warming gas. Some have estimated that FBCs emit fifteen percent more greenhouse gas pollution than conventional boilers. With the rise in use of waste coal FBCs, the greenhouse gas tailoring rule’s applicability will become all the more relevant and important.

D. Site Reclamation and Green Jobs

As an alternative to costly conventional remediation projects, researchers at the Natural Resources Conservation Service discovered an environmentally viable and cheaper alternative to traditional practices through beach grass remediation. They found that beach grass thrives in waste coal piles and can establish enough plant cover to enable native plants to take root in only a few years. In fact, this method has been shown to bring life back to desolate waste coal piles for only 6–10% of the cost of conventional methods. Costs for traditional grading, top-soiling, and seeding waste coal piles averaged $30,000 per acre, whereas a two-acre site in southern West Virginia was stabilized with Cape American Beachgrass for $3,750 per acre. The success of Beachgrass remediation depends, however, on the underlying characteristics of the waste coal pile, such as its slope aspect, compaction, water-holding capacity, pH, and temperature. These factors may also determine how much site preparation work must be done to establish viable plant communities and the failure rate of initial re-vegetation, which may change the cost profile for the remediation project.

According to statistics provided to Congress from the National Association of Contractors, each million dollars of AML money spent on reclamation projects creates 59 jobs. OSM estimates that it would take over $625 million to clean up all the highest priority sites in

129. See COAL-RELATED GREENHOUSE MANAGEMENT ISSUES, supra note 76, at 7 (regarding N₂O emissions associated with FBC generation technology).
130. See Id. (regarding emissions from FBC plants compared to conventional burners).
Pennsylvania—that would also mean over 36,000 new jobs in the Pennsylvania coalfields.\footnote{Id.}

CONCLUSION

Waste coal mounds scar the landscapes of coal mining country and contribute to air and water pollution in adjacent communities. Managing waste coal is a priority for these communities and has been addressed by state and federal regulators. Their solutions, however, may simply transform waste coal mounds into concentrated toxic ash mounds that are currently not regulated as hazardous wastes, leading to considerably more environmental degradation.\footnote{See Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals From Electric Utilities, 75 Fed. Reg. 35128, 35145 (June 21, 2010) (In fact, the EPA’s proposed coal combustion residuals (“CCR”) rule places CCR managed with waste coal in the 90th percentile risk level for arsenic, lead, cobalt, and selenium.).}

In Pennsylvania, waste coal is a Tier II alternative energy source and qualifies for energy credits that may be sold and traded on the market. Many waste coal facilities also qualify for direct state and federal financial assistance to offset construction costs. The Environmental Protection Agency even proposes to exempt new waste coal facilities from meeting new emissions standards. And through other federal environmental law exemptions, combusted waste coal ash is applied as mine filler and may cause acid mine drainage—the principal environmental concern associated with waste coal mounds.

Despite the significant incentives available to waste coal burning power plants, these facilities are economically inefficient and environmentally deficient. State and federal regulators should instead encourage sustainable and efficient solutions for managing waste coal mounds rather than promote superficial and potentially destructive solutions to handling waste coal.
To see coal purely as a gift from God overlooks the many dangerous strings attached to that gift. Similarly, to see it as just an environmental evil would be to overlook the undeniable good that accompanies that evil. “Failing to recognize both sides of coal—the vast power and the exorbitant costs—misses the essential, heartbreaking drama of the story.”

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1. BARBARA FREESE, COAL, A HUMAN HISTORY 13 (Perseus Publishing 2003) [hereinafter “FREESE”].
INTRODUCTION

The shadow cast by the threat of climate change clouds the world’s path to a sustainable energy future. In a relatively short time, hundreds of millions of people around the world have recognized global warming as a threat of potentially catastrophic proportions. This paper seeks to provide a small measure of illumination to facilitate informed decision-making as future energy options are explored. Informed decisions are necessary if the potential disasters attendant to climate change are to be avoided. Ignorance is no longer an option.

Careful, objective consideration of the full range of costs and benefits of each option will effectively serve the public interest. It is imperative that public policy decision-makers accurately address the true range of costs and
benefits of all energy options—including those relating to coal. However, in
the past, such a cost-benefit analysis could easily overlook the externalities
of coal mining and burning, as those costs have historically been obscure.
As discussed below, public policy researchers and analysts have begun to
examine and document coal’s impacts. A recent scholarly report prepared
by university economists gives voice to long-expressed concerns of
coalfield citizens:

> Each stage in the life cycle of coal—extraction, transport,
> processing, and combustion—generates a waste stream and
carries multiple hazards for health and the environment.
> These costs are external to the coal industry and are thus
> often considered “externalities.” We estimate that the life
cycle effects of coal and the waste stream generated are
costing the U.S. public a third to over one-half of a trillion
dollars annually. Many of these so-called externalities are,
moreover, cumulative. Accounting for the damages
conservatively doubles to triples the price of electricity
from coal per [kilowatt hour] generated, making wind,
solar, and other forms of nonfossil fuel power generation,
along with investments in efficiency and electricity
conservation methods, economically competitive.²

The following discussion recognizes “both sides of coal” with an
emphasis on those aspects of coal mining and burning that falls on what
coil historian Barbara Freese calls “the dark side.”³ Her book, COAL: A
HUMAN HISTORY, acknowledges the extraordinary contribution coal has
made to modern civilization, observing that “[l]ike a good genie, coal has
granted many of our wishes enriching most of us in developed nations
beyond our wildest pre-industrial dreams.”⁴ Importantly, Freese also
acknowledges the costs of coal, asserting that: “also like a genie, coal has
an unpredictable and threatening side[;] . . . although we have always

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73-98 (2011) [hereafter, Full Accounting]. See also, Julia M. Gohlke, et al., Estimating the Global
Public Health Implications of Electricity and Coal Consumption, 119 Env. Health Perspect. 821-826
(2011) [hereafter Global Health] (“Increased electricity consumption in countries with IM < 100/1,000
live births does not lead to greater health benefits, whereas coal consumption has significant detrimental
health impacts.”).
³. FREESE, supra note 1.
⁴. Id.
known that, we are just beginning to realize how far reaching that dark side is.\textsuperscript{5}

The modern coal and power industries—“Big Coal”—have no difficulty being heard by public policy decision-makers.\textsuperscript{6} Coal, power generation interests, and those associated with them, have millions at their disposal to promote and spread the positive side of coal’s story.\textsuperscript{7} However, the “dark side” of coal—its obscured externalities—is little appreciated or understood by the public. These externalities are the primary focus of this essay. Even while recognizing coal’s contributions to world industrialization, the following discussion identifies and discusses coal’s history of socio-economic, environmental, workplace safety, and public health externalities. No argument is made here for or against coal’s use in meeting the world’s demand for energy. The modest hope is that public policy decision-makers will weigh in the balance both the costs and the benefits of coal as the climate change debate focuses on future energy options.

I. COAL AT THE MILLENNIUM

The International Energy Agency’s Coal Industry Advisory Board (“IEA”) has concluded that “[d]iverse, secure, affordable and environmentally acceptable energy supplies are essential to sustainable development.”\textsuperscript{8} The IEA Advisory Board emphasized that “[r]esponding

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5. Id.
6. The term “Big Coal” was coined by author Jeff Goodell who defined it as “shorthand for the alliance of coal mining companies, coal-burning utilities, railroads, lobbying groups, and industry supporters that make the coal industry such a political force in America.” Goodell is highly critical of these interests. JEFF GOODELL, BIG COAL: THE DIRTY SECRET BEHIND AMERICA’S ENERGY FUTURE, xxvii, (2006) (Goodell emphasizes that the term is not meant to suggest the industry is monolithic or that its proponents meet in secret to plan grand strategies. Rather, he posits, the coal industry like many other industries “can be identified by certain common goals and pursuits” and thus, he uses the term to suggest that commonality as well as to remind the reader of the power and influence of “the players involved.” It is in this specific sense the term “Big Coal” is used in this paper. Throughout this paper the term is used interchangeably with “Coal,” each term intended to have the same meaning.).

7. As explained below, climate change constitutes an enormous concern of Big Coal. Coal’s strategic response has been to tout its affordability, availability, and adaptability, arguing that these benefits should guarantee coal’s share of future energy markets. See, e.g., Hal Quinn, President & CEO, National Mining Association, Address at the United States Energy Association Eighth Annual State of the Energy Industry Forum (January 18, 2012) available at http://www.nma.org/pdf/speeches/011712_usea_hal.pdf (discussing the future of coal in America and globally).

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effectively to the risks of global climate change while continuing to meet the high energy demands of mature economies and the rapidly increasing energy demands of developing economies is a significant international challenge.\textsuperscript{9}

In meeting this challenge, fuel choices will no doubt include some mix of coal and its competitors, including oil, natural gas, solar, hydro, wind, biomass, and nuclear. The composition of the future mix is presently unclear. What is clear is the contribution coal currently makes to the world energy market and to the greenhouse gas emissions that raise climate change concerns.

In the last two decades of the twentieth century, world coal production increased by thirty-eight percent to four billion tons.\textsuperscript{10} Coal production has steadily increased in Asia while European production has declined steadily.\textsuperscript{11} World coal production increased one and a half times as much from 2003 to 2007 as it did over the previous twenty-three years.\textsuperscript{12} By 2030, annual world coal production is projected to grow to seven billion tons—China accounting for half of the increase.\textsuperscript{13} United States reserves amount to 30% of the world’s coal and the nation produced more coal annually than any other country but China. China, by far the largest producer, possesses only half the reserves of the U.S.\textsuperscript{14}

\textsuperscript{9} Id. at 9.
\textsuperscript{10} The geographic extent of mineable coal reserves is reflected in statistics identifying leading coal producing nations. Thirty-four countries produce one million tons of coal per year. The leading coal producers are China (1119.8); United States (595.1); India (209.7); Australia (203.1); South Africa (144.8); Russia (144.5) (numbers represent million tons oil equivalent). See THE GEOFHIVE, http://www.geohive.com/charts/en_coalprod.aspx (last visited June 3, 2012).
\textsuperscript{12} Id.
\textsuperscript{13} WORLD COAL INSTITUTE, THE COAL RESOURCE: A COMPREHENSIVE OVERVIEW OF COAL 13 (2009) [hereinafter THE COAL RESOURCE].

[ ]largest coal producers in descending order are: China, USA (half of Chinese production), Australia (less than half of US production), India, South Africa, and Russia. These countries account for over 80 percent of global coal production. Coal consumption mainly takes place in the country of origin. Only 15 percent of production is exported, 85 percent of produced coal is consumed domestically.

\textit{Id.}
In 2006, Big Coal had plans to build as many as 150 new coal-burning power plants in the United States. None of these proposed facilities had concrete plans for carbon capture and sequestration. Chinese plans for constructing new facilities for generating electricity by coal combustion are more ambitious. China is planning to construct the equivalent of two five hundred megawatt, coal-fired power plants per week with a capacity comparable to the entire power grid of the United Kingdom each year. Worldwide, hundreds of new coal-fired power plants are currently under construction or are in various stages of planning that will put them on-line in the next few decades.

Today, coal produces 39% of the world’s electricity with natural gas, hydro, and oil far behind. 93% of South Africa’s electricity is produced by coal, 78% in China, 80% in Australia, 69% in India, and 47% in Germany. Until recently, 50% of the electricity generated in the United States was generated from coal, but the Energy Information Association expects electric power sector coal use to continue to decline significantly.

19. IEA Production Rep’t, supra note 11. Coal generates electricity in many nations across the globe. Thirty-four countries consume more than a million tons oil equivalent per year. The biggest coal consumers are: China (1191); United States (567.3); India (237.7); Japan (119.1); Russian Federation (112.5); South Africa (93.8); Germany (82.4); Poland (58.4); South Korea (54.8); Australia (51.5); United Kingdom (43.8); Ukraine (39.6); Taiwan (39.5); Canada (35.0); Kazakhstan (29.7); Turkey (28.8); Indonesia (27.7); (numbers represent million tons oil equivalent). See http://www.xist.org/charts/en_coalcons.aspx (last visited June 3, 2012). Percentages of market share of other fuels are natural gas (19%), nuclear (17%), hydro (16%), and oil (7%). Id.
21. See FUTURE OF COAL, supra note 17. But see ENERGY INFORMATION ADMINISTRATION, Short Term Energy Rep’t (February 7, 2012), at 9; available at http://www.eia.gov/forecasts/steo/pdf/steo_full.pdf (projecting a drop in electric generation coal consumption declining to 41.2 percent in 2013 as other generation sources are developed to meet
average age of the more than 500 coal-burning power plants in this country is 35 years.22

Just one 500 megawatt coal-fired power plant produces approximately three million tons of carbon dioxide ("CO₂") per year.23 As of 2008, the United States’ coal-burning power plants were producing CO₂ at an annual rate of about one and a half billion tons.24 Coal contributes more climate change-inducing greenhouse gases than any other fossil fuel.25 Coal burning is the world’s largest source of carbon dioxide emissions, accounting for 40.3 percent of the total.26 Moreover, as far as perceptions go, coal has a well-established reputation in the public eye as a “dirty” fuel, long synonymous with smoke and air pollution.27 Thus, in making its case for future energy market share, Big Coal starts with major disadvantages even without factoring in the other serious externalities discussed below.
II. HISTORY OF COAL

A. Early History

Coal is a natural resource found in seams in underground layers throughout the world; it underlies every continent—including Antarctica.\(^{28}\) Coal has been exploited as an energy source for millennia.\(^{29}\) It is mentioned in the annals of Roman occupiers of the British Isles in the third to fifth centuries A.D.\(^{30}\) Coal use began in earnest in Europe at the end of the middle ages.\(^{31}\) By the early fourteenth century, coal use had become common as well as problematic in English cities. London streets in the summer of 1306 were filled with coal smoke from blacksmith and artisan fires. The air contamination was so offensive that it led to laws in the reign of Edward I that banned coal burning and imposed “great fines and ransoms” on violators.\(^{32}\)

B. Coal and the Industrial Age

Two centuries later, population had significantly increased and the great forests of the British Isles had been decimated to provide wood for heating, cooking, and other domestic uses. England turned to coal as its primary source of fuel.\(^{33}\) Elizabethan England’s transition from wood to coal has

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28. Coal is found in significant if not necessarily mineable quantities in many countries. The nations with the most estimated reserves (in million tons) are: United States (243,069); Russian Federation (156,994); China (113,209); India (57,955); Australia (76,367); South Africa (30,713); Ukraine (32,988); and Kazakhstan (31,626). Europe's ENERGY PORTAL, http://www.energy.eu/#non-renewable (last visited June 3, 2012).

29. See THE COAL RESOURCE, supra note 13, at 19 (Mining in northeastern China provided coal to fuel a copper smelter whose metal product was cast into coins around 1000 B.C. The World Coal Institute asserts that “one of the earliest known references to coal was made by the Greek philosopher and scientist Aristotle, who referred to a charcoal like rock.”).


31. See FRESE, supra note 1, at 15–42 (discussing use of coal in the British Isles from the time of Roman occupation circa. 300 B.C until the end of the reign of Queen Elizabeth I).

32. Id. at 1(citing ROBERT GALLOWAY, 1 ANNALS OF COAL MINING AND THE COAL TRADE 10 (1999))

33. By the end of the Sixteenth century coal use increased dramatically as sources of wood for fuel were depleted. Before the end of the reign of Elizabeth I in 1603, coal surpassed wood as the primary source of English fuel. GALLOWAY, supra note 32, at 10 (citing JOHN HATCHER, 1 THE HISTORY OF THE BRITISH COAL INDUSTRY, BEFORE 1700: TOWARDS THE AGE OF COAL (Oxford Univ. Press 1993)).
been identified as a pivotal turning point in world history. It is seen by one commentator as a transformational event:

[The English] went on to spark a coal-fired industrial revolution that would transform the planet. The industrial age emerged literally in a haze of coal smoke, and in that coal smoke we can read much of the history of the modern world.

Coal-fired industrialization expanded in the late eighteenth and early nineteenth centuries as the market for coal increased dramatically following the perfection of steam-engine technology.

The coal market expanded exponentially in England and other industrializing European nations in order to meet the increasing demands of iron and, later, steel production, train transportation, and steam-powered ships.

Domestic coal fueled Great Britain’s rise to become a global commercial and military superpower—a position it held for the better part of two centuries.

C. Coal and Industrialization in the United States

Beyond the far-flung British Empire, the industrial revolution took root most quickly in the coal-rich United States. America’s vast coalfields contained more coal than all of England and were the largest, easiest to

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34. Id. at 2, 30–32. Robert Galloway explained:

Had the coal ban held up…human history would have been radically different. As it happened, though, in the late 1500s the English faced an energy crisis…they learned to tolerate what had been intolerable, becoming the first western nation to mine and burn coal on a large scale. In so doing, they filled London and other English cities with some of the nastiest urban air the world had yet seen.

FRESE, supra note 1, at 2, 230–32(citing ROBERT GALLOWAY, 1 ANNALS OF COAL MINING AND THE COAL TRADE 10 (1898, reprinted, 1999)).

35. FRESE, supra note 1, at 2.


37. Id. Coal was also used extensively to fuel gas lights in many urban areas. Coal gasification triggered exponential growth in gas lighting in urban areas in the early nineteenth century, especially in London. Electricity eventually replaced coal gas street lighting at the end of the century as electric generation and transmission became common.
access, and highest quality coal reserves in the world. It was near the end of the nineteenth century when invention and ingenuity in the United States led to another surge in world demand for coal.

Tinkering at his Menlo Park, New Jersey, laboratory, Thomas A. Edison developed the electric light bulb that helped propelled worldwide industrialization. Yet, alone, Edison’s invention was of little value. To fulfill its promise, the bulb required stimulation by electric current.

Edison was a pioneer in the development of a system for efficient electricity generation and transmission. Edison designed and oversaw the construction of an electricity generating station that began commercial operation in New York City in 1882. To fuel his system, Edison turned to coal—which was readily available, discovered in seemingly limitless quantities, and found in convenient locations reachable by rail and waterways.

Coal’s entrepreneurs, politicians, laborers, and financiers sprang into action. The importance of the agrarian economic base, a defining characteristic of the nation since its colonial period, rapidly declined as engines whirred and factories spewed mass-produced goods out into the markets of the new American industrial age.

Thus, at the turn of the twentieth century, Edison’s genius brought coal and electric generation together, effectively triggering an inexorable expansion of the market for coal that continues today. Comfort was no longer strictly the province of the wealthy. The lives of many Americans improved dramatically. From the Atlantic to the Pacific, coal was the fuel providing light to America’s cities and farms, and powering her factories. Coal’s time had come in America.

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38. Today, after well over a century of mining billions upon billions of tons of coal, the United States coal reserves are still greater than that of any other nation of the world. Estimates of the remaining minable coal in the nation run between one and two hundred years. There is a measure of controversy concerning the accuracy of world and national coal reserve estimates. See, e.g., EWG COAL RESOURCES AND PRODUCTION, supra note 14.

39. The genius of Thomas Edison was aimed not only at electric lighting, but necessarily at designing an efficient mechanism for generating electricity and transmitting current long distances to activate his invention. See FRANCIS ROLT-WHEELER, THOMAS ALVA EDISON, 125–136 (MacMillan 1915).

40. Id. The Edison plant generated electricity that was transmitted around the city to provide residential lighting. THE COAL RESOURCE, supra note 13, at 19.
III. COAL’S DARK SIDE: EXAMINING ITS EXTERNALITIES

Air pollution caused by coal mining and combustion is only one of many externalities adversely impacting the environment and coalfield communities. Coal’s consequences are neither well known nor understood outside the world’s coal mining regions. Most people in developed nations have long been unaware of the connection between coal’s costs and the simple act of flipping on a light switch to illuminate a room. The public is generally oblivious to coal’s negative impacts on the environment, including soil erosion, landslides, sulfuric acid water pollution, stream sedimentation, and loss of potable water. They are also unaware of the workplace injuries, diseases, and fatalities associated with coal mining. Nor is the public aware of coal’s socio-economic impacts, which include: family and community disruption; economic stagnation; and accompanying lack of educational, employment, and economic development opportunities. Sadly, many or all of these burdens are often borne by coalfield communities.


43. See generally P. McGinley, supra note 42.
A. The Socio-Economic Costs of Coal Mining and Burning

1. Industrial Awakening in the Coalfields

The coming of the industrial age impacted the awakening coalfields of Appalachia differently than it did the distant cities. As Edison innovated in Menlo Park, the vast underground coalfield of Appalachia rested largely undisturbed—as it had for millennia. The industrial activities of America’s burgeoning cities lay in sharp contrast with the solitude of Appalachia’s mountains:

Great forests of oak, ash, and poplar covered the hillsides with a rich blanket of deep hues, and clear, sparkling streams rushed along the valley floors. No railroad had yet penetrated the hollows. The mountain people lived in small settlements scattered here and there in the valleys and coves. Life on the whole was simple, quiet, and devoted chiefly to agricultural pursuits.  

Within three decades the quiet rural life in the coal-laden mountains of the region had vanished. Young men and their families fled hard-scrabble subsistence farming, flocking to work in underground coal mines and live in one of the multitude of “coal camps”—coal company-built and -owned towns tucked up remote valleys and hollows in West Virginia, Kentucky, and Pennsylvania. From sunrise to sundown, miners wielding picks and shovels loaded coal into mule and horse drawn carts that hauled coal to the surface and on to industrial markets. Miners spent long hours underground

45. Id.
46. A history of the Pennsylvania bituminous coalfields explains the work performed by men and boys:

Coal mining was arduous work, especially before mechanization. Miners labored in coal seams that were two–to twenty-feet thick, many spent the work day hunched over in narrow seams. Before mechanization they used crude hand tools and explosives to break coal from the vertical face. A skilled miner, usually lying on his side, used his pick and wedges to remove chunks of coal without shattering them. If he could not dislodge coal with his hand tools, a skilled miner drilled holes into the rock face with a hand-powered auger, placed explosives in the holes, and detonated the explosives. . . . Laborers . . . shoveled dislodged coal into wooden cars, which . . . animals . . . pulled along rails to the surface or to a mine elevator in a shaft. Boys often led the draft animals, and opened and closed tunnel doors to regulate the flow of fresh air through mines. The wooden cars delivered coal to . . . the surface . . .
engaged in back-breaking work. They found solace and refuge above
ground in the coal-camp homes rented from their employer.

New coal-camp communities sprouted throughout the remote
wilderness overlying the vast coal deposits.47 The great virgin forest was
clear-cut with a vengeance, and pristine mountain streams, only a few
decades earlier teeming with native trout, were polluted by coal-mine
drainage.48

In short order, coal mining transformed the Appalachian landscape and
“civilized” the region’s inhabitants:

[E]vidence of change was to be found on every hand. Coal-
mining village after coal-mining village dotted the hollows
along every creek and stream. The weathered houses of
those who worked in the mines lined the creeks and steep
slopes, and the black holes themselves gaped from the
hillsides like great open wounds. Mine tipples, headhouses,
and other buildings straddled the slopes of the mountains.
Railroads sent their tracks in all directions, and long lines
of coal cars sat on the sidings and disappeared around the
curves of the hills. . . . The once majestic earth was scarred
and ugly, and the streams ran brown with garbage and acid
runoff from the mines. A black dust covered everything.
Huge mounds of coal and “gob” piles of discarded mine
waste lay about. The peaceful quiet of three decades before
had been replaced by a cacophony of voices and industrial
sounds.49

Historian David Alan Corbin observed that “[o]wnership of the land
and resources gave coal companies enormous social control over the
miners. ‘You didn’t even own your own soul in those damnable places,’
recalled one elderly miner. ‘The company owned everything, the houses,
the schools, churches, the stores—everything.”50 Indeed, the coal camp came to symbolize the rapid industrialization of rural Appalachia. Historian Ron Eller observed:

[C]ompany town[s] became for thousands of mountaineers the dominant institution of community life—a vital social center around which the miners’ world revolved. Not only was the coal camp the site of one’s work, the source of one’s income, and the location of one’s residence, but for many it also provided an introduction to organized community life and the setting in which new attitudes, values, and social institutions evolved. Completely owned and tightly dominated by the coal companies, the mining towns also reflected the underlying transition in land ownership and social power which had swept the region with the coming of the industrial age.51

With ownership of the towns came coal-company administrative responsibility for providing public services.52 Only two percent of company towns possessed a sewer system; the vast majority simply dumped community wastes into nearby creeks.53 Streams running through coal camps were often polluted by a combination of raw sewage and acid mine runoff that completely eliminated all biological life.54 Water pollution affected human health. During hot, humid summers the polluted stream stank, and diseases like typhoid ravaged children of the coal camps.55

50. THE WEST VIRGINIA MINE WARS: AN ANTHOLOGY 1 (David Alan Corbin ed., Un. Pittsburgh Press 1990) [hereinafter W. VA. MINE WARS]. In the coal camps, “company rule included the company police in the form of mine guards, who would toss the miners in jail when they got disruptive, or administer the company beating when they attempted to unionize.” Id. The coal company towns provided a complete cradle to grave system which provided a company doctor to deliver babies, the mines in which boys and men worked and cemeteries where camp inhabitants were eventually buried. Id.

51. MINERS AND MILL HANDS, supra note 48, at 162.

52. Winthrop D. Lane, The Denial of Civil Liberties in the Coal Fields 2 (1924); Jerry Bruce Thomas, An Appalachian New Deal: West Virginia in the Great Depression 91–106 (Un. Press of Kentucky 1998) [hereinafter Appalachian New Deal].

53. MINERS AND MILL HANDS, supra note 48, at 184.

54. Id. at 186.

55. Id. (citing Jerry Bruce Thomas, Coal Country: The Rise of the Southern Smokeless Coal Industry and Its Effect on Area Development, 1872–1910 (1971) (unpublished Ph.D. dissertation, University of North Carolina at Chapel Hill)). At the time coal companies’ responded to criticism “arguing that coal could not be mined economically if they concernred themselves with ecology.” Id.
“Civilization [had] come into the mountains” Professor Eller noted—with no small hint of irony.  

2. Early Labor–Management Coalfield Conflicts

Industrial strife was common in the coalfields from 1900 to the 1930s when the “New Deal” Administration of President Franklin Delano Roosevelt began to level the playing field between labor and management. Unionization played a central role in coal-camp residents’ struggle for economic and social justice during repeating cycles of boom and bust. While miners engaged in strikes both in support of unionization and higher wages they also struck “for their dignity and freedom.” For decades, miners battled anti-union coal operators who dominated the Southern Appalachian coalfields.

In West Virginia, from 1912 to 1921, a virtual war existed between coal-company forces and miners. On several occasions, martial law was declared and the state militia was summoned. Miners were arrested and tried by military tribunals. Once, in September 1921, President Warren G. Harding sent federal troops to intervene in the conflict.

Contemporaneously, a political battle raged across the region’s coalfields as miners fought for the right to unionize. Appalachian historian and sage Harry Caudill observed that:

In 1931, for all practical purposes, the only law for the miners . . . was the mining companies’ law as interpreted by deputies sheriff selected and paid directly by the

56. Id. at 162.
57. Conflicts between company and Union continued on a slowly diminishing scale until the 1990s where an era of rapprochement between coal industry and labor brought relative peace to coal field labor relations.
59. See generally W. VA. MINE WARS, supra note 50, at 1.
60. Arthur Warner, Fighting Unionism with Martial Law, THE NATION, Oct. 12, 1921, at 395, 396. Local newspapers referred to this conflict as an “industrial controversy.” Id. at 395. Warner reminds us, however, that “the home folks resent the words ‘civil war’ as describing the situation, but they seem to forget that the phrase is that [of West Virginia’s] Governor . . . in proclaiming martial law in Mingo County on May 19 [1921], [who] said that ‘a state of war, insurrection, and riot and bloodshed is and has been for some time in existence.’” Id.
61. The War in West Virginia, INDEPENDENT, Sept. 17, 1921, reprinted in W. VA. MINE WARS, supra note 50, at 106.
companies . . . . The system was simply law enforcement stripped of any pretense of impartiality, and it is difficult to imagine a more effective device for promoting violence and engendering resentful hatred among a people bred in the free air of the Kentucky hills. 63

The 1932 election of President Roosevelt and the advent of the “New Deal” did not end coalfield violence nor the terrible poverty and oppression of the coal camps. Labor unrest and strikes continued to pit miners against nonunion coal operators during the 1930s. Some coal operators recognized and bargained with the United Mine Workers Union. Others “resolved to fight the menace so long as they had a shot to fire.” 64 Historian Caudill chronicled the tactics of those coal operators who resisted unionization:

[T]hey proceeded step by step along the road to intimidation and coercion. Miners suspected of joining the union, harboring its agents or spreading its propaganda were summarily ordered out of company houses and off company property. The detailed leases covering the camp residences, as interpreted by the docile courts, authorized such summary evictions. Many unfortunate coal diggers found their possessions and families thrust out of doors when they were practically without funds and with no place to go. If another miner took such a dangerous family into his own house for even the shortest period he risked the same fate. 65

63. HARRY M. CAUDILL, NIGHT COMES TO THE CUMBERLANDS: A BIOGRAPHY OF A DEPRESSED AREA 195–96 (Jesse Stuart Foundation 1962) (quoting Russell Briney of the COURIER-JOURNAL (Louisville, Kentucky)) [hereinafter NIGHT COMES].
64. Id. at 195.
65. Id. Coal Company owners contradicted these reports. One operator testified before a federal commission that “In all cases, regard has been paid to the health and comfort of those persons whom it was found necessary to evict.” See W. VA. MINE WARS, supra note 50, at 9 (quoting BITUMINOUS OPERATORS’ SPECIAL COMMITTEE, THE COMPANY TOWN: REPORT SUBMITTED TO THE U.S. COAL COMMISSION 36–37 (1923)). In W.VA. MINE WARS, Corbin also cites other evidence from an early effort to unionize coal camps in Kanawha County, West Virginia that contradicts coal operator denials:

[M]ine guards arrived in the early morning and threw breakfasts out with the furniture. During the process the mine guards destroyed over $40,000 worth of furniture. In the town of Banner, the mine guards came to the house of Tony Seviller, whose wife was pregnant. The head of the squadron shouted, “Get out!” Mrs. Seviller, in bed and in labor when ordered out, responded, “My God! Can’t you see I am sick; just let me stay here until my baby is born.” The guard leader
The onset of the Great Depression aggravated existing management–labor conflicts, and distressed an already depressed coal market. Widespread bankruptcies hit banks and coal operators alike. Coal-company managers slashed miners’ already meager wages and then reverted to paying workers on a “piecework” basis. Miners were permitted to stay underground for as long as they wished, resulting in ten-hour to twelve-hour workdays.

The Depression’s effects were bad for most American workers, but even more devastating to Appalachian coal miners and their families. "People who have never lived in mining communities cannot comprehend the feeling of captivity and helplessness that lay so heavy in the coal camps through these years," Although aided by New Deal labor legislation granting rights to organize and strike, it was not until the late 1930s that unions gained a semblance of parity with coal industry management. The coalfield economy did not revive until war clouds began gathering over Europe prior to World War II.

3. Economic Boom–Bust Cycle in Coalfield Communities: 1940-2009

By 1940, ninety percent of the nation’s coal came from union mines. The federal government nationalized and ran coal mines during World War II, and its negotiations with the union produced an agreement to pay miners generous wages. The war-time demands for coal-fired industrial production resulted in a coalfield economic boom. "Empty camps filled again and the ghastly, painted houses swarmed with new brigades of ragged irrepressible children. . . . The coal camps had been rejuvenated by 1945,

replied, “I don’t give a damn, get out or I’ll shoot you out.” Mrs. Seviler gave birth to her baby two hours later, in a tent furnished by the UMWA.
and union miners and their families were enjoying unparalleled freedom and prosperity.\textsuperscript{74}

The government relinquished control of the mines to their owners following the war. However, as the country welcomed returning veterans, the coal market collapsed. Coal prices plummeted. The glut of coal stockpiled for wartime consumption collided with the severely contracting demand of a peacetime economy.\textsuperscript{75} Adding greatly to this dysfunctional coalfield economy, coal began to lose its market share as railroads and home furnaces were increasingly fueled by cheaper and cleaner-burning oil and natural gas.\textsuperscript{76}

A new period of labor-management conflict followed in the wake of this coalfield “bust” economy. Eventually, after a long, hostile strike in 1950 and 1951, coal companies and the union agreed to a revolutionary contract that significantly increased miners’ wages and benefits in return for union acquiescence to mine mechanization.\textsuperscript{77} By the beginning of the 1960s, the new mining machines had greatly increased coal production while drastically reducing the need for skilled and unskilled labor.\textsuperscript{78}

By 1950, coal industry consolidation, a poor coal market, loss of mining jobs and a concomitant immigration from coalfield communities “made for a severe and chronic economic predicament” for West Virginia’s coalfield communities.\textsuperscript{79} The depressed job market drove up unemployment in these communities. West Virginia’s unemployment rate was the nation’s

\textsuperscript{74} Id.
\textsuperscript{75} Id. at 247.
\textsuperscript{76} Id.; Memory of Miners, supra note 71, at 168.
\textsuperscript{77} APPALACHIA HISTORY, supra note 70, at 318; Memory of Miners, supra note 71, at 168–69. See also NIGHT COMES, supra note 63, at 258–264 (describing the mechanization of coal mining). See generally KEITH DIX, WHAT’S A COAL MINER TO DO? THE MECHANIZATION OF COAL MINING (Univ. Pittsburgh Press 1988).
\textsuperscript{78} OTIS K. RICE, STEPHEN W. BROWN, WEST VIRGINIA: A HISTORY 280 (Univ. Press of Ky., 2d ed. 1993) [hereinafter W.VA. HISTORY]. Coal production per man-day increased from 5.57 tons in 1945 to 10.05 tons in 1957. In 1948, 117,104 miners were at work in West Virginia. In 1957, only 58,732 miners were employed; by 1961 the number of miners had shrunk to only 42,557 in West Virginia and less than 200,000 nationwide. Id. at 280, 284. See also APPALACHIAN NEW DEAL, supra note 58, at 238.
\textsuperscript{79} See APPALACHIAN NEW DEAL, supra note 58, at 239 (1998). During this period of economic distress the character of the company town relationship between company and residents changed. See generally McGinley, supra note 42, at 35–36. Many houses were sold to their occupants and others were rented to anyone who could pay the meager rent (in 1987, as little as $15 per month) for the dilapidated structures. Indeed, this relationship continues today in some of the former coal camps that remain. See id. citing, Jules Loh, The Longstanding Paradox of Eureka Hollow, CHARLESTON GAZETTE, Jan. 4, 1987, at A4 [hereinafter Longstanding Paradox]; Jules Loh, Despite Billions In Aid, Poverty Still Plagues Appalachia, THE DALLAS MORNING NEWS 6A, 1987 WLNR 1943627 (January 4, 1987).
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highest—triple that of the nation. As the coal-based economy continued to collapse, tens of thousands left the coalfields in search of work in the industrial plants of the Northeast and the nonunion textile and manufacturing plants of the Sunbelt. Some miners and their families elected to stay and hope for better times. One man described the quandary faced by unemployed coal miners:

It’s rough, buddy. . . . This is home. This is where we were both born and raised. We like it here. Until I can find work, we stay. If the program I’m on runs out, well, then I guess we’ll have to think about moving on. Where to? Where can a man with a family go with no place to set out for and no money to get there? Hard as it is, we want to stay here. This hollow is home.

The beleaguered, poverty-stricken coalfield communities of Central Appalachia did receive a measure of assistance via the food stamp and public assistance programs launched by the administrations of Presidents John F. Kennedy and Lyndon Johnson.

The future of the coal regions appeared brighter by 1970 when a new coal “boom” took hold. The United States faced an “energy crisis” brought on by a Middle-Eastern oil cartel’s price fixing. In the coalfields of Appalachia, the hiring call went out for miners for the first time in decades as electric generating power companies shifted from more expensive oil to coal—which was not only cheaper, but also more reliable because it was

80. Id. at 239.
81. See W.VA. HISTORY, supra note 78, at 280 (“[t]housands of young men, who normally would have entered the mines . . . left for Pittsburgh, Cleveland, Akron, Chicago, Detroit, and other cities.”); APPALACHIA HISTORY, supra note 70, at 394 (recounting the southward exodus to the “sunbelt”). See generally CHAD BERRY, SOUTHERN MIGRANTS, NORTHERN EXILES (Univ. of Ill. Press 2000)(describing Appalachian migration during times of economic distress); see generally HARRY K. SCHWARTZKELLER et al., MOUNTAIN FAMILIES IN TRANSITION: A CASE STUDY OF APPALACHIAN MIGRATION (Pa. State Univ. Press 2nd ed. 1971). (describing the “exodus” of residents from Beech Creek, Ky.);
82. Longstanding Paradox, supra note 79.
83. See generally APPALACHIA HISTORY, supra note 70, at 339–52, 366–79. Professor Williams quotes Harry Caudill as expressing the concern that the Kennedy-Johnson Administration’s “War on Poverty” threatened to “turn Appalachia into a giant welfare reservation.” Id. at 369 (citing HARRY CAUDILL, THE WATCHES OF THE NIGHT (1976)).
84. See generally DAVID YERGIN, THE PRIZE: THE EPIC QUEST FOR OIL, MONEY, AND POWER 607–09 (Free Press 1993). The per barrel cost of oil quickly escalated as the Organization of Petroleum Exporting Countries (OPEC) ratcheted up prices in response to the “Yom Kippur War” and the shutdown of oil fields of Iran after the country’s leader was overthrown in a 1978 coup. Id. at 607–09, 635, 685.
not subject to international political intrigue and terrorism. Thousands of miners were hired or re-hired and the region sprang back to life:

During those fabulous days in the mid-seventies, thousands of men who had left the mountains came home from distant cities to dig coal. In West Virginia, Virginia, Kentucky, and Tennessee, small truck mines that had been abandoned for years were reopened. Nearly anybody who had or could borrow money to buy a dump truck and a road grader could become a strip mine operator. Bootleggers mined without permits and got good money for gray mixtures of coal, slate, and rock. Spot market prices soared to nearly $100 a ton and suddenly-rich independent operators lived in opulence, bought luxury cars for their wives, and concluded business deals on the golf course.  

The 1970s coal boom was short-lived. By 1980, the boom subsided and economic hard times returned once again to the coalfields. By 1984, West Virginia experienced the nation’s highest unemployment rate and “economic indicators pointed to continuing difficulties, with recovery trailing far behind that of the other states.”

In 1987 a journalist described the condition of the old coal camp in Eureka Hollow, West Virginia:

The village on its trash-strewn banks at the mouth of the hollow is Eckman. You won’t find it on a road map. Eckman consists of a grocery store, filling station and a one-room post office. Wooden planks thrown over a ditch at the uphill edge of town mark the start of the road up Eureka Hollow. Woebegone wooden houses, many of them falling down, dot the hillsides along the road. Tree limbs, like crutches, prop up porches. Abandoned houses crumble alongside inhabited mobile homes. Coal dust trodden into black gum replaces grass. Red dog, a rust-colored mine waste turned into coarse gravel, paves driveways.


Automobile carcasses rot beneath clotheslines burdened with patched jeans and faded shirts.\footnote{87. Longstanding Paradox, \textit{ supra} note 79. Reporter Loh’s description of Eureka Hollow cannot be generalized to all former coal camps. Some coal company lessors maintained their properties and often remodeled houses they owned keeping them in good repair. See \textit{NIGHT COMES, \textit{ supra} note 63, at 263–268; Gerald M. Stern, \textit{The Buffalo Creek Disaster: How the Survivors of One of the Worst Disasters in Coal-Mining History Brought Suit Against the Coal Company—And Won}, 41–2 (Vintage Books ed. 1977) [hereinafter \textit{BUFFALO CREEK DISASTER}).}

The streets of Whitesville, West Virginia were clogged with shoppers and traffic during the 70s boom; by 2002, they were usually empty. A reporter described the town: “Vacant stores dot the town’s main drag and windows are covered with dust from coal trucks that rumble through night and day. Traffic lights work intermittently. Parking meters were removed long ago.”\footnote{88. Abramson, \textit{ supra} note 85.}

During the period from 1982 to 2011, the Appalachian coalfield economy has continued to experience an extended decades-long bust phase. Midwestern utility companies eschewed Appalachian coal for cheaper western coal, and loss of mining jobs in Appalachian underground mines continued as a result of further mechanization.\footnote{89. McGinley, \textit{ supra} note 42, at 44.}

West Virginia’s coal economy typified that of the Central Appalachian coal region. In 1980, coal jobs in the State had dropped by 7,000 from the boom high of almost 63,000 in 1978; five years later only 35,813 miners were at work in West Virginia.\footnote{90. \textit{Id}.} In 1990, coal-miner employment dipped to less than 29,000. By 2000, coal-mining jobs in West Virginia declined to 14,925. In the first decade of the new century, coal-mine employment in the state cycled between 15,000 and 21,000 jobs with a slightly upward trend.\footnote{91. Randall A. Childs & George W. Hammond, \textit{Consensus Coal Production Forecast for West Virginia 2009-2030} 1 (2009), available at http://www.be.wvu.edu/bber/pdfs/BBER-2009-14.pdf.}

Today, less than 22,000 miners are at work in the state.\footnote{92. \textit{Average Number of Employees by State and Mine Type}, U.S. Energy Information Administration, http://www.eia.gov/cneaf/coal/page/acr/table18.html (last visited June 3, 2012).}

As the number of coal jobs decreased, Appalachian coal production reached record levels by the beginning of the millennium. However, coal production is projected to decline over the next three decades.\footnote{93. Childs, \textit{ supra} note 91.} Ironically, high levels of coal production and unemployment coincided—a paradox explained by new technologies and large scale mining methods that utilize far fewer workers.\footnote{94. \textit{Id}.}
Dan Radmacher, former editor of the Charleston Gazette in West Virginia, has examined this paradox, finding that the coal-producing counties in West Virginia, Kentucky, and Virginia are much poorer than coal-producing counties in western states.95

In Mingo County, West Virginia, the heart of the so-called “Billion Dollar Coalfields,” Radmacher found that, in 2001, the median household income was $12,000 less than the national average and the area is filled with “empty houses and businesses[,] . . . which has to be a psychological burden as well as a barrier to economic development.”96 A local bank’s profile of the area observed that “[t]oday, a large percentage of the coal mined in West Virginia is from strip [mining], requiring fewer people. This means fewer jobs, lack of a well-planned infrastructure for communities and an educational system that suffers from all of these factors.”97

One study of the economics of Appalachian coal counties has observed:

> The bottom line is that these are poor counties with poverty rates substantially above the national median, particularly for white families, children, and dependent populations . . . . These counties have populations with low median levels of education and high levels of unemployment. In 2003, median household income was substantially below the national median. Per-capita disability and supplemental Social Security income levels are high by national standards.98

Government projections suggest that, as coal reserves in Central Appalachia are depleted over the next two decades, coal production will shift to Great Plains states and to the northern part of the basin.99 The

98. Glasmeier, supra note 96 (explaining that “[f]or those living in mining communities, low levels of education, poor health conditions, unstable work histories, and limited access to jobs paying a living wage explain why people work in the mines. With few alternatives, it is no wonder that when the price of coal goes up people risk their lives to take jobs in the mines”).
prospects of coalfield communities, East and West, will continue to cycle between boom and bust if forecasts of regional sagging and/or declining coal production are credible. Indeed, the first three decades of the twenty-first century portend yet another generation of coal country families experiencing the industry’s economically debilitating boom-bust cycle—likely more “bust” than “boom.” 100

B. Environmental Impacts of Coal

1. Limited Public Awareness of Coal’s Externalities

The contributions of coal burning to global warming has increasingly been the focus of intense scientific study and growing public concern. The enormous consumption of billions of tons of coal for electric generation pollutes the Earth’s atmosphere with greenhouse gases including sulfur dioxide, carbon dioxide and ozone. 101 Other constituents of coal-fired power plant emissions, including mercury, arsenic, and dioxin, raise serious public health concerns. 102 Recent research by public health scholars suggest

Western coal production will increase slowly through 2035 as demand for coal grows slowly. The agency forecasts that “low-cost supplies of coal from the West [will] satisfy much of the additional fuel needs at coal-fired power plants east of the Mississippi River” while “coal produced from the extensively mined, higher cost reserves of Central Appalachia is supplanted by lower cost coal from other supply regions.” The EIA predicts that “increased production from substantial reserves of mid- and high-sulfur bituminous coal in the northern part of the basin” (Illinois, Indiana and Western Kentucky) will “help to moderate the overall production decline in Appalachia.” Id. See also Childs & Hammond, supra note 91, at 21 (indicating that coal production in central Appalachia will gradually decrease through 2030). (W.Va. Dep’t. Envt’l. Protection, 2009) http://www.be.wvu.edu/bber/pdfs/BBER-2009-14.pdf (last visited June 3, 2012); Rory McIlmoil & Evan Hansen, Downstream Strategies Report, The Decline of Central Appalachian Coal and the Need for Economic Diversification (2010), available at http://www.downstreamstrategies.com/documents/reports_publication/DownstreamStrategies-


a correlation between coal mining pollution and various health problems of coalfield residents. However important coal burning’s contribution to global warming is, generation of greenhouse gases is not the fuel’s only adverse environmental consequence. Coal’s adverse effects on natural resources and coal-related human health effects have long been documented, if not generally recognized by the public. As discussed below, there are many other serious adverse environmental and socio-economic consequences of coal. These adverse externalities have failed to gain major traction in public discourse of the world’s energy future.

2. Environmental Impacts of Early Coal Mining

When coal was first mined in the United States, its impact on the environment was minimal. American coal was hand-mined underground from the late nineteenth century to the nineteen twenties by men with the help of animals including mules, ponies, oxen, goats, and even dogs. Mine tunnels originally were dug by pick and shovel, aided by use of explosives to clear the path through rock layers to the coal. Because most of the coal mined prior to World War II came from underground pits, the environmental impacts of coal mining were limited to surface subsidence and water pollution. Mines and the number of miners grew as tunnels were dug deeper and deeper underground. The industry’s footprint grew with the severity of its environmental effects.

3. Post–World War II Impacts of New Mining Technologies and Methods

At the conclusion of World War II, mining technology evolved quickly as did the adverse impacts of coal. Strip mining accelerated as equipment


105. Pennsylvania History, supra note 46.

106. Steam engines and improved mechanization made strip mining of coal feasible from 1940 onward. Appalachia History, supra note 70, at 257.

107. Of course mining coal did cause some serious air pollution in industrial cities. Pittsburgh earned the sobriquet “the smoky city” because it was common for streets to be lit at mid-day due to the smoked-filled air.
grew larger and more efficient. In the late 1940s, highly productive “continuous mining” machines were introduced and rapidly adopted as the underground mining equipment of choice. These new mining methods and technologies dramatically boosted production per miner/hour. Correspondingly, coal mining required substantially less manual labor than it had only a decade earlier.

During the next two decades, the most visible adverse impacts of the new mining technologies appeared on the surface as a consequence of the growing use of strip mining. Not as visible, but similarly destructive, are the environmental impacts of modern underground mining.

Surface mining gashed scars in Appalachian mountainsides, stripping away the forest on thousands of acres and causing erosion and attendant stream sedimentation, siltation, and flooding. Stripping was almost completely unregulated, so coal operators rarely reclaimed disturbed land. Surface mining smothered stream aquatic life.

In some coalfield regions, drainage from strip and underground mining, laced with iron-laden sulfuric acid, sterilized watercourses, staining them red and orange with iron and manganese precipitants. Underground and strip mining fractured strata and depleted aquifers. Wells and springs used by many coalfield families were contaminated or went dry with severe effects on domestic home life.


110. J.R. Ferrari, et al., Surface mining and reclamation effects on flood response of watersheds in the central Appalachian plateau region, 45 Water Resources Research WO 0447, (2009). (“[F]indings indicate that mine reclamation leaves the landscape in a condition more similar to urban areas rather than does simple deforestation, and call into question the effectiveness of reclamation in terms of returning mined areas to the hydrological state that existed before mining.”


112. COMMISSION ON ENGINEERING AND TECHNICAL SYSTEMS, SURFACE COAL MINING EFFECTS ON GROUNDWATER RECHARGE 4 (1990) (describing destruction of aquifers in Kentucky caused by surface mining);
Loud noise and dust from blasting and earth-moving activities disturbed nearby communities and wildlife. Indiscriminate dumping of mine spoil on steep mountainsides caused landslides, sometimes killing people and burying cars and homes.

On occasion, mine site coal-slurry impoundments, containing wastes generated by coal processing and cleaning, have been breached or collapsed, causing loss of life and severe economic and ecological damage. The most poignant example is the 1972 collapse of a huge coal waste impoundment at Buffalo Creek, West Virginia. Pittston Coal Company denied responsibility for the disaster, claiming the flood was an “Act of God.” Investigations, however, showed that the dam was not
engineered; rather, it was constructed by simply dumping an enormous quantity of solid and liquid coal refuse in a narrow valley flanked by high ridges and traversed by Buffalo Creek. Federal regulations at the time prohibited such dams.119

A state inspector’s repeated warnings over several years and his suggestion that Pittston build an emergency spillway were ignored by company managers.120 Terrified people living downstream from the dam unsuccessfully begged the company and state officials to act.121

On February 26, 1972, a towering flood wall created by a succession of huge waste impoundments collapsing upstream hurtled 132 million gallons of slurry down a narrow valley, killing 125 people and injuring thousands more. The flood totally destroyed 17 coal camp communities, leaving 4,000 homeless.122 Appointed by the state’s governor, the West Virginia Ad Hoc Commission of Inquiry into the Buffalo Creek Flood found that “Pittston[,] through its Officials, has shown flagrant disregard for the safety of residents of Buffalo Creek and other persons who live near coal-refuse impoundments.”123 Pittston was not alone in putting coalfield communities at risk. The Commission, staffed with experienced coal industry leaders, also found that “this attitude appears prevalent throughout much of the coal industry.”124
climatologist disagreed. "'Act of God' is a legal term. There are other legal terms—terms like 'involuntary manslaughter because of stupidity' and 'criminal negligence.'" Id., quoting Robert Weedfall.

119. Gerald Stern described how the dump was “constructed:” [T]rucks merely dumped coal refuse across [the Creek] until the refuse reached the other side. [After two dams positioned one above the other filled with silt] Dam 3 was started upstream . . . by the . . . time of the disaster its 534,000 cubic yards of refuse reached almost 500 feet up the hollow, and spanned 450 to 600 feet across the hollow. The water in this dam towered almost 250 feet above the town of Saunders . . . below.

120. Id. at 141–2.

121. Id. at 142–3. For example, one downstream resident wrote to West Virginia’s Governor:

I’m writing to you about a big dam above us. The coal co. has dumped a big pile of slate about 4 or 5 hundred feet high. The water behind it is about 400 feet deep and it is like a river. It is endangering our homes & lives. Please send someone here to see the water and how dangerous it is. Every time it rains it scares me to death. We are all afraid we will be washed away & drowned. They just keep dumping slate and slush in the water and making it more dangerous everyday . . . for God’s sake have the dump and water destroyed. Our lives are in danger.

122. Id.

123. Id. at 64.

124. Id.
The Buffalo Creek tragedy and the disdain many in the industry displayed for coalfield communities was an important catalyst finally leading to action. After two decades of protests, the enormous harm caused by unregulated surface and underground coal mining throughout the Appalachian coalfields generated support for a national strip mining regulatory law. After several years of debate and two presidential vetoes, Congress passed, and a new president, Jimmy Carter, signed the Federal Surface Mining Control and Reclamation Act of 1977 (“SMCRA”).

Professor Mark Squillace described the breadth of the damage that led to the enactment of the SMCRA:

Over the past twenty years, coal mining has disturbed almost two million acres of land; only half of that has been reclaimed even to minimum standards. More than 264,000 acres of cropland, 135,000 acres of pasture, and 127,800 acres of forest have been lost. In a 1977 report, Congress estimated the cost of rehabilitating these ravaged lands at nearly $10 billion. . . . [M]ore than 11,000 miles of streams have been polluted by sediment or acid from surface and underground mining combined. Some 29,000 acres of reservoirs and impoundments have been seriously damaged by strip mining. Strip mining has created at least 3000 miles of landslides and left some 34,500 miles of

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125. House Report, supra note 114, at 56. (stating that “[o]ne example of exposure of the general public to dangerous conditions is the disastrous collapse of a mine waste impoundment on Buffalo Creek, West Virginia, in which 124 people were killed and 4,000 rendered homeless in 1972.”)


127. See generally P. McGinley, The Surface Mining Control And Reclamation Act of 1977: New Era of Federal-State Cooperation or Prologue to Future Controversy?, EASTERN MINERAL LAW FOUNDATION INSTITUTE 16, Chapter 11, (1997) (with E. Green, L. Price, D. Michael Miller and G. M. McCarthy). A primary author of SMCRA, Congressman Morris K. Udall (D-Ariz.) observed: “[t]he Act was passed after years of struggle by people in the coal fields—people who have lived with the mutilated mountainsides, spoiled streams, landslides and destruction of their homes. The voices of those people were heard on that August day [when SMCRA was enacted].” Morris K. Udall, foreword to M. SQUILLACE, THE STRIP MINING HANDBOOK: A COALFIELD CITIZENS’ GUIDE TO FIGHT BACK AGAINST THE RAVAGES OF STRIP MINING AND UNDERGROUND MINING 1 (Environmental Policy Institute & Friends of the Earth 1990) [hereinafter COALFIELD CITIZENS’ GUIDE]. More recently, the National Research Council confirmed that “[a]dverse safety and environmental impacts of coal mining—even with regulation—are well documented and include mine drainage, mine fires, waste piles, ground movements (subsidence), and hydrological impacts.” NATIONAL RESEARCH COUNCIL, COAL: RESEARCH AND DEVELOPMENT TO SUPPORT NATIONAL ENERGY POLICY (2007), (emphasis added), available at http://www.nap.edu/books/030911022X/html/.
4. New Technologies, Mining Methods, and Increasing Use of Coal Magnify Coal’s Environmental Externalities

Coal mining technology advanced spectacularly in the decades after the 1977 enactment of the SMCRA.129 Like the post World War II mining technology burst, new equipment and technology facilitated a quantum leap forward in worker efficiency and coal production capacity. As in the earlier post-war technology revolution, the number of coal miners again dropped precipitously.130 With new surface mining and underground mining technologies and equipment came the potential for new and more extensive environmental damage than that caused by older mining methods.

The move to the use of large-scale mountaintop removal operations would make mining in Appalachia more efficient, productive, and—most important for coal operators—much less labor-intensive. Mechanization and concomitant massive job losses, attendant stripping operators’ embrace of mountaintop removal, were paralleled by the underground operators’ adoption of new deep mining technology.131 Only a fraction of the miners required for conventional continuous miner operations in underground room and pillar mines are employed in longwall mining.132

The efficiencies of the new surface and underground mining technologies were reflected in the dramatic decline in coal mining jobs in Appalachia. In 1979, 58,565 miners produced 112.3 million tons of coal in

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128. COALFIELD CITIZENS’ GUIDE, supra note 127, at 10–11. Squillace lamented: “[g]rossly underregulated coal mining in the 1960’s and 1970’s spawned one of the greatest abuses of the environment in the history of the United States. The statistics of strip mine abuse numb the mind and overwhelm the spirit.”

129. See id. at 1 (noting that “[s]ooner [SMCRA] has produced a vast improvement in mining methods and reclamation compliance in much of the coalfields. Nevertheless, in some regions—too often the very regions which compelled the passage of the law—abuses continue at an alarming rate.”). Notwithstanding improvements in mining and enforcement, SMCRA has not proven a panacea. SMCRA’s strict regulatory regime has been muted by a combination of forces including industry lobbyists, state politicians inured to industry positions for political reasons, and government regulators who have been cowed by external pressures.

130. For example, in West Virginia, 55,256 coal miners were employed in 1975. By 2007 the number of working miners dropped by almost two thirds to 19,175. In contrast, coal production increased by more than fifty percent during 1975-2007—from 109,048,898 to 160,043,930 tons.

131. Abramson, supra note 85, at 74.

West Virginia; two decades later, 15,000 miners produced almost 170 million tons.133

Increased coal mine productivity coincided in the late 1970s with an oil shortage orchestrated by a Middle East oil cartel that significantly raised oil prices.134 Electricity-generating power plants switched from burning oil to cheaper and more secure coal. An unintended consequence of this fuel switching was the creation of a new environmental externality—“acid rain.” Acid rain was caused primarily by emissions from electricity-generating plants that burned high-sulfur coal in the Ohio River Basin, extending from Missouri east to West Virginia and south to Georgia.135 Scientists confirmed what hunters and anglers were reporting. Vast forested regions of the Northeastern United States as well as lakes and streams were experiencing serious adverse impacts of “acid precipitation,” or acid rain.136

As in the more recent climate change debate, late 1970s governmental inaction on acid rain became a significant environmental and political issue. The issue pitted Midwestern and Northern Appalachian high-sulfur coal producing states against conservationists and the downwind northeastern states whose forests and streams were suffering damage.137 And, as with

133. Id.
135. The local impact of pollution-laden emissions from coal-fired power plants was avoided in many instances by the construction of very tall smoke stacks that served to transport the toxic brew higher into the atmosphere where prevailing winds transported it across state lines and dispersed it far from the source. See, e.g., Sierra Club v. EPA, 719 F.2d 436, 439 (D.C. Cir. 1983). (“[s]ince taller stacks tend to disperse pollutants over a greater area, a utility or other source can lower the ambient pollution concentrations not only by reducing the amount of pollutants it emits into the air, but also by raising the height of its stack.”) The Clean Air Act regulates emissions based on the ground level concentrations of pollutants and EPA allowed sources to satisfy certain emission limitations by building taller smoke stacks (hence the term “dispersion techniques”). The high-sulfur coal burned in eastern power plants was produced in Northern Appalachia and the Mid-West coalfields of Ohio, Illinois and Indiana.
136. Acid precipitation occurs when sulfur dioxide and nitrogen oxides from coal-fired power plants and other sources of carbon fuel combustion react in the upper atmosphere with water, oxygen, and other chemicals to form sulfuric acid and nitric acid. The resulting acid-laced rain and snowfall damages forests and acidification of lakes limits their ability to support fish and other aquatic life. Acid precipitation damage has been most experienced in the northeastern United States and Canada where the forests and lakes are lightly buffered and thus more sensitive to acidic deposition. Byron Swift, How Environmental Laws Work: An Analysis of the Utility Sector’s Response to Regulation of Nitrogen Oxides and Sulfur Dioxide Under the Clean Air Act, 14 TUL. ENVTL. L.J. 309, 314 (2001) (citing JAMES L. REGENS & ROBERT RYCROFT, THE ACID RAIN CONTROVERSY 35–58 (Univ. Pittsburgh Press 1989) (Revesz); NATIONAL ACID PRECIPITATION ASSESSMENT PROGRAM REPORT TO CONGRESS (2003). Richard L. Revesz, Federalism and Interstate Environmental Externalities, 144 U. PA. L. REV. 2341, 2351–52 (1996).
137. Id. (citing BRUCE A. ACKERMAN & WILLIAM T. HASSLER, CLEAN COAL AND DIRTY AIR: OR HOW THE CLEAN AIR ACT BECAME A MULTIBILLION-DOLLAR BAILOUT FOR HIGH-SULFER COAL...
climate change controversy, scientific findings were ignored or minimized by Big Coal and its political allies.\textsuperscript{138} The acrimonious debate lasted for more than a decade until a Congressional stalemate was finally overcome by the enactment of Title IV of the Clean Air Act Amendments of 1990, which included an Acid Rain Program to address both sulfur dioxide ("SO\textsubscript{2}") and nitrogen oxide ("NO\textsubscript{X}") emissions from coal-fired power plants.\textsuperscript{139}

Longwall Mining Externalities

Underground, “longwall mines” cut vast swaths under the earth—often 1,500 feet wide and a mile or more long—through thick coal seams.\textsuperscript{140} Longwall mining removes huge chunks of a coal seam that lies horizontally hundreds of feet beneath the earth’s surface.\textsuperscript{141} A huge circular drum with cutting bits (the “shear”) cuts coal from the seam.\textsuperscript{142} The longwall shear, related equipment, and the miners operating them are protected from roof cave-ins by overhead hydraulic shields ("roof supports").\textsuperscript{143} The roof supports move forward mechanically along the 1,000 to 1,500 foot wide longwall “face” as the shears cut into the coal.\textsuperscript{144} As the mineral is cut by the shear bits, it drops onto a conveyer belt that runs parallel to the coal seam face.\textsuperscript{145} The conveyor belt then carries the newly cut coal out of the mine to the surface for processing and transportation to market.\textsuperscript{146} As the supports move forward, the strata they support cave in, causing overlying rock to subside.\textsuperscript{147} Longwall mining subsidence under rural coalfield

\textsuperscript{138} Swift, supra note 136, at 315.
\textsuperscript{140} S.S. PENG & H.S. CHIANG, LONGWALL MINING (John Wiley & Sons, Inc. 1984). For a brief explanation of longwall mining technology see McGinley, supra note 42, at 55 56 n. 179, 180. See also BARLOW BURKE, JR. ET AL., MINERAL LAW: CASES AND MATERIALS 316 (West Publ’g. Co. 1994) [hereinafter BURKE].
\textsuperscript{141} BURKE, supra note 140, at 316.
\textsuperscript{142} Id.
\textsuperscript{143} Id.
\textsuperscript{144} Id.
\textsuperscript{145} Id.
\textsuperscript{146} Id.
\textsuperscript{147} Id, at 316–17
communities has caused widespread, significant structural damage to homes and other structures.\textsuperscript{148}

Similarly, longwall subsidence has triggered pervasive loss or contamination of rural domestic well and spring water supplies.\textsuperscript{149} While some in the coal industry dispute the impact of longwall mining on water resources, evidence of such effect is pervasive.\textsuperscript{150}

\textsuperscript{148} In \textit{Keystone Bituminous Coal Ass’n v. DeBenedictis}, 480 U.S. 470, 474 (1976), the Supreme Court of the United States defined “coal mine subsidence” as “the lowering of strata overlying a coal mine, including the land surface, caused by the extraction of underground coal.” The Court upheld a Pennsylvania law prohibiting underground longwall and room and pillar mining where the extraction of coal might harm important public interests. The Court summarized the harm that can accrue as a result of coal mining-induced surface subsidence:

Coal mine subsidence is the lowering of strata overlying a coal mine, including the land surface, caused by the extraction of underground coal. This lowering of the strata can have devastating effects. It often causes substantial damage to foundations, walls, other structural members, and the integrity of houses and buildings. Subsidence frequently causes sinkholes or troughs in land which make the land difficult or impossible to develop. Its effect on farming has been well documented—many subsided areas cannot be plowed or properly prepared. Subsidence can also cause the loss of groundwater and surface ponds.

\textit{Id. at} 474–5.


Also, an additional little-noticed or commented-upon longwall mining coal externality is naturally occurring coalbed methane, a potent greenhouse gas. The methane is exhausted from mine ventilation shafts and degasification well bores into the ambient atmosphere during underground mining operations. Longwall and other methods of underground mining release 13% of the methane gas emitted annually by industrial sources into the earth’s atmosphere. Two decades ago one commentator warned:

Approximately two-thirds of the wasted methane is intentionally “vented” as part of the coal mining process. Such venting not only wastes the energy present in this methane, but also significantly contributes to the problem of global warming, as methane is a powerful greenhouse gas with twenty-three times more “radiative effect” than carbon dioxide. Increased methane concentrations in the atmosphere are believed to be responsible for fifteen to twenty percent of the recent increase in global temperatures. Coal mine emissions account for approximately ten percent of worldwide methane emissions, and that number is expected to rise.

20 years later, most coal mines continue to “vent” coalbed methane gas contributing to the accumulation of greenhouse gases in the earth’s atmosphere.

Mountaintop Removal Mining Externalities

On the surface, strip miners using high explosives blasted apart mountain ridge tops in Kentucky, West Virginia, and Virginia. The blasts, part of the new extraordinarily large-scale “mountaintop removal” ("MTR") mining method, allow coal to be scooped from the broken mountaintops by

(discussing that the state sued coal company claiming it lied about risks of mining under Ryerson Station State Park Dam, necessitating draining of Duke Lake, a popular swimming, boating and fishing spot).


152. REDUCING COAL SUBSIDIES, supra note 42.


154. See, e.g., McGinley, supra note 42, at 54–57.
twenty story tall “draglines.” An enormous amount of rock and debris—the remains of what were high mountain ridges—are shoved into valleys burying headwater streams creating “valley fills.” Valley fills both block and contaminate waterways. EPA has reported that “almost 2,000 miles of Appalachian headwater streams had been buried by mountaintop coal mining.” At the same time, existing watersheds are negatively affected by the surface mining, water quality deteriorates as biodiversity diminishes, and a concentration of metals pollutes the soil and water.

In the context of a citizen suit challenge to state agency permitting of mountaintop removal operations in West Virginia, a federal district court judge flew over all of the MTR mines in the state. In a subsequent opinion the judge related what he saw:

[The flight] revealed the extent and permanence of environmental degradation this type of mining produces. . . . [T]he ground was covered with light snow, and mined sites were visible from miles away. The sites stood out among the natural wooded ridges as huge white plateaus, and the valley fills appeared as massive, artificially landscaped stair steps. Some mine sites were twenty years old, yet tree growth was stunted or non-

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155. Abramson, supra note 85 (stating that “[t]he efficiency of [Appalachia’s] most productive mines pales beside that of mines in the West.”). Strip mining operations use draglines that take 200 cubic yard bites and dump coal or rock in to 400-ton trucks. Id.


157. See Bragg v. Robertson, 72 F. Supp. 2d 642, 646 (S.D.W. Va. 1999) (describing mountaintop removal and the creation of valley fills), rev’d sub nov. W. Va. Coal Ass’n, 248 F.3d 275 (4th Cir. 2001). See also Strip-Mining Battle Resurfaces, supra note 156. (maintaining that “much of this rock and earth . . . is normally dumped into nearby hollows in piles called valley fills.”).


existent. Compared to the thick hardwoods of surrounding undisturbed hills, the mine sites appeared stark and barren and enormously different from the original topography.160

Chief Judge Haden continued:

If the forest canopy . . . is leveled, exposing the stream to extreme temperatures, and aquatic life is destroyed, these harms cannot be undone. If the forest wildlife are [sic] driven away by the blasting, the noise, and the lack of safe nesting and eating areas, they cannot be coaxed back. If the mountaintop is removed, even [coal company] engineers will affirm that it cannot be reclaimed to its exact original contour. Destruction of the unique topography of southern West Virginia, and of Pigeonroost Hollow in particular, cannot be regarded as anything but permanent and irreversible.161

EPA released a report in March 2011 on the impact of MTR and related valley fills on the aquatic ecosystems of the coalfields of Central Appalachia. The report was based on evidence gleaned from peer-reviewed literature and EPA’s 2005 Programmatic Environmental Impact Statement on MTR. The report indicated that MTR and associated valley fills “lead directly to five principal alterations of stream ecosystems.”162 These direct impacts included:

(1) springs, and ephemeral, intermittent, and small perennial streams are permanently lost with the removal of

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161. Id. (Haden, J., granting preliminary injunction) Chief Judge Haden’s observations were an accurate depiction of the impact MTR has on vegetation and animal life. It has been estimated that as of 2007 MTR had destroyed over 300 square miles of Appalachian forest. Diana Kaneva, Let’s Face Fact, These Mountains Won’t Grow Back: Reducing the Environmental Impact of Mountaintop Removal Coal Mining in Appalachia, 35 WM. & MARY ENVTL. L. & POL’Y 931, 933. The deforestation that occurs during the MTR process affects the biodiversity of the region. Id. For example government studies reveal a decrease in species of forest birds and amphibians which require a mature forest habitat in MTR affected areas, while grassland birds and reptiles which do not typically thrive in wooded areas grow in numbers. U.S. ENVTL. PROT. AGENCY, MOUNTAINTOP MINING/VALLEY FILLS IN APPALACHIA: FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT (2005), available at http://www.epa.gov/region03/mtntop/pdf/mtm-vf_fpeis_full-document.pdf [hereafter FINAL PROGRAMMATIC EIS 2005].
the mountain and from burial under fill, (2) concentrations of major chemical ions are persistently elevated downstream, (3) degraded water quality reaches levels that are acutely lethal to standard laboratory test organisms, (4) selenium concentrations are elevated, reaching concentrations that have caused toxic effects in fish and birds and (5) macroinvertebrate and fish communities are consistently degraded.

Coal Waste Externalities

The newest generation of technology and mining methods on the front end of the coal fuel cycle has also magnified the scale of coal waste impoundments, which are bigger than ever and continue to pose threats to downstream communities. A 2002 National Academy of Sciences study reported that there were more than 700 federally-regulated waste impoundments in the United States, most of them located in Appalachia.164 From 1981 through 2000, five coal waste impoundment failures released


164. NATIONAL ACADEMY OF SCIENCES, COAL WASTE IMPOUNDMENTS: RISKS, RESPONSES, ALTERNATIVES 23–4 (National Academic Press 2002) [hereafter IMPOUNDMENTS]; see generally STANLEY J. MICHALEK ET AL., ACCIDENTAL RELEASES OF SLURRY AND WATER FROM COAL IMPOUNDMENTS THROUGH ABANDONED UNDERGROUND COAL MINES (Mine Safety & Health Admin.1996), available at http://www.msha.gov/S&HINFO/TECHRPT/MINEWSTE/ASDSO2.pdf (giving background information on impoundments). Thicker coal seams in the West contain less impurities and most coal from Western coalfields is shipped without extensive cleaning. Id. 23–24. More than a billion tons of coal is mined annually in the United States and more than 600 million tons are washed (processed) to some extent. Seventy to ninety million tons of slurry waste per year are disposed of in above-ground impoundments or injected underground as a water-coal slurry. Id.
more than 90 million gallons of this polluting “black water” into Appalachian streams.

In 2000, an impoundment containing over a billion gallons of coal slurry waste in Eastern Kentucky was breached, allowing more than 300 hundred million gallons of the black water sludge to reach a nearby stream. The waste travelled more than 100 miles downstream from Kentucky into West Virginia, burying and destroying stream life.

On the back end of the coal fuel cycle, an enormous amount of inorganic coal combustion waste (“CCW”) is produced annually when coal is burned in electricity-generating power plants. According to a 2010 Congressional Research Service report,

The 1.05 billion tons of coal burned each year in the United States contain 109 tons of mercury, 7884 tons of arsenic, 1167 tons of beryllium, 750 tons of cadmium, 8810 tons of chromium, 9339 tons of nickel, and 2587 tons of selenium. On top of emitting 1.9 billion tons of carbon dioxide each year, coal-fired power plants in the United States also create 120 million tons of toxic waste. That means each of the nation's 500 coal-fired power plants produces an average 240,000 tons of toxic waste each year. A power

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165. IMPOUNDMENTS, supra note 164, at 27–31. “Black water” is a colloquial term for the liquid waste contained in or released untreated from coal waste impoundments. See also J. Michalek, supra note 164.


167. The impoundment collapse occurred on October 11, 2000. See INTERNAL REVIEW, supra note 166. See also Ky. Envtl. Quality Comm., Martin County Coal Slurry Spill: Three Years Later, http://www.eqc.ky.gov/NR/rdonlyres/78642226-A465-4EDC-9D2C-8F675DCECC84/0/coalslurrytour.pdf (last visited June 3, 2012). Kentucky officials reported that 20 miles of streams and floodplains were buried in 8 feet of slurry. The sludge contaminated water supplies of riverside communities in Kentucky and West Virginia with measurable amounts of heavy metals including arsenic, mercury, lead, cadmium, copper, copper, and chromium. Four municipal drinking water intakes were shut down. All aquatic life was eliminated in Wolf and Coldwater creeks and severely damaged approximately 70 miles of streams. The cleanup cost was estimated to be at least $58 million. Id.
plant that operates for 40 years will leave behind 9.6 million tons of toxic waste.\footnote{168}

Approximately 76 million tons of CCW is primarily disposed of annually, on-site at power plants in unlined wastewater impoundments and landfills.\footnote{169} Of the more than 600 coal waste impoundments spread across the nation, one commentator estimates that 240 have been constructed in areas above abandoned underground mines, raising concerns of instability and possibility of structural collapse.\footnote{170}

In 2008, the contents of a Tennessee Valley Authority coal-fired power plant impoundment containing liquid coal combustion waste broke through a dam wall releasing 1.1 billion gallons of CCW slurry.\footnote{171} The cleanup cost has been estimated at $1.2 billion.\footnote{172} The spill material included environmentally toxic levels of mercury, arsenic, and lead. It damaged a dozen homes and contaminated miles of a tributary of the Tennessee River.\footnote{173}

Coal and electric power industry lobbyists have successfully blocked federal regulation of CCW and coal processing waste, notwithstanding the risks attendant their disposal. In 1976, Congress enacted the Resource
Conservation and Recovery Act ("RCRA") to strictly regulate generation, storage, and disposal of hazardous wastes. In 1980, in response to intense lobbying by mining and related industries, Congress passed the Bevill Amendment exempting solid wastes from the "extraction, beneficiation and processing" of ores and minerals from RCRA while EPA conducted studies to determine how they should be regulated. 30 years after the adoption of the Bevill Amendment, the statute still exempts many mining wastes, including coal processing and coal combustion wastes from RCRA Subtitle C. Regulatory responsibility for CCW has been left to the states until EPA decides to include it within the purview of RCRA.

Thus, CCW is specifically exempted from regulation under RCRA, even though it is heavily laden with toxic material. In the wake of the TVA CCW impoundment collapse, public demands for regulation grew, and EPA responded with a proposed regulation in 2010. The agency is again

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176. The Congressional Research Service reports that EPA has finally grown impatient with state efforts to regulate CCW:

EPA again cites a lack of progress in state regulation of CCW disposal units. Primarily, after identifying risks associated with CCW disposal in unlined landfills and surface impoundments in 2000, states have still not adequately implemented CCW regulatory programs, according to EPA. In particular, according to recent survey data, with regard to CCW disposal units, 36% of responding states do not have minimum liner requirements for landfills, 67% do not have liner requirements for surface impoundments, 19% of the responding states do not have minimum groundwater monitoring for landfills, and 61% do not have minimum groundwater monitoring for surface impoundments. . . . EPA asserts that, while the states seem to be regulating landfills to a greater extent, given the significant risks associated with surface impoundments, survey results suggest that there continue to be significant gaps in state regulatory programs for the disposal of CCWs.

LUTHER, supra note 168, at 9.
177. Id. at 13.
under intense pressure from regulated entities and Big Coal’s opposition makes promulgation of the proposed rule unlikely in the near future.\textsuperscript{179}

As related above, much of the externalized environment and associated socio-economic costs of coal mining and burning have not been calculated or considered by public policy makers. Much of the harm of the past, however, could be mitigated or prevented in the future by responsible mining practices and strict government enforcement of the SMCRA, the Clean Water Act, the RCRA, and the Clean Air Act. One policy choice to be considered is continuing to use significant quantities of coal as a bridge to an energy future while renewable energy and infrastructure is developed. Some argue that technology is available to allow a smaller quantity of coal to be mined and burned at a profit with more limited environmental and related impacts than in the past. However, the history of lax enforcement and regulatory politicization does not engender confidence that coal’s environmental externalities will be effectively minimized in the near future.\textsuperscript{180}

\textbf{C. Miner Safety and Public Health Impacts of Coal}

1. A Century-Long Trail of Workplace Injuries and Deaths

Early on the morning of January 2, 2006, almost a century after the single worst industrial accident occurred in United States history in Monongah, West Virginia, an explosion ripped through the depths of a coal

\textsuperscript{179} See Gabriel Nelson, \textit{White House Gets an Earful on Power Plant Rule}, N.Y. TIMES, Mar. 14, 2011, http://www.nytimes.com/gwire/2011/03/14/14greenwire-white-house-gets-an-earful-on-power-plant-rule-86449.html?scp=3&sq=coal%20ash&st=cse (stating that the “rule has faced a backlash from companies that burn coal, or recycle the ash by using it . . . in cement and other products. EPA has not moved forward with a final rule since receiving tens of thousands of comments.).

\textsuperscript{180} Pervasive laxness in enforcement of the SMCRA in some coal producing states is well documented. In \textit{W. Va. Highlands Conservancy v. Norton}, the Court stated that: a climate of lawlessness [exists], which creates a pervasive impression that continued disregard for federal law and statutory requirements goes unpunished, or possibly unnoticed. Agency warnings have no more effect than a wink and a nod, a deadline is just an arbitrary date on the calendar and, once passed, not to be mentioned again. Financial benefits accrue to the owners and operators who were not required to incur the statutory burden and costs attendant to surface mining; political benefits accrue to the state executive and legislators who escape accountability while the mining industry gets a free pass. Why should the state actors do otherwise when the federal regulatory enforcers’ findings, requirements, and warnings remain toothless and without effect?

mine in rural north-central West Virginia. For 40 hours, an international television audience watched with growing trepidation as coal company officials and government regulators periodically reported on efforts to rescue 13 coal miners trapped deep in the Sago mine. Ultimately, the truth was revealed as morning dawned on the third day after the explosion: one miner had died at the time of the blast and 11 others died hours later of asphyxiation when thick toxic fumes overwhelmed them as they lay barricaded deep in the mine. One miner, although overcome by fumes, was found lying among his comrades, unconscious, but alive.

Four years later, on April 5, 2010, another mine explosion killed 29 coal miners at the Massey Energy Upper Big Branch Mine (“UBB”) located in southern West Virginia’s Raleigh County. The UBB disaster was the worst since 78 miners were killed in 1968 in an explosion within Consolidation Coal’s Farmington No. 9 Mine near Fairmont, West Virginia. Following an intensive investigation, including interviews of more than 250 UBB employees, an independent investigation panel found:

Ultimately, the responsibility for the explosion at the Upper Big Branch mine lies with the management of Massey
Energy. The company broke faith with its workers by frequently and knowingly violating the law and blatantly disregarding known safety practices while creating a public perception that its operations exceeded industry safety standards.\(^{186}\)

The Sago and UBB tragedies were neither unique nor the worst of our nation’s coal mine disasters. They rank as but two of more than 600 mine disasters that have visited American coal mining communities over the last century.\(^{187}\) For those familiar with coalfield history, Sago and UBB join a long list of names synonymous with death, injury, shattered families, and devastated communities stretching back to the 1800s.\(^{188}\) Over the course of a century, more than 100,000 coal miners died from mine roof falls, cave-ins, fires, explosions, and other causes in American coal mines.\(^{189}\) Several million miners suffered injuries, many of them serious and disabling.\(^{190}\)


\(^{187}\) Regulators and historians arbitrarily define a mine “disaster” as an incident involving at least five deaths. See, Center for Disease Control, NIOSH Mining: Coal Mining Disasters, http://www.cdc.gov/niosh/mining/statistics/discoal.htm (last visited June 3, 2012) (listing coal mining disasters with 5 or more fatalities dating back to 1829).

\(^{188}\) Among the disasters that gained the most public notoriety were: Monongah (500), Stag Canyon No. 9 (263), Cherry Mine (259), Mather (195), Centralia (111), Pond Creek No. 1 (91), Farmington (78), Willow Grove (72), Scotia (26), Finley Coal Nos. 15 & 16 (38), Wilberg (27), Jim Walter Resources No. 5 (13), No. 2, Dutch Creek No. 1 (15), Grundy Mining No. 21 (13), Robena No. 3 (37) and Blacksville No. 1 (9) (the numbers in the parentheticals represent the number of deaths reported).

\(^{189}\) MINE SAFETY AND HEALTH ADMINISTRATION, HISTORICAL DATA ON MINE DISASTERS IN THE UNITED STATES, available at http://www.msha.gov/MSHAINFO/FactSheets/MSHAFACT8.HTM.

\(^{190}\) Six-hundred and five mining disasters have occurred in American coal mines since 1876 (defined as accidents in which five or more workers were killed). Id. The MSHA website documents the history of the carnage in America’s coal and other mines from 1936 through 2007:
“The deadliest year in the nation’s coal mining history was 1907, when 3,242 deaths were recorded.”\textsuperscript{191} Coal mine deaths then declined from 1910 to the present.\textsuperscript{192}

In the aftermath of the tragic events at the Sago and Upper Big Branch mines, as with virtually every other modern coal mine disaster in the United States, familiar pledges were made. Indeed, for a century, coal mine operators and government regulators have repeatedly asserted that they have “learned from” these disasters. Accompanying such assurances have been commitments that similar events would “never happen again” and solemn vows that miners have not “died in vain.”

Time after time, these pledges have rung hollow as coal miners, their families, and coalfield communities suffered from death and injuries in the nation’s mines. Following the deaths of 111 miners at the Centralia Illinois

<table>
<thead>
<tr>
<th>Years</th>
<th>Average Annual &amp; Total Deaths for Period</th>
<th>Average Annual Injuries</th>
<th>Total Injuries During Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1936-1940</td>
<td>1,546 / 7730</td>
<td>81,342</td>
<td>406,710</td>
</tr>
<tr>
<td>1941-1945</td>
<td>1,592 / 7960</td>
<td>82,825</td>
<td>415,125</td>
</tr>
<tr>
<td>1946-1950</td>
<td>1,054 / 5270</td>
<td>63,367</td>
<td>316,835</td>
</tr>
<tr>
<td>1951-1955</td>
<td>690 / 3450</td>
<td>38,510</td>
<td>192,550</td>
</tr>
<tr>
<td>1956-1960</td>
<td>550 / 2750</td>
<td>28,805</td>
<td>144,025</td>
</tr>
<tr>
<td>1961-1965</td>
<td>449 / 2245</td>
<td>23,204</td>
<td>116,020</td>
</tr>
<tr>
<td>1966-1970</td>
<td>426 / 2130</td>
<td>22,435</td>
<td>112,175</td>
</tr>
<tr>
<td>1971-1975</td>
<td>322 / 1610</td>
<td>33,963</td>
<td>169,815</td>
</tr>
<tr>
<td>1976-1980</td>
<td>254 / 1270</td>
<td>41,220</td>
<td>206,100</td>
</tr>
<tr>
<td>1981-1985</td>
<td>174 / 870</td>
<td>24,290</td>
<td>121,450</td>
</tr>
<tr>
<td>1986-1990</td>
<td>122 / 610</td>
<td>27,524</td>
<td>137,620</td>
</tr>
<tr>
<td>1991-1995</td>
<td>99 / 495</td>
<td>24,201</td>
<td>121,005</td>
</tr>
<tr>
<td>1996-2000</td>
<td>86 / 430</td>
<td>17,500</td>
<td>87,500</td>
</tr>
<tr>
<td>2001-2005</td>
<td>62 / 310</td>
<td>12,952</td>
<td>64,625</td>
</tr>
<tr>
<td>2006-2007</td>
<td>69 / 138</td>
<td>11,800</td>
<td>23,600</td>
</tr>
</tbody>
</table>

Total: 37,340 Total: 2,815,805


\textsuperscript{191} \textit{Injury Trends in Mining, supra note 190.}

\textsuperscript{192} \textit{Mine Safety and Health Administration, supra note 189.}
mine in 1947, legendary United Mine Workers Union President John L. Lewis captured the sense of *déjà vu* accompanying death and loss in America’s coal field communities:

> There is public sorrow at the moment, but we know from harsh experience that it is only a momentary feeling of pity on the part of the public, and this sacrifice, like others before, will soon be forgotten. Shortly after the mine workers bury their dead, the feeling of sorrow will remain only in the breasts of the loved ones who survived: and the mine workers can look forward to the next catastrophe.\(^{193}\)

History documents a mine disaster leading to new laws followed by another disaster cause-and-effect cycle. In this repeating cycle, a coal mine disaster is followed by strengthening of mine safety laws and enforcement, a lax enforcement phase that includes industry resistance to regulation followed by another mine disaster, and so on. The causal connection between mine disasters involving multiple fatalities and enactment of mine safety laws should, however, not lead one to ignore the *far greater number of injuries and loss of lives suffered in isolated accidents* involving only one or two individuals.\(^{194}\) Whether coal miner deaths occur in disasters or in ones and twos, the cost of these non-economic externalities are incalculable and the total economic costs have never been objectively calculated.

2. Mine Safety in The Twenty-First Century

The cause and effect cycle continues today, although more than a century passed between the 1906 Monongah and the 2006 Sago explosions. Following Sago, miners died needlessly in Massey Energy’s Aracoma Mine in southern West Virginia and in the Darby Mine in eastern Kentucky in 2006.\(^{195}\) In 2007, at a mine at Crandall Canyon, Utah, another drama

\(^{193}\). *Text of Lewis Order Calling Stoppage*, THE NEW YORK TIMES (March 30, 1947), available at http://select.nytimes.com/gst/abstract.html?res=F40E10F63B5F1A7A93C2A1788D85F438485F9&scp=1&sq=text+of+lewis+order+calling+stoppage&st=p. [hereinafter *Text of Lewis Order*]. Lewis’ letter to all United Mine workers members calling for a week’s holiday in memorial to the victims of the Centralia mine disaster was printed in full in the *Times*.


unfolded before an international television audience and ended, like Sago, in unnecessary death and heartache.\textsuperscript{196} Once again, Congress passed a new law in the wake of promises of “never again.”\textsuperscript{197} The 2010 Upper Big Branch mine explosion was the worst disaster in the more than four decades since the 1969 Farmington explosion killed 78 men in 1968. Until UBB it was fair to say that every significant advance in coal mine safety has been written in the blood of coal miners.\textsuperscript{198} Uncharacteristically, the UBB deaths did not spawn new safety legislation, although tough new amendments to the Mine Act were introduced in Congress.\textsuperscript{199} These legislative proposals were shelved by both houses and are unlikely to be enacted—unless, of course, another coal mine tragedy reminds the public and politicians of the risks coal miners take every day to feed their families and in an effort to quench America’s thirst for electric power.

It is important, however, to recognize that enormous improvements in mine safety over the last 40 years have significantly reduced coal mine deaths and serious injuries over time. Records of the federal Mine Safety and Health Administration show that, in each decade of the 20th century, the number of mining deaths and serious injuries reported have slowly declined.\textsuperscript{200} As the chart in footnote 187 indicates, annual coal mine


\textsuperscript{198} Text of Lewis Order, supra note 193. “The American people must be aroused to the stark realities of the situation and the casualties of the coal industry. Coal is already saturated with the blood of too many brave men and drenched with the tears of too many surviving widows and orphans.” Id. The irony is emphasized by J. Davitt McAteer, lawyer, scholar, and former MSHA chief:


\textsuperscript{199} H.R. 5663, 111th Cong. (2010).

\textsuperscript{200} MSHA's averages are based upon measuring the numbers of miner injuries against hours worked. See MSHA Facts, supra note 189.
fatalities fell from more than 1,500 per year in the late 1930s to an average of about 450 in the 1950s. Average annual fatalities dropped to 140 in the 1970s. By the 2001–2005 period, the yearly average of coal miner deaths dipped to 30.\footnote{1} The safest year in American coal mining history occurred in 2005, when an all-time low of 23 coal mining deaths were recorded, lower than the previous low of 28 fatalities recorded in 2002. 33 miners died in 2007.\footnote{2} Even as the number of fatalities in U.S. mines dropped, MSHA loosened federal mine safety law enforcement in favor of giving “compliance assistance” to coal companies.\footnote{3} From 2008 through 2010, mining fatalities rose, with a total of 72 miners dying in that time span.\footnote{4} MSHA documented more than 170,000 miner injuries from 1995 to 2007.\footnote{5}

\footnote{1. According to the MSHA website data, the coal miner death rate decreased from about .20 fatalities per 200,000 hours worked by miners (or one death per million production hours) in 1970 to about .07 fatalities in 1977 and dropped still lower to an average of .03 fatalities for the 2001–2005 period. Id.}

\footnote{2. Id.}


\footnote{5. Id. Emily Channell, Coal Miner’s Slaughter, 14 North American Dialogue 12, 13 (Apr. 3, 2011). During the previous two years MSHA had given Massey Energy Corporation, the mine’s owner company, 639 safety violation citations, which were ignored and not enforced. Id. at 18. Although MSHA claimed they “used the tools we have available,” there was “a clear record of blatant disregard for the welfare and safety of Massey miners.” Id. (quoting Senator of West Virginia Robert Byrd). Today, federal criminal investigation continues. MINE SAFETY & HEALTH ADMIN, STATEMENT BY SOLICITOR OF LABOR M. PATRICIA SMITH REGARDING ONGOING INVESTIGATION OF UPPER BIG BRANCH MINE EXPLOSION (Jan. 14, 2011) available at http://www.msha.gov/MEDIA/PRESS/2011/NS110118.asp.}
Clearly, efforts to protect coal miners’ health and safety have not stood still since 500 miners’ lives were lost in the 1907 Monongah explosion. Regulation, Union persistence, and more responsible coal mining management have greatly reduced the number of miners killed and maimed in American mines.

It is fair to say that extraordinary progress has been made over time in advancing mine safety and reducing coal miner deaths and injuries. Nevertheless, preventable deaths and injuries continue to externalize the costs of coal mining at an unacceptable rate. That tragic deaths in mine disasters are the primary, indeed the only, impetus for stimulating politicians to enact legislation to protect miners lives and health speaks volumes about the United States coal industry and the governments that regulate it. As with many other coal externalities, the American public is largely ignorant of the significant costs of coal mine injuries and fatalities except during the short windows of consciousness of the risks miners face which are highlighted by intense media reporting in the aftermath of mine disasters.

D. Coal’s Externalized Health–Related Costs: Black Lung Disease

While a century of coal mine accidents and disasters have claimed thousands of lives and injured more than two million miners, an even more insidious and obscure health hazard has caused many more deaths and disabilities. Medically known as “coal workers’ pneumoconiosis,” “black lung” is the common name for lung disease developing from inhaling coal dust. The term “black lung” derives from the observation by pathologists that the lungs of diseased victims appear black instead of the natural pink color of the healthy organ. The inhalation and accumulation of coal dust in the lungs increases the risk of developing emphysema and chronic bronchitis. Coal dust can also enhance risk of chronic obstructive pulmonary disease or “COPD.” As explained below, accepted medical etiology of the disease was that black lung disease develops over a fairly long period of exposure—a view opened to question by the findings of an

206. Monongah, supra note 181.
207. There are two forms of black lung: simple, which is known as coal workers’ pneumoconiosis (“CWP”), and complicated, which is known as progressive massive fibrosis (PMF).
209. Id.
independent government investigation panel examining the UBB explosion.\textsuperscript{210}

Black lung disease was first identified in the mid-19th Century by doctors treating British coal miners.\textsuperscript{211} For many years, the disease was called “miner’s asthma” or “miner’s consumption” and medically labeled “anthracosis.”\textsuperscript{212} Miners’ symptoms include “progressive dyspnea, chest discomfort, and cough, sometimes dramatically accompanied by the expectoration of copious quantities of black, inky sputum.”\textsuperscript{213} Black lung can be very debilitating and often fatal. Throughout the history of coal mining, miners have been exposed to and have contracted black lung disease. In the early days of coal mining, men and boys worked for a pittance in extraordinarily dusty places in mines where the process of contracting black lung would usually begin. Even today, modern coal mining technologies continue to expose miners to black lung disease, notwithstanding a federal regulatory regime intended to minimize such exposure.

It would surprise most Americans to learn that black lung disease has claimed “far more lives than do catastrophic cave-ins and explosions.”\textsuperscript{214} “Perhaps even worse, . . . black lung condemn[s] thousands of miners to live out their days crippled by the devastating effects of progressive, chronic lung disease.”\textsuperscript{215} The statistics of black lung’s costs are staggering.


\textsuperscript{211} See Alan Derickson, Black Lung: Anatomy of a Public Health Disaster 6 (Cornell Univ. Press 1998) [hereinafter BLACK LUNG]. Black lung was not officially recognized as a compensable occupational disease in Great Britain until 1937. See Barbara Ellen Smith, Digging Our Own Graves: Coal Miners and the Struggle Over Black Lung Disease 4 (Temple Univ. Press 1987).

\textsuperscript{212} See Frederic Gomes Cassidy, Joan Houston Hall, 3 Dictionary of American Regional English 607 (Belknap Press 1996), available at: http://books.google.com/books?id=eEB0YFR2EowC&pg=PA607&lpg=PA607&dq=%22miner’s+asthma%22+%22miner’s+consumption%22&source=bl&ots=SNtQq9u88&sig=UeiFWYW2KdW_CtYm_7FkzWpJD4&hl=en&sa=X&ei=book_result&resnum=2&ct=result.


\textsuperscript{215} Id.
While 104,722 miners died in coal mine accidents from 1900 to 2010,\textsuperscript{216} four times more miner deaths during the same period are attributable to black lung.\textsuperscript{217} By 1969, at least 365,000 miners died of black lung disease; it has been estimated that another 123,000 miners died between 1969 and 2004.\textsuperscript{218}

For a century in the United States, coal industry and governments generally refused to recognize the existence of the disease.\textsuperscript{219} Bizarrely, some coal industry officials, politicians, and even medical doctors claimed that inhalation of coal dust posed no health threat.\textsuperscript{220} A noted public health historian has observed that “it is clear in retrospect that denial of the dangers of mine dust shortened the lives of hundreds of thousands of anthracite and bituminous coal miners.”\textsuperscript{221}

It was not until a grassroots uprising of miners’ widows forced a reluctant Congress and president to address the disease and its cause. The Federal Coal Mine Safety and Health Act of 1969 included limits on

\begin{footnotes}
\footnotetext{216}{Id. (citing Mine Safety and Health Administration, Coal Fatalities for 1900 through 2010, UNITED STATES DEPARTMENT OF LABOR, http://www.msha.gov/stats/centurystats/coalstats.asp (last visited June 3, 2012)).}
\footnotetext{217}{Id.}
\footnotetext{219}{See Brian C. Murchison, Due Process, Black Lung, And The Shaping Of Administrative Justice, 54 ADMIN. L. REV. 1025, 1038–48 (2002) (illustrating the difficulties faced by former miners in receiving compensation for black lung).}
\footnotetext{220}{Id. at 1040. Murchison explains:
By 1930, the “denial of coal workers’ respiratory difficulties had triumphed in the United States,” due to a host of factors that historians are still trying to understand. One factor was the stance of company physicians that inhaling coal mine dusts was harmless because the body was naturally equipped to expectorate “deposits of carbon” and thus purify itself. Another claim was that inhaling carbonaceous dusts was in fact beneficial to miners’ health because it caused fibrotic formations which supposedly prevented tubercular bacilli “from getting a foothold” in the lungs. A third industry position was that the only real danger posed by either anthracite or bituminous mining was inhalation of “silicious dusts associated with sandstone, slate, and other minerals that occurred with coal deposits.” According to industry doctors, miners with dust-induced lung disease must have inhaled dust containing rock dust, since inhaling particles of coal “posed no hazard at all.” This effort to equate all mine dust disease with silicosis became the conventional wisdom; the only conceded effect of inhaling coal particles without significant silica was anthracosis, which coal interests insisted was not a disease but a discoloration of the lung.}
\footnotetext{221}{BLACK LUNG, supra note 211, at xii.}
\end{footnotes}
miners’ workplace exposure to black lung-causing ambient coal dust.\footnote{Federal Mine Safety and Health Act of 1977, 30 U.S.C. § 842(b)(2) (2006) ("each [mine] operator shall continuously maintain the average concentration of respirable dust in the mine atmosphere during each shift to which each miner in the active workings of such mine is exposed at or below 2.0 milligrams of respirable dust per cubic meter of air.") Federal Law also requires miners and their widows/families to receive compensatory benefits if it can be proven that a miner contracted the disease while working in coal mines. Black Lung Benefits Act (BLBA), 83 Stat. 792 (2006) (codified as amended at 30 U.S.C. § 901).}

One widow put the impact of black lung disease in perspective:

> My father was killed by black lung. I lost four brothers to black lung. My first husband had black lung when he died, and my second husband died of black lung. . . . Women and children live in the coal fields, too, and they breathe coal dust just like the men do, and they end up with asthma.\footnote{W. Davis, Out Of The Black Hole: Reclaiming The Crown Of King Coal, 51 AM. U. L. REV. 905, 952 (2002) (citing RANDALL NORRIS & JEAN-PHILLIPE CYPRES, WOMEN OF COAL (Un. Press of Ky. 1996); CAROL A.B. GIESEN, COAL MINER’S WIVES: PORTRAITS OF ENDURANCE 56 (Un. Press of Ky. 1995).}

The 1969 federal legislation, however, did not end the nightmare experienced by black lung riddled coal miners and their families. For almost four decades coal operators and their lawyers have continued to challenge miners and widows’ black lung claims in a tortuous U.S. Department of Labor administrative adjudicatory system.\footnote{See generally Murchison, supra note 219 (describing coal operators’ continuing challenges to former miners’ black lung claims) (citing, Ron Nixon, Benefits Claims Process is as Slow, Painful as the Disease, Miners Say, ROANOAKE TIMES, Nov. 24, 2000). Ron Nixon, A Coalfield Legacy: Black Lung—As Court Battles for Disability Benefits Drag On, Miners Slowly Suffocate, ROANOAKE TIMES & WORLD NEWS, Nov. 24, 2000 at A1 (reporting black lung claims can last for decades); Ron Nixon, Lawyers Are Few and Far Between for Black Lung Plaintiffs, ROANOAKE TIMES, Nov. 25, 2000. Murchison recites the history of one shocking convoluted case, typical of numerous others, in which a coal miner suffering serious disability from black lung fought a circuitous route through hearing after hearing for more than a decade seeking benefits to which he was clearly entitled.}

A law professor who directs a black lung clinic representing coal miners in black lung administrative cases described the agency’s scandalous black lung claims system in testimony before a Congressional subcommittee:

> I have argued cases before the United States Supreme Court as well as the Supreme Courts of several states. I have also represented people before Justices of the Peace and Small Claims Court. And I can say without hesitation that the most unfair process I have ever run into is that which I found in the Federal black lung system. It defies
due process of law, it defies reason and it is just simply unreasonable.\textsuperscript{225}

It is true that government mandated dust mitigation measures have resulted in a significant decline in the incidence of black lung since 1970.\textsuperscript{226} However, while the prevalence of black lung disease among miners dropped substantially from the tragic numbers inflicted before government regulation, “the numbers are on the rise again”\textsuperscript{227} and are affecting both young and seasoned miners.\textsuperscript{228} In 1995, MSHA confirmed the increase in

\begin{itemize}
\item \textsuperscript{225} Id. at 1032. The problematic nature of the black lung benefit system and the injustice to severely diseased miners and their families is exacerbated by a system that makes it difficult for the afflicted to obtain competent legal counsel. See generally U.S. GOV'T ACCOUNTABILITY OFFICE, BLACK LUNG BENEFITS PROGRAM: ADMINISTRATIVE AND STRUCTURAL CHANGES COULD IMPROVE MINERS' ABILITY TO PURSUE CLAIMS, (Govt. Acct. Off. Rpt. GAO-10-7) (2009), available at http://www.gao.gov/new.items/d107.pdf (stating that the “GAO found that coal miners face a number of challenges pursuing federal black lung claims, including finding legal representation and developing sound medical evidence to support their claims. Dol officials identified miners' lack of resources, the low probability of success, and high litigation costs for their cases as factors that contribute to the difficulties miners face in finding legal representatives. Miners also encounter challenges in developing sound medical evidence.”). A particularly outrageous example of a seriously ill black lung claimant’s pro se effort to obtain benefits occurred in West Virginia where a coal company lawyer tampered with evidence showing the claimant was entitled to benefits. The claimant died before he received benefits. The lawyer’s duplicity was discovered several years into the case when a lawyer was found who agreed to represent the client. Ultimately the lawyer was suspended from practice for one year for his actions. See Lawyer’s Disciplinary Bd. v. Smoot, ___ S.E.2d ___, 2010 WL 4679256 (W.Va.) ([The claimant] “was a seventy-four-year-old man with a limited education who was acting pro se at the time of Mr. Smoot's misconduct. . . . Submitting an altered report to a tribunal is an affront to justice that simply cannot be tolerated”).
\item \textsuperscript{226} MD Attfield et al., Changing Patterns of Pneumoconiosis Mortality --United States, 1968--2000, CDC (July 23, 2004), http://www.cdc.gov/MMWR/preview/mmwrhtml/mm5328a1.htm.
\item \textsuperscript{228} Chris Hamby, Autopsies of Massey Miners Reveal Black Lung, HUFF POST GREEN (May 19, 2011), http://www.huffingtonpost.com/the-center-for-public-integrity/autopsies-massey-miner-black-lung_b_864174.html.
\end{itemize}
black lung and the need to tighten respirable dust standards. Government statistics showed that coal mines in the United States were logging more than 6,000 violations of ambient coal dust regulations annually over a five year period.\textsuperscript{229} No action was taken on the agency findings for a decade and a half.\textsuperscript{230}

Finally, on October 19, 2010, MSHA proposed a rule aimed at lowering miners’ exposure to coal dust.\textsuperscript{231} The rule is a part of MSHA’s End Black Lung: ACT NOW campaign begun in 2009.\textsuperscript{232} The new rule addresses many previously identified problems with existing federal mining regulations, including updating methods for measuring coal dust so that sampling will more accurately reflect working conditions. If implemented, the new rule would require miners to wear personal dust monitors if they work in high dust-concentration areas.\textsuperscript{233} Dust levels will now be recorded using individual measurements instead of simply recording an average calculated over a time span of multiple shifts.\textsuperscript{234} The goal of the rule is to give mine operators 24 months to phase in lower dust levels, from the present level of 2.0 mg/m\textsuperscript{3} of air to 1.0 mg/m\textsuperscript{3}. MSHA and coal mine operator data indicate that a majority of miners’ exposures are presently at or below the limits in the proposed rule.\textsuperscript{235}

\textsuperscript{229} Ken Ward Jr., Beyond Sago: Coal Dust Most Common Violation; Mines Averaging 6,000 Citations for it Each Year, THE CHARLESTON GAZETTE (December 17, 2006).


\textsuperscript{234} Id.

\textsuperscript{235} Respirable Coal Mine Dust, Including Continuous Personal Dust Monitors, 75 Fed. Reg. at 64419.
The coal industry has almost uniformly objected to the proposed rule on a number of grounds, which include the assertion that it will not reduce the incidence of black lung:

What evidence does MSHA have to show that the . . . standard that has been used to protect Part 90 miners for the past 40 years is no longer adequate? This appears to be a case of arbitrarily cutting the standard in half, since the proposed standard will be reduced by that amount? The rule also appears to include a variety of 30 C.F.R. Part 75 changes that bear no rational relationship whatsoever to preventing CWP.236

A coal industry executive criticized MSHA’s black lung proposal in a more strident tone. Mr. Tom Mackall, President of East Fairfield Coal Company, testified:

Workers at businesses we supply will also see their jobs be destroyed if we don’t stop the regulatory wave that’s crushing the American economy. . . . MSHA has proposed a Respirable Dust Standard that is unachievable in underground mine settings, and continues to be unable to produce the relevant data that they claim creates the causation basis for their rule. Day to day, our company sees the impacts of how MSHA is being used as a tool to stop coal mining.237

Just as coal lobbyists were putting their aggressive campaign in opposition to the proposed rule in high gear, a report of the West Virginia Governor’s Upper Independent Big Branch Investigation Panel added weight to demands for government action to curtail the return of the


237. Testimony of Tom Mackell, House Subcomm. on Reg. Affairs, Stimulus Oversight & Gov’t. Spending, Comm. on Oversight & Govt. Reform, available at http://oversight.house.gov/images/stories/Testimony/7-14-11_Mackell_RegAffairs_EPA_Testimony.pdf (July 14, 2011); but see, Celeste Montforton, No matter what mining industry reps say, MSHA’s proposed rule to address black lung is easily achievable, THE PUMP HANDLE BLOG (July 19, 2011), http://scienceblogs.com/thepumphandle/2011/07/no_matter_what_mining_industry.php ("Respirable dust concentrations at Mr. Mackell's underground coal mines are comparable to the situation nationwide. MSHA's enforcement data indicates that the vast majority of coal mine operators are already complying with the 1.0 milligram standard.").
scourge of black lung to coalfield communities. Autopsies revealed that of the 24 miners whose lungs could be examined, 17 (or 71 percent) had contracted the disease—more than 20 times higher than what was thought to be the average for all underground coal miners.238

Most troubling was the fact that, contrary to conventional government and coal industry reports, the disease was not limited to older UBB miners who had been exposed to coal dust during decades of working underground. The autopsies showed that some UBB miners with black lung were as young as 25, and five had been working in coal mines less than ten years.239 The investigation panel observed that “the victims at UBB constitute a random sample of miners. The fact that 71 percent of them show evidence of CWP is an alarming finding given the ages and work history of these men.”240

The Comment period has been extended and MSHA has yet to publish the rule.241 Notwithstanding the harm—10,000 black lung-related deaths in ten years—to coal miners, their families, and their communities, the coal industry and its supporters continue to successfully block more protective regulation of mining-generated respirable dust. Just in case MSHA decides to move forward with its 2010 regulatory proposal, the House of Representatives majority added a provision to block the agency’s use of appropriated funds to implement new black lung regulations to the 2012 appropriations bill.242

Unlike most of the externalized socio-economic and environmental costs of coal, it is possible to put a monetary price on coal mine operators’

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238. GOVERNOR’S INDEPENDENT INVESTIGATION PANEL, supra note 186. See also, Chris Hamby, Autopsies of Massey Miners Reveal Black Lung, HUFF POST GREEN (May 19, 2011), http://www.huffingtonpost.com/the-center-for-public-integrity/autopsies-massey-miner-black-lung_b_864174.html. (reporting that seventeen miners had black lung at “a rate more than 20 times higher than the average for all underground coal miners.”).

239. GOVERNOR’S INDEPENDENT INVESTIGATION PANEL, supra note 186.

240. Id. at 32.


242. In their FY 2012 appropriations bill, members of the majority party of the House Appropriations subcommittee with jurisdiction over the Labor Department would prohibit MSHA from using any funds to develop, promulgate, enforce or otherwise implement a new rule to protect miners from exposure to respirable coal dust. (See page 36 in the bill.) http://appropriations.house.gov/UploadedFiles/FY_2012_Final_LHHSE.pdf (“SEC. 122. None of the funds made available by this Act may be used to continue the development of or to promulgate, administer, enforce, or otherwise implement the Lowering Miners’ Exposure to Coal Mine Dust, Including 22 Continuous Personal Dust Monitors regulation . . . being developed by the Mine Safety and Health Administration of the Department of Labor.”).
externalization of black lung costs. Since 1969, the federal government has administered a compensation program for victims of black lung paid in part by coal company fees. In addition to the price paid by miners themselves, their families, and their communities, the American people have had to bear some of the costs. As Professor Vladeck emphasizes, mine “owners have managed to cap and partially off-load their liability for black lung disease on both the companies that buy coal and the American people.” From 1969 through 2004, black lung benefits paid to almost one million miners have totaled more than $41 billion.

One commentator emphasizes the time lag in failing to act upon MSHA’s 1995 recommendations that the rising tide of black lung disability be addressed by aggressive action to protect miners’ health. Dr. Celeste Montforton reminds that:

> For 15 years, the scientific evidence has been telling us that US coal miners are exposed to levels of respirable dust that cause disease, but under the current federal mine safety regulations, these exposure levels are legal. That needs to change. Not only is it ethically the right thing to do, but it is also the law of the land: “... to the greatest extent possible, the working conditions in each underground coal mine are sufficiently free of respirable dust concentrations in the mine atmosphere to permit each miner the opportunity to work underground during the period of his entire adult working life without incurring any disability from pneumoconiosis or any other occupation-related disease during or at the end of such period.”

> “In other words,” she writes, “U.S. coal miners should be able to have a long career in an occupation they enjoy, and when they retire, their lungs

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244. Vladeck, supra note 214, at 40.


should be healthy—not scarred and inelastic because of imbedded coal and silica dust.”

The externalization of environmental harm, mine safety injuries and deaths, and the cumulative socio-economic damage attendant to coal mining and burning have long been obscured from public view. Misery and death of coal miners afflicted with black lung disease are other externalized costs that have similarly escaped public attention. In a just society, ten thousand deaths in a decade from a preventable occupational disease is abhorrent. A nation and its politicians properly exalt and honor the sacrifices of men and women in our armed forces; in contrast, they cast a blind eye upon the plight of coal miners who have subsidized the “cheap energy” provided by coal with their lungs and their lives.

IV. CLIMATE CHANGE AND COAL: AN HONEST DIALOGUE ABOUT COAL’S EXTERNALITIES AND ITS FUTURE

A. Call For a New Paradigm

For more than a century, electricity generated by coal combustion has fueled industrialization, improved living standards, and delivered historically unparalleled personal comfort and convenience to people of developed nations, and it promises the same for developing countries. Worldwide concern about climate change has awakened the public to one of the major externalities of coal—the fuel contributes 20% of global greenhouse gas emissions and 41% (11 billion metric tons) of global carbon dioxide emissions, the most common greenhouse gas.

As the overwhelming consensus of climate change scientists revealed the threat of serious implications of continuing to pump greenhouse gas into the earth’s atmosphere, some supporters of Big Coal challenged the science, ridiculing it as a huge hoax. In a 2008 speech to the mining industry, Massey Energy’s former Chairman and CEO Donald Blankenship, a throwback to nineteenth-century coal barons, dismissed concerns about climate change: “They can say what they want about climate...
change... But the only thing melting in this country that matters is our financial system and our economy.” 249 Blankenship warned that “[t]he greeniacs are taking over the world... and that... [i]f [U.S. House of Representatives Speaker] Pelosi thinks that decreasing CO₂ in this country is going to save the polar bears, she’s crazy.” 250 Blankenship concluded his talk with the confident observation that “if CO₂ emissions are going to kill the polar bears, it’s going to happen... [w]hat we do here [in the U.S.] is not going to do it.” 251

In a Labor Day speech to Massey workers, Blankenship said, “we also endure a Mine Safety and Health Administration that seeks power over coal miners versus improving their safety and their health... Washington and state politicians have no idea how to improve miner safety. The very idea that they care more about coal miner safety than we do is as silly as global warming.” 252

In yet another speech to coal industry officials a few months after the Upper Big Branch mine exploded, killing 29 Massey miners, Blankenship accused MSHA of lying and trying to cover up the agency’s culpability for the disaster. 253 Blankenship also generally denied coal’s other serious externalities. 254 He asserted that “coal is the most important thing to the

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249. Julia R. Goad, Coal CEO calls environmentalists crazy, WILLIAMSON (WV) DAILY NEWS, Nov. 22, 2008 [hereinafter Coal CEO], 10computer08, The Big Lies of Coal: Don Blankenship Speaks, YOUTUBE (Dec. 10, 2008), http://www.youtube.com/watch?v=0M_XbeXDNNM (in the same speech, Blankenship also accused a newspaper editor of being a communist, and asserted that former Vice President Al Gore, U.S. House of Representatives Speaker Nancy Pelosi and U.S. Senate President Harry Reid are “totally wrong” and “absolutely crazy.”).

250. Coal CEO, supra note 249.

251. Id.


253. Jessica Y. Lilly, Blankenship Accuses MSHA of Lying about UBB Investigation, W.VA. PUB. BROADCASTING (Sep. 22, 2010), http://www.wvpubcast.org/newsarticle.aspx?id=16746 (“As the keynote speaker at [the 2010] Bluefield Coal Symposium... Don Blankenship criticized [MSHA] and its investigation into the Upper Big Branch Disaster. Blankenship compared MSHA’s actions to Watergate... [w]hen... President Richard Nixon [tried] to hide recordings of conversations in his office.”). See also Howard Berkes, Mine CEO Points Fingers As He Details Explosion, NATL. PUB. RADIO (Nov. 20, 2010), http://www.npr.org/2010/11/20/131465631/massey-head-points-fingers-as-he-details-explosion (stating that “Blankenship blamed MSHA for the ventilation problems at Upper Big Branch before the fatal explosion in April... he said MSHA’s disaster investigators were essentially investigating themselves given the possibility that failed regulation may have contributed to the tragedy”).

254. A report of an investigation of the Massey UBB mine disaster commissioned by West Virginia’s Governor succinctly summarized the negative reputation Blankenship’s company had earned: Massey is... well known for causing incalculable damage to mountains, streams and air in the coalfields; creating health risks for coalfield residents by polluting...
environment”255 and scoffed at charges Massey mines did not put safety first.256 Blankenship served on the Board of Directors of both the National Mining Association (“NMA”) and the United States Chamber of Commerce. Few among his colleagues spoke publically in support of the Massey Chairman’s views,257 but neither NMA, the Chamber, nor any other

streams, injecting slurry into the ground and failing to control coal waste dams and dust emissions from processing plants; using vast amounts of money to influence the political system; and battling government regulation regarding safety in the coal mines and environmental safeguards for communities. J. Davitt McAteer, et al., Upper Big Branch, The April 5, 2010 Explosion: A Failure of Basic Coal Mine Safety Practices, REPORT TO THE GOVERNOR OF WEST VIRGINIA (May 2011), available at http://www.nttc.edu/ubb.

255. Id. (He stated, “I talk a lot about the total environment. Yes, we need to breathe clean air and have fresh water in the streams. We need to have trees and all that, but we need to be able to send out children to school. That’s a total environment. Most people wouldn’t believe that coal is the most important thing to the environment, but coal produces electricity . . . and that improves the quality of life.”).

256. An in-depth examination of Massey’s mine safety compliance record revealed that during the 10-year time period examined, Massey had been cited for 62,923 violations, including 25,612 considered “significant and substantial.” During that time, MSHA proposed $49.9 million in fines against Massey, $15 million more than any other company. Giovanni Russonello, Massey Had Worst Mine Fatality Record Even Before April Disaster, INVESTIGATIVE REPORTING WORKSHOP: AM. UNIV. SCHOOL OF COMM’C’N. (Nov. 23, 2010), http://investigativereportingworkshop.org/investigations/coal-truth/story/massey-had-worst-mine-fatality-record-even-april-d/. Admiral Bobby Inman assumed the position of Chairman of Massey Energy upon Blankenship’s retirement; Inman admitted that Blankenship’s claim that Massey always put miner’s safety first was not true:

I had been told by management for years that we had the best safety program in the coal business . . . .What [wasn’t] convey[ed] to the board was behavior. The company asked employees, "Do you know the safety rules? Yes. Do you always abide by them?" The answer is no. As we got more deeply into examining our safety performance, we concluded we were not the best.

Joann S. Lublin, Bobby Inman, A Year Later, Massey Chair Takes Stock, WALL ST. J., March 28, 2011 [hereafter Bobby Inman], http://online.wsj.com/article/SB10001424052748703410604576217063480492154.html. See generally, Jeff Goodell, The Dark Lord of Coal Country, ROLLING STONE (Dec. 9, 2010, 12:00 PM), http://www.rollingstone.com/politics/news/the-dark-lord-of-coal-country-20101129. The independent investigation panel examining the UBB mine explosion found Massey responsible for “total and catastrophic systemic failures” that “can only be explained in the context of a culture in which wrongdoing became acceptable, where deviation became the norm.” GOVERNOR’S INDEPENDENT INVESTIGATION PANEL, supra note 186, at 101–02. The GIIP asserted that “the same culture allowed Massey Energy to use its resources to create a false public image to mislead the public, community leaders and investors—the perception that the company exceeded industry safety standards.” The GIIP report concluded that Massey’s corporate deviance from decades of acknowledged safe mining practices could be understood “only in the context of a culture bent on production at the expense of safety.” GOVERNOR’S INDEPENDENT INVESTIGATION PANEL, supra note 186.

257. See, e.g., Goodell, supra note 256, at 1 (“A hundred executives from the coal industry . . . gathered for a two-day conference on mine safety—a topic that has taken on added urgency since April, when 29 men were killed in an explosion at the Upper Big Branch . . . the worst mining
industry leaders disavowed Blankenship’s provocative rhetoric. By the end of 2010, Blankenship’s strident anti-regulation voice was silenced when he was forced to retire as Massey CEO and Chairman as a consequence of the impact the Upper Big Branch disaster and an attendant steep decline in the value of Massey shares.258

Senator Robert C. Byrd—Big Coal’s most consistent champion in Congress for a half century—cautioned politicians and the industry’s leaders against Blankenship-type scurrilous attacks. Byrd also urged them to reject the premise underlying Blankenship’s brash attacks on environmental groups and government regulators. “When coal industry representatives stir up public anger toward federal regulatory agencies, it can damage the state’s ability to work with those agencies to West Virginia’s benefit,” Byrd said in a public statement titled Coal Must Embrace The Future.259 “This in turn,” Byrd emphasized, “may create the perception of ineffectiveness within the industry, which can drive potential investors away.”260 In a statement pointedly directed at Big Coal and its political supporters, Senator Byrd suggested a new paradigm:

To be part of any solution, one must first acknowledge a problem. To deny the mounting science of climate change is to stick our heads in the sand and say “deal me out.” West Virginia would be much smarter to stay at the table . . . The 20 coal-producing states together hold some powerful political cards. We can have a part in shaping energy policy, but we must be honest brokers if we have any prayer of influencing coal policy on looming issues important to the future of coal like hazardous air pollutants, climate change, and federal dollars for investments in clean coal technology.261

“The time has come,” Byrd wrote, “to have an open and honest dialogue about coal’s future.”262 Although Senator Byrd sounded a call for Big Coal to change its strategy in response to the new challenges of tragedy in 40 years . . . but nobody in the room seems to hold that against Blankenship . . . he is greeted by applause and whistles.”

258. See, Bobby Inman, supra note 256 (reviewing Blankenship’s ouster in favor of Inman).
260. Id.
261. Id.
262. Id.
developing a twenty-first century energy policy, it appears, with a few notable exceptions, few were listening.

**B. Embracing the Future with a “War on Coal” Strategy**

Senator Byrd’s invitation to Big Coal to engage in “an honest dialogue” about the “real problems” it faces and “embrace the future” drew an immediate Blankenship-like response from Bill Raney, the West Virginia Coal Association’s president. Raney “respectfully” disagreed with Byrd’s message, finding it to be filled with misconceptions that ignored “a concerted, deliberate effort by the EPA and some factions in Congress to end coal mining in Appalachia.”

There are, to be sure, mature and open-minded views of some Big Coal leaders who understand the value of honest and open dialogue regarding coal’s future. However, when viewed cumulatively, those progressive voices within the energy community have been drowned by the strident high-decibel assertions of an industry at war with its critics.

The term “war on coal” was coined by industry public relations specialists as a core principle of a multi-million dollar public relations campaign. This strategy seeks to counter demands of environmental and other groups for legislative action to tax carbon or create a cap and trade

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264. The shrill rhetoric attendant “war on coal” pronouncements is not a new Big Coal strategy. Pre-Obama attacks on Coal’s critics were marked with similar strident factual distortions. See, e.g., Steve Mufson, Coal Funded Ad is Called Misleading, WASH. POST (Nov. 7, 2007), at A9, available at http://www.washingtonpost.com/wp-dyn/content/article/2007/11/06/AR2007110602098.html?nav=emailpage%20Andrew%20C.%20Revkin%20Hugo%20Chavez%20Smiling%20Over%20Kansa%20Coal%20; Andrew C. Revkin, Is Hugo Chavez Smiling Over Kansas, or Coal? Dot Earth Blog (November 20, 2007), http://dotearth.blogs.nytimes.com/2007/11/20/is-hugo-chavez-smiling-over-kansas-or-coal/. Big Coal entities, including Peabody Energy and a Kansas utility, funded an advertising campaign attacking Kansas’ Governor for blocking air permits for two coal-fired electricity plants as a way to avoid increasing carbon dioxide emissions. Full-page newspaper ads included photos of Russian President Vladimir Putin, Venezuelan President Hugo Chavez and Iranian President Mahmoud Ahmadinejad—the ads asked: “Why are these men smiling?” The ads charged that the Governor’s action would force the state to import natural gas from places like Iran, Russia and Venezuela—though natural gas has never been imported from those countries. A Peabody Energy spokesman explained “[t]here is a need to reset the energy debate in Kansas toward responsible, adequate supplies of energy going forward.” Id.
system. The “war on coal” strategy frames its argument against limiting the externalized costs of coal mining and combustion by charging “elites” in government as “‘job killers’ who are out of touch with the struggle of the middle class to survive in a time of economic recession and high unemployment.”

One commentator who analyzed public relations campaign “framing” of issues found that “many environmental debates—clean coal, climate change, cap and trade, etc.—those against legislation or action to combat CO₂ emissions or change our energy sources in any way, use the threats to capitalism, the American way of life, and our economy to counter any positive/progressive action.” Another observer explains that, in the ongoing debate about climate change, opponents of regulation frame the issue as a:

[C]hoice between the earth and the economy, and making clear that the economy comes first. The notion that fixing

265. Tom Eblen, a columnist covering Kentucky coalfield issues for the Lexington Herald-Leader reacted to Big Coal’s War on Coal:

Did you hear we are at war? I don’t mean the never-ending wars in Iraq and Afghanistan . . . or even the nebulous wars against terrorism and drugs. I mean the “War on Coal.” All of Kentucky’s politicians are talking about it—at least all of those who want campaign contributions and support from the coal industry.

“They have declared war, war on Kentucky’s coal industry,” U.S. Sen. Mitch McConnell said of the U.S. Environmental Protection Agency in a speech to the Kentucky Coal Association . . . The U.S. Senate’s Republican leader claimed the EPA wants to see the “coal industry driven out of business altogether.”


268. Id.
the climate necessarily means destroying the economy was
to become the Big lie of the climate debate and the
signature achievement of the opponents of action…Climate
campaigners find themselves arguing in vain that the costs,
“wouldn’t be as bad” as the opponents claim. Not that bad
is not that good a strategy, and it [loses] every time.269

Identifying Big Coal’s strategy to maintain energy market share is not
to suggest that there has been no push-back from environmental and other
groups concerned about climate change. On the contrary, coal’s critics have
spent tens of millions of dollars during the 2008–2011 period attempting to
make the case for slashing the use of greenhouse gas-producing coal to
generate electricity.270 The largest and most effective counter-campaign
responding to Big Coal’s strategy is “Reality Coalition,” an alliance of

269. ERIC POOLEY, THE CLIMATE WAR: TRUE BELIEVERS, POWER BROKERS, AND THE FIGHT TO
SAVE THE EARTH 91 (Hyperion 2010). There is a distinctly partisan political edge to Big Coal’s
claims that the Obama Administration regulatory decisions signal an intent to destroy the coal industry. Prior to
the 2010 elections, one political commentator reported that:

Republicans believe there are three words so powerful that they might reshape the
political order in an economically beleaguered corner of the country: War on
coil. With Democrats holding total control of the federal government and a cap-
and-trade bill still looming, the GOP is fanning widespread coal country fears that
the national Democratic Party is hostile to the coal mining industry, if not outright
committed to its demise.

Jonathan Martin, GOP Mines Coal-Country Anxieties, POLITCO, (Feb. 15, 2010)
http://dyn.politico.com/printstory.cfm?uuid=D0FA7CF9-18FE-70B2-A8F0703457EB8629. See also
Julia A. Seymour, Obama Backs EPA War on Coal, While Networks Ignore Harm to Industry Major
utility announces proposal to retire power plants, layoff workers and spend billions to comply with
‘pending’ regulations BUSINESS AND MEDIA INSTITUTE, (June 15, 2011),
http://www.mrc.org/bmi/articles/2011/Obama_Backs_EPA_War_on_Coal_While_Networks_Ignore_Ha
rm_to_Industry.html.

270. See generally MATTHEW C. NISBET, CLIMATE SHIFT: CLEAR VISION FOR THE NEXT
DECADE OF PUBLIC DEBATE (Am. Univ. Sch. of Commen’s 2011) [hereafter Climate Shift], available at
Nisbet identifies the spending of interest groups on climate change and energy-specific activities:
Overall, in 2009, the most recent year for which data is available, the major
conservative think tanks, advocacy groups and industry associations . . . spent an
estimated $259 million specific to climate change and energy policy. In
comparison, national environmental groups . . . spent an estimated $394 million
on climate change and energy-specific activities. Yet despite these sizable
advantages in spending for environmental groups, only 19 percent of the spending
by environmental groups specific to climate change and energy policy was
unrestricted as part of a 501(c)(4) organization. In comparison, because of the
501(c)(6) tax status of the industry associations, approximately two-thirds of
spending by the coalition of advocacy groups opposed to climate action was free
to be applied in unlimited amounts to lobbying and direct grassroots mobilization.

Id. at iii.
environmental NGOs that promotes alternative forms of energy including wind, solar, and geothermal. The group engages in a campaign to explain the environmental impacts of coal while debunking the claim that clean coal technology is close to becoming a reality. Reality Coalition frames these issues using humor and sarcasm to discredit claims of “clean coal” technology.271

For Big Coal and its critics, framing the issues helps to simplify complex issues by lending greater weight to certain considerations and arguments over others and translating why an issue might be a problem, who or what might be responsible, and what should be done.272 There is, however, a distinct difference between the way environmental and other groups frame issues and the manner in which Big Coal frames its “War on Coal” strategy. At bottom, Big Coal frames its strategy to demonize both government regulators who seek to enforce statutory mandates to abate air and water pollution and others who argue for the internalization of costs long borne by coalfield communities, coal miners, and the environment.273

Whatever the merits of the strategies of those who would limit the use of coal in our energy future, Big Coal’s assertion that there is a War on Coal seems the antithesis of the “open and honest dialogue about coal’s future” urged by Senator Byrd.274 Byrd cautioned that “[w]e have our work cut out for us in finding a prudent and profitable middle ground—but we will not reach it by using fear mongering, grandstanding and outrage as a strategy.”

Notwithstanding the fact that there is scientific consensus among experts in the field, some Big Coal interests continue to deny that climate

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271. See CLIMATE REALITY PROJECT, http://climaterealityproject.org/ (last visited June 3, 2012). Reality Coalition members include Al Gore’s Alliance for Climate Protection, League of Conservation Voters, National Wildlife Federation, Natural Resources Defense Council, and the Sierra Club. Reality Coalition’s most widely discussed TV ad, “Clean Coal: This Is Real” shows a man walking into a “clean coal” power plant—only to find there is no power plant and he finds himself walking through an empty and quiet field. Reality Coalition uses this ad to show that there are no such thing as an operational clean coal facility.

272. See Climate Shift, supra note 270, at 4.

273. Id. Eblen asserts that what Big Coal refers to as a “war”—in reality is an effort to enforce existing law more aggressively than the G.W. Bush Administration (“EPA is enforcing the Clean Air Act by requiring industries to reduce carbon dioxide and other greenhouse-gas emissions that cause climate change. . . . The agency also is trying to curb destructive surface-mining practices and reduce water pollution.”)

274. Embrace the Future, supra note 259. It is beyond the scope of this essay to analyze and critique the methodology and tactics of those who argue for a major reduction of the use of coal or for a move to a future “carbon-free” energy future. Suffice it to say that “open and honest dialogue” regarding energy policy requires reciprocal candor and sincerity.

275. Id.
change is a result of human activity or that it is a credible threat.\textsuperscript{276} In addition, while there are those among Big Coal that supported carbon capture and storage and other so-called “clean coal” technologies as essential to coal’s future, most Big Coal interests opposed enactment of cap and trade legislation.\textsuperscript{277} Despite Big Coal opposition, the Waxman-Markey bill, containing a framework for a cap and trade system, passed the House loaded with $60 billion to jump start carbon capture and storage and other “clean coal” initiatives. This enormous subsidy assuring coal’s market share for decades was insufficient to garner Big Coal’s support. The bill ultimately died in the Senate.\textsuperscript{278}

Beyond opposing climate change legislation, Big Coal also has aggressively opposed legislative and regulatory proposals to reign in some of coal’s most harmful externalities including black lung, coal combustion waste disposal, mountaintop removal, water pollution, as well as carbon dioxide and other problematic emissions from coal-fired power plants. Set forth below is a sampling of industry leaders’ comments in response to efforts to enforce or strengthen laws to lessen the impact of coal’s externalities that incorporate the “War on Coal” strategy.

In testimony before a congressional committee, Mike Carey, President of the Ohio Coal Association, broadly attacked and derided efforts by EPA,
OSM, and MSHA to enforce the Clean Water, Clean Air, Surface Mining Control, and Reclamation and Resource Conservation and Recovery Acts:

The Obama Administration and its allies have declared war on coal across Appalachia. We are ground zero for the fundamental overreach of the Obama regulatory agenda. The Administration wants to shut down Eastern coal, forcing our power plants to be either redesigned or shut down, leading to a massive increase in utility prices across the Midwest and coal miners put out of work. We are talking about thousands of more workers across the manufacturing sector losing their jobs, too. This will cause massive relocation of our citizens to other states with those left behind becoming totally dependent on the federal government.

Under the general rubric of responding to the Obama Administration’s “War on Coal,” Carey attacked EPA for its regulatory initiatives under the Clean Air Act (“CAA”) to strengthen standards for particulate matter, CO2, ozone, and Maximum Achievable Control Technology (MACT) emissions standards. EPA’s intent in imposing those standards was to regulate greenhouse gases and other pollutants under the CAA and coal combustion wastes under RCRA. Carey also attacked the EPA and the Department of the Interior for its proposals to limit adverse impacts of mountaintop removal strip mining and MSHA’s proposals to reduce respirable dust in underground mines that causes black lung.

In April 2010, Greg Boyce Peabody Energy Chairman and CEO, testified before a subcommittee of the House of Representatives Select Committee on Energy Independence and Global Warming. Boyce
asserted that “to move carbon capture technology forward, the federal government should assume responsibility for carbon storage and fund emissions reductions research.”

Boyce blasted the House-passed energy and climate bill that would put a price on carbon emissions,” telling the committee that Congress should wait until carbon capture and storage technology is available before it regulates carbon. The Peabody Energy Chairman also told the committee that his company wanted EPA to revisit its determination that carbon emissions endanger human health. When asked, he declined to say that human actions are causing global warming.

With regard to coal combustion waste, the American Coal Council has argued that “the chemical make-up of coal ash is the same as what you would find in every day retail products and natural materials–like the soil in your back yard.” The Council rejects “claims that CCPs are ‘toxic’” because those claims “ignore basic scientific facts.” Kentucky Coal Association President, Bill Bissett, accused the EPA of “using public outrage over a recent and regrettable incident in Tennessee along with inaccurate science to further their political agenda and continue their war against coal.” Bisset asserted: “Time and time again, the EPA has deemed coal ash to be non-hazardous waste[;] . . . EPA’s proposed rule is a continued pursuit of radical environmental policies by individuals who attack coal but do not offer any realistic alternatives.”

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282 Id.

283 Id.

284 Reis, supra note 281.

285 American Coal Council, Coal Ash–Coal Combustion Products, available at http://americancoalcouncil.org/displaycommon.cfm?an=1&subarticlenbr=129. The American Coal Council’s board of directors includes executives of many major coal producers and power companies including The Southern Company, Arch Coal, Peabody Energy, American Electric Power, and Progress Energy. It is reasonable to ask how one can engage in an honest dialogue about the potential hazards of CCW while asserting that federal regulators and concerned citizens ignore basic scientific facts and the waste containing arsenic and other toxic components is like “soil in backyards.” Whether or not Big Coal’s position on CCW is ultimately borne out by objective science, its flat denial of any serious concern is evidence of the same tin-ear insensitivity to concerns of affected families and communities that has plagued Big Coal’s reputation for more than a century.


288 Id. In contrast to Big Coal’s assertions, EPA has documented cases of damage relating to CCW disposal; CCW is referred to by EPA as “coal residual waste” but the meaning is the same. See, Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal
As discussed above, MSHA proposed a rule in 2010 to limit underground miners’ exposure to coal dust in an effort to reduce the rising incidence of black lung that resulted in the deaths of 10,000 coal miners over a decade. The proposal would cut the existing ambient respirable dust standard in half, require use of personal dust monitors providing instantaneous data, impose more strict dust sampling requirements, and increase medical monitoring of miners.

The coal industry quickly rejected MSHA’s black lung initiative. George Ellis, president of the Pennsylvania Coal Association, said the current black lung dust standard was “more than adequate.” When asked why miners continue to be diagnosed with black lung he said: “There could be other issues besides [coal dust exposure]. It could be age or...
predisposition; maybe they’re a smoker.” Appearing at a hearing on the MSHA proposed black lung regulations, Chris Hamilton, senior vice president of the West Virginia Coal Association, said the companies he represents “strongly object to the proposal in its current form.” He added that the proposal was “fraught with technical and operational impracticalities, misapplication of dust control technologies,” and “relies on an inappropriate, convoluted or uneven enforcement scheme.”

Consistent with the “War on Coal” strategy of the many Big Coal interests, Hamilton asserted that the coal industry is “clearly under attack by the Obama administration.”

From the above examples, several themes of Big Coal’s war strategy may be discerned: (1) obfuscation and denial of coal’s serious negative impacts, (2) orchestrated attacks on those who argue for internalization of costs of mining and burning coal, and (3) use of threats of economic doom for coalfield families and communities if the “War on Coal” is lost to “extremist” government regulators and environmentalists.

There are, however, some Big Coal leaders who recognize the value of a new paradigm and are open to honest and open dialogue about coal’s future. They agree that protecting the environment, communities, and miner health and safety constitutes good public policy. For example, CONSOL Energy President and CEO, Brett Harvey, has staked out a refreshingly enlightened position on coal mine safety, arguing to other industry leaders that zero injuries in U.S. coal mines is a realistic goal. In a speech to the Utah Mining Association in August 2007, Brett Harvey stated:

> We need to change the paradigm and we need to change it now . . . . What industry must change is our incremental

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295. Id. Hamilton told those attending the MSHA hearing on the proposed regulations that the industry is committed to reducing incidence of black lung by creating “lowest possible” concentrations of coal dust in the mines, but MSHA’s cost estimates were greatly “off the mark . . . and woefully understated,” Hamilton placed the expense of increased dust monitoring at more than $75 million annually for underground operators as opposed to MSHA’s calculated cost of under $40 million. He warned that the total cost of compliance would exceed $1 billion. Id.

approach to safety improvement because it creates an unintended level of tolerance to accidents . . . We will start with the premise that our normal state of operation is no accidents. An accident is an abnormality that is unacceptable. Accidents are an exception to our core values. Our approach means safety trumps everything else we do. It trumps production, it trumps profits, it trumps all other rules, policies or procedures . . . I firmly believe it is possible for CONSOL to achieve “zero-accidents” performance at every CONSOL facility and we intend to achieve those results within the next five years.297

Preston Chiaro, Group Executive of Rio Tinto, the largest diversified mining company in the United States, also testified at the April 2010 House Select Committee hearing. The Rio Tinto executive demonstrated a willingness to engage in honest dialogue and, in so doing, showed that Big Coal is not monolithic. Chiaro told the Select Committee that “[o]ur own experience as a company has been that constructive participation in the policy process can yield positive outcomes on the issues which are most important to us.”298 He told those present that “Rio Tinto ha[de] recognized that human carbon emissions [had been] causing global warming since the mid-1990s.”299

In May 2011, EPA proposed Maximum Achievable Control Technology (“MACT”) rules pursuant to the Clean Air Act’s section 112(d) national emission standards for hazardous air pollutants (“NESHAP”) mandate. The proposed rule would require reduction of emissions by coal and oil-fired power plants of mercury, other metallic toxins, acid gases, and organic air toxics.300

299. Id.
300. 77 Fed. Reg. 9304 (Feb 16, 2012). (Final EPA Mercury and Air Toxics Standard). See, National Emission Standards for Hazardous Air Pollutants From Coal and Oil-Fired Electric Utility Steam Generating Units, 76 Fed. Reg 24,976, 25,147 (proposed May 3, 2011) (to be codified as 40 C.F.R. pts. 60 & 63). Emissions from oil and coal-fired power plant include mercury and arsenic, acid gases, and particles, that can have adverse impacts on human health including neurological damage, cancer, lung damage, heart and respiratory disease. The benefits of garnered by the emissions reductions reducing mandated by the MACT rule amount to fifty nine to one hundred and sixty billion dollars per year according to EPA projections. The agency calculates that five to thirteen dollars of benefits will be derived for every dollar spent on pollution controls. BIPARTISAN POLICY CENTER, ASSESSMENT OF EPA’S UTILITY MACT PROPOSAL [hereafter MACT Assessment], available at
While most Big Coal entities opposed the rule, Exelon Corporation and The Clean Energy Group, which includes PG&E and other major utility companies, supported it. In comments on the proposal, Exelon Corporation urged the agency “to implement the rule largely as proposed and to do so as quickly as possible.” The MACT proposal would require reduction of emissions by coal and oil-fired power plants of mercury, other metallic toxics, acid gases, and organic air toxics. Promising to “continue to work with U.S. EPA to support regulations to further improve regional air quality and modernize the nation’s power generation infrastructure,” Exelon comments stated that the “lack of a national standard for toxic emissions continues to be a barrier to investment in new, cleaner generation capacity.”

Explaining the Clean Energy Group’s support for the rulemaking, a consultant maintained that:

Complying with the two proposed rules will require significant planning, effort, and investments by the electric sector. However, given that the electric industry has made significant investments to reduce emissions in the past decade and that proven and commercially available control technologies exist, even companies with large coal fleets should be able to comply with the proposed rules in a timely and cost-effective manner. Evidence supports that the electric industry can maintain reliability while complying with EPA’s air rules.


301. THE CLEAN ENERGY GROUP MEMBER COMPANIES, http://www.thecleanenergygroup.com/cegcompanies.asp (last visited June 3, 2012) (providing a complete list of The Clean Energy Group’s member’s). The group describes itself as including “major electric generating and electric distribution companies with operations throughout the United States.” Id.


304. Comments Of Exelon Corporation, supra note 302.

There are major coal companies engaged in underground and surface mining that indicate a commitment to environmental compliance and stewardship. Among them is Alpha Natural Resources, which acquired corporate scofflaw Massey Energy in June 2011. With that acquisition, Alpha became the second biggest U.S. coal company by market capitalization and the leading producer of metallurgical coal. Alpha controls the second largest coal reserves (5.1 billion tons). The management of Alpha Natural Resources promises leadership on environmental, mine safety, and other issues. Representative of this corporate policy is a statement prominently placed on its website:

Our commitment to environmental stewardship . . . extends across all facets of our mining operations. . . . Our highly trained team of environmental professionals perpetually measures the company’s environmental compliance. We take pride in environmental awareness and repeatedly operate at a higher level of compliance than other mining companies in the Appalachian region. Alpha also has a zero tolerance for blackwater discharges and has established a release prevention program that exceeds regulatory requirements. All of our coal preparation plants and slurry handling and disposal facilities are required to utilize Best Management Practices that help us to prevent accidental discharges of coal slurry that could adversely impact the environment.

Alpha Natural Resources, however, is a member of both the U.S. Chamber of Commerce and the National Mining Association, organizations closely tied to Big Coal’s War strategy. In replacing Massey Energy’s blighted management, Alpha has a unique opportunity to heed Senator Byrd’s advice to move beyond the War on Coal rhetoric by choosing to be “an honest broker” by attempting to “influence coal policy on . . . issues important to the future of coal like hazardous air pollutants, climate change, and federal dollars for investments in clean coal technology.”

There is no doubt that there are enlightened leaders in the coal and power industries who recognize that there are alternatives to a war on coal.

308. Embrace the Future, supra note 259.
strategy of denial, obfuscation, and attack. Whether those leaders will emerge and push Big Coal in the direction of honest dialogue remains to be seen. No doubt the War on Coal strategy may, in the short term, prove successful in repelling legislative and regulatory initiatives intended to reduce Coal’s many externalities. The entities comprising Big Coal will ignore the advice of Senator Byrd at their own peril. Indeed they need to look no further than the direction of the energy markets for a hint of what the future holds for an industry unwilling to engage in a truly honest and open dialogue about its future.

C. The Energy Markets

While many Big Coal leaders and lobbyists rail against the so-called “War on Coal” allegedly being waged by EPA, MSHA, and environmental groups, the markets appear to be sorting out fact from fiction. The federal Energy Information Agency “reference case” outlook for 2011 through 2035 projects a relatively flat market for coal and a minimal drop in the mineral’s market share:

Despite rapid growth in generation from natural gas and nonhydropower [sic] renewable energy sources, coal continues to account for the largest share of electricity generation. Assuming no additional constraints on CO₂ emissions, coal remains the largest source of electricity generation in the [American Energy Outlook 2011] Reference case because of continued reliance on existing coal-fired plants. EIA projects few new central-station coal-fired power plants, however, beyond those already under construction or supported by clean coal incentives. Generation from coal increases by 25 percent from 2009 to 2035, largely as a result of increased use of existing capacity; however, its share of the total generation mix falls from 45 percent to 43 percent as a result of more rapid increases in generation from natural gas and renewables over the same period. 309

309.  Outlook 2011, supra note 99, at 3. The EIA reference case outlook also projected growth in the natural gas sector. Id. (“The role of natural gas grows due to low natural gas prices and relatively low capital construction costs that make it more attractive than coal. The share of generation from natural gas increases from 23 percent in 2009 to 25 percent in 2035”). Some commentators downplay the reliability of EIA energy forecasts. EIA’s “reference case” projections, it is said, assume normal inventories, weather, as well as laws and regulations that won’t change during the period of forecast.
Looking forward at the economics of energy over the next few decades, other commentators find coal’s future clouded in differing degrees. For example, one power industry analyst opined that:

[Coal] looks solid for the next couple of years. But there is an eerie resemblance between the current coal project pipeline and what we saw in the late 1970s and 1980s with nuclear plants: It’s a pipeline in the process of emptying. The EIA’s Annual Energy Outlook also points to this phenomenon, showing a gradual but significant market share decline for coal-fired electricity by the middle of this decade, rebounding a bit by 2035. The EIA says, “With slow growth in electricity demand, little new coal-fired capacity is added, and the coal share falls from 48 percent in 2008 to 44 percent in 2035.”

More serious concerns have been expressed at the beginning of the second decade of the twenty-first century:

The headline news for the coal industry in 2010 was what didn’t happen: Construction did not begin on a single new coal-fired power plant in the United States for the second straight year. This in a nation where a fleet of coal-fired plants generates nearly half the electricity used. But a combination of low natural gas prices, shale gas discoveries, the economic slowdown and litigation by environmental groups has stopped - at least for now - groundbreaking on new ones.

The global head of asset management at Deutsche Bank was more blunt in his assessment of coal’s future. The Bank’s Kevin Barker asserted “Coal is a dead man walkin’ ... banks won’t finance them. Insurance companies...

Reference case forecasts, they argue, do not necessarily reflect EIA’s view of the “most likely” market outcome. “In fact, the EIA does not assign probabilities to any of the forecasts it generates, so the “high economic growth case” forecast might be considered just as likely as the “reference case” or even ”low economic growth case” forecast, for example.” MARK BOLINGER & RYAN WISER, LAWRENCE BERKELEY NATIONAL LABORATORY, THE VALUE OF RENEWABLE ENERGY AS A HEDGE AGAINST FUEL PRICE RISK: ANALYTIC CONTRIBUTIONS FROM ECONOMIC AND FINANCE THEORY, at 8-9, available at http://escholarship.org/uc/item/65g8f2t4.


won't insure them. The EPA is coming after them... And the economics to make it clean don't work.”

In an October 2011 white paper, Bank analysts projected a very different scenario than did the Energy Information Agency. Deutsche Bank forecast that coal’s U.S. market share of energy for production of electricity would drop from 45% in 2010 to 20% in 2030, while natural gas would capture 38% of the market by 2030, rising from a 24% share in 2010.

On the positive side for the coal industry, the rapidly expanding demand for electricity in industrializing countries like China and India is viewed by Big Coal as creating significant new markets for North American steam and metallurgical coal. However, the optimism over these new markets is tempered by analysts who see the U.S. coal industry’s efforts to develop Asian markets as an indication that the domestic coal market is troubled. A University of Wyoming coal expert explained:

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313. The Bank’s analysis also projected that nuclear’s market share would drop from 19% to 17% by 2030, while intermittent (wind and solar) and baseload renewables (geothermal and hydro) would increase their market share from eleven percent in 2010 to 24% in 2030. The Bank’s analysts acknowledged that “our low carbon fuel forecast is clearly not a consensus view when contrasted to the EIA’s base case generation mix forecast for 2020 and 2030... EIA expects coal to maintain share through 2030 at about 43%, whereas we are much more optimistic about growth in natural gas generation in particular but also growth in renewables.” Id. See also, Henry D. Jacoby, et al., The Influence of Shale Gas on U.S. Energy and Environmental Policy, 1 ECONOMICS OF ENERGY & ENVIRONMENTAL POLICY, at 1 (2012), (“shale gas is shown both to benefit the national economy and to ease the task of emissions control. However, in treating the shale as a “bridge” to a low carbon future there are risks to the development of technologies, like capture and storage, needed to complete the task.”) available at http://globalchange.mit.edu/files/document/MITJPSPGC_Reprint_12-1.pdf

314. Dustin Bleirzeffer, Coal Seeks Exports to Asia While U.S. Market Falters, WYOF ile (Oct. 18, 2011), http://wyofile.com/2011/01/coal-policy (“In a prepared statement in October, Peabody chairman and CEO Gregory H. Boyce said, ‘Peabody believes that the global coal industry is in the early stages of a long term supercycle, led by China and India.’”)

315. Id.
There's very little progress in the build-out of the coal-gasification and carbon sequestration technologies that are seen as essential to preserving Wyoming's coal industry in a future energy regime that forces nations to curb greenhouse gas emissions and become more energy independent. While it focuses on serving the burgeoning Asian market, the coal industry remains dead-set against implementing a cap-and-trade policy or any other market-driven carbon emission reduction policy in the U.S. 'It's evidence there's lack of confidence that the coal market for power generation in the U.S. will be vibrant for the future."

It is clear that the future of coal is in the process of being decided by market forces. It is axiomatic that the energy market is motivated by the profit/cost differentials. Coal's many externalities are, for the first time, being intensely examined as it seeks to compete with other fuels and sources for market share. Big Coal has reached the most significant crossroads in its history as a major fuel source. The positions and policies it advocates will be judged by economists and policy makers. Big Coal eschews objective discourse of its externalities at its peril.

CONCLUSION

As historian Barbara Freese asserted, coal may be seen by some as a gift from God that provides undeniable good and by others as an evil with extraordinary costs. She warns against "failing to recognize both sides of coal." The above discussion examines the history of coal in the United States focusing on recognition of its' many negative externalities that have largely been long obscured or ignored by a country hungry for cheap electricity.

Notwithstanding that history, the “War on Coal” campaign of the fuel’s supporters embraces only coal’s positive side while essentially ignoring the enormous costs that accompany coal mining and combustion. Big Coal leaders have adopted a strategy of continuing to obfuscate the fact of the industries’ externalities while stridently attacking critics. In advancing its War on Coal meme, Big Coal has chosen to ignore Senator Byrd’s warning that “using fear mongering, grandstanding and outrage as a strategy . . . can

316. Id. (quoting, Mark Northam, director of the University of Wyoming’s School of Energy Resources).
drive potential investors away. In the Twenty-First Century, it is unlikely that such a strategy will be successful in securing Coal’s future in America’s energy mix. There are simply too many competitors, too many critics, too many victims, and too many peer-reviewed studies and internet-accessible facts documenting Coal’s externalities.

Externalities and all, there is no doubt coal will be mined and burned both at home and abroad for decades to come. Metallurgical-grade Appalachian coal will be needed to make steel, and steam coal from Eastern and Western coalfields will continue to be used to generate electricity well into the future. The extent of coal’s contribution to that mix has yet to be determined. For the industries involved, the proportion of Big Coal’s market share is what is really at stake. Some coal companies have hedged their bets, moving aggressively into shale gas and renewables. Some power companies have begun to move aggressively into renewables and energy conservation.

Arguments for the continued use of coal have appeal. There may be national security benefits of having coal provide a substantial part of a nation’s energy needs. Coal has the potential to reduce national reliance on oil whose market price-per-barrel spiked to stratospheric levels in 2008 and

317. Embrace the Future, supra note 259.
318. See, Sonja Elmquist, Appalachian Coal Fights for Survival on Shale Boom: Commodities, (BLOOMBERG NEWS, Mar. 21, 2012) (“coal mining in Appalachia . . . the latest threat is booming shale-gas production. U.S. power utilities are favoring natural gas, which is trading at its cheapest in a decade . . . [c]onsumption of coal to generate electricity will fall 5 percent in 2012 to less than 900 million tons, a 16-year low, according to the U.S. Energy Information Administration.”) available at http://www.bloomberg.com/news/2012-03-21/appalachian-coal-fights-for-survival-on-shale-boom-commodities.html
319. For example, leading coal producer Consol Energy has moved to greatly expand its natural gas reserves and production capacity, positioning itself as an energy industry leader among diversified energy companies with a balanced portfolio of both coal and natural gas. See Consol Energy, News Release, (Mar. 13, 2010), http://phx.corporate-ir.net/phoenix.zhtml?c=66439&p=irol-newsArticle&ID=1402230&highlight= (“In addition to bolstering our gas platform, this transaction will also result in a more balanced energy portfolio, improving the Company’s risk profile and positioning it to deliver sustainable long-term growth and increased value to shareholders . . . [a]s we expand our natural gas production, we remain fully committed to utilizing state-of-the-art exploration and production techniques, which enable us to operate efficiently, safely and compatibly with the environment.”).
again in the spring of 2012. The United States coal reserves are among the largest in the world and Coal’s proponents assert that security of supply and economics provide significant incentives for continuing use of the fuel. Under various scenarios, it may be argued that coal is cheaper and more readily available than other sources—at least if all of coal’s previously obscure externalities are not included in the calculation. While there are certainly arguments in support of coal in the new energy future, they cannot be made in a vacuum without reference to externalities.

The nexus of the threat of catastrophic climate change and competition from shale gas, renewable energy technologies, and demands for greater energy efficiency call into question coal’s role in America’s energy future. In less than five years, plans for construction of scores of new coal-fired power plants have been put on hold or abandoned, and the percentage of electric power fueled by coal has dropped from fifty percent to less than forty percent.

Coal’s longtime champion Senator Robert C. Byrd saw the handwriting on the wall, so to speak, when he warned: “[c]hange has been a constant throughout the history of our coal industry[,] . . . [w]e can choose to anticipate change and adapt to it, or resist and be overrun by it. One thing is clear. The time has arrived . . . to think long and hard about which course . . . to choose.”

If coal is to play an important role in the energy future, pragmatism and demands of rational decision-making should lead to an inclusion of a full calculation of all of Coal’s costs, not just its benefits. Efforts to conceal the huge demonstrable price extracted from miners and their families, coalfield communities, taxpayers and the environment are no longer a viable option.

321. Embrace the Future, supra note 259.
LOW-CARBON AND MORE: CHALLENGES AND SOLUTIONS OF CHINA’S COAL INDUSTRY LEGISLATION

Wenxuan YU∗

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INTRODUCTION

Although coal has long played a dominant role in China’s energy structure, it has gradually changed since entering into the 21st century. Despite new and renewable energy playing a more prominent role, coal remains paramount in China’s energy structure. Against this backdrop, the coal industry must, based on science-based legislation and regulation, break the shackles of the traditional energy model to better respond to climate change and promote the construction of a low-carbon society.

I. THE STATUS QUO OF CHINA’S COAL INDUSTRY

A. China’s Achievements in the Development of the Coal Industry

1. Abundant Possession of Coal Reserves

China possesses abundant reserves of coal. Their production ranks first in the world. By the end of 2009, China coal reserves totaled 114,500
million tons—ranking third in the world and accounting for 13.9% of the total amount of world-wide proven coal reserves.\(^1\) In 2010, China produced 324 million tons of coal,\(^2\) accounting for 48.3% of global output. This increased output by nine percent compared to 2009.\(^3\) Abundant coal reserves play an important role in China’s economy, ensuring energy security and providing an important, inexpensive source of fuel.

2. Steady Growth of Consumption and Promising Prospects

From 2006 to 2009, China witnessed a steady growth of energy consumption. Specifically, from 2006 to 2007, the annual growth rate amounted to 8.4%. Over the next two years, the growth rate increased by 3.9% and 5.2% respectively. As to the specific portion of total energy consumption, the percentage of raw coal remained around 70%.\(^4\)

The average daily amount of coal consumption has also increased alarmingly. In 2000, the average daily coal consumption was 3.855 million tons. In 2006, it soared to 6.352 million tons and 7.68 million tons in 2009.\(^5\)

3. Increased Strategic Position and Strengthened Policy Control

Coal has played a strategic role in the development of the national economy. The coal-dominated energy structure will remain in place for a long time as a result of China’s policy choices. China has paid serious attention to the development of the coal industry. China issued a series of industrial control policies including: “State Council’s Several Opinions on Promoting Healthy Development of Coal Industry,” “Opinions on Issues Related to Strengthening Management of Coal Industry,” and “Coal Industry Policy.”\(^6\) These policies provide support to ensure sustainable and

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3. BP STATISTICAL REVIEW OF THE WORLD, supra note 1, at 32.
4. Id.
healthy development of the coal industry.\textsuperscript{7} With regards to administrative agency reform, the newly established National Energy Bureau and National Energy Coordination Committee have actively tried to change China’s energy management, which suffers from overlapping and decentralized management and poor coordination. Their efforts have positively strengthened the management of the coal industry.

4. Construction of Large-Scale Coal Bases Achieved Substantive Results

During the period of the “Eleventh-Five,” the National Development and Reform Commission approved a plan to construct 13 large-scale coal bases covering Shen Dong, Shanxi North, Huang Long, Jin Zhong, Jin North, Lu Xi, Liang Hua, Jin Zhong, He Nan, Yun Gui, Meng Dong, and Ning Dong.\textsuperscript{8} In the subsequent “Twelfth-Five” period, China will construct 14 large-scale coal bases, attempting to account for 90% of total production.\textsuperscript{9} These multi-function bases have covered coal transportation, power supply, coal chemical industry, and comprehensive utilization of resources.\textsuperscript{10} They contribute to protecting the security of national energy, optimizing coal industrial structure, and promoting economic and healthy social development.\textsuperscript{11}

5. Strengthened Scientific and Technical Support

China constructed a three-pronged technical innovation system. It centered on coal enterprises, relied on preferential policies of government finance and tax, actively implemented international cooperation with advanced countries, and tackled a large number of technical problems in this industry. In 2009, China successfully brought indirect coal liquefaction technology from the laboratory to pilot production and further expanded to

\textsuperscript{7} Id.
\textsuperscript{9} Id.
\textsuperscript{11} Id.
industrial demonstration production. On January 7, 2007, the commissioning of the Shenhua direct coal liquefaction demonstration project was successful. This operation made China the only country in the world that owns the key techniques of direct liquefaction of megaton coal. In 2004, China Huaneng Group first proposed the GreenGen Project to develop, demonstrate, and promote methods for clean coal power generation. These techniques greatly improve efficiency—achieving near-zero emissions of pollutants and carbon dioxide. Ultimately, this project will ensure the sustainable development of coal-generated power in the long run.

B. Challenges Faced by China’s Coal Industry

Though China’s coal industry has already made significant achievements, a series of problems still plague the country. These include: extensive growth models, relatively low levels of technology, frequently occurring accidents, the waste of resources, out-of-date environmental governance, and historical issues from prior regimes. The following paragraphs outline these issues.

1. Human Health

Security of the coal industry closely relates to human health because of mine production and miner’s safety. With the improvement of hardware facilities and strengthened supervision, the number of coal mine accidents has declined. But, generally speaking, the total amount of coal mine accidents in China remains high and lags far behind levels in the developed world. Mortality rates for coal mine workers in “one-million ton coal mines” is 35 times higher than America’s, 15 times South Africa’s, eight times...
times Poland’s, six times Russia and India’s, and is much higher than the world average. 15

2. Resources Utilization

Today, China’s coal industry is in the process of extensive development. This development focuses on high input, high consumption, low efficiency, and low input. As a result, China suffers from low recovery rates of coal resources, serious waste of coal and associated mineral resources, potential risks of energy safety (especially safety of energy supply), and gloomy prospects of sustainable development. The average recovery rate of Chinese coal enterprises remains at about 40% and around 15% for small-size coal mines.16 Compared to the 60% recovery rate of most coal-producing countries, China experiences serious waste of coal resources. In 2005, China consumed 2.1 billion tons of coal. Compared to the international average coal recovery rate, the amount of wasted coal is almost enough to sustain China’s consumption for another decade.17

3. Environmental Protection

Mining activities damage and deteriorate the environment around the mine. Open-pit mining damages the earth’s surface and vegetation, changes the forms of landscape, and worsens the process of weathering. 18 Coal mining generates a huge amount of solid waste. Long-term weathering and leaching often contaminates farmland and water sources close to the mining area. As a result, the open-pit mining creates geological disasters including: land subsidence, ground fissures, landslides, collapse, and debris flow. Furthermore, open-pit mining causes water to inundate large areas of land in China’s eastern plain mining area and may cause soil salinization. Coal mining in western mining areas has gained more attention as the seriousness of land erosion and desertification has increased.19

Wastewater, gases, and residues have sometimes been improperly handled by coal-mining operations. For example, in Shanxi Province, the annual amount of wastewater discharged from coal mining is about 400 million tons; the average amount of wastewater discharged per ton of coal is 1.62 cubic meters; the amount of wastewater discharged from coal washing is about 5 million cubic meters; and about 50,000 tons of coal slime is discharged every year. Mining operations release a significant quantity of untreated wastewater into rivers—83% of the 24 major rivers in the province have been seriously polluted. The air pollution load per square kilometer is 1.6 times the national average, and in some areas as high as six to 10 times the national average.

The ecological restoration of mining areas has not been effectively implemented. For instance, China has not yet established a unified system of ecological compensation and restoration of mining areas. This has caused serious negative impacts on the natural environment.

4. Satisfying Requirements of Low-Coal Economy

Increased concentrations of greenhouse gases cause climate change. CO₂ emissions from coal-burning power plants contribute to this problem. Thus, the unrestrained use of fossil fuels directly leads to increased CO₂ emissions. The reasonable and effective utilization of coal resources plays an important role in reducing CO₂ emissions and addressing climate change. China has long instituted a single energy structure that depends on coal. China’s coal industry is confronted with the challenge of how to break the shackles of the traditional development model and live up to the requirements of a low-carbon economy.

II. THE LEGAL FRAMEWORK OF CHINA’S COAL INDUSTRY

The legal hierarchy of the legislative system for China’s coal industry includes laws, administrative regulations, departmental rules, local regulations, and other standards. The following section outlines the legal framework for the coal industry in China.


21. Id.

A. Special Laws and Other Related Laws

After several decades of efforts, China has instituted a legal system to ensure the healthy development of its coal industry that promotes the reasonable exploitation and protection of coal resources. In 1996, China promulgated the first special law to regulate the coal industry. This Law’s legal objectives included: rationally developing, utilizing, and protecting the coal resources; standardizing the production and marketing of coal; and promoting and ensuring the development of the coal industry. The Coal Law regulates production, exploitation, and management of coal resources. In August 2009, China revised the Coal Law for the first time. In April 2011, China amended the law again to more adequately address issues such as coal production, exploitation, planning and construction of coal mines, safety of coal production and coal mines, management of coal, protection of coal mine areas, supervision and inspection, liabilities, etc.

In addition to the Coal Law, relevant provisions of other laws help to develop the legal system for coal regulation. For instance, the General Rules of the Civil Law and Property Law contain provisions related to ownership. The Invitation and Submission of Bids Law and Auction Law have articles related to mineral rights. The Law on Prevention and Control of Occupational Disease, Labor Law, Production Safety Law, and Law on Safety in Mines protect human life, safety, and health. The Environmental Protection Law, Law on Environmental Impact Assessment, Clean Production Law, and Prevention and Control of Environmental Pollution by Solid Wastes include several provisions related to environmental protection. Also, the Criminal Law regulates illegal mining and destruction of coal resources.


Administrative Procedural Law, Criminal Procedural Law, etc., provide significant legal grounds for dispute settlement. All of the above-mentioned laws and the Coal Law itself have constituted important parts of China’s coal legal system.

B. Administrative Regulations and Rules

Administrative regulations and rules also play an important role in the Chinese coal legal system. They chiefly include: (1) Management of coal ten years.” Further, 343 of the same law states that “Whoever, in violation of the provisions of the Mineral Resources Law, mines without a mining license, enters without authorization and mines in mining areas that the state has planned to develop, in mining areas with ores of significant value to the national economy, or in other’s mining areas, or exploits special kinds of minerals that the state has prescribed for protective exploitation, and refuses to stop mining after he is ordered to do so shall, if the offence causes damage to mineral resources, be sentenced to fixed-term imprisonment of not more than three years, criminal detention or public surveillance, and concurrently or independently be sentenced to a fine. If the offence causes serious damage to mineral resources, the offender shall be sentenced to fixed-term imprisonment of not less than three years and not more than seven years and concurrently be sentenced to a fine.” Id. at Art. 343.

C. Local Regulations and Rules

Local coal industry regulations and rules play an important role in practice. Some of them have effectively supplemented and improved above-mentioned laws, and others have further detailed national laws. For instance, Coal Management Regulation of Shanxi Province (CMR) has a


series of more feasible provisions to better regulate the actual situation of the province. Specifically, CMR further details the Coal Law’s certificate and licensing system of coal production and management. Additionally, CMR has more detailed provisions for mine managers and other special operations personnel to obtain certificates.29 Also, CMR provides procedural stipulations to the Coal Law, such as increasing the number of application materials to be submitted by a coal enterprise when opening mines and approval times for the administrative departments.30 Furthermore, CMR provides rights for coal workers, entitling them to boycott illegal commands of company management that force them to take risks harmful to human health and safety and the safety of the mine. This brand new system, created by local laws and regulations, undoubtedly plays an important role in protecting coal workers’ lives, health, and safety.31 In conclusion, local laws effectively supplement national legislation and better regulate the coal industry.

D. Technology Standards

China has two different types of coal technology standards: national and industrial. From a content perspective, some of these national and industrial standards can be divided into the following categories: basic standards for construction and production, construction standards, determination standards, technical standards of production and operation, standards for electricians, coal quality standards, ventilation/dustproof and drainage systems standards, standards for anti-explosion and blast equipment, labor protection standards, mine supporting standards, safety standards, transportation improvement standards, coal dressing standards, technical standards for driving machinery, and related technical standards for analysis and detection of characteristics of coal blending.32 These technology standards comprise the integral parts of China’s legal system and coal industry management.
III. CHALLENGES OF CHINA’S LEGISLATION ON COAL INDUSTRY

China’s coal industry legislation mostly reflects flaws in the management system, admittance standard of resource exploitation, resource reserves, the design of tax and fee systems, mine safety, environmental protection, and other aspects. Due to these problems, a gap developed between current legislation and the requirements of the low-carbon economy.

A. Supervision and Management

After the dissolution of the Ministry of Coal in 1998, the government formulated China’s current coal management system. In its place, the State Council Energy Leading Team (Team) is the highest authority for the management of the coal industry. The Team exists under the National Development and Reform Commission and is headed by a prime minister with two deputy prime ministers. Also, the head of the National Development and Reform Commission serves as the director of the Office of Energy Leading Group. Under the National Energy Administration, the government established the Coal Management Department as the administrative body. The Ministry of Land Resource governs coal resource management; State Administration of Production Safety Supervision and Management and National Coal Mine Safety Supervision Bureau oversee safe production; State-Owned Assets Supervision and Administration Commission presides over state-owned assets; Ministry of Commerce, Ministry of Railways, and the Ministry of Transport govern coal transportation and sales management; Ministry of Finance, Ministry of Human Resources and Social Security controls social management; and China Coal Industry Association is responsible for functions of industry intermediary services. Most of the local coal management systems are similar to the central system. This cooperation and division has played an active role in the promotion and development of the coal industry. However, no department coordinates these different agencies. As a result,

34. See Id. (stating that the Ministry of Coal transitioned into the National Development and Reform Commission).
36. Id.
officials excessively focus on the division of labor and insufficiently coordinate the functions between the various departments. Therefore, the management system lacks complete governance and supervision.37

B. Admittance Standards for Enterprises’ Resource Exploitation

The 2011 Revised Coal Law provides six conditions for the establishment of coal mining enterprises, including "having a rational scale of coal mine production and the funds, equipments and technicians commensurate with such scale."38 Unfortunately, the law remains unclear on several points. What is a "rational" scale of production? What are the standards of “commensurate” funds, equipment, and technicians? Compared to the 1996 Coal Law, this provision has had no revision for more specificity. In reality, when issuing approval, the coal management authorities have had too much discretion and randomness in their choice. Thus, many enterprises and start-up operators entered the coal mining industry with insufficient funds, outdated technical equipment, poor safety conditions, and insufficient environmental capacity. The result has made the number of small coal mines abnormally excessive, which resulted in environmental destruction and waste of resources.39 In the past few decades, vague provisions resulted in broad administrative discretion. This caused many problems with the approval process for the establishment of a coal mine. These administrative problems have not attracted enough attention from the legislature to result in any changes to the mining law.

C. Coal Resources Reserve

China heavily relies on coal production and coal consumption for economic development—especially for the power supply. China’s annual production and consumption quantities are the largest in the world.40 In this

38. Coal Law, supra note 23, at art. 18.
40. See CHINA STATISTICAL YEARBOOK (Sheng Laiyun et al. eds., 2010) available at http://www.stats.gov.cn/tjsj/ndsj/2010/indexeh.htm (China’s coal production in 1990 was 1.080 billion tons, in 2005 was 2.350 billion tons, and in 2008 was 2.802 billion tons. Availability of coal in 2008 was 2.59 times greater than in 1990. Availability of coal in, increased by 19.3% from 2005 to 2008. China’s coal imports surged year after year. China imported only 2.003 million tons in 1990, 26.171 million tons in 2005, and reached 40.341 million tons in 2008. Importation in 2008, compared with 1990, was nearly
case, the proposal of "strategic reserve of coal resources" was put forward by some scholars for a long time. However, the 2011 Revised Coal Law does not create this system. In May 2011, the National Development and Reform Commission and Ministry of Finance jointly issued the Interim Measures of National Emergency Reserves of Coal (Measures). The Measures are designed to regulate the management of national emergency reserves of coal and to improve the capacity of coal supply under a state of emergency. The Measures define the "national emergency reserves of coal," commissioned by the central government, as locations of major coal distribution, consumption, and transport hubs reserved to respond to a serious coal shortage or supply disruption, or to major natural disasters and emergencies. The Measures provide detailed qualifications of coal reserve enterprises, the implementation and size of corporate reserves, and the region and planning of the emergency reserve.

For example, in 2011, China established its first national emergency coal reserves located in Qinhuangdao Port, Huanghua Port, Zhoushan Port, Guangzhou Port, Wuhan Port, Wuhu Port, Xuzhou Port, and Zuhai Port. These ports and ten large coal electric power companies are required to reserve 500 million tons of coal.

The emergency reserve remains an important part of the coal reserve system, but lacks a comprehensive scope to include, among other things, a coal resource reserve, production capacity reserve, and a spare reserve. So, China's coal resource reserve system is still in the exploration stage. As

20 times greater. 2008 imports increased by 54.1% over 2005 figures. Exports in 2005 were 71,724 million tons, dropping to 45,434 million tons in 2008).


43. Id. at Art. 2.

44. Id. at Art. 12.


a young government mechanism, this strategic coal reserve system still requires improvement through further legislation.

D. Tax and Fee

China's Coal Law does not provide compensation for the use of coal resources.48 According to the Mineral Resources Law, the State practices a system wherein the exploration right and mining right are obtained with compensation.49 A mining operation that explores and utilizes coal resources must pay consideration for the exploration and mining rights obtained with the resource compensation fee and resource tax. With respect to the resource compensation fee, the rate remains too low, not reflecting the fair value of coal as an important non-renewable energy source. The low compensation fee fails to encourage coal producers to conserve resources. In respect to the resource tax, the main problem is the tax levies remain fixed by the administrations, regardless of changes of prices, costs, and profits.

E. Coal Mine Safety

One important goal of coal industry legislation is to ensure production safety in coal mines, protecting the life and safety of the miners. China’s Coal Law provides safety requirements through an accountability system of production safety, education and training, emergency response, trade union rights, labor protection, equipment safety, and other aspects.50 With respect to legal responsibility, the Coal Law stipulates that “where administrators of a coal mining enterprise give directions against regulations and order miners to work at risk, thus causing serious causality, they shall be investigated for criminal responsibility.”51 Correspondingly, the Amendments to Criminal Law (VI) stipulate that:

Where anyone violates the provisions concerning the safety management in production or operations and thus causes any serious casualty or any other serious consequences, he

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48. Coal law, supra note 23.
51. Id. at art. 78.
shall be sentenced to fixed-term imprisonment of not more than three years or detention. If the circumstances are extremely severe, he shall be sentenced to fixed-term imprisonment of not less than three years but not more than seven years.

Where the facilities or conditions for safe work fail to meet the relevant provisions of the state so that any serious casualty or any other serious consequence is caused, the persons-in-charge who are held to be directly responsible and other directly liable persons shall be sentenced to fixed-term imprisonment of not more than three years or detention. If the circumstances are particularly severe, he shall be sentenced to fixed-term imprisonment of not less than three years but not more than seven years. Where, after any safety accident occurs, the person who is obliged to report it fails to report it or makes a false report so that the rescue of the accident is affected and if the circumstances are severe, he shall be sentenced to fixed-term imprisonment of not more than three years or detention. If the circumstances are extremely severe, he shall be sentenced to fixed-term imprisonment of not less than three years but not more than seven years.52

Compared to the serious consequences caused by coal mine accidents, the above punishments fail to deter violations. The high occurrence of mine accidents in China largely relates to the law’s weak punishment. Furthermore, the legal responsibilities fail to warn the persons responsible.

F. Environmental Protection

Traditionally, coal is seen as a dirty energy source. Because the development and utilization of coal resources causes negative impacts on water, soil, air, and other aspects, the provisions relating to environmental protection in coal legislation remain highly significant for promoting environmental health. In addition to the provisions on general principles,53 China’s Coal Law requires environmental protection for conditions on


53. See id. at art. 11 (providing that “anyone who exploits or utilizes coal resources shall abide by the laws and regulations governing environmental protection, prevent and control pollution and other public hazards, and protect the ecological environment”).
launching coal mining enterprises,\textsuperscript{54} as well as obtaining coal production licenses.\textsuperscript{55}

The Coal Law also provides requirements on implementation of the "three simultaneous" system.\textsuperscript{56} However, these provisions do not put enough emphasis on environmental protection. For instance, the "three simultaneous" system in the Coal Law only copied the articles in the Environmental Protection Law. This failed to combine the characteristics of the development and utilization of coal to make more operational requirements. On the other hand, the law fails to address ecological restoration of coal mining sites.\textsuperscript{57} The Coal Law provides that coal mining enterprises shall be responsible for reclaiming land that is covered by coal, subsides, or is destroyed, and any losses caused to another person shall be compensated according to law.\textsuperscript{58} The law remains ambiguous on how to compensate.\textsuperscript{59} Thus, the role of legislation in environmental protection is limited for ecological protection and restoration.

\textit{G. Gap with Requirements of Low Carbon Economy}

Since the Intergovernmental Panel on Climate Change’s fourth assessment report on climate change, the low-carbon economy has become a growing worldwide concern. The low-carbon economy, as an emerging economic model, is based on market mechanisms. In turn, institutional frameworks and policies promote the development and use of energy-efficient technologies, energy-conserving technologies, renewable energy technologies and greenhouse gas emission reduction technologies. These accelerate a transformation in the social economic model towards energy-
efficient, low-energy consumption, and low-carbon emissions.\(^\text{60}\) Generally, the transformation from fossil fuels to new and renewable energies constitutes an important way to achieve a low-carbon economy.

In China, considering the current energy structure, coal will remain the main source of energy for a long period of time. Therefore, the question becomes how to reform the traditional high energy-consuming, high carbon-emitting, and highly polluted model of the coal industry to the requirements of a low-carbon economy. To ensure sustained and healthy development of China's coal industry, these reforms are critical to achieve low-carbon development. However, China has not yet introduced specific legislation to promote a low-carbon economy, but there are some existing regulations on the management of the coal industry. For example, the Coal Law states, “[t]he State shall adopt measures to ban coke making by indigenous methods. The construction of kilns for making coke with indigenous methods shall be forbidden, and the existing kilns for making coke with indigenous methods shall be renovated within a time limit.”\(^\text{61}\) This provision reflects means of low-carbon technical specifications.

Moreover, the Law on Prevention and Control of Environmental Pollution by Solid Wastes stipulates:

> Products shall be packaged with materials that are easy to be recycled or treated, or easy to dissolve or be absorbed in the environment. Producers, sellers and users of products shall, in accordance with the relevant State regulations, recycle the packaging materials and containers of products that can be recycled.

This provision reflects the comprehensive utilization of resources in a low-carbon economy. In addition, the Energy Conservation Law, Law on Promotion of Clean Production, Circular Economy Promotion Law, Interim Measures on Clean Production Checks, Measures for Administrations of Energy Efficiency Label, Measures for the Operation and Management of Clean Development Mechanism Projects, and other laws and regulations reflect the concepts of energy conservation, energy efficiency, and energy


\(^{61}\) Coal Law, supra note 23, at Art. 36.

reductions required by a low-carbon economy. Also, The Renewable Energy Law reflects the means of developing clean renewable energy required of a low-carbon economy.

Generally speaking, gaps still exist between China's current development and existing legislation and the inherent requirements of a low-carbon economy. There are technical (clean coal technology, carbon capture, and carbon capture storage) and institutional (inadequate systems of financial incentives, and chain management) reasons for those gaps. Further legislation would resolve these issues.

IV. COUNTERMEASURES TO IMPROVE CHINA’S LEGISLATION ON THE COAL INDUSTRY

Future legislation should focus on: improving supervision and management, clarifying admittance standards of coal exploitation, improving coal reserve systems, strengthening coal mine safety, improving coal tax systems, strengthening environmental protection, and further promoting a low-carbon economy.

A. Improve Supervision and Management

To improve China's coal management system in a low-carbon economy, the first step is to improve the existing energy management system. The State should separate the functions of energy management and energy supervision by establishing a Ministry of Energy and a Commission of Supervision and Management of Energy.63

First, the Ministry of Energy, as one of the component departments of the State Council, would be in charge of unified management of national energy affairs. The administrative department of energy, under the State Council, formulates the national energy development strategy and plan. The department also creates the national energy policy, and organizes the implementation of various energy governance systems—including the coal legal system.

The Ministry of Energy's specific responsibilities should include: developing a national energy security assessment; establishing an energy

warning and emergency system; implementing an energy reserves strategy; forecasting energy supply, export, and production capacity; formulating policies to promote development of renewable and new energy; and developing policy measures to ensure energy needs in rural, remote, and other underdeveloped areas are met. Moreover, the Ministry of Energy would aid in developing policies and measures to promote the rationalization of energy use and energy efficiency; formulation and adjustment of governmental fixed or governmental guided prices of energy resources, energy products, and energy services. Finally, the Ministry would establish, improve, and monitor the implementation of the energy impact evaluation index system; organize the research, development, and application of key energy technology; develop standards for energy-related products and services; gather energy statistics; release energy information and data; and provide policy advice on foreign energy matters.

The Commission of Supervision and Management of Energy’s, similar to the U.S.’s Federal Energy Regulatory Commission, specific responsibilities would include: development and implementation of energy-related regulations and rules of supervision and management; issuance and management of energy business licenses; monitoring the operation of the energy market; maintaining order in the energy market; promoting fair competition; supervising and managing the implementation of energy impact assessment systems for major projects; supervision and management of energy production safety; participating in accident investigation and treatment; counting and analyzing energy safety and price information from energy companies; supervising and inspecting the implementation of energy price regulations; establishing supervision and management information systems; on-site inspections of energy businesses; investigation of illegal energy companies; and imposing administrative penalties within their authority.64

The ministries responsible for supervising the coal industry should implement a strong oversight system to enhance the supervision of coal exploitation, mine safety, and environmental mining pollution. These changes would help the management system to meet the necessary requirements for a low-carbon economy.

B. Clarify Admittance Standards for Coal Resources Exploitation

In the past few years, China punished and rectified several small coal mines, which had a significant effect. These mines had low production efficiency, facilities unqualified for safe production, serious environmental pollution, and failed to meet the requirements of the low-carbon economy. Based on the above analysis, future legislation should improve detailed admittance standards for coal exploitation. Specifically, rigid guidelines should be established that require funds, facilities, staff quality, and other protocols for easy implementation. In particular, China should force coal mining corporations to increase capital investment. China could establish a risk prevention reserve system with adequate supervision and make corporations pay risk prevention fees in advance. These reforms would cover the risks to safety, health, and environment, and continue to pay in accordance with production cost per ton.

China should also increase the production scale of corporations, which requires approved authorities to examine the applications for coal mining projects. Also, corporations should follow the principles and requirements of intensive, large-scale production. The development of small coal mines should be restricted to encourage the establishment of medium to large sized enterprises, in order to improve the market threshold of the coal mining industry.

C. Perfect Coal Reserve System

Future legislation should incorporate coal reserves, which will help the long-term development of the coal industry. To maximize this development, coal reserves should be divided into government reserves and corporate reserves. Government coal reserves should be determined in accordance with the needs of national economic security and national financial strength. In turn, corporate coal reserves should be in accordance with the requirements of China’s national strategy and legislation. As mentioned above, the coal reserve system should include coal resource, coal production capacity, and spot coal reserves.

At present, China only has spot coal reserves to respond to sudden fluctuations of the coal market and maintain the market’s stability. Future

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legislation should make specific provisions for the purchase and storage of coal reserves and stock rotation, safety, environmental protection, management of reserve capitals, supervision and inspection requirements, and other issues. These measures would further the system of spot coal reserves by continuing to institutionalize them.

In the long-term, China should move quickly to establish sound coal resource and coal production capacity reserves. For example, China should provide a limited number of high-quality coal reserves in storage for emergency situations. Legislations should provide for procedures of selection, protection, management, and usage of reserved coal mines. This policy will ensure a stable annual production of coal. Compared with resource reserves and spot reserves, the production capacity reserve is much more policy-oriented. Future legislation should address procedures for planning and adjusting the quantity of production capacity reserves.

D. Improve Tax and Fee System

Because the government owns the coal reserves, the administrative department of geology and mineral resources levies a compensation fee on start-up operators and enterprises that exploit such resources for economic gain. The sum of the compensation fee is included in the fiscal budget as government non-tax revenue, which reflects the State's property rights over mineral resources. According to The Provisions on Administration of Collection of the Compensation Fee of Mineral Resources (2003), the rate of compensation fee for coal is one percent.67 The amount of the compensation fee for coal resources equals sales revenue of minerals multiplied by one percent of the coefficient of the Mining Recovery Rate (MRR). The coefficient of the MRR equals the approved MRR divided by the actual MRR.68

\[
\text{Compensation Fee} = \text{Sales Revenue} \times 1\% \times \text{coefficient of MRR};
\]
\[
\text{Coefficient MRR} = \frac{\text{Approved MRR}}{\text{Actual MRR}}
\]

Despite attempts to raise revenue with the above rate, the amount collected was less than expected and did not reflect the value of coal as a non-

68. Id.
renewable resource. The rate of the compensation fee should be improved to 1.5%. This would place it between the rate of copper, iron, lead, zinc, and the existing rate of coal, oil, natural gas, and other fossil fuels.

The coal resources tax faces similar problems with the compensation fee. The Provisional Regulations on Resources Tax and its implementation rules stipulate that the rate of the coal resources tax is 0.3–5 Yuan per ton.69 Since July 1, 2004, the Ministry of Finance and the State Taxation Administration have jointly issued provisions to adjust the rate of the coal resources tax to 3.2 Yuan per ton in Shanxi, Inner Mongolia, Qinghai, and other places. This design remains convenient for an agency to implement. However, with the development of the economy and the coal industry, as well as the government's emphasis on saving energy and reducing emissions, the side effects of the coal resources tax become increasingly apparent. This method of taxation fails to adapt to the price fluctuation of resources. Also, the taxation rate does not encourage reasonable exploitation and utilization of resources.

Over many years, understanding these problems, the government has revised the resource tax to better reflect price fluctuations, but has made slow progress.70 Reforming the coal reserves tax will prove challenging, because economic feasibility remains low. Recently, China has faced inflation pressures. Also, a series of uncertainties surround economic development. Against this background, inappropriate tax reform will definitely affect the electricity market because of coal-electricity linkages. Thus, reforms should be implemented when the economy is relatively stable and the price of electricity can be smoothly adjusted.

E. Enhance Coal Mine Safety

In January 2006, the State Administration of Work Safety revised the Guidelines on Coal Mine Safety (Guidelines). The Guidelines contain explicit stipulations on mining safety, ventilation and gas, dust control, special control carbon dioxide (CO₂), fire prevention, water control prevention and treatment, explosive materials and underground blasting,

69. “Zhonghua Renmin Gongheguo Ziyuanshui Zanxing Tiaoli” (China), Article 16

70. China once planned to levy "special proceeds" on coal mining enterprises, but, considering the difficulty of management of a large number of small-size privately owned coal mines, this plan was finally dropped. China reformed tax and fee systems of some resource products, the rate of some products was increased by 16 times. But due to global recession, the reform of tax and fee also dropped.
transportation, air compression, electricity, coal mine rescues, stripping and mining, landslide prevention and treatment, equipment maintenance, management and monitoring, and health care of workers. Compared to previous guidelines, this revised version is easier to implement.

To comply with the guidelines, managers should institute a comprehensive security mechanism to strengthen corporate security management, emphasize security supervision, build effective emergency rescue systems, and clearly define objectives of assessments and accountabilities. In order to abide by the Notice on Constructing and Improving “Six Systems” of Underground Mine Safety and Risk Avoidance (2010), formulated by the National Security Administration and State Coal Mine Safety Supervision Bureau, several areas of the mining industry need significant improvements. Potential examples include: the improvement of mine monitoring and supervision systems, people tracking systems, underground emergency systems, mine air pressure self-rescue systems, mine water-supply rescue systems, and communication systems. On the other hand, current legislation governing liabilities for violations of coal safety, mining accidents, and leadership accountability, should be further strengthened—especially under the Criminal Law.

From an administrative point of view, in addition to increasing the punishment imposed on mine accidents, new measures regarding government and corporate response to violations should be written into future legislation. For example, the punishment for illegal exploitation should be to shut down the mine instead of issuing a fine. Thus, any mine with a potential safety hazard should be required to suspend production to rectify the violations, rather than only imposing an economic punishment. Furthermore, the industrial injury insurance system should be improved to protect any injured or dead miners, so that their relatives receive reasonable financial compensation from their employers and enhance corporate precaution.

F. Strengthen Environmental Protection

Relevant laws and regulations for pollution prevention should be applied to protect against negative environmental impacts from coal exploitation and utilization. For instance, the Environmental Impact Assessment (EIA) system⁷¹ and the "three simultaneous" system⁷² stipulated

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in the Environmental Protection Law should apply to exploitation and utilization of coal. When applying the "three simultaneous" system, future legislation should consider characteristics of exploitation and utilization of coal resources. Future legislation should require coal mines to provide a detailed EIA as a condition to operation. In so doing, the government can utilize existing environmental legislation for the healthy and sustainable development of the coal industry.

Another important issue is ecological restoration and environmental compensation. A newly-established ecological restoration and environmental damage compensation fund would be funded by collections from active coal-mining enterprises. When ecological damage or environmental pollution accidents occur, the fund will pay for ecological restoration and environmental compensation costs. To avoid uncertainty, the government should define the principles and methods of collection and the management and usage of funds. The new laws would require the government and coal-mining operations to effectively manage, contribute to, and distribute the ecological fund.73

G. Promote Development of Low Carbon Economy

The previous six sections played a crucial role in narrowing the gap between management of China's coal industry and the development of a low carbon economic model. In order to strengthen the low carbon legal system, particular attention should be paid to industrial restructuring, the management of small-scale mines, and further promotion of low-carbon technology innovation.

1. Guide for Industrial Transformation

On the one hand, the macro energy policy should gradually adjust the proportion of coal entering the energy consumption structure. This alteration would increase investment in the development of new energy sources and actively promote the use of these new sources. On the other hand, the government should promote the improvement of the coal industry chain and improve the utilization of coal resources through legislative reforms or improved technical standards.

Some of China's major coal companies have made efforts for a low-carbon economy. For example, China's largest coal company, Shenhua

73. Jiang & Liu, supra note 10, at 83.
Group, proposed a strategy for the "integrated development of coal, electricity, road, port and oil; and one-stop management of production, transportation and selling".74 Another coal company, the Shanxi Coking Coal Group, proposed the construction of a high energy chain, "coal, electricity, wood;" a high value-added chain, "coal, coke, chemical;" and an environmentally friendly closed-cycle economic chain, "resources, products, waste utilization."75 These development strategies of coal-based industrial chains not only contribute to the high added value of coal products, but also improve the competitiveness of coal enterprises and sustainable development capability. Also, the corporate strategies help to improve the utilization of coal resources and reduce carbon emissions, thus transitioning China's coal industry to a low-carbon economy.

2. Strengthen Management of Small-Scale Mining

Many small mines in China adopted the extensive growth model. As a result, these small mines routinely waste resources, use relatively backward technology and equipment, negatively affect the environment and its resources, reflect a significant "carbon consumption" feature, and fail to adhere to the development of a low-carbon economy.

The government realizes the scope of this problem and has taken active measures to deal with it.76 In turn, the government coordinates the relationship between small, medium, and large-scale coal enterprises. The government also promotes mergers among small coal mining enterprises, encourages improvement of single-well mines, controls the number of small coal mines, and closes small coal mines without qualifications of exploitation.

Future legislation should increase coal production and accelerate industrial upgrades to promote sustainable development of the coal industry. China should actively foster large-scale coal enterprises, and improve energy security and market competitiveness. China should accelerate the construction of new mines to improve coal supply capacity—especially in the areas with rich storage of coal resources, proper infrastructure, and updated equipment.77

75. Id.
3. Promote Innovation of Low-Carbon Technology

To decrease carbon emissions for coal, China should actively promote clean coal technology, carbon-capture, and carbon-capture storage technology. These technologies would help decrease the pollution caused by extracting, refining, and consuming coal resources.

With respect to mining technologies, mining corporations should utilize the best available technologies and the most advanced equipment. This would allow corporations to effectively and efficiently extract coal and other minerals, water, and land. Also, the government should focus on developing coal washing, dressing, processing, and conversion technologies in order to improve industry chains, as well as reduce waste and pollution of coal resources. The government should research advanced coal combustion technology to promote the efficient and clean burning of coal.  

CONCLUSION

Future legislation should strengthen the combination of environmental protection measures, and require the development and implementation of clean coal technologies. Ultimately, these reforms would increase the efficiency of coal conversion, optimize terminal energy structure, and control mining pollution.

INTRODUCTION

Many unanswered questions have been raised as a result of the devastating oil spill that occurred in the Gulf of Mexico in the summer of
2010. Such questions include concerns over the lack of adequate prevention measures, the ability of the government to regulate industry practice, and the extent that the Gulf will be able to sufficiently recover from the economic and environmental damage that has, and will continue to be, caused by the oil spill. In the midst of these questions lie concerns over British Petroleum’s (BP) ability to pay for this disaster and the threat of BP filing for bankruptcy. Whether or not BP files for bankruptcy, this issue illustrates the point that the Gulf States are not adequately prepared for such an event. When adopting oil pollution protection laws, states should be aware that consideration of environmental obligations does not fit easily into bankruptcy proceedings. In addition, states must be aware that bankruptcy has the ability to discharge polluters from their environmental obligations, leaving the states to pick up the tab. Therefore, states must take adequate preparatory measures before a disaster happens to ensure that they will be able to hold the polluter fully accountable.

In determining how the Gulf States could better prepare themselves for the event that BP files for bankruptcy, the relationship between environmental laws and the Bankruptcy Code (the Code) is key. The inherent tension between these two sets of laws can be attributed in part to their contradictory goals and objectives. Environmental law aims to hold the polluter responsible for environmental damage caused by the polluter’s actions. In contrast, bankruptcy law aims to give the debtor a clean slate, to allow the debtor a chance at a new beginning. Congress created the Code with simple debt obligations in mind, such as basic tort and contract claims. Environmental claims, which are often complex, do not fit easily into this framework. This uneasy fit makes it difficult to determine whether or not an environmental obligation should be defined as a “claim” and be

3. STROCHAK, supra note 2, at 3.
included in the bankruptcy proceeding. Further, if it is determined that an environmental obligation is a “claim,” parties will then run into difficulty in determining when the claim arose. The United States Supreme Court has given little guidance for interpreting these legal definitions and has only decided two cases involving environmental obligations in bankruptcy. Recently, the Court denied a petition for certiorari that would have helped to resolve this confusion. Absent any clear and comprehensive precedent, lower courts have differed in their analysis of environmental obligations under the Code.

Part I of this article discusses the history of American bankruptcy law and how the current Bankruptcy Code affects environmental cleanup obligations. Part II discusses the current jurisdictional split concerning the classification of environmental obligations under the Bankruptcy Code. Part III analyzes how current environmental laws, as applied to environmental cleanup obligations in the Gulf of Mexico, could be classified under the Bankruptcy Code and what remedies a governmental body seeking remediation would likely receive. Finally, Part IV discusses different options to remedy the uncertainties that surround environmental obligations in bankruptcy, including an amendment to the Bankruptcy Code. It also addresses different options that the Gulf States could take to safeguard themselves against a polluter in bankruptcy and assure that a polluter will be held responsible for environmental damage caused to state land.

I. THE BANKRUPTCY CODE AND ENVIRONMENTAL LAW

A. History of Bankruptcy Law in the United States

The history of the Bankruptcy Code, and what it aims to achieve, helps explain the difficulty in fitting environmental obligations within the Code. This history sheds light on the evolving purpose behind bankruptcy law and how environmental obligations fit, or do not fit, into the overall structure of

5. Id. at 154–55.
6. Id.
7. Id. at 154 (citing Midatlantic Nat’l Bank v. N.J. Dep’t of Envtl. Prot., 474 U.S. 494 (1986); Ohio v. Kovacs, 469 U.S. 274 (1985)).
the Code. One of the primary goals, stated in 1915, was the idea that bankruptcy law should "relieve the honest debtor from the weight of oppressive indebtedness and permit him to start afresh . . . ."\textsuperscript{10} This idea paved the way for the inception of modern bankruptcy law and was part of the evolving nature of bankruptcy. Changing societal views about the nature of bankruptcy spurred the desire to create a better system for dealing with debt.

The Constitution gives the federal government the power to establish laws relating to bankruptcy.\textsuperscript{11} When the Founding Fathers included this power in the Constitution they understood the general need for federal regulation of this field.\textsuperscript{12} However, there was no consensus among early lawmakers as to the exact role the federal government should play.\textsuperscript{13} A few short-lived bankruptcy laws were passed in response to financial crises, but no permanent federal bankruptcy law was passed until 1898.\textsuperscript{14} Commercial trade groups, then newly formed, have been attributed as one of the driving forces behind the successful passage of the law.\textsuperscript{15} However, despite their influence in the process, the Bankruptcy Act of 1898 was not overly creditor-friendly due to strong opposition by agrarian and populist groups.\textsuperscript{16} In the end, the Act was passed with provisions that left some authority with the states, minimized the administrative machinery, and offered discharge provisions that were more lenient than in previous acts.\textsuperscript{17} This 1898 Act was the first permanent federal bankruptcy law and, perhaps most influentially, spurred the creation of the Bankruptcy Bar.\textsuperscript{18} This group of professionals would prove to be the "single most important influence on the development of bankruptcy law" since 1898.\textsuperscript{19}

The next big shift in American bankruptcy law came in the wake of the Great Depression.\textsuperscript{20} In 1938 Congress passed the Chandler Act, which essentially revised nearly all of the 1898 Act, including provisions

\begin{flushright}
13. Id.
15. SKEEL, supra note 12, at 37.
16. Id. at 38–39.
17. Id. at 46.
18. Id. at 45–46.
19. Id. at 47.
20. Tabb, supra note 14, at 23.
\end{flushright}
regarding liquidation, administration, and, most significantly, corporate reorganization.\textsuperscript{21} This legislation dramatically changed corporate reorganization by introducing government oversight to the process and taking control away from private interests.\textsuperscript{22}

The most recent federal law is the Bankruptcy Reform Act of 1978, more commonly known as the Code.\textsuperscript{23} The 1978 legislation transformed bankruptcy law in the United States, reforming its treatment of consumer credit and corporate bankruptcy.\textsuperscript{24} One particularly relevant debate leading up to the passage of the Code was between creditors and pro-debtor advocates.\textsuperscript{25} This conflict highlights an inherent tension within bankruptcy law: balancing creditor protection against the debtor’s fresh start.\textsuperscript{26} In the end, compromises satisfied both sides, largely as a result of political pressures.\textsuperscript{27}

The history of bankruptcy law illustrates the evolving nature of this field of law. Although changes may not come quickly or frequently, reform has the power to fix problematic aspects involved in the bankruptcy process. The conflict between environmental laws and the Bankruptcy Code is one such problematic area. The intersection between these two areas of law is murky and the boundaries are undefined. The current Bankruptcy Code was created when environmental laws were in their infancy; therefore, it is no surprise that the Code does not have an adequate mechanism to address them.\textsuperscript{28} The murkiness of this area has allowed some corporations to evade environmental responsibilities through bankruptcy proceedings.\textsuperscript{29} An amendment to the current Bankruptcy Code is one

\textsuperscript{21} Id. at 29–30.
\textsuperscript{22} SKEEL, supra note 12, at 119, 125.
\textsuperscript{24} SKEEL, supra note 12, at 131.
\textsuperscript{25} Id. at 154–57.
\textsuperscript{26} Id. at 155.
\textsuperscript{27} Id. at 155.
\textsuperscript{29} The most infamous example of this is the bankruptcy proceeding of the mining giant American Smelting and Refining Company (Asarco). When Asarco filed for bankruptcy in 2005, there were over 80 Superfund sites with contamination from its former mining operations. Recently, the EPA won an unprecedented $1.79 billion bankruptcy settlement for cleanup obligations. This result was unexpected when Asarco filed for bankruptcy, with most fearing that the large environmental debt would be borne by taxpayers. Leslie Kaufman, \textit{Asarco Pays $1.79 Billion to Fix Sites}, \textit{N.Y. TIMES}, Dec. 10, 2009, http://www.nytimes.com/2009/12/11/science/earth/11settle.html.
solution to this abuse. However, absent such an amendment, states should understand how courts treat environmental obligations in bankruptcy in order to amend their laws to reflect such interpretations.

B. The Bankruptcy Process

A corporation has two options when filing for bankruptcy. One option is to file under Chapter 11, allowing the corporation to restructure its debts according to a reorganization plan and emerge after the culmination of bankruptcy proceedings. Under Chapter 11, all of the pre-bankruptcy debts included in the plan are discharged. Thus, if a corporation wishes to remain viable after bankruptcy it will file a petition under Chapter 11. Reorganization requires the debtor to file a plan that specifies the treatment of each claim, including the classification of the claim and a proposed settlement. The court must confirm this plan provided that “the plan does not discriminate unfairly, and is fair and equitable, with respect to each class of claims or interests that is impaired under, and has not accepted, the plan.” The second option is to file under Chapter 7, which, rather than giving the corporation a discharge, liquidates all of the corporation’s assets and the corporation then “go[es] out of business and may formally dissolve under state law.”

Any government, person, or business who has an outstanding debt against a debtor must file their claim in the bankruptcy proceeding. Any person or governmental unit who has an “allowed claim” may participate in a bankruptcy proceeding and in the distribution. Whether a claim gets paid back in full and what level of priority is assigned to it is determined under Chapter 5 of the Code. A secured claim receives the highest priority. Depending on the specific details of the secured claim, the claim will be paid in full as long as there is enough money in the estate or on the particular property securing the claim to cover the amount owed. After the secured claims are paid, the unsecured claims, which are prioritized in

30. AHERN, supra note 2, § 1.11.
32. Id. §§ 1121–23 (2006).
33. Id. § 1129(b)(1).
34. AHERN, supra note 2, § 1:10.
37. § 507(b).
38. § 506.
Section 507, are addressed. In a Chapter 11 proceeding claimholders can vote on the plan of reorganization, affording them some protection during the proceeding and the ultimate distribution. In a Chapter 7 proceeding claimholders merely share in the distribution without participating in the decision making.

Whether a government wants the debtor’s environmental obligation treated as a claim depends on the corporation’s assets and type of bankruptcy proceeding involved. For example, if treated as a claim, the environmental obligation is part of the bankruptcy proceeding and a government is precluded from pursuing enforcement measures after the bankruptcy. Therefore, what is in a government’s best interest depends in great part whether the corporation is likely to survive a Chapter 11 reorganization and have the assets necessary to pay the government back post-bankruptcy. Unfortunately, there is no way to predict which path a bankruptcy proceeding will take. A corporation could begin the bankruptcy proceeding under Chapter 11 and convert the proceeding to a Chapter 7. If a bankruptcy court has ruled that the outstanding environmental obligation is not a “claim,” then the government would not be part of the distribution and would be left with no one to pursue once the Chapter 7 proceeding concludes.

C. Key Bankruptcy Provisions

In addition to the definition and subsequent treatment of claims, states should be aware of a few key provisions of the Code when enacting environmental legislation. These sections help define when a debtor can receive an automatic stay (§ 362) and discharge a debt (§ 1141). A state may be able to avoid these actions in an environmental case, if they frame the polluter’s environmental obligation in the proper context.

Section 362 of the Code handles the automatic stay, a mechanism in the Code that postpones certain actions against the debtor, including “any act to
collect, assess, or recover a claim against the debtor that arose before the commencement of the case. 47 Under an exception to this provision, a government action to enforce its police and regulatory powers does not operate as a stay, as long as this action is not to enforce a money judgment. 48 This exception includes “action[s] to force the debtor to cease polluting,” because such an action is equitable and is a clear example of a government enforcing its police powers to protect the health and safety of the public. 49 In contrast, actions by the government to determine the amount of damages and recover expenses from the polluter should be stayed because they are actions to enforce a money judgment. 50 A government action enforcing an order to clean up a contaminated site may fall under the exception, but is not as easily determined. 51 Generally, bankruptcy law respects other laws, allowing the government to enforce a state environmental law. 52 However, the ultimate determination depends on whether the presiding court determines that a government is enforcing a money judgment. 53 “[A]llowing the government to enforce a cleanup order can affect the priorities in the distribution,” and a deciding court must contemplate such effect when considering the applicability of a stay. 54

Section 1141 applies to Chapter 11 reorganization cases, determining which claims may be discharged in the reorganization process. 55 A “discharge” of a debt in a bankruptcy proceeding does not extinguish the debt; rather, it protects the debtor from any personal liability on the debt and enjoins all legal actions to collect the debt. 56 Section 1141 provides that “the confirmation of a plan discharges the debtor from any debt that arose before the date of such confirmation.” 57 A state must consider two factors when looking at this provision. 58 First, only “claims” can be discharged; therefore, if an environmental obligation is not classified as a claim it will

47. 11 U.S.C. § 362(a)(6) (2006); Courts have often overlooked § 362(a)(6) and allowed governments to pursue environmental obligations. AHERN, supra note 2, § 4:1–4:2.
48. § 362(b)(4).
50. Id. § 4:13.
51. Smith, supra note 2, at 990 (describing how bankruptcy courts must first determine what a state desires when seeking a debtor’s compliance with its environmental statutes).
52. AHERN, supra note 2, § 4:13.
53. Smith, supra note 2, at 990.
54. AHERN, supra note 2, § 4:13.
55. 11 U.S.C. § 1141 (2006). Individuals are entitled to discharge under § 727 of the Code, which does not apply to corporations. Id. § 727(a)(1).
56. BLACK’S LAW DICTIONARY 530 (9th ed. 2009).
57. § 1141(d)(1)(A).
58. STROCHAK, supra note 2, at 46–47.
survive reorganization. Second, only claims that arose before the date of confirmation will be discharged, so a state must also consider defining when an environmental claim arose.

**D. Environmental Obligation as a Claim**

A court’s first step in determining whether an environmental obligation is a claim is to look at the language of the Code. The Code defines a “claim” as:

(A) right to payment, whether or not such right is reduced to judgment, liquidated, unliquidated, fixed, contingent, matured, unmatured, disputed, undisputed, legal, equitable, secured, or unsecured; or (B) right to an equitable remedy for breach of performance if such breach gives rise to a right to payment, whether or not such right to an equitable remedy is reduced to judgment, fixed, contingent, matured, unmatured, disputed, undisputed, secured, or unsecured.

Congress intended this provision to be broad and only exclude purely equitable remedies. The Code defines two of the three basic cleanup remedies a government can pursue. First, if the government cleans up a polluted area and seeks monetary reimbursement for its expense from the debtor, such an obligation would fall under the definition of a claim because the government clearly has a “right to payment.” Second, if a government seeks an injunction ordering a debtor not to pollute in the future, such an obligation would be equitable and not fall under the definition of a claim. The third type of remedy, ordering the debtor to clean up a site, is more complex. The Supreme Court has upheld Congress’s broad interpretation of a claim, but has not spoken directly to whether environmental cleanup

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59. *Id.*; AHERN, *supra* note 2, § 1:17.
60. See STROCHAK ET AL., *supra* note 2, at 47–55 (analyzing when environmental claims arise); AHERN, *supra* note 2, § 1:17.
63. AHERN, *supra* note 2, § 3:12.
64. *Id.* § 3:13.
orders fit this broad definition. Thus, the third type of remedy does not fit readily into the Code.

The language of the state or federal environmental statute at issue is key when determining whether a governmental order to clean up a polluted site can be defined as a claim. Some statutes, both state and federal, specifically require a responsible party to clean up a polluted site. Other statutes provide alternatives, such as allowing the government to clean up the site and then seek reimbursement from a debtor. If an environmental statute provides such an alternative, some courts will consider the environmental obligation a claim, because the “equitable right” to specific performance (the cleanup) can be transformed into a right of payment.

Federal appellate courts are split on the issue of how to define environmental obligations. For example, the Second, Third, and Seventh Circuits limited the definition of a claim, holding that a government must actually seek a monetary remedy in order for the obligation to be considered a claim. It is not enough that the statute merely allows for the government to seek money as an alternative to cleanup. In contrast, the Sixth Circuit has expanded the definition of a claim, holding that if a debtor has to spend money to comply with the order, the obligation will be considered a claim.

E. Determining When the Claim Arose

Once a court has classified an environmental obligation as a claim, its next step is determining when the claim arose. This determination establishes whether the claim is part of the bankruptcy proceeding and

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66. See Heidt, supra note 4, at 171 (discussing how the Second Circuit has defined what constitutes a “claim” under CERCLA).
68. Heidt, supra note 4, at 171.
69. Id. CERCLA has such a provision and many courts have found that this alternative defines a cleanup order issued under CERCLA to be a claim. Id.
70. Ahern, supra note 2, § 3.15.
71. Id. § 3:17.
72. Id.
73. Heidt, supra note 4, at 177–78.
whether it will be discharged.\(^{74}\) In a Chapter 11 bankruptcy proceeding, debts that arose before the confirmation of the plan can be discharged. The Supreme Court has not spoken to this issue and there is no dispositive test for determining when a claim arises.\(^{75}\) There are many factors that can be considered, including: when the acts causing the pollution were committed, when the hazardous materials were released, when the right to bring the action became viable under applicable law, and when the creditor knew or should have known of the potential obligations.\(^{76}\) A court has discretion to base its decision on the factors it thinks best fit the facts of the case.\(^{77}\) However, it should be noted that many courts considering this question have held that determining when the claim arose will not depend on the timing of government expenditures.\(^{78}\) Thus, the government cannot argue that, even though the act causing the pollution occurred pre-petition, the claim did not arise until it incurred the cost of cleanup.\(^{79}\)

II. JUDICIAL PRECEDENT

A. The Supreme Court

The Supreme Court has decided only two cases concerning the intersection between bankruptcy and environmental law. The first of these cases, decided in 1985, was \textit{Ohio v. Kovacs}.\(^{80}\) This case, discussed further below, concerned how courts should interpret certain environmental obligations under the Code, and specifically addressed whether or not such obligations could be defined as claims.\(^{81}\) The second case, \textit{Midatlantic National Bank v. New Jersey Department of Environmental Protection}, questioned whether a debtor could abandon contaminated property under the Code.\(^{82}\) This case is of little relevance in the Gulf oil spill bankruptcy scenario because the majority of polluted property does not belong to BP, therefore the question of abandonment is not relevant. However, in the

\(^{74}\) See \textit{id.} at 178 (noting that “[t]he government argues that there can be no liability until it incurs expenses in cleaning up or investigating the site.”).


\(^{76}\) \textit{Ahern}, supra note 2, § 3:19.

\(^{77}\) \textit{Id.}

\(^{78}\) Heidt, supra note 4, at 179.

\(^{79}\) \textit{Id.} at 178–79.


\(^{81}\) \textit{Id.} at 275.

context of environmental obligations in bankruptcy as a whole, it is important to note that the Court held that a debtor cannot abandon property in contravention of state, federal, and local laws designed to protect public health and safety.\textsuperscript{83} By recognizing a key purpose of environmental law, the court allowed the environmental law to trump bankruptcy law. Such analysis may be useful in future environmental cases outside of the abandonment context.

The question before the Court in \textit{Kovacs} was, “whether, in the circumstances present . . . [the debtor’s] obligation under the injunction [was] a ‘debt’ or a ‘liability on a claim’ subject to discharge under the Bankruptcy Code.”\textsuperscript{84} In \textit{Kovacs}, the debtor had operated a hazardous waste disposal facility and had been sued by the state of Ohio for “polluting public waters, maintaining a nuisance, and causing fish kills” in violation of Ohio state law.\textsuperscript{85} The state and the debtor settled the lawsuit. As part of this settlement the debtor agreed to clean up the site, but subsequently failed to do so.\textsuperscript{86} The state obtained an order appointing a receiver for the debtor’s property due to the debtor’s failure to comply.\textsuperscript{87} After the receiver had taken control of the debtor’s property, the debtor filed a petition for bankruptcy under Chapter 7 of the Code.\textsuperscript{88} In the case before the Supreme Court, the state of Ohio sought to have the debtor’s post-bankruptcy income applied against the cost of the environmental cleanup, arguing that such an obligation did not fall under the Code’s definition of a claim.\textsuperscript{89}

The Court examined the plain language of the definition of a claim in Section 101 of the Code to determine how the debtor’s environmental obligation fit into the Code.\textsuperscript{90} The Court also looked to the legislative history, noting that Congress intended the definition of a claim to be broad, basing this conclusion on the different definitions proposed in the House

\textsuperscript{83} Ryan M. Murphy, \textit{Revisiting Treatment of Environmental Cleanup Obligations Under the Bankruptcy Code: Using Chapter 11 to Create a Clean Slate}, 19 J. BANKR. INST. L. & PRAC. 4, art. 4, 1 (2010).

\textsuperscript{84} \textit{Kovacs}, 469 U.S. at 275.


\textsuperscript{87} \textit{Id.} at 372. A receiver is “[a] disinterested person appointed by a court, or by a corporation or other person, for the protection or collection of property that is the subject of diverse claims” (e.g., property that is subject to litigation), BLACK’S LAW DICTIONARY 1383 (9th ed. 2009).

\textsuperscript{88} \textit{Kovacs}, 469 U.S. at 276. Mr. Kovacs, the debtor, had originally filed a petition under Chapter 11 of the Code, but converted the petition to a Chapter 7 proceeding. \textit{Id.} at 276 n.1.

\textsuperscript{89} Grueneberg, supra note 85, at 7.

\textsuperscript{90} \textit{Kovacs}, 469 U.S. at 278–80.
and Senate versions compared with the final version of the Act. The Court found that, in this case, “there [was] little doubt that the State had the right to an equitable remedy under state law and that the right [had] been reduced to judgment in the form of an injunction ordering the cleanup.” The Court further reasoned that, because the debtor’s property was in receivership, he was unable to “personally tak[e] charge of and carry[] out the removal of wastes from the property.” Thus, the only way for the debtor to comply with the state’s cleanup request would be to pay the receiver for the cost of cleanup. Based on the circumstances, the Court held that the obligation was a liability on a claim and therefore could be discharged. The Court made clear that its decision in this case was not broad, specifically pointing out that it did not decide “what the legal consequences would have been had [the debtor filed for] bankruptcy before a receiver had been appointed and a trustee had been designated with the usual duties of a bankruptcy trustee.” Also, the Court made clear that it did not hold that the “injunction against bringing further toxic wastes on the premises or against any conduct that will contribute to the pollution of the site or the State’s waters [would be] dischargeable in bankruptcy . . . .”

The Court’s decision in Kovacs is limited to an instance where a state is seeking payment from a debtor. The Court’s decision also suggests that an injunction against a debtor from further polluting in the future would not be a claim. This decision left lower courts with the task of interpreting whether, absent an appointment of a receiver, an environmental obligation to clean up a site is definable as a claim under the Code.

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91. Id. at 280. “The definition of ‘claim’ in H.R. 8200 as originally drafted would have deemed a right to an equitable remedy for breach of performance a claim even if it did not give rise to a right to payment. The initial Senate definition of claim was narrower, and a compromised version, § 101(4) [the current version of the Code has been amended so that § 101(4) is now § 101(5)], was finally adopted. In that version, the key phrases ‘equitable remedy,’ ‘breach of performance,’ and ‘right to payment’ are not defined.” Id.

92. Id. at 278–79.
93. Id. at 283.
94. Id. at 281 n.9, 283.
95. Id. at 283.
96. Id. at 284.
97. Id. at 284–85.
98. Hillinger & Hillinger, supra note 86, at 373–74; Kovacs, 469 U.S. at 285 (“[W]e here address . . . only the affirmative duty to clean up the site and the duty to pay money to that end.”).
99. Hillinger & Hillinger, supra note 86, at 374–75; Kovacs, 469 U.S. at 284–85 (“[W]e do not hold that the injunction against bringing further toxic wastes on the premises or against any conduct that will contribute to the pollution of the site or the State's waters is dischargeable in bankruptcy.”).
100. Hillinger & Hillinger, supra note 86, at 374–75.
B. Jurisdictional Split—How Courts Define Environmental Obligations

Lower courts have varied approaches to determining whether environmental obligations qualify as claims under the Code. This variation is a result of the limited Supreme Court precedent.\(^{101}\) Four federal appellate courts have spoken to this issue, which is a helpful guide for bankruptcy and district courts in the respective circuits; however, because the appellate courts have taken different approaches, no unified national guideline exists.\(^{102}\)

A recent case addressing this issue is *United States v. Apex Oil Company*.\(^{103}\) The Seventh Circuit ruled that an injunction ordering a debtor to clean up a contaminated site should be considered an equitable remedy under the Code, despite the fact that the debtor would have to spend money in order to comply with the injunction. Because the obligation is equitable, it is not a claim and not dischargeable under the Code.\(^{104}\) The Court reasoned that because most equitable remedies require a debtor to expend money in some form, allowing the discharge of equitable remedies that impose a cost on the debtor, which includes most equitable remedies, would be inconsistent with the Code’s definition of a claim, which only allows limited discharge of equitable claims.\(^{105}\)

The Seventh Circuit relied in part on previous decisions from other circuits, noting that its decision complied with the “near consensus” of these cases on this question.\(^{106}\) Like *Apex Oil*, these cases all concerned the question of when an environmental obligation should be treated as a claim under the Bankruptcy Code.\(^{107}\) The Second and Third Circuits followed a similar line of reasoning as the Seventh Circuit, concluding that environmental obligations are not claims under the Code unless the state

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\(^{101}\) Murphy, *supra* note 83, at 2–4 (outlining four approaches taken by lower courts: a right to payment approach, an underlying act approach, a debtor-creditor relationship approach, and a fair contemplation approach).

\(^{102}\) *United States v. Apex Oil Co.*, 579 F.3d 734 (7th Cir. 2009); Torwico Elec., Inc. v. N.J. Dep’t of Envtl. Prot., 8 F.3d 146 (3d Cir. 1993); *In re Chateaugay Corp.*, 944 F.2d 997 (2d Cir. 1991); United States v. Whizco, Inc., 841 F.2d 147 (6th Cir. 1988).

\(^{103}\) *Apex Oil Co.*, 579 F.3d 734 (7th Cir. 2009).

\(^{104}\) Id. at 737.


\(^{106}\) *Apex Oil Co.*, 579 F.3d at 737–38.

\(^{107}\) Torwico Elec., Inc. v. N.J. Dep’t of Envtl. Prot., 8 F.3d 146 (3d Cir. 1993); *In re Chateaugay Corp.*, 944 F.2d 997 (2d Cir. 1991); United States v. Whizco, Inc., 841 F.2d 147 (6th Cir. 1988).
actually seeks payment from the debtor. In *Torwico v. New Jersey Department of Environmental Protection*, the Third Circuit read the *Kovacs* decision narrowly, stating that:

> The state can exercise its regulatory powers and force compliance with its laws, even if the debtor must expend money to comply. . . . [W]hat the state cannot do is force the debtor to pay money to the state; at that point, the state is no longer acting in its role as regulator, it is acting as a creditor.

Similarly, the Second Circuit in *In re Chateaugay Corp.*, held that “[a]n injunction that does no more than impose an obligation entirely as an alternative to a payment right is dischargeable. . . . On the other hand, if the order . . . requires [the debtor] to take any action that ends or ameliorates current pollution, such an order is not a ‘claim.’”\(^{109}\) In contrast, the Sixth Circuit read the *Kovacs* decision broadly. In *United States v. Whizco*, the federal government, under the Surface Mining Control and Reclamation Act of 1977,\(^{110}\) brought a suit against a mining company for failing to reclaim lands that it used in its mining operations.\(^{111}\) The government sought an injunction against Whizco that would require it to clean up the polluted sites.\(^{112}\) The court compared *Kovacs*, in which the government was actually seeking a monetary remedy, to *Whizco*, in which the remedy sought would require the debtor to spend money.\(^{113}\) The court reasoned that “when we look at the substance of what the plaintiff seeks, rather than the form of the relief sought, we see that the plaintiff is really seeking payment.”\(^{114}\) Therefore, under the standard set in *Kovacs*, the environmental obligation was considered a claim.

The *Apex Oil* case was appealed to the Supreme Court to remedy the jurisdictional split. However, the Court denied the petition for certiorari, effectively leaving the resolution in the hands of Congress.

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108. *Torwico*, 8 F.3d at 150.
109. *Chateaugay*, 944 F.2d at 1008.
112. Id.
113. Id. at 150.
114. Id.
III. ANALYZING BP’S ENVIRONMENTAL OBLIGATIONS UNDER CURRENT ENVIRONMENTAL LAWS

If BP were to file for bankruptcy, how would its obligations be treated under the current framework for defining claims? There is no clear precedent for the treatment of environmental claims, thus, a bankruptcy court in any of the Gulf states’ jurisdictions could follow the reasoning of any of the circuits discussed above. The speculative nature of such a decision reinforces the need for a federal standard in dealing with environmental obligations in bankruptcy.

A. Facts About BP and the Gulf Oil Spill

On April 20, 2010, the Deepwater Horizon drilling rig caught fire due to a subsea explosion.115 This event killed 11 workers and caused approximately 205 million gallons of oil to leak into the Gulf of Mexico.116 The total amount of damage caused by this event is unknown, and it will be difficult to calculate the cost required to repair this damage. To date, several mechanisms have been established to reimburse parties that have been adversely affected by the incident. These mechanisms are designed to assure that compensation for economic and natural resource damages will be allocated fairly and adequately.

Individuals, businesses, and state and local governments adversely affected by the oil spill may file a claim to receive compensation with the Gulf Coast Claims Facility (GCCF), funded by a voluntary escrow account set up by BP.117 Alternatively, if the GCCF denies a claim, a party may seek compensation from the Oil Spill Liability Trust Fund, a fund established under the Oil Pollution Act, which is administered by the U.S. Coast Guard.118 President Obama has proposed that Congress establish a Gulf Coast Recovery Fund, dedicated to long-term recovery and restoration

116. Id.
118. Id.
in the Gulf.\textsuperscript{119} All of these remedies are funded either directly or indirectly by BP and the oil industry. In the event of a BP bankruptcy, the Oil Spill Liability Trust Fund and Gulf Coast Recovery Fund would remain unaffected because they are independent funds. However, there is a limit to how much these funds are able to pay out and their resources may become exhausted.

Setting aside the issue of the GCCF escrow account, it is instructive to examine what types of claims could be filed against BP under state and federal law and whether or not such claims would be protected during the bankruptcy process. The U.S. government has declared BP Corporation America, Inc., the guarantor, as a responsible party for the spill under the OPA, and has been billing BP Exploration and Production, a subsidiary of BP America and another designated responsible party, for the response costs to date.\textsuperscript{120}

**B. Oil Pollution Act**

The Oil Pollution Act of 1990 allows the government to hold responsible parties liable for removal costs and damages specified in OPA.\textsuperscript{121} Removal costs include all costs “incurred by the United States, a State, or an Indian tribe . . . and any removal costs incurred by any person for acts taken by the person which are consistent with the National Contingency Plan [(NCP)].”\textsuperscript{122} The NCP is the federal government’s “blueprint” for responding to oil spills.\textsuperscript{123} Since the NCP was first published in 1968, it has been amended to reflect important changes in environmental law, including revisions that reflect important provisions in OPA.\textsuperscript{124} The NCP provides that “any person may undertake a response action,” but also includes a provision that would allow the government to force a responsible party to cleanup a contaminated area.\textsuperscript{125} Generally, a responsible party will

\begin{itemize}
\item \textsuperscript{120} U.S. GOVT ACCOUNTABILITY OFFICE, GAO-11-90R, DEEPWATER HORIZON OIL SPILL: PRELIMINARY ASSESSMENT OF FEDERAL FINANCIAL RISKS AND COST REIMBURSEMENT AND NOTIFICATION POLICIES AND PROCEDURES (2010).
\item \textsuperscript{121} Oil Pollution Act of 1990, 33 U.S.C. § 2702(a) (2006).
\item \textsuperscript{122} § 2702(b)(1).
\item \textsuperscript{123} National Oil and Hazardous Substances Pollution Contingency Plan Overview, U.S. ENVIRONMENTAL PROTECTION AGENCY EMERGENCY MANAGEMENT, www.epa.gov/emergencies/content/lawsregs/ncpover.htm (last updated Aug. 19, 2011).
\item \textsuperscript{124} Id.
\item \textsuperscript{125} 40 C.F.R. § 300.700(a) (2010).
\end{itemize}
have the opportunity to work cooperatively with the federal and state response agencies in the cleanup activities. 126 If the responsible party refuses to voluntarily undertake a cleanup operation, the government has an alternative right of payment guaranteed under OPA. 127 A responsible party is liable for specific damages, including: natural resource damage, damage to real or personal property, damage for loss of subsistence use, lost revenues, lost profits and earning capacity, and costs of providing public services. 128 Under OPA, the government also has a right to seek reimbursement for funds expended from the Oil Spill Liability Trust Fund. 129

A key provision of OPA requires that owners and operators of vessels and facilities establish proof of financial assurance sufficient to meet the limits of liability covered by the statute. 130 A Mobile Offshore Drilling Unit, like the Deepwater Horizon, is treated as a vessel for purposes of liability and as an offshore facility for any removal and damage costs that exceed the vessel liability cap. 131 As an offshore drilling unit, the Deepwater Horizon is subject to a higher level of financial responsibility, not to exceed $150 million, “based on the relative operational, environmental, human health, and other risks posed by the quantity or quality of oil that is explored for, drilled for, produced, or transported by the responsible party.” 132 The limitation on financial responsibility compared to the costs of damages incurred in the Gulf to date, which far exceeds $150 million, illustrates the inadequacy of this provision. 133 The reliance on new technologies and methods for deepwater drilling makes it difficult to predict the amount of damage that could arise from failure. The federal government must create another mechanism to ensure that the responsible party will be held fully accountable.

128. Id. § 2702(b)(2)(A)–(F).
129. Id. § 2712(a).
130. Id. § 2716(a).
C. State Laws

The Gulf States each have laws that deal with oil spill pollution, most of which are modeled in some way after federal law. This article looks at the laws of two of the Gulf States, Louisiana and Florida, and examines what legal mechanisms, if any, have been established that would protect the state in the event of bankruptcy.

1. Louisiana

Louisiana’s Oil Prevention and Response Act (LOPRA) is an integral mechanism to protect Louisiana’s fragile natural resources in the event of a spill. Louisiana has “large volumes of stored oil, numerous production platforms and miles of pipelines, large numbers of inland barges, and heavy tanker traffic, including the Louisiana Offshore Oil Port which receives fifteen percent of the oil imported into the United States.” Because of Louisiana’s strong connection to the production and shipment of oil, together with Louisiana’s “limited adequate highway access to the coast and remote inland areas for rapid transport of oil spill equipment and few areas suitable for staging facilities, . . . great potential for a major oil spill event and its consequences” exist.

LOPRA was created to “support and compliment” the federal OPA. LOPRA mirrors OPA, containing similar provisions for liability, natural resource damages, and defenses and establishes a state fund similar to the Oil Spill Liability Trust Fund. The analysis of LOPRA in a bankruptcy context is much like the analysis of OPA. However, unlike OPA, LOPRA requires a responsible party to “[u]ndertake all reasonable actions to abate, contain, and remove pollution from the discharge.” This provision allows the state government to order a responsible party to undertake a cleanup obligation and, depending on a court’s analysis, possibly avoid having such an obligation be defined as a “claim” under the Code. Under LOPRA the government has an alternative right to payment if a responsible party fails

134. Louisiana’s Oil Spill Prevention and Response Act was created to “support and compliment” the Oil Pollution Act. L. A. REV. STAT. ANN. § 30:2453 (2000); Florida’s Pollution Discharge Prevention and Control Act was enacted “to support and complement applicable provisions of the Federal Water Pollution Control Act” FLA. STAT. ANN. § 376.021(6) (West 2010).
135. Id. REV. STAT. ANN. § 30:2452.
136. Id.
137. Id. § 30:2453(B).
138. Id.
139. Id. § 2463(A)(2).
to complete its cleanup obligation, making it susceptible to the alternative definition as a “claim” under the Code.\textsuperscript{140}

2. Florida

Florida’s Pollutant Discharge Prevention and Control Act (formerly titled the Oil Spill Prevention and Pollution Control Act) was enacted “to support and complement applicable provisions of the Federal Water Pollution Control Act.”\textsuperscript{141} It provides that “[a]ny person discharging pollutants as prohibited by [the Act] shall immediately undertake to contain, remove, and abate the discharge.”\textsuperscript{142} Similarly to LOPRA, Florida’s act allows the government to conduct the removal in the event the responsible party does not or is not capable of doing so, and to recover all costs incurred from the responsible party.\textsuperscript{143} Florida’s oil spill act is similar to LOPRA in the bankruptcy context. The government may be able to avoid asserting a bankruptcy “claim” as long as it orders the responsible party to clean up and does not attempt to recover any money.

Florida’s State Lands Statute gives the Board of Trustees for the Internal Improvement Trust Fund (the Board) the obligation to ensure that state lands are adequately managed, protected, and conserved.\textsuperscript{144} In order to fulfill this obligation, the Trustees may bring a suit or impose a fine against any person who has damaged state lands.\textsuperscript{145} Its unique feature, from a bankruptcy perspective, is that all fines and damages awarded under the statute constitute a lien upon the real and personal property of a responsible party.\textsuperscript{146} This statute creates a secured claim by allowing the Trustees to impose a lien, which would be given a higher priority than other environmental obligations that are not secured. This Act has the potential of providing Florida with an alternative and more secure way of ensuring that the responsible party is held accountable. However, the Act is narrow, covering only damage to state lands, and has never been used in such a way before.

\begin{itemize}
  \item \textsuperscript{140} \textit{Id.} \S 30:2463(B) (allowing state to undertake cleanup for responsible parties that fail to complete their cleanup obligation); \textit{Id.} \S 30:2480(G) (allowing state to recover costs associated with the “restoration, rehabilitation, replacement, or mitigation of damages to natural resources”).
  \item \textsuperscript{141} \textit{Fla. Stat. Ann.} \S 376.021(6) (West 2010).
  \item \textsuperscript{142} \S 376.09(1).
  \item \textsuperscript{143} \S 376.09(2).
  \item \textsuperscript{144} \textit{Fla. Stat. Ann.} \S\S 253.01, 253.03 (West 2009 & Supp. 2011).
  \item \textsuperscript{145} \S 253.04(1)-(2).
  \item \textsuperscript{146} \S 253.04(6).
\end{itemize}
IV. POSSIBLE SOLUTIONS

A number of solutions have been proposed to reconcile the gap that exists between the Bankruptcy Code and environmental laws.147 Perhaps the most obvious is to amend the Bankruptcy Code. Of the many different options for such an amendment, this article will explore only a few. Aside from such a sweeping change in the governing bankruptcy law, states have a variety of options available to ensure that their environmental claims will not be discharged in bankruptcy proceedings. These options enable states to better protect their natural resources and the public health of their citizens.

A. Amendments to the Bankruptcy Code

The current incarnation of bankruptcy law in the United States is a result of a relatively modern historical shift.148 As society’s views of debt and the need for relief changed, so did bankruptcy law. When the Code was enacted in 1978, the country did not have extensive familiarity or experience with many of the environmental laws that have become an integral part of protecting the nation’s natural resources. Thirty-four years after the passage of the current federal bankruptcy system, it is time to step back and think about how this system could be amended to create a uniform and fair procedure for treating environmental obligations.

One option is to define all environmental obligations as claims and to amend the Code to raise the priority status for these claims. Currently, most environmental claims rank eighth under Section 507’s priority list, falling behind other unsecured claims.149 This low level of priority means that the environmental obligation will not be paid in full, if at all.150 Moving environmental obligations to rank first in priority of unsecured claims would make obtaining substantial repayment far more likely.151 Also, this would avoid the unfairness of placing environmental claims ahead of secured creditors. The environmental claim would, as it is currently, be considered unsecured and all of the secured claims would still be paid ahead of the environmental obligation.152

150. Silber, supra note 147, at 890.
151. Id. at 891.
152. Id.
Another option is to amend Section 523 of the Code, which creates exceptions to the discharge provision, to include environmental claims under the debts that cannot be discharged. 153 This option is premised on the idea that the “fresh start” principle of bankruptcy law is not more important than the responsibility of states to hold polluters responsible for damage to the environment. 154 The current law allows environmental claims to be discharged, thereby implicitly condoning the behavior that gave rise to such obligations. 155 Adding environmental obligations to the list of non-dischargeable debts that “concern misconduct by the debtor in the events leading up to the bankruptcy” would signal a stronger commitment to environmental protection. 156

These two options, although they would aid in cleanup, would not hold a debtor fully responsible. By prioritizing environmental claims, these added expenses will have to be taken into consideration in the final bankruptcy settlement. This could result in secured claims receiving less and many unsecured claims not being paid at all. In the end, other debtors will end up sharing the cost of the environmental remediation.

Lastly, a third option is to amend the Code to make it more difficult to evade environmental obligations. Senator Cantwell introduced this idea in a bill to the Senate in 2007. 157 This bill was in response to a report by the Government Accountability Office that highlighted the need to ensure that parties meet their cleanup obligations. 158 This report noted that the number of bankruptcies involving environmental obligations was unknown, simply because the information is not routinely collected. 159 Part of the proposed bill would require any business that is filing for bankruptcy to report all environmental liabilities to the EPA. 160

The most innovative section of this bill calls for an amendment to the Bankruptcy Code which would allow a trustee to access any assets of the debtor that were transferred within the previous ten years if the debtor, at the time of transfer, had environmental liabilities under CERCLA. 161 This

153. Id. at 888.
154. Id.
155. Id.
159. Id. at 17–18.
161. Id. § 201. CERCLA is the acronym for the Comprehensive Environmental Response, Compensation, and Liability Act, commonly referred to as “Superfund.”
would allow the EPA to fully recover from a parent corporation if the environmental liabilities sought were from a bankrupt subsidiary. This amendment aims to target corporations that participate in a “shell game,” whereby the corporation moves assets out of a liable subsidiary, leaving an empty shell and avoiding responsibilities. Of all of the proposed amendments to the Bankruptcy Code, this solution stays truest to the “polluter pays” principle. The amendment would keep the obligation in the hands of the debtor, rather than merely shifting priorities of the bankruptcy estate. Unfortunately, this amendment does not appear to have any political support and the bill has effectively died in committee hearings.162

B. State Solutions: Liens and Superliens

In the absence of an amendment to the federal Bankruptcy Code, securing a claim by means of a statutory lien or a statutory environmental “superlien” is a good way for states to ensure that the responsible party will be held accountable.163 A statutory lien, similar to the Florida State Lands Statute’s lien, applied specifically to all removal expenditures incurred by the state, would give the state a better standing in the bankruptcy proceeding.164 In the case of the Gulf Oil Spill, adding a statutory lien provision to LOPRA or Florida’s Pollution Prevention Act would allow the states to recover more of their removal costs in a bankruptcy proceeding than their current laws now provide. However, the downfall of a regular statutory lien is that it only has privilege over other secured liens filed after the statutory lien was filed.165 The statutory lien does not have priority over any previously filed lien; therefore, it is not guaranteed to be fully secured.

An alternative to a non-priority statutory lien is an environmental super-priority lien, or superlien. A superlien has priority over all claims and prior liens of other creditors. A few states have enacted superlien laws, some more expansive than others.166 The New Jersey Spill Compensation and Control Act (Spill Act) is the most expansive of the state superlien

163. Smith, supra note 2, at 1005–06.
164. Id. at 1006.
165. AHERN, supra note 2, § 1:21.
The Spill Act is an apt model for Gulf states because it allows the government to impose the lien on any property of the debtor’s estate. Other superlien laws only attach a lien to the real property where hazardous waste was released. An expansive lien, like the Spill Act, is essential in the Gulf due to the extent and high cost of the damage. Also, limiting the lien attachment to the real property where hazardous waste was released would not have effect in the Gulf because the Macondo well—the source of the released oil—was leased, not owned, by BP from the federal government.

CONCLUSION

In the wake of a devastating environmental disaster, it is difficult to step back and observe what changes need to be made. The federal Bankruptcy Code is in many ways at odds with the purposes and goals of environmental laws. Unfortunately, there is no perfect fix that can reconcile this divide. In the absence of a federal amendment to the Code, it is essential that the Gulf states reevaluate the strength of their environmental laws. Although there is no state law that is bankruptcy-proof, there are laws that would better protect the Gulf States in the event that a responsible party files for bankruptcy. Enactment of these laws could also signal change in the culture of oil exploration in the Gulf. If the penalties for failure are higher, the level of investment in precautionary measures by the oil industry are also likely to increase. Thus, whether BP files for bankruptcy is not as important as the lessons to be learned from this disaster. Once a party responsible for environmental damages files for bankruptcy, it is too late to make changes in state laws to hold them accountable. Gulf states need to look ahead and create stronger environmental laws that will secure some level of financial assurance in the event that a polluter files for bankruptcy. Such laws will help ensure that states will not be left to pick up the tab for cleanup costs.

167. Smith, supra note 2, at 1007.
168. Spill Compensation and Control Act, 58 N.J. STAT. ANN. § 10.23.11f(3)(f) (Supp. 2011). For example, Massachusetts’ superlien statutes only attaches to the property where the hazardous waste was released. Smith, supra note 2, at 1008.
INTRODUCTION

On the night of April 20, 2010, an explosion rocked the Deepwater Horizon, an oil drilling rig in the Gulf of Mexico. Within ten days, an oil
spill had spread across almost 4,000 square miles of ocean. The massive release of oil from the Macondo reservoir continued unabated for eighty-six days until the well was capped on July 15, 2010.

The Deepwater Horizon spill is the largest accidental oil spill in history. Estimates indicate that the amount of oil released may be nearly five million barrels, or about 205 million gallons. In comparison, the Exxon Valdez spilled only 11 million gallons. Oil made landfall in all five of the Gulf Coast states: Louisiana, Mississippi, Alabama, Florida, and Texas.

Communities dependent on marine harvesting and tourism have been devastated. Huge portions of the Gulf were closed to fishing by the federal government. The environmental harm is catastrophic; thousands of species were threatened and the whole ecosystem has suffered a devastating blow. The true extent of the ecological damage remains relatively uncertain.

The legal implications of the oil spill are also vast. The Department of Justice has filed suit against BP and eight other companies, and criminal

4. Id.
6. In re Exxon Valdez, 270 F.3d 1215, 1223 (9th Cir. 2001). Just over three million barrels of oil were spilled into the Bay of Campeche by the Mexican rig Ixtoc I in 1979. Gulf of Mexico Oil Spill (2010), supra note 3.
7. Gulf of Mexico Oil Spill (2010), supra note 3.
investigations are ongoing.\textsuperscript{11} Wrongful death suits are being filed on behalf of the eleven men who were killed during the explosion and its aftermath.\textsuperscript{12} State and local governments affected by the disaster have also initiated suits.\textsuperscript{13} Even securities, racketeering, and animal cruelty litigation has begun.\textsuperscript{14}

Over three hundred lawsuits have already been consolidated under Federal Judge Carl Barbier in New Orleans.\textsuperscript{15} Similar to the Exxon Valdez case,\textsuperscript{16} the multi-district litigation will be bifurcated.\textsuperscript{17} An initial trial to determine fault and assign percentages of liability to defendants was scheduled to begin February 27, 2012.\textsuperscript{18} Damage trials are unlikely to be held until 2013.\textsuperscript{19} If history is a good marker, appellate litigation could potentially last decades.\textsuperscript{20}

This research paper focuses on the bulk of the claimants and potential civil liability. This group includes those affected economically by the spill, such as shrimpers, fisherman, seafood dealers, restaurants, hotel owners, other business owners, and individuals who assert claims.

\begin{itemize}
  \item \textsuperscript{13} Amanda Bronstad, \textit{Plaintiffs Lawyers Say Oil Spill Fund Unlikely to Deter Litigation}, A.M. LAWYER MAG (Aug. 30, 2010), http://www.law.com/jsp/nlj/PubArticleNLJ.jsp?id=120247122741.
  \item \textsuperscript{15} Dionne Searcey, \textit{Judge in New Orleans to Hear Oil-Spill Cases}, WALL ST. J. LAW (Aug. 11, 2010), http://online.wsj.com/article/SB10001424052748704164904575421483433277348.html?mod=WSJ_hps_MIDDLEForthNews. The multi-district litigation has been consolidated in the Eastern District of Louisiana. \textit{Id.}
  \item \textsuperscript{16} \textit{See In re Exxon Valdez}, 270 F.3d 1215, 1225 (9th Cir. 2001) (chronicling four phases of trial and post-trial litigation).
  \item \textsuperscript{17} \textit{Judge Postpones Trial in Gulf Oil Spill Cases}, BUSINESS WEEK (Oct. 7, 2010), http://www.businessweek.com/ap/financialnews/D91MRH700.htm.
  \item \textsuperscript{18} \textit{Id.}
  \item \textsuperscript{19} \textit{Id.}
\end{itemize}
Part I, the Background, first outlines the potential claims available to these plaintiffs. Part I.A examines federal claims under the Oil Pollution Act of 1990 (OPA) and explains the OPA savings clauses. The research also explores federal maritime claims and an array of statutory and common law claims arising under state law. Part I.B discusses preemption, displacement, maritime preemption, and related caselaw.

In the Analysis, Part II.A determines that OPA preserves state law, in accord with most authorities on the subject. Part II.B demonstrates that OPA clearly does not displace general maritime law, contrary to two district court decisions premised on faulty reasoning. An issue, which has not been addressed by courts or academics, is whether maritime law might preempt state law independently from OPA. Part II.C argues that OPA's savings clause is limited to statutory preemption analysis and does not affect maritime preemption.

The maritime preemption standard created by the Supreme Court in *Southern Pacific Co. v. Jensen* is rooted in the Admiralty Clause of the Constitution and developed over the years to promote the federal interest in maritime uniformity.21 The doctrine has not been applied clearly in the past. As one federal judge stated: “[d]iscerning the law in this area is far from easy; one might tack a sailboat into a fog bank with more confidence.”22 Nevertheless, this essay seeks to illuminate a path through the murky doctrine towards a fair and efficient outcome.

After applying the standard to the unique facts and legal dilemma of the Gulf spill, this essay concludes that preemption of state law is warranted because the federal interest overwhelms state interests in the balancing test developed under *Jensen*’s third prong. The spill originated in federal waters. It resulted from an activity heavily regulated by federal law and agencies. Its affects were not confined to a single state but were spread across an entire region. There is also a federal interest in the uniform recovery for citizens in Gulf states. The state interests are minimal because the rights and remedies available under state law are generally duplicative of the federal scheme provided by OPA and maritime negligence. However, maritime courts may use their inherent rule-making power to incorporate aspects of state law into the litigation to alleviate the harshness of preemption and pay respect to the historic police power of states. This dual analysis balances the state’s historic police power and the federal interest in uniformity in

22. Ballard Shipping Co. v. Beach Shellfish, 32 F.3d 623, 624 (1st Cir. 1994).
maritime law. Its application creates results that are fair to the litigants and efficient for federal courts.

During the process of publishing the present article, the district court released an order addressing preemption and displacement, among a multitude of other issues.23 Similar to the conclusion drawn here, the district court held that OPA did not displace maritime claims and punitive damages under maritime law.24 Also arriving at a similar conclusion to this article, the district court found that state law was preempted by federal maritime law despite the OPA savings clause.25 While the conclusions are generally similar, the substance, focus, scope, and depth of the two analyses vary significantly.26 This article should provide an effective supplement to the analysis performed by the district court as the parties decide which issues to eventually raise on appeal.

I. BACKGROUND

A. Potential Claims

1. OPA Claims.

Congress enacted the Oil Pollution Act of 1990 (OPA) in the wake of the 1989 Exxon Valdez spill.27 OPA establishes that a responsible party28 is strictly liable for removal costs29 and damages caused by the discharge of

24. See id. at *10–15 (“Thus, OPA does not displace general maritime law claims for those Plaintiffs who would have been able to bring such claims prior to OPA’s enactment. These Plaintiffs assert plausible claims for punitive damages against Responsible and non-Responsible parties.”).
25. See id. at *5–10 (dismissing all common law and statutory claims arising under state law and noting that “[a]lthough the Supreme Court [in Locke] observed that the savings clause in OPA preserved state statutes relative to liability, it did not declare a rule so broad as to allow state liability statutes to apply to oil spills outside of state waters”).
26. For example, the district court examined the role of the Outer Continental Shelf Lands Act, admiralty jurisdiction, and vessel status (all key issues in determining the applicable law) in much greater detail than the current paper. Id. at *2–5. This article, however, explored the maritime preemption in greater depth, particularly the Jensen doctrine and the court’s maritime rule-making authority. See infra Part I.B.2 and Part II.C. While the authorities relied upon by the respective analyses overlap to some extent, there is also considerable variance.
29. Removal costs include all costs incurred by the federal government and individual states. 33 U.S.C. § 2702.
oil. Private parties, as well as federal and local government agencies, may recover. Private plaintiffs may recover loss of subsistence use of natural resources, damages to real or personal property, and even pure economic damages. By allowing claimants to recover pure economic losses without physical damage to property or personal injury, Congress effectively eliminated one of the greatest historical barriers of recovery in maritime pollution and tort cases.

OPA’s strict liability for offshore facilities is unlimited in regards to removal costs, but is capped at $75 million for the other damage provisions. Liability is unlimited, however, if the incident was caused by gross negligence, willful misconduct, violation of a federal safety regulation, or if the responsible party fails to report a spill or cooperate with government officials. If the discharge resulted from an act of God, act of war, or an act or omission of a third party, then the party has a viable defense.

30. See § 2702(a) (“[E]ach responsible party for a vessel or facility from which oil is discharged . . . into or upon the navigable waters or adjoining shorelines or the exclusive economic zone is liable for the removal costs and damages specified in subsection (b) of this section that result from the incident.”).
31. See § 2702(b) (“any claimant”); § 2702(b)(2)(D) (providing for recovery of lost taxes and other revenues by the federal, state, and local governments); § 2702(b)(2)(a) (providing recovery for loss of natural resources by various government entities).
32. See § 2702(b)(2)(c) (providing recovery for any claimant who uses those resources without regard to the ownership or management of the resources).
33. See § 2702(b)(2)(b) (providing for recovery of actual damages or economic damages resulting from injury of real or personal property by any claimant).
34. See § 2702(b)(2)(e) (allowing recovery for lost profits and future earnings by any claimant).
35. See infra Part I.A.3. (discussing Robins Dry Dock rule); H.R. CONF. REP. NO. 101-653, at 3 (1990), reprinted in 1990 U.S.C.C.A.N. 779, 781 (The Act will govern notwithstanding “existing requirements that physical damage to the proprietary interest of the claimant be shown.”). The limit of pure economic recovery under OPA is an interesting issue not addressed by this paper. One possible solution is borrowing limitations from traditional tort doctrine: duty, proximate causation, foreseeability, and temporal and geographic remoteness. See, e.g., Benefiel v. Exxon, 959 F.2d 805, 808 (9th Cir. 1992) (holding that Californians who claimed that their gasoline cost more as a result of the Exxon Valdez spill were barred from recovery because they lacked proximate causation despite an Alaska statute which created strict liability for pure economic harm resulting from hazardous substance spills).
36. Id. at § 2704(a)(3).
37. Id. at § 2704(c).
38. Id. at § 2703(a). Third parties do not include “an employee or agent of the responsible party or a third party whose act or omission occurs in connection with any contractual relationship with the responsible party.” Id.
Title I of the statute, governing oil spill liability and compensation, is peppered with savings clauses. Congress provides for strict liability “[n]otwithstanding any other provision or rule of law,” in the central liability provision of the statute. The most extensive savings provision, Section 2718, preserves state law:

Nothing in this Act . . . shall—(1) affect, or be construed or interpreted as preempting, the authority of any State or political subdivision thereof from imposing any additional liability or requirements with respect to—(A) the discharge of oil or other pollution by oil within such State; or (B) any removal activities in connection with such a discharge; or (2) affect, or be construed to affect or modify in any way the obligations or liabilities of any person under . . . State law, including common law.

OPA’s legislative history reinforces the broad language of the savings provisions. Specifically, the Senate Report stated: “[t]he theory behind the [savings clause] is that the federal statute is designed to provide basic protection for the environment and victims damaged by spills of oil. Any state wishing to impose a greater degree of protection for its own resources and citizens is entitled to do so.”

Maritime law is also preserved from displacement by OPA; the “Act does not affect admiralty or maritime law,” or jurisdiction of such claims. The House Report further clarifies that OPA does not affect or supersede admiralty and maritime law, and that Congress wishes “to promote uniformity regarding these laws.”

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41. Id. at § 2718(a).
44. 33 U.S.C. § 2751(e).

Maritime tort clearly recognizes an action for damages caused by oil pollution.46 The primary claim available is negligence, comprised of its usual elements: duty, breach, causation, and damages.47 The burden of proof is a preponderance of the evidence standard.48 Punitive damages are available in cases of recklessness or greater fault.49 However, the punitive-to-compensatory damages ratio may not exceed 1:1, at least in cases not involving intentional, malicious, profit-motivated, or surreptitious conduct.50 Under the common law maritime rule announced in Robins Dry Dock, economic damages cannot be recovered without physical damage to a plaintiff’s property.51 If negligence diminishes aquatic life, however, commercial fishermen, as “favorites of the admiralty,” may still recover pure economic damages.52

Strict products liability has been recognized in maritime law.53 These claims could be relevant given the prominent role of the blow-out preventer in causing the spill.54 A federal nuisance claim might be applicable, but

46. See, e.g., Exxon Shipping Co. v. Baker, 554 U.S. at 475–76, 478 (2008). Because the Deepwater Horizon rig is not a traditional vessel, a maritime jurisdictional question may arise which is outside the scope of this paper. The test for admiralty tort jurisdiction requires that the incident occur on navigable waters, have a potentially disruptive impact on maritime commerce, and bear a substantial relationship to traditional maritime activity. See generally Thomas J. Schoenbaum, Admiralty & Maritime Law § 3–6 (4th ed. 2010). The Gulf oil spill satisfies the locality aspect because it originated in the U.S. exclusive economic zone. There was clearly potential to disrupt maritime commerce as well. The maritime relationship requirement will depend upon the rig being classified as a vessel. Id. at § 3–6. Generally, mobile rigs are considered vessels and rigs permanently attached to the ocean floor are not. Id. However, the caselaw is divided. Compare Sohyde Drilling and Marine Co. v. Coastal States Gas Producing Co., 644 F.2d 1132, 1138 (5th Cir. 1981) (holding extraction of gas by a mobile drilling barge in inland waters was not traditional maritime activity) with Houston Oil & Minerals Corp. v. American Intern. Tool Co., 827 F.2d 1049, 1054 (5th Cir. 1987) (“On a practical level, Sohyde requires the application of potentially inconsistent rules of law to different claims arising from a single incident. For example, in the likely scenario of a blowout on a movable rig . . . causing both personal injury and property damage, maritime law would apply to the latter while state law would govern the former.”). For the purpose of this research, the incident will be deemed to be governed by maritime law given that the rig was mobile and not permanently attached to the sea floor. If courts resolve the issue otherwise, most of the analysis here will be irrelevant.


48. In re Exxon Valdez, 270 F.3d 1215, 1231 (9th Cir. 2001).

49. Id. at 1226 n.14.


51. See Robins Dry Dock & Repair v. Flint, 275 U.S. 303, 309 (1927); see also Louisiana v. M/V Testbank, 752 F.2d 1019, 1021–28 (5th Cir. 1985) (examining history and rationale of the rule).

52. Union Oil Co. v. Oppen, 501 F.2d 558, 567, 570–71 (9th Cir. 1974).


54. See Gulf of Mexico Oil Spill (2010), supra note 3 (discussing role of blow-out preventer).
there is doubt that nuisance claims exist in maritime law.\textsuperscript{55} Other maritime actions, such as wrongful death and intentional torts, exist but are irrelevant to the current analysis.\textsuperscript{56} In the Analysis, this research only considers the preemptive effect of maritime negligence claims.

4. State Law Claims.

While delving into the intricacies of each of the Gulf Coast states’ common law and statutes is impossible here, a general overview is helpful. Common law claims include negligence, nuisance, strict products liability, and strict liability for abnormally dangerous substances.\textsuperscript{57}

The negligence claims require a showing of the familiar elements, usually by a preponderance of the evidence. Similar to maritime claims, pure economic damages are not recoverable absent personal injury or property damage,\textsuperscript{58} and punitive damages can be awarded only upon showing recklessness or greater fault.\textsuperscript{59} Unlike maritime claims, most states require clear and convincing evidence for punitive claims.\textsuperscript{60} Maximums for punitive damages vary. Florida and Alabama have a maximum ratio of 3:1

\begin{itemize}
\item \textsuperscript{55} See Testbank, 752 F.2d at 1030 n.13. There is also doubt that private parties can assert federal nuisance claims. See Connecticut v. Am. Elec. Power Co., 582 F.3d 309, 358–68 (2009) (adopting rule allowing suits by non-state parties who suffer a harm different from the public).
\item \textsuperscript{57} Matthew P. Harrington, Necessary and Proper, But Still Unconstitutional, 48 CASE W. RES. L. REV. 1, 58 (1997). Trespass is irrelevant to the Gulf spill cases because there was no intent. Id.
\item \textsuperscript{58} See, e.g., Cargill, Inc. v. Offshore Logistics, Inc., 615 F.2d 212, 213–14 (5th Cir. 1980) (holding that Louisiana law bars recovery for negligent interference with contractual relations).
\item \textsuperscript{59} See, e.g., ALA.CODE § 6-11-20 (LexisNexis 2005) (prohibiting punitive damages in civil actions unless defendant acted recklessly); MISS. CODE ANN. § 11-1-65 (Lexis Supp. 2010) (same). But see TEX. CIV. PRAC. & REM. CODE ANN. § 41.003 (West 2008) (allowing punitive award for gross negligence).
\item \textsuperscript{60} Compare ALA.CODE § 6-11-20 (LexisNexis 2005) (requiring clear and convincing evidence for punitive damage awards); MISS. CODE ANN. § 11-1-65 (Lexis Supp. 2010) (same); TEX. CIV. PRAC. & REM. CODE ANN. § 41.003 (West ) (same) with In re Exxon Valdez, 270 F.3d 1215, 1232 (9th Cir. 2001).
\end{itemize}
and Texas is 2:1. 61 Mississippi caps punitive awards at $20 million. 62 Louisiana does not allow punitive damages for oil pollution. 63

Most states have adopted the Restatement’s definition of public nuisance: an “unreasonable interference with a right common to the general public.” 64 Private nuisance, in contrast, requires substantial unreasonable interference with private use and enjoyment of land. 65 Strict liability claims may be available if oil is determined to be an abnormally dangerous substance under state law. 66 Courts are reluctant to classify oil in this manner. 67

Additionally, each Gulf Coast state has enacted legislation governing liability for oil spills, or water pollution generally. 68 Generally, these statutes create strict liability and a private right of action. 69 The rights and defenses under the Florida statute, for example, are quite similar to OPA. 70 Liability caps vary. 71

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65. Restatement (Second) of Torts § 821B cmt. h, 821D (1979).
66. Restatement (Second) of Torts § 520 (1979) (supplying factor test).
70. See Fla. Stat. Ann. § 376.12 (West 2010) (allowing state to recover removal costs and damage to natural resources, capping liability at $150 million for facilities, but creating an exception for gross negligence, willful misconduct, violation of a regulation, or lack of cooperation with government during cleanup). Defenses include acts of war, acts of god, and third party causation, also similar to OPA. Id.
71. See, e.g., id (capping liability at $150 million for facilities with exceptions); Tex. Civ. Nat. Res. Ann. § 40.203 (West 2011) (limiting liability at $350 million for facilities, but no cap if unauthorized discharge of oil results from gross negligence, willful misconduct or violation of federal or state safety, construction, or operating regulation).
B. Statutory Preemption, Displacement, and Maritime Preemption

1. Statutory Preemption and Displacement.

The Supremacy Clause proclaims that federal law is the supreme law of the land. In the bulk of cases, preemption doctrine evaluates whether a federal statute preempts state common law or a state statute. However, federal common law and regulations may also preempt state law. There are generally four types of preemption: express, field, implied, and conflict. In all preemption and displacement case law, congressional intent is the “ultimate touchstone.” Many federal statutes include savings clauses which announce legislative intent to avoid preemption of related state claims.

Because OPA's savings clause expressly preserves state law, extensive review of preemption doctrine is unnecessary. However, the mere presence of a savings clause is not dispositive. Courts must evaluate the text of the provision, its location within the statutory framework, and its relationship to the federal regulatory scheme, and the state law being challenged. The Supreme Court has stated that it will “decline to give broad effect to savings clauses where doing so would upset the careful regulatory scheme established by federal law.”

Displacement of federal common law by federal statute involves a similar but distinct analysis to preemption. Though courts have frequently confused the doctrines by using the term preemption when discussing

72. U.S. Const. art. VI, cl. 2.
79. Id. at 106–07.
displacement,\textsuperscript{80} the Supreme Court has emphasized that “the appropriate analysis . . . is not the same.”\textsuperscript{81} Displacement is more straightforward than preemption because it only involves “an assessment of the scope of the legislation and whether the scheme established by Congress addresses the problem formerly governed by federal common law.”\textsuperscript{82} The historic presence of state police powers, competing state and federal interests, and the presence of a savings provision preserving state law are all irrelevant.\textsuperscript{83}

There is a preliminary assumption that “it is for Congress, not federal courts, to articulate” federal law.\textsuperscript{84} Whether the federal statute is “comprehensive” in character is “quite relevant.”\textsuperscript{85} Federal courts may fill a gap in a federal regulatory scheme with common law but may not do so if it would essentially create a different scheme or have a “frustrating effect” on the federal scheme.\textsuperscript{86} Displacement of federal maritime common law is governed by the same principles.\textsuperscript{87}

2. Maritime Preemption and Case Law

Under the Admiralty Clause, judicial power extends to all cases of admiralty and maritime jurisdiction.\textsuperscript{88} Though not explicit in the clause, Congress has implied authority to legislate in the area.\textsuperscript{89} In early maritime law, the interest of uniformity was held to be “unquestionable.”\textsuperscript{90} Later

\begin{itemize}
\item \textsuperscript{81} City of Milwaukee v. Illinois & Michigan (Milwaukee II), 451 U.S. 304, 316 (1981).
\item \textsuperscript{82} Id. at 315 n.8.
\item \textsuperscript{83} See id. at 316–17 (stating that such concerns are “not implicated”).
\item \textsuperscript{84} Id. at 317.
\item \textsuperscript{85} Id. at 319 n.14. If Congress has occupied a field of law through a comprehensive regulatory program supervised by an administrative agency, displacement is suggested. Id. at 317–19.
\item \textsuperscript{86} Id. at 324 n.18; Exxon Shipping Co. v. Baker, 554 U.S. 471, 489 (2008).
\item \textsuperscript{87} See Miles v. Apex Marine Corp., 498 U.S. 19, 31–37 (1990) (holding that loss of society and future earnings are not recoverable under a maritime wrongful death action because those damage provisions are not recoverable under the applicable federal statutes, the Jones Act and the Death on the High Seas Act) (“Congress has spoken directly to the question of recoverable damages on the high seas, and . . . the courts are not free to supplement Congress’ answer so thoroughly that the Act becomes meaningless.”); Mobil Oil Corp. v. Higginbotham, 436 U.S. 618, 625 (1978) (refusing to provide damages for loss of society under federal maritime common law when Congress had not provided such a remedy in the Death on the High Seas Act).
\item \textsuperscript{88} U.S. Const. art. VI, cl. 2.
\item \textsuperscript{89} See The Lottawanna, 88 U.S. 558, 577 (1874) (holding that Congress has undoubted power to legislate maritime law).
\item \textsuperscript{90} See id. at 575 (Constitution did not intend “to place the rules and limits of maritime law under the disposal and regulation of the several States” as that would defeat the uniformity interest.).
\end{itemize}
cases, however, recognized that the uniformity interest is not absolute.\footnote{Am. Dredging Co. v. Miller, 510 U.S. 443, 451 (1994).}

Preemption of state law by maritime law is governed by the three-prong test established in *Southern Pacific Co. v. Jensen*.\footnote{See generally S. Pac. Co. v. Jensen, 244 U.S. 205, 251 (1917) (holding that a maritime worker could not constitutionally receive an award under New York’s worker compensation statute because the remedy in admiralty was exclusive). Following the decision, Congress expressly allowed states to provide such a remedy but the Court again held that this was an impermissible intrusion upon the admiralty. See *Knickerbocker Ice Co. v. Stewart*, 253 U.S. 149, 164 (1920) (holding that Congress’s legislative authority over maritime affairs is “non-delegable”).} Under *Jensen*, state law may affect maritime affairs “to some extent,” but is invalid if it: (1) “contravenes the essential purpose expressed by an act of Congress,” (2) “works material prejudice to the characteristic features of the general maritime law,” or (3) “interferes with the proper harmony and uniformity” of maritime law in its interstate and international relations.\footnote{*Jensen*, 244 U.S. at 216.}

The first prong is a question of statutory preemption. Under the second prong, a characteristic feature of maritime law is a federal rule that “originated in admiralty” or “has exclusive application there.”\footnote{See Am. Dredging Co., 510 U.S. at 450 (1994) (holding state law on forum non conveniens was not preempted by maritime law after reaffirming and applying *Jensen* test).} Under the third prong, the Supreme Court has adopted a balancing test that weighs state and federal interests in the matter.\footnote{Kossick v. United Fruit Co., 365 U.S. 731, 739 (1961).}

In the field of state water pollution control laws, the pertinent case is undoubtedly *Askew v. American Waterway Operators*\footnote{See *Askew v. Am. Waterways Operators, Inc.*, 411 U.S. 325 (1973) (holding that WQIA and maritime law did not preempt the Florida Oil Pollution statute in a challenge to its facial validity).}. In that case, the Supreme Court confronted a constitutional challenge to Florida’s Oil Spill Prevention and Pollution Control Act.\footnote{*Id.* at 327 (“[A]ction was brought . . . to enjoin application of the Florida Oil Spill Prevention and Pollution Control Act.”); see also Steven R. Swanson, *Federalism, the Admiralty, and Oil Spills*, 27 J. OF MAR. L. & COM. 379, 389–93 (July 1996) (explaining the preemption issue in *Askew*).} The Florida statute imposed strict liability for any damage incurred by the state or private plaintiffs as a result of an oil spill in Florida waters from a drilling facility or vessel.\footnote{*Askew*, 411 U.S. at 327.} At that time, the federal statute governing water pollution was the Water Quality Improvement Act of 1970 (WQIA), which subjected owners of vessels and facilities without fault to limited liability for cleanup costs incurred by the federal government as a result of oil spills.\footnote{*Id.* at 328. Liability was limited at $14 million for vessel owners and $8 million for owners of facilities. *Id.*}
costs was unlimited in the case of willful negligence or willful misconduct.\textsuperscript{100} It also authorized the federal government to promulgate regulations requiring ships and facilities to maintain equipment for the prevention of oil spills.\textsuperscript{101}

The Court explained that statutory preemption of the Florida Statute was unwarranted.\textsuperscript{102} The WQIA savings clause clearly allowed state regulation and the legislative history supported this finding.\textsuperscript{103} Though WQIA did provide a “pervasive system of federal control,” the Court held there was no conflict with the Florida provisions allowing recovery of property damage because WQIA only concerned removal costs.\textsuperscript{104} As to removal costs, there was no conflict because WQIA only covered federal costs and the Florida statute only covered state costs.\textsuperscript{105} The Court declined to address whether Florida could recoup costs above the federal cap.\textsuperscript{106}

In the absence of federal statutory preemption, the Court then addressed the question of whether maritime law preempted the Florida statute under \textit{Jensen}.\textsuperscript{107} The Court determined that the Florida statute did not interfere with a characteristic feature of maritime law because, historically, damages to shore-side interests were not cognizable in admiralty.\textsuperscript{108} While the Admiralty Extension Act did extend admiralty jurisdiction to include sea-to-shore injuries, the Court declined “to move the \textit{Jensen} line of cases shoreward to oust state law from any situations involving shore side injuries by ships on navigable waters.”\textsuperscript{109} The Court emphasized the state interest in its traditional police powers over pollution within its borders.\textsuperscript{110} Justice Douglas characterized oil spills as “an insidious form of pollution of vast concern to every coastal city or port and to all the estuaries on which the life of the ocean and the lives of coastal people are greatly dependent.”\textsuperscript{111}

\textsuperscript{100.} Id. at 330 (citing 33 U.S.C. § 1161).
\textsuperscript{101.} Id. at 328.
\textsuperscript{102.} See id. at 328 (performing statutory preemption analysis).
\textsuperscript{103.} Id. at 329 (quoting 33 U.S.C. 1161(o)).
\textsuperscript{104.} Id. at 330–31.
\textsuperscript{105.} See id. at 335–36 (finding “no collision” between the two statutes). In support, the Court noted that WQIA contemplated federal cooperation with state and local agencies in response to spills under a national contingency plan. Id. at 331–32 (citing 33 U.S.C. § 1161(c)(2)).
\textsuperscript{106.} See id. at 332 (noting that it would be “premature”).
\textsuperscript{107.} Id. at 337.
\textsuperscript{108.} Id. at 340.
\textsuperscript{109.} See id. at 340–41, 343–44 (referring to the area of law governing sea-to-shore pollution where both federal and state regulation is permissible as the “twilight zone”).
\textsuperscript{110.} Id. at 329, 340, 343.
\textsuperscript{111.} Id. at 328–29.
While the case can be read to give great deference to state pollution laws in matters of maritime preemption, it can also be read narrowly as allowing WQIA’s savings clause to survive a challenge to only its facial validity without addressing any actual conflicts that might result from its application.\footnote{112. \textit{See id. at 343–44 (“[W]e cannot say with certainty at this stage that the Florida Act conflicts with any federal Act. We have only the question whether the waiver of pre-emption by Congress in [Section] 1161(o)(2) concerning the imposition by a State of ‘any requirement or liability’ is valid.”); \textit{see also} Swanson, \textit{supra} note 97, at 393–94 (interpreting \textit{Askew}).}} Courts have reached divergent conclusions in applying \textit{Askew}.\footnote{113. Swanson, \textit{supra} note 97, at 393-94 (categorizing state interpretations).}

During the Exxon Valdez litigation, maritime preemption arguments resurfaced. An Alaska statute imposed strict liability for discharges of hazardous substances and included pure economic damages.\footnote{114. \textit{In re Exxon Valdez}, 270 F.3d 1215, 1250 (2001).} However, economic damages without physical injury to person or property are barred in maritime tort actions under the \textit{Robins Dry Dock} rule.\footnote{115. \textit{Id. at 1250–51.}} The Ninth Circuit, however, determined that the rule “neither ‘originated in the admiralty’ nor ‘had exclusive application in admiralty.’”\footnote{116. \textit{Id. at 1251.}} The maritime rule is generally applied in land-based contexts and was traced back to the traditional tort rule, which refuses recovery for negligent interference with contractual rights.\footnote{117. \textit{Id.; see also} Ballard Shipping Co. v. Beach Shellfish, 32 F.3d 623, 627–28 (1994) (noting that of the four cases cited in the \textit{Robins} decision, only two involved maritime law).}

After concluding \textit{Jensen}’s second prong did not warrant preemption, the court balanced state and federal interests to determine if application of the state law would interfere with maritime uniformity under the third prong.\footnote{118. \textit{Id. at 1251–52.}} The court found that Alaska had a strong interest in regulating oil pollution and providing for recovery of damages for injury caused by oil spills.\footnote{119. \textit{See id. at 1252 (citing \textit{Askew}).}} The federal interest in limiting liability in maritime commerce and providing a uniform maritime rule was minimized because two federal statutes governing oil pollution allowed recovery for pure economic harm.\footnote{120. \textit{See id. (referring to OPA and the Trans-Alaska Pipeline Authorization Act).}} While OPA did not apply retroactively to the case,\footnote{121. \textit{See Pub. L. No. 101-380 § 1020 (providing that OPA “shall apply to an incident occurring after the date of the enactment of this Act [August 18, 1990]”).}} the Ninth Circuit believed it offered “compelling evidence that Congress does not view either expansion of liability to cover purely economic losses or
enactment of comparable state oil pollution regimes as an excessive burden on maritime commerce.” 122 In accord with the Ninth Circuit, the Alaska Supreme Court also held that damages for pure economic harm were not preempted by the maritime rule.123 Addressing the same issue, the First Circuit and various district courts have reached the same conclusion.124

3. Post-OPA Case Law

Since OPA was enacted, several courts have addressed preemption and displacement issues related to oil spills, but the results do not clearly establish how the statute interacts with maritime and state law.

In Sekco Energy Inc. v. M/V Margaret Chouest, a seismic cable towed by vessels struck an oil drilling platform on the outer continental shelf.125 Though the incident caused no physical damage to the platform, oil did spill from the cable after it was ripped open by barnacles.126 Government officials ordered the platform to halt operations during an investigation.127 After suffering economic losses following this period, the platform owners sued the vessel owners, asserting maritime tort claims, nuisance claims under state and federal law, and OPA claims.128

The District Court allowed the OPA claim for lost profits under Section 2702(b)(2)(E).129 The court did not perform any analysis to determine if OPA displaced the federal maritime claims or federal nuisance claims. The court did determine that federal maritime law preempted the state law

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124. See Ballard Shipping Co. v. Beach Shellfish, 32 F.3d 623, 630–31 (1994) (holding that shellfish dealers were allowed to recover pure economic damages resulting from oil spill under Rhode Island statute, which was not preempted by Robins Dry Dock rule of maritime law); Slaven v. BP Am., Inc., 786 F. Supp. 853, 864–65 (C.D. Cal. 1992) (holding that federal uniformity interest in Robins Dry Dock rule was outweighed by state interest in regulating pollution within its borders and providing remedies for shoreside injuries). But see Louisiana v. M/V Testbank, 752 F.2d 1019, 1032 (1985) (“While our maritime decisions are informed by . . . developments in the state courts . . . federal interest in protecting maritime commerce is often best served by the establishment of uniform rules of conduct.”).
126. Id. at 1010.
127. Id.
128. Id. at 1010–15. The plaintiffs also asserted a Federal Water Pollution Control Act claim but the court dismissed the claim because the statute clearly does not create a private right of action. Id. at 1014.
129. Id. at 1014–15.
nuisance claim, but its reasoning was sparse. It stated only that the facts were that of a classic maritime case and that state law did not apply because maritime law applied “of its own force.” The court did not consider the effect of OPA’s savings clause or the Jensen doctrine.

In South Port Marine, LLC v. Gulf Oil Ltd., a gasoline spill severely damaged a marina’s floating docks, causing property damage as well as lost profits and other economic losses. The First Circuit addressed whether OPA displaced maritime law. The plaintiff desired a maritime claim because punitive damages would be available, while OPA does not provide for punitive damages. Relying heavily on Miles v. Apex Marine Corp., the court held that Congress intended OPA to be the exclusive federal law governing oil spills and refused to supplement the available OPA remedies with a general maritime claim. It reasoned that OPA set forth a “comprehensive federal scheme for oil pollution liability” with a similarly “comprehensive list of recoverable damages” which did not include punitive damages. The court mentioned, but failed to adequately address, the OPA provision; it specifically states, “this Act does not affect . . . admiralty and maritime law.” It should be noted that the

131. Id. at 1013. The court initially determined that state law of the adjacent state applied in accord with the Outer Continental Shelf Lands Act. Id. Its scanty analysis of maritime preemption was guided by Rodrigue v. Aetna Casualty and Sur. Co., 395 U.S. 352 (1969) and its progeny. See id. This doctrine has traditionally only applied to contract and personal injury actions. The Rodrigue case law is inconsistent and lacks standards which adequately consider the federal and state policy implications created by the Gulf oil spill. Rodrigue has never been applied to oil spills before Sekco Energy. The Jensen analysis, however, has been used to address maritime preemption in oil spill cases and provides a means to weigh the relevant policy issues. See infra Part I.B.2 and supra Part II.C. The Sekco Energy court, therefore, allowed an OPA claim and a maritime negligence claim after the limited Rodrigue analysis. Id. at 1012–13, 1015. A maritime claim for intentional tort was dismissed because it lacked an adequate factual basis. Id. at 1013. A maritime claim for private nuisance was dismissed because the court found no authority recognizing such a claim in maritime law, or alternatively because the plaintiff had not pleaded facts establishing intent. Id. The court also rejected a federal maritime claim for public nuisance. See id. at 1014 (finding no authority recognizing such a cause of action and noting that the Fifth Circuit had already declined to create such a claim).
133. Id. at 64–65.
134. Id. at 64.
135. Miles v. Apex Marine Corp., 498 U.S. 19, 37 (1990) (holding that loss of society and future earnings are not recoverable under a maritime wrongful death action because those damage provisions are not available under the applicable federal statutes: the Jones Act and Death on the High Seas Act).
136. Id; see also Clausen v. M/V New Carissa, 171 F. Supp. 2d 1127, 1133 (relying heavily on South Port, the district court determined that OPA precluded an award of punitive damages under general maritime law).
137. South Port, 234 F.3d at 65.
138. Id. at 65 (quoting 33 U.S.C. § 2751(e)).
statutes at issue in *Miles* do not include any similar provisions preserving maritime law.139 The Supreme Court addressed the preemptive force of OPA in *United States v. Locke*.140 Plaintiffs, a trade association of tanker owners, sought declaratory and injunctive relief against the enforcement of state regulations governing the design, equipment, reporting, and operation of tankers.141 They argued that the state law impermissibly invaded an area long governed by federal law and dependent upon national uniformity.142 The Court generally agreed, holding that state regulations on watch procedures, training, English language skills, and casualty reporting are preempted and implying that the other requirements would be preempted on remand.143

Title IV of OPA governs oil spill prevention and amended a number of other federal statutes that regulate tanker design, construction, equipment, traffic, operating, training, reporting, and language requirements.144 These new statutory provisions expanded an already “comprehensive federal regulatory scheme governing oil tankers.”145 The Court noted that federal interest in regulating interstate navigation “has been manifest since the beginning of our Republic” and was one of the reasons for adopting the Constitution.146

Addressing the OPA savings clauses, the Court emphasized that the provisions were placed in Title I of OPA, which governs oil pollution

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139. See *Jones Act*, 46 U.S.C.A. § 30104; *Death on the High Seas Act*, 46 U.S.C.A. § 30302. The latter specifically preserves state law, but makes no mention of preserving maritime common law, unlike OPA. See 46 U.S.C.A. § 30308(a) (“This chapter does not affect the law of a State regulating the right to recover for death.”).


141. *Id.* at 97.

142. *Id.*

143. *See id.* at 116–17.


146. *Id.* at 99 (citing *The Federalist No. 12* (Alexander Hamilton), *The Federalist No. 44* (James Madison), & *The Federalist No. 64* (John Jay)).
liability and compensation. In addition to the location of the clauses within the statute, the court found that the text also referred only to liability provisions. Believing that Congress did not intend to disrupt national uniformity of maritime commerce, the Court limited the savings clauses to Title I. Legislative history, which specifically preserved the holding of Ray v. Atlantic Richfield Co., supported this determination. The Court, in Ray, held that state laws regulating design, construction, maintenance, operation, equipment, and personnel qualifications of tanker vessels were preempted by the Ports and Waterways Safety Act, one of the statutes amended by OPA.

The application of the OPA savings clause to matters of oil spill liability was not at issue in the litigation, but Locke’s dicta implies that state laws imposing liability for oil spills should be preserved. Citing Askew, the Court mentioned that limiting the savings clauses to Title I of OPA would respect the “established federal-state balance in matters of maritime commerce.” Without definitively ruling on the subject, the Court stated:

Placement of the saving clauses in Title I of OPA suggests that Congress intended to preserve state laws of a scope similar to the matters contained in Title I of OPA. The evident purpose of the saving clauses is to preserve state laws which, rather than imposing substantive regulation of a vessel’s primary conduct, establish liability rules and financial requirements relating to oil spills. The clauses

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147. See id. at 104–06 (“The saving clauses are found in Title I of OPA, captioned Oil Pollution Liability and Compensation and creating a liability scheme for oil pollution. In contrast to the Washington rules at issue here, Title I does not regulate vessel operation, design, or manning.”).
148. See id. at 105 (“Our conclusion is fortified by Congress’ decision to limit the saving clauses by the same key words it used in declaring the scope of Title I of OPA. Title I of OPA permits recovery of damages involving vessels ‘from which oil is discharged, or which pos[e] the substantial threat of a discharge of oil.’ 33 U.S.C. § 2702(a). The saving clauses, in parallel manner, permit States to impose liability or requirements ‘relating to the discharge, or substantial threat of a discharge, of oil.’ ”).
149. See id. at 106 (“The clauses may preserve a State’s ability to enact laws of a scope similar to Title I, but do not extend to subjects addressed in the other titles of the Act or other acts.”).
150. See id. at 107 (citing H.R. Conf. Rep. No. 101-653, p. 122 (1990)).
151. Id. at 110–11. Ray also “preserved state authority to regulate the peculiarities of local waters if there was no conflict with federal regulatory determinations.” Id. at 110. The Court in Locke reaffirmed Ray by adopting the “same approach.” Id. at 11.
152. See id. at 106 (noting that the role of state law in oil spill liability is “unchallenged here”).
153. Id. at 106 (citing Askew, 441 U.S. at 325). Askew held that WQIA and maritime law did not preempt the Florida Oil Pollution statute in a challenge to its facial validity. See supra Part I.B.2.
154. Locke, 529 U.S. at 106.
may preserve a State's ability to enact laws of a scope similar to Title I.155

While this language is strongly suggestive, application of the savings clauses to an actual scenario of facts and state oil spill liability law has only been performed by lower courts.156

In Williams v. Potomac Electric Power Co., an oil pipeline burst over a marsh in Maryland.157 Oil leaked into a river and washed ashore on land owned by numerous plaintiffs, who asserted negligence, trespass, strict liability, and nuisance claims under state law.158 Without performing conflict or field preemption analysis, the District Court quoted the same passages from Locke referred to above and held that OPA did not preempt the common law claims.159 It stated that Locke had “put to rest” the matter and “foreclosed” any preemption argument.160 As there were no maritime claims involved, no preemption analysis under Jensen was performed.

In Dostie Development, Inc. v. Arctic Peace Shipping Co., oil spilled from a tanker into a Florida river and washed onto the plaintiff’s land.161 The landowner asserted federal OPA claims and state law claims for negligence.162 The defendant argued that the negligence claims were preempted by OPA.163 The district court considered the plain language of the OPA savings clause and its persuasive legislative history.164 The court held the preemption argument was without merit and allowed the state negligence claim to proceed.165 No maritime claims were involved so Jensen analysis was unnecessary.

155. Id. at 105–06 (emphasis added).
156. See Steven R. Swanson, Federalism, the Admiralty, and Oil Spills, 27 J. MAR. L. & COM. 379, 393 (1996) (“No Supreme Court decision since Askew has broadened its holding.”).
158. Id. at 563.
159. Id. at 564–65 (quoting United States v. Locke, 120 S. Ct. 1135, 1145-47 (2000)).
160. Id.
162. Id. The plaintiff also asserted a claim under the Florida statute creating strict liability for damages caused by pollution, but the defendant did not argue that this claim was preempted by OPA. Id. at *1–2.
163. Id. at *3.
165. Id at *3.
In National Shipping Co. of Saudi Arabia v. Moran, the Fourth Circuit confronted a more complex situation. The case involved a collision between a tugboat and a cargo vessel and the resulting oil spill. Under OPA, the “responsible party” is the vessel which actually discharges oil and is liable for all removal costs and damages. However, the responsible party can reassign liability to a third party if that party was the sole cause of the spill. The U.S. Coast Guard initially designated the cargo vessel as the responsible party. Its owners paid about $870,000 to remove oil, $300,000 to the U.S. navy for costs incurred, and $106,806 to settle claims of those whose property was damaged by the spill. This totals $1,276,806 in liability.

The district court determined that the tugboat’s negligence was the sole cause of the accident. The cargo vessel’s owners had claims under OPA and state law. The district court granted relief under OPA, but capped damages at $500,000 which is the OPA cap for non-tanker vessels absent gross negligence, willful misconduct, or violation of federal regulation. The district court did not allow the cargo vessel owners to circumvent the cap through its state law claims and the Fourth Circuit affirmed.

The court reasoned that the OPA savings clause only protects the rights of parties to “bring additional claims based on liability which accrues under state law.” State law, however, was never imposed to force the cargo vessel owners to clean up the spill or to compensate private parties. Because the liability derived solely from OPA, the court held that the plaintiffs could not recover from the tugboat owners beyond the $500,000

166. Nat’l Shipping Co. of Saudi Arabia v. Moran, Nos. 96-1741, 96-1824, 122 F.3d 1062 (Table) (4th Cir. Sept. 9, 1997).
167. Id. at *1.
168. Id. at *2 (citing 33 U.S.C. § 2701–02).
169. Id. at *2 (citing 33 U.S.C. § 2702(d)).
170. Id. at *1.
171. Id.
172. Id.
173. Id. A Virginia Water Control Law claim was dismissed before trial and about $20,000 was awarded under general maritime law for lost fuel and damage to the hull. Id. These claims did not factor into the court’s preemption analysis.
174. Id.
175. Id. at *2–3 (citing 33 U.S.C. 2704). Though it was argued that the tugboat violated a federal safety regulation, the court determined there was no factual basis for this exception to OPA’s limited liability scheme. Id. at *3.
176. Id. at *2–4.
177. Id. at *4.
178. Id.
OPA cap. In defiance of common sense (and probably legislative intent), the non-negligent party incurred the most of the liability.

In summary, the First Circuit and a district court determined that OPA displaces maritime law despite the provision explicitly preserving it. The Supreme Court’s dicta in Locke seems to indicate that state laws imposing oil spill liability are preserved by the OPA savings clause. Two district courts reached similar conclusions in cases actually involving oil spills. The Fourth Circuit has construed the savings clause very narrowly in the context of contribution for removal costs. Another district court confronted with OPA, maritime, and state claims basically avoided the effect of the savings clause altogether by deciding the claims under other grounds. This is the loose patchwork of case law that existed prior to the Gulf oil spill.

II. ANALYSIS

A. Statutory Preemption

Under this line of analysis, it is clear that state laws creating liability for oil pollution are not preempted. Section 2718 of OPA explicitly preserves the ability of states to enact laws providing additional liability or requirements with respect to oil discharges and removal. It further provides that nothing in the Act shall affect (or be construed or interpreted to affect or modify in any way) the obligations or liabilities of state law, “including common law.” Thus, both state statutory and common law are within the scope of the savings provision. Non-preemption of state law is reiterated throughout the OPA’s title on liability.

While OPA is comprehensive and directly addresses the question of oil spill liability, the presence of savings clauses in Title I negates express
Conflict preemption also seems to be out of the question because OPA itself contemplates “additional liability or requirements” under state law.190 Unlike the Clean Water Act savings clause at issue in Ouellette,191 the OPA savings clause is not generic. Actually, preemption was the most discussed issue by the Senate Committee, which endorsed the view that Section 2718 “does not embrace any preemption of State oil spill liability laws,” including additional requirements or penalties.192 Finally, the Supreme Court strongly suggested in Locke that the OPA savings clause preserves all state laws which establish liability rules and financial requirements.193 Simply stated, no state law governing oil spill liability is preempted by OPA.

Some commentators argue that the OPA savings clause is an unconstitutional intrusion upon admiralty and maritime law.194 They argue that Congress cannot delegate such authority to the states because varying and inconsistent liability regimes for oil pollution under state law would lead to a lack of uniformity impermissible under the Constitution’s Admiralty clause.195 The Supreme Court has effectively laid these arguments to rest. In Askew, the Court held that the non-delegation principle is not applicable to areas historically governed by state police powers.196 Specifically, it held that oil pollution is one of these areas and upheld a Florida statute imposing

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189. See Int’l Paper Co. v. Ouellette, 479 U.S. 481, 492 (1987) (“Although Congress intended to dominate the field of pollution regulation, the saving clause negates the inference that Congress ‘left no room’ for state causes of action.”).
190. § 2718(a).
191. See Ouellette, 479 U.S. at 492–94 & n.14 (refusing to allow a generic savings clause to disrupt a federal regulatory scheme and also preempting the nuisance law of a state which was merely affected by interstate water pollution but not the source of the pollution).
194. Matthew P. Harrington, Necessary and Proper, But Still Unconstitutional, 48 CASE W. RES. L. REV. 1, 2 (1997); Steven R. Swanson, Federalism, the Admiralty, and Oil Spills, 27 J. OF MAR. L. & COM. 379, 380 (July 1996) (“This overlapping jurisdiction runs contrary to the constitutional grant of admiralty powers to the national authorities.”). Others have criticized the clause but not considered it unconstitutional. See, e.g., Daniel Kopec & Philip Peterson, Crude Legislation and Compensation Under the Oil Pollution Act of 1990, RUTGERS L. J. 597, 626 (1992) (concluding that OPA’s lack of national uniformity creates a domino effect where inequities lead to an inefficient oil cleanup response).
196. See Askew v. Am. Waterways Operators, 411 U.S. 325, 328–29, 343–44 ("[WQIA savings clause] is valid unless the rule of Jensen and Knickerbocker Ice is to engulf everything that Congress chose to call ‘admiralty,’ preempting state action.").
strict liability for oil pollution. The cases relied upon by the commentators were expressly limited to their facts. In 2000, the Court reaffirmed *Askew* in *Locke*. It explained that upholding state oil spill liability laws would respect, not upset, the established federal-state balance in matters of maritime commerce.

**B. Displacement**

The First Circuit and a district court in Oregon have held that OPA displaces federal maritime law. This essay takes the opposite view. Section 2751(e) of OPA addresses admiralty and maritime law. It explicitly states that the “Act does not affect-- (1) admiralty and maritime law; or (2) [admiralty and maritime jurisdiction].” Neither the First Circuit, nor the district court adequately addressed this provision.

The First Circuit relied heavily on *Miles v. Apex Marine Corp.*, in determining that Congress intended OPA to be the exclusive federal law governing oil spills. However, the two statutes at issue in *Miles* do not include any similar provisions preserving maritime law.

In *Milwaukee II*, the Supreme Court held that the Federal Water Pollution Control Act displaced federal common law nuisance suits for interstate water pollution. Though the FWPCA did contain a savings clause preserving “common law,” it did not explicitly address federal

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197. *Id.* at 327.
198. See *id.* at 343–44 (“*Jensen and Knickerbocker Ice* have been confined to their facts, viz., to suits relating to the relationship of vessels, plying the high seas and our navigable waters, and to their crews.”).
200. *Id.* at 106.
201. South Port Marine, LLC v. Gulf Oil Ltd., 234 F.3d 58, 65 (1st Cir. 2000); Clausen v. M/V New Carissa, 171 F. Supp. 2d 1127, 1133 (relying heavily on *South Port*).
203. *Id.*
204. *Miles v. Apex Marine Corp.*, 498 U.S. 19, 37 (1990) (holding that loss of society and future earnings are not recoverable under a maritime wrongful death action because those damage provisions are not available under the applicable federal statute: the Jones Act and Death on the High Seas Act).
205. *South Port*, 234 F.3d at 65-66; see also *Clausen*, 171 F. Supp. at 1133 (relying heavily on *South Port*, the district court determined that OPA precluded an award of punitive damages under general maritime law).
206. See supra note 139 and accompanying text.
common law. The Court believed it was generic and referred only to “the more routine state common law.”

The same cannot be said about Section 2751(e) of OPA. Its preservation of admiralty and maritime law is clear and unambiguous. The legislative history also contradicts any displacement argument. The House Report clarifies that OPA does not affect or supersede admiralty and maritime law. Maritime law should not be displaced by OPA. To hold otherwise would defy Congressional intent.

C. Maritime Preemption

OPA’s savings clause does not affect maritime preemption. In Section 2751, Congress expressly indicated that OPA does not affect maritime law. As maritime preemption is a subset of maritime law, OPA cannot affect maritime preemption. In Section 2718, OPA only dictates that “Nothing in this Act” shall affect state law. The clause, however, does not speak to, let alone prevent, preemption of state law by maritime law. After reading Sections 2718 and 2751 together, courts should not foreclose upon maritime preemption solely because Section 2718 preserves state law from preemption by OPA. To do so would give unintended breadth to Section 2718, especially when OPA’s legislative history indicates that Congress intended to maintain and “promote uniformity regarding [maritime] laws.”

To examine the possibility of maritime preemption, it is necessary to turn to the third prong of the maritime preemption test established in Jensen. There, the Supreme Court held that application of a state law cannot interfere with the proper harmony of maritime law in its international or interstate relations. Courts must weigh federal and state interests in the

208. See Milwaukee II, 451 U.S. at 328 (providing the text of Section 510 and 505(e) of the FPWCA).
209. See id. at 329 (interpreting Section 510 and 505(e) of the FPWCA).
211. 33 U.S.C. § 2751(e) (“[T]his Act does not affect-- (1) admiralty and maritime law;”).
212. § 2718(a),(e) (emphasis added).
213. “[W]ords of a statute should be interpreted consistent with their neighbors to avoid giving unintended breadth to an Act of Congress.” United States v. Locke, 529 U.S. 89, 105 (2000).
matters. Generally, the federal interest is maritime uniformity and the state interest is the exercise of its historic police powers. Askew, the primary case governing maritime preemption of state oil spill laws only confronted a challenge to the facial validity of a state oil spill statute. It certainly did not consider the implications of an oil spill originating in federal water and reaching the shores of multiple states. Neither did Locke. The matter of the Gulf oil spill is certainly unique factually. After an extensive search, no cases were found involving an oil spill that originated in federal waters and affected multiple states. The Exxon Valdez oil spill, like most other oil spill cases, originated in one state’s territorial waters and only affected that one state.

Also worth noting, the federal statute only allowed the federal government to recover removal costs at the time of Askew. Unlike OPA, it did not specifically permit recovery by state and local governments and did not create a private right of action with extensive damage provisions. Legal regimes have changed and the factual scenario is unprecedented. The courts must perform a novel analysis of federal and state interests involved in the Gulf oil spill.

There is a federal interest in providing citizens from different states with equal rights and remedies. If the varying law of each of the five Gulf Coast states is deemed to apply, residents of some states might be entitled to greater rights and recovery than claimants in other states. For example, state statutes have different liability limits and punitive-to-compensatory damage ratio maximums. Louisiana residents might be denied punitive damages altogether, while residents of other states recover punitive damages up to three times the amount of their compensatory damages. Recovery should be uniform for those suffering similar harms. Divergent rights and recovery based on state citizenship simply “interfere with the proper harmony and uniformity of that law in its . . . interstate relations.”

217. See supra notes 96–113 and accompanying text.
218. See supra notes 140–56 and accompanying text.
219. Robert P. Thibault, Are Today’s International Model Operating Agreements Looking Far Enough Into Tomorrow?—Operator Liability for Major Spill or Blowout Incidents, 3 ROCKY MNT. MIN. L. INST. 21B-1, 21B-6 (2011) (“The Exxon Valdez spill only dealt with one state, while the Gulf spill involves several Gulf States.”).
221. See supra Part I.A.1.
223. See supra notes 61-63 and accompanying text.
Additionally, the spill originated in the exclusive economic zone of the United States,\textsuperscript{225} outside of the borders of state territorial waters. There is a significant federal interest in regulating conduct which takes place in federal waters. Locality has always played a great role in admiralty tort jurisdiction.\textsuperscript{226} Further, the Secretary of the Interior has been granted federal statutory authority to oversee oil and gas extraction on the outer continental shelf.\textsuperscript{227} The Bureau of Ocean Energy Management, Regulation, and Enforcement, a federal agency, grants federal leases, issues federal permits, and administers a complex and comprehensive federal regulatory scheme governing oil exploration and drilling.\textsuperscript{228} The well-established federal presence in the regulation of oil extraction activities on the outer continental shelf and the extensive federal response to this particular spill are significant evidence of the federal interest in the matter.

There is also a federal interest in resolving the multi-district litigation efficiently and compensating plaintiffs in a timely manner. Application of the varying law of each of the five states in the multi-district litigation could cause significant constraints and delays. A typical claimant might have three common law claims and one statutory claim under state law.\textsuperscript{229} Multiplied by five states, there are probably at least twenty types of claims just from civil litigants with economic losses. Varying elements, burdens of proof, defenses, jury instructions, and damage awards for each type of claim could easily overwhelm the litigation process.

The fact that the spill originated in federal waters does not lessen the terrible impact it has had on the lives of Gulf Coast residents and businesses. The oil entered state waters; each state still has a strong interest in compensating their residents and imposing liability to deter future spills which effect their waters and shores.

However, the interest of the states in applying their own law is greatly minimized because the state law claims being asserted are generally duplicative of federal claims. In fact, the state law claims would not provide any type of remedy beyond what is already available to plaintiffs under the

\begin{itemize}
  \item \textsuperscript{225} Robertson, supra note 1.
  \item \textsuperscript{226} See THOMAS J. SCHOPENBAUM, ADMIRALTY & MARITIME LAW § 1–3 (4th ed. 2010) (explaining prominent role of locality in admiralty tort jurisdiction, both historically and in modern caselaw).
  \item \textsuperscript{227} Outer Continental Shelf Lands Act, 43 U.S.C. § 1334 (1986). The liability portions of this statute were repealed and replaced by OPA § 2004 (repealing 43 U.S.C. §§ 1811 to 1824).
  \item \textsuperscript{229} See supra Part I.A.4.
\end{itemize}
federal scheme of maritime negligence and OPA. Between maritime negligence claims and OPA, claimants have access to punitive awards for reckless conduct, compensatory damages for property damage, and pure economic recovery. The latter two are available under OPA without having to show fault.

Negligence claims under state law generally mirror negligence claims under maritime law. The elements are the same and the same types of damages will be available: compensatory property damages, punitive awards, and economic losses. Property damage is a prerequisite to recovery of economic damages under both state and maritime negligence. Maritime claims actually provide a more, plaintiff-friendly burden of proof for punitive awards than under state law.

While maritime punitive awards were capped at 1:1 in the Exxon Valdez litigation, the same may not be true in this litigation. The Supreme Court only established the 1:1 ratio for cases without exceptional conduct, such as dangerous behavior driven by financial gain. An initial report found that the defendants in the Gulf spill case took numerous actions which “saved time and money when less risky alternatives were available.” Even if there was no exceptional conduct justifying a ratio greater than 1:1, maritime courts have broad power to draw from state law and adopt a ratio that more closely resembles the Gulf state ratios.

The constitutional grant of judicial power in admiralty allows courts to continue the development of general maritime law. As Justice Marshall stated: “the law, admiralty and maritime, as it has existed for ages, is applied by our courts to the cases as they arise.” When new situations arise that are not directly governed by precedent, federal courts may fashion

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231. See supra Part I.A.1.
233. Compare Part I.A.3 with Part I.A.4. One minor difference is that Texas allows punitive damages under a showing of gross negligence, not recklessness as in maritime law. However, the other Gulf states all require recklessness. This minor divergence between rights under state and maritime law is isolated and does not significantly increase the interests of the states in applying their own law. The Texas rule should be preempted.
238. The St. Lawrence, 66 U.S. (1 Black) 522, 526–27 (1862).
a rule by a variety of methods. \footnote{THOMAS J. SCHOENBAUM, ADMIRALTY & MARITIME LAW § 2–1 (4th ed. 2010).} Federal courts may, and often do, “borrow” state law and apply it as the federal admiralty rule. \footnote{Id.} For example, the Supreme Court looked to state law when it originally formulated the 1:1 punitive-to-compensatory damage ratio for maritime law. \footnote{See Exxon Shipping Co. v. Baker, 554 U.S. 471, 509–513 (2008) (comparing state damage statutory provisions). The Court emphasized “the Judiciary has traditionally taken the lead in formulating flexible and fair remedies in the law [of] maritime.” \textit{Id.} at 508 n.21.}

It has already been noted that the Gulf oil spill is without precedent. The ability to borrow state law to create a uniform rule could prove to be the ultimate tool in handling the Gulf oil spill litigation, working in conjunction with maritime preemption of state law to promote the federal interest in maritime uniformity while minimizing any intrusion of the admiralty into areas traditionally governed by state police powers.

For example, punitive-to-compensatory ratios in the Gulf states range from a 4:1 maximum ratio to not recoverable at all. \footnote{See supra Part I.A.4.} Borrowing from the state rules, a federal judge could adopt a more representative and average ratio, perhaps at 3:1 or 2:1. The newly crafted maritime rule would preempt the varying state law rules without substantially reducing the remedies available to claimants located in states with higher ratios. The federal interest in uniformity would be promoted while respecting historical state police powers in regulating pollution.

The state statutes providing strict liability and state common law claims for strict liability would be duplicative of OPA. It is unlikely that liability will be capped under OPA because a finding of gross negligence or violation of a federal regulation seems almost inevitable. Transocean, for example, did not perform an inspection of the blowout preventer as required by federal regulation. \footnote{30 C.F.R. § 250.516; David Barstow, et. al., \textit{Deepwater Horizon’s Final Hours}, N.Y. TIMES, Dec. 25, 2010, http://www.nytimes.com/2010/12/26/us/26spill.html?pagewanted=all.} However, in the event that liability was deemed to be capped under OPA, but uncapped under a state law, the state interest in applying its own law would greatly increase and maritime preemption of state law would probably be unjustifiable.

The only type of state claim remaining would be nuisance claims. If seeking damages under nuisance, then this would be duplicative of remedies available by OPA, which provides a better fault standard for claimants anyway. To the extent that parties were seeking some form of injunctive relief available under a state nuisance claim and no similar right...
or remedy was available under federal nuisance claims, preemption of the state law would be ill-advised.

Because the state law claims are generally duplicative of claims under the federal scheme of maritime negligence and OPA, the interest of the states in applying their own law is minimal. The Supreme Court has noted that when similar claims exist under both state and federal common law, the federal claims govern. Additionally, the federal interest in such a catastrophic oil spill is great because the spill originating in federal waters was caused by activities regulated by federal law and agencies. Further, the spill has contaminated many coastal states while most spills in previous caselaw have been limited to a single state. The spill has affected a whole region, if not the whole nation. The overwhelming nature of the federal interest cannot be denied and, therefore, outweighs the state interests at issue. Federal maritime law should, therefore, preempt state law under the third prong of *Jensen*.

To the extent that state laws offer more generous substantive rights or procedural advantages, courts can seek to incorporate these benefits into general maritime law under the courts broad maritime rule-making authority after comparing the federal rule to the rules of each of the Gulf states. This rule-making power can be wielded to balance the federal interest in maritime uniformity with the state interest in preserving historical police powers.

Finally, this essay does not address a distinct factual scenario in which oil pollution originates within one state’s borders or territorial waters but affects other states. The federal interest in such cases is reduced to some extent because of the locality. The federal interest in uniform recovery and efficiency is still present. The state in which the pollution originated has an even greater interest because of the locality.

In such scenarios, two options are available. The court could hold that maritime law does not preempt either of the states’ laws because the federal interest is diminished. Alternatively, maritime law would only preempt the law of the affected state because its interest is lesser based on locality. The

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245. City of Milwaukee v. Illinois & Michigan (*Milwaukee II*), 451 U.S. 304, 314 n.7 (1981) ("In this regard we note the inconsistency in Illinois' argument and the decision of the District Court that both federal and state nuisance law apply to this case."); Illinois v. Milwaukee (*Milwaukee I*), 406 U.S. 91, 108 n.9 (1972) ("Federal common law and not the varying common law of the individual States is, we think, entitled and necessary to be recognized as a basis for dealing in uniform standard with the environmental rights of a State against improper impairment by sources outside its domain.").
latter alternative is analogous to the Court’s reasoning in Ouellette\(^{246}\) and, for that reason, this essay advocates that interpretation. Ultimately, it is not necessary to address that factual scenario during the Gulf Coast litigation. In cases involving oil pollution originating within one state’s waters and only affecting the same state, there is no interference with interstate relations and state law should be applied. That state’s police power interest clearly outweighs any federal interest in the matter.

In summary, OPA’s savings clause should not be construed to affect maritime preemption. The text and legislative history support this line of reasoning. The two cases, which have held otherwise, are based on faulty reasoning.

In factual situations involving multistate oil pollution originating in federal waters, maritime law should preempt state laws governing oil spill liability. To offset any of the harshness of this holding, courts can incorporate some state law into the case under the maritime rule-making authority, which permits borrowing rules from state law in novel situations. This construction of the law honors both the historic police powers of the states and the maritime interest in uniformity required by the Constitution.

**CONCLUSION**

Research demonstrates that OPA’s savings clause is limited to OPA itself and does not affect maritime law or maritime preemption. This analysis is primarily textual in nature.\(^{247}\) However, its application properly balances constitutional interests in historic police powers and uniformity in maritime law. General maritime law should preempt the state law of each of the five Gulf Coast states because most rights and remedies under state law are already available to claimants under federal maritime law and OPA. In some instances, the state laws may provide greater rights or remedies than maritime law, such as the punitive-to-compensatory maximum damage ratios. To address these situations, federal courts may use their maritime rule-making authority to adopt a standard which reflects the state law practices but is applied uniformly throughout the multi-district litigation.

The courts could limit this holding to the Gulf spill, or to factual scenarios in which oil pollution originates in federal waters and affects...

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\(^{246}\) See Int’l Paper Co. v. Ouellette, 479 U.S. 481, 493–97 (1987) (holding nuisance law of a state affected by interstate pollution was preempted by the Clean Water Act’s regulatory scheme and that nuisance law of source states where pollution originated was not preempted).

\(^{247}\) See supra Parts II.A and II.B (focusing on text of OPA’s saving clauses).
multiple states. In these cases, state law interferes with the proper harmony of maritime law in interstate relations under the third prong of *Jensen*. Under this novel yet common sense argument, duplicative state laws would be preempted in order to achieve a fair and efficient resolution to the litigation, which acknowledges the overwhelming federal interest and need for uniform recovery. The harshness of preemption would be alleviated and the historic police powers of the states would be preserved through maritime rule-making authority.