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Coal's Plateau and Energy Horizon?

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Sam Kalen¹

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What is striking . . . is the shift in attention from machinery to resources, from man's mastery of nature to his dependence on its bounty, from Harrod-Domar-Solow growth economics to Malthusian-Ricardian scarcity economics. And the principle of diminishing returns, rather than increasing yields to scale, becomes the analytical motif.²

"The coal industry is caught up in powerful undercurrents of change that are profoundly affecting its course."³ While such sentiments

1. Associate Professor, University of Wyoming College of Law. The author appreciates the Public Lands and Resources Law Review for convening this symposium, inviting me to participate, and assisting in preparing this paper for publication. The author also thanks Robert R. Nordhaus, Kyle W. Danish, and Mark Squillace, for their comments, although the contents of the article remain my sole responsibility.

2. Daniel Bell, *The Coming of the Post-Industrial Society* 463 (1973).

3. Reed Moyer, *The Role of Coal: Problems and Policies*, 18 Nat. Resources J. 761 (1978).

are now being echoed in 2013, this statement is well over 30 years old. And it was roughly thirty-six years ago that Amory B. Lovins warned, “[t]he commitment to a long-term coal economy many times the scale of today’s makes the doubling of atmospheric carbon dioxide concentration early in the next century virtually unavoidable.”⁴ Lovins has continued his quest since then, most recently suggesting that fossil fuels could be phased out by 2050.⁵

Yet, the United States energy landscape has changed significantly in these intervening 36 years. The United States has more natural gas and oil than previously projected. Renewable energy resources were an unsung promise in the 1970s, while today they are here and growing. And coal remains abundant.

In response to these shifts, and with climate change the defining challenge for our generation, reducing coal’s contribution toward greenhouse gas (GHG) emissions has become a principal target.⁶ Coal, after all, accounts for roughly one third of all U.S. GHG emissions.⁷ And it is neither surprising nor unexpected that additional regulatory programs are being imposed to address GHG emissions, as well as other emissions from coal-fired power plants, such as air toxics, particulate matter, sulfur dioxides, and nitrogen dioxides.⁸ Public concern about the externalities of coal, including its social and health effects, is increasingly becoming

4. Amory B. Lovins, *Energy Strategy: The Road Not Taken?* 55 For. Affairs 65, 67 (1976-1977).

5. Amory B. Lovins, *A Farewell to Fossil Fuels*, 91 For. Affairs 134 (2012); see also Amory B. Lovins, *Reinventing Fire: Bold Business Solutions for the New Energy Era* 232 (2011) (phasing out coal by 2050).

6. See generally Melissa Powers, *The Cost of Coal: Climate Change and the End of Coal as a Source of “Cheap” Electricity*, 12 U. Pa. J. Bus. L. 407 (2010).

7. See EPA: *Sources of Greenhouse Gas Emissions*, <http://www.epa.gov/climatechange/ghgemissions/sources.html> (July 13, 2013) (coal accounts for roughly 80% of all CO₂ emissions from utility sector, and utility sector accounts for roughly one third of all U.S. GHG emissions). See also Robert L. Glicksman, *Coal-Fired Power Plants, Greenhouse Gases, and State Statutory Substantial Endangerment Provisions: Climate Change Comes to Kansas*, 56 U. Kan. L. Rev. 517, 527-28 (2008). Some reports suggest that coal accounts for roughly 20% of all global GHG emissions. See Ctr. for Climate and Energy Solutions, *Coal and Climate Change Facts*, www.c2es.org/science-impacts/basics/fact-sheets/coal-facts (July 13, 2013).

8. See *infra* nn. 68–73 and accompanying text.

pronounced.⁹ Nor is it remarkable that the Sierra Club has an aggressive “beyond coal” campaign.¹⁰

The tension surrounding coal's future is striking. Today, some in the coal industry talk about the Obama administration's purported “war on coal.”¹¹ In a historic speech on the floor of the Senate, retiring Senator Jay Rockefeller (D-W.V.) warned that the coal industry must “face reality” and that, unfortunately, the “dialogue on coal” has reached a “stunningly fevered pitch.”¹² New York City Mayor Michael Bloomberg recently tagged coal as “a dead man walking.”¹³ The industry, once committed to expanding U.S. markets through commercialization of clean coal technologies, has now focused on exporting coal to expanding overseas markets.

What, then, should we make of coal's future prospect, particularly coal from the nation's western public lands? The Energy Information Administration (EIA) projects that coal will remain the nation's largest energy source for, at least, several decades, although the electric utility industry is likely to retire roughly 49 gigawatts of coal-fired electric generation by 2022.¹⁴ Between 2011 and 2012, however, coal

9. Alan H. Lockwood et al., *Coal's Assault on Human Health*, <http://www.psr.org/assets/pdfs/psr-coal-fullreport.pdf> (2009). Some of the nation's most prominent natural resource economists suggest that coal-fired generation is the largest industrial contributor to gross external damages for pollution. Nicholas Z. Muller et al., *Environmental Accounting for Pollution in the United States Economy*, 101 *Am. Econ. Rev.* 1649 (2011). In Europe, the Health and Environment Alliance reports that costs associated with burning coal accounts for approximately €43 billion annually. Health and Environment Alliance, *Coal's Health Bill Reaches €43 Billion a Year*, <http://www.env-health.org/resources/press-releases/article/coal-s-health-bill-reaches-eur43> (March 7, 2013).

10. See Sierra Club, *Beyond Coal*, <http://content.sierraclub.org/coal/> (July 13, 2013).

11. Manuel Quinones, *Industry Boosters Conflicted About “War” Whoops*, *E&E News* (Jan. 16, 2013); see also Manuel Quinones, *Industry Divided on Obama Climate Plans, But ‘War’ Remains Battle Cry*, *E&E News* (July 3, 2013).

12. 158 Cong. Rec. S4316 (daily ed. June 20, 2012).

13. Manuel Quinones, “*Coal Is A Dead Man Walking*” – Bloomberg, *E&E News* (Feb. 27, 2013).

14. United States Energy Info. Administration, *AEO2013 Early Release Overview* 8, <http://www.eia.gov/forecasts/aeo/er/pdf/0383er%282013%29.pdf> (July 13, 2013). The Government Accountability Office predicts that the United States will retire between 15 and 18 percent of its coal-fired generation by 2020. Government Accountability Off., *Significant Changes Are Expected in Coal-Fueled Generation, But Coal is Likely to Remain a Key Fuel Source*, GAO-13-72 (Oct. 29, 2012). Cf.

consumption in the power sector declined by 12.5 percent and coal-fired generation decreased from 1.73 billion megawatt hours to 1.52 megawatt hours; meanwhile, gas-fired generation rose during this period by 21.4 percent.¹⁵ And once again coal exports are breaking records, with numbers likely exceeding the 1981 record of 112.5 million tons, and most of the coal demand is from Europe not Asia.¹⁶ But what is coal's mid and long-term prospect—where is coal's future market? Unless new growth markets emerge here in the U.S. or elsewhere in the world, capital investment in new coal mines or expansions of existing mines could become risky. This is acutely important for the west in areas like the Powder River Basin (PRB), where coal is a critical component of the economy.¹⁷

This essay, therefore, reviews how coal has arrived at this critical juncture and suggests that the time is ripe for rationally assessing coal's place in the U.S.'s energy horizon. Part I summarizes the growth of coal in the U.S., recounting how coal effectively gained prominence for supplying energy in the 1970s. Part II then reviews how electric utilities have responded to changing market dynamics, and how those dynamics have become intensified by the suite of factors indirectly affecting coal's utilization. The coal industry in the west has responded to these factors by focusing on expanding our nation's northwest port capacity for overseas coal markets. Part III, therefore, recounts these efforts. It also examines the dialogue surrounding the cumulative environmental effects that might flow from greatly expanding port capacity and increasing the amount of coal shipped to overseas markets. While the essay suggests that existing law may not require a broad programmatic approach for exploring the array of effects, it counters that such an approach appears sensible.

Daniel Cusick, *Coal May Not Regain its Dominance in the Electric Sector—Study*, E&E News (June 7, 2013) (coal has rebounded from 2012 historic low, but may not recapture dominance as fuel source).

15. Daniel Cusick, *Power Producers Accelerate Switch from Coal to Gas*, E&E News (Feb. 27, 2013) (describing EIA report).

16. Chris Preston, *U.S. Coal Exports on Track for Record Year*, <http://finance.yahoo.com/news/u-coal-exports-track-record-201146458.html> (Oct. 3, 2012); see also Collin Sullivan, *U.S. Set Record for Coal Exports in March—EIA*, E&E News (June, 2013).

17. In Wyoming, for instance, coal is a vibrant part of the state's economy. See Benjamin Storrow, *New Obama Carbon Limits Could Hit Wyoming*, http://trib.com/news/state-and-regional/new-obama-carbon-limits-could-hit-wyoming-coal/article_a3a652f7-c98b-5a15-a8d9-dc43f06ad761.html (June 26, 2013).

Consequently, Parts IV and V conclude that a new paradigm seems plausible, employing, for instance, a duly entrusted Department of Energy capable of exploring the range of issues affecting and affected by coal utilization and proffering sound choices for coal's future role in a coordinated and coherent national energy policy.

I. COAL'S MYSTIQUE

For most of our history, coal has served a secondary role in supplying electric generation.¹⁸ Prior to the 1880s, first water and then wood fed the nation's growing economy.¹⁹ Coal only became the nation's favored fuel by 1886, and its prominence lasted until shortly after World War II.²⁰ During the early years of coal's rise, the railroads and the industrial sector used most of the coal.²¹ And while coal's use for electric

18. The picture worldwide is quite different, with coal serving as the "pre-eminent fuel until the mid-twentieth century." John G. Clark, *The Political Economy of World Energy* 15 (1990).

19. Sam H. Schurr & Bruce C. Netschert, *Energy in the American Economy, 1850-1975: An Economic Study of its History and Prospects* 61-62 (1960).

20. John G. Clark, *Energy and the Federal Government: Fossil Fuel Policies, 1900-1946* xxi (1987). Coal during this period provided half the nation's energy requirements. *Id.* "Coal's input to energy consumption peaked in the first two decades of the twentieth century when it provided over 70 percent of energy needs." *Id.* Coal production quadrupled between 1880 and 1900, and doubled between 1900 and 1920, reaching 678 million tons by 1918. *Id.* This was roughly a 411 percent increase in production. Clark, *supra* n. 18, at 15. World War I then spurred increased coal production. Clark, *supra* n. 20, at 4. A trade advisor wrote for Foreign Affairs in 1920s that coal's dominance "seems sure to prevail indefinitely." Walter S. Tower, *The Coal Question*, 2 *For. Affairs* 100, 101 (1923-1924).

21. Clark, *supra* n. 18, at 21-22, 27. This coal generally was eastern bituminous (largely for industrial uses) and anthracite (for heating and steam purposes) coal. Clark, *supra* n. 20, at 3-4, 8. And the railroads and industrial sector controlled much of this coal. *Id.* at 7. This explains why, for western coal, railroad land grants often excluded conveying minerals but included the disposition of coal and iron for use by the railroads. *See* 12 Stat. 489 (1870); *Northern Pacific Ry. Co. v. Soderberg*, 188 U.S. 526 (1903). By the 1950's, the United States consumed roughly one-third of the then world's energy supply (9 tons of coal equivalent per person), with about only 25% from coal. Schurr, *supra* n. 19, at 1. This reflected a dramatic change from prior decades, when coal provided a much larger share. "The transformation of the American economy from its earlier coal basis has involved the consumption in recent years of enormous amounts of oil and gas." *Id.* at 2.

energy rose during this period, it was being out-competed by the emergence of the oil and gas industry.²²

The 1970s energy crisis effectively elevated coal to its status as a dominant source for producing electricity.²³ After all, the United States' energy sources had become increasingly reliant on oil and natural gas, even though the country had yet to develop and adopt much of the modern-day legislation aimed at increasing domestic oil and gas production.²⁴ Going into the decade, therefore, federal coal, not surprisingly,²⁵ accounted for only a small percent of the national production.²⁵

This all changed once Congress and the administration responded to the 1970s energy crisis. The summer and early fall of 1974 marked the emergence of President Nixon's Project Independence.²⁶ A few years

22. See Joseph P. Tomain, *The Dominant Model of United States Energy Policy*, 61 U. Colo. L. Rev. 355, 358, 362, 365 (1990).

23. Dan Tarlock aptly observes that, at the time, "the successful achievement of domestic energy supply independence is widely thought to require a return to coal." Dan Tarlock, *Western Coal in Context*, 53 U. Colo. L. Rev. 315, 317 (1981).

24. Offshore oil and gas development, for instance, only became prominent after Congress passed the Outer Continental Shelf Lands Act (OCSLA) in 1953, 43 U.S.C. §§ 1301-1315 (2012), but little development occurred until after the 1970s and the passage of the 1978 Amendments to the OCSLA. See generally Sam Kalen, *Cruise Control and Speed Bumps: Energy Policy and Limits for Outer Continental Shelf Leasing*, 7 *Env'tl & Energy Law & Pol'y J.* 155 (2012).

25. Marion Clawson, *The Federal Lands Revisited* 93 (1983); Tarlock, *supra* n. 23, at 326, 333-335.

26. President Nixon delivered his first energy message to Congress in June 1971. See Neil De Marchi, *Energy Policy Under Nixon: Mainly Putting Out Fires*, in *Energy Policy in Perspective: Today's Problems, Yesterday's Solutions* 395, 409 (Craufurd D. Goodwin, William J. Barber, James L. Choichrane, Neil D. Marchi, Joseph A. Yager eds., The Brookings Institution 1981). In 1973, he urged the relaxation of environmental standards and encouraged that plants not switch away from coal. *Id.* at 447. In a macroeconomic model for matching energy supply and demand, the first of its kind and the apparent predecessor to the Energy Information Administration's Annual Energy Outlooks, the lengthy 1974 Project Independence Blueprint Report forecast that coal's contribution toward U.S. energy supply would rise from 17 percent to 23.4 percent by 1985 (assuming an \$11 ton cost for coal). See Jerry A. Hausman, *Project Independence Report: An Appraisal of U.S. Energy Needs Up to 1985*, 6 *Bell J. Econ.* 517, 533 (1975); see also De Marchi, *supra* at 461-66 (describing Project Independence Blueprint project).

On August 12, 1974, President Ford highlighted Project Independence in his speech to the joint session of Congress, as well as during the Sept. 23, 1974 World Energy

later, when President Carter spoke to the Nation on April 18, 1977 and proclaimed that the energy crisis was the moral equivalent of war, he championed increased coal production.²⁷ Increased use of coal became one of the five principal aspects of the array of programs that became the nation's energy policy.²⁸ The President's National Energy Plan called for roughly doubling the 1975 coal production and consumption levels by 1985.²⁹ Even with a long coal strike in 1978, coal production had grown

Conference in Detroit, Michigan. In 1974, Congress passed the Energy Supply and Environmental Coordination Act (ESECA), Pub. L. No. 93-319, 88 Stat. 246 (1974), which promoted the use of coal over other fossil fuels if a plant had the capability of burning coal. A year later, Congress passed the Energy Policy and Conservation Act (EPCA), Pub. L. No. 94-163, 89 Stat. 871 (1975) (start of vehicle emission standards, creating strategic petroleum reserve and extending oil price controls).

27. Jimmy Carter, *Address to the Nation*, 1977 Pub. Papers 656, 656-663. "Coal," under Carter's plan, was the "key" to bridging the "gap between even the modestly rising energy requirements of sustained economic growth and the relatively stable U.S. production of oil and natural gas." James L. Cochrane, *Carter Energy Policy and the Ninety-fifth Congress*, in *Energy Policy in Perspective: Today's Problems, Yesterday's Solutions* 547, 573 (Craufurd D. Goodwin, William J. Barber, James L. Cochrane, Neil D. Marchi, Joseph A. Yager eds., The Brookings Institution 1981). See also Mel Horwitch, *Coal: Constrained Abundance*, in *Energy Future: Report of the Energy Project at the Harvard Business School* 79 (Robert Stobaugh & Daniel Yergin eds., Random House 1979); President's Comm'n on Coal, *Acceptable Ways to Hasten the Substitution of Coal for Oil: An Interim Report* (1979) (often dubbed the "Rockefeller Report"). In the Powerplant and Industrial Fuel Use Act of 1978, Congress regulated existing power plants' use of fuel, and it further prohibited—with exceptions and limitations—the use of gas or oil in new power plants, effectively supplanting the ESECA. Pub. L. No. 95-620, 92 Stat. 3289. For a symposium on the Fuel Use Act, see Richard J. Pierce, Jr., *Introduction: Symposium on the Powerplant and Industrial Fuel Use Act of 1978*, 29 Kan. L. Rev. 297 (1981). See also Edward L. Lublin, *The Future of the Department of Energy's Coal Conversion Program*, 2 Energy L. J. 355 (1981); J. Richard Tiano, Michael K. Hammaker, *Coal Conversion: Procedural Improprieties in Pursuit of a National Energy Policy*, 11 Conn. L. Rev. 482 (1979). A few years later, Congress removed the restriction against using natural gas. Economic Recovery Act of 1981, Pub. L. No. 97-34, 95 Stat. 172 (1981).

28. Henry M. Jackson, *The Role for Greater Coal Utilization for United States' National Energy Policy*, 29 U. Kan. L. Rev. 303, 304 (1981). See also Richard L. Gordon, *The Worlds of Coal—The Perspective from the U.S.A.*, 10 Case W. Res. J. Intl. L. 659 (1987) (useful examination of the history of coal production and utilization from comparative perspective); Marvin O. Young, *Conflicting Government Regulations and Policies Affecting Coal Development*, 9 Nat. Res. Law. 503 (1976) (coal industry official noting importance of coal to nation's energy policy).

29. Cochrane, *supra* n. 27, at 561, 594; Reed Moyer, *The Role of Coal: Problems and Policies*, 18 Nat. Res. J. 761, 762, 767 (1978). The Carter

dramatically since the early part of the decade, with the 1978 level of over 60 million tons well above the 1973 level.³⁰ At the end of the decade, the Executive Director for the International Energy Agency suggested that worldwide production of coal would need to triple by 2000 to satisfy growing energy demand.³¹ This emphasis on coal not surprisingly prompted the price of coal to increase over 15% during the 1970s.³²

Coal's importance is possibly best illustrated by the Carter administration's effort to convert coal into gas or liquids, and correspondingly reduce U.S. dependence on oil and natural gas. The National Energy Plan contemplated the construction of several coal gasification plants by the 1990s.³³ Germany had employed successfully coal liquefaction during World War II,³⁴ and Sasol had developed a coal gasification facility in South Africa.³⁵ The U.S. began exploring liquefaction before the energy crisis, with several pieces of legislation targeting research and development funding for coal conversion technologies.³⁶ The U.S., moreover, dedicated considerable resources to promoting a federally sponsored synthetic fuels program.³⁷ One example

administration developed a centralized planning process, designed to calculate the amount of coal needed for leasing in one of twelve regions (6 of which predominately federal coal) throughout the country. See Robert H. Nelson, *Public Lands and Private Rights: The Failure of Scientific Management* 290 (1995). The DOE set production targets, but it soon became apparent that such planning was unworkable and the DOI moved more toward a predictable market planning process. *Id.* at 291.

30. Clawson, *supra* n. 25, at 290.

31. Ulf Lantzke, *Expanding World Use of Coal*, 58 *For. Affairs* 351 (1979-1980).

32. Steven Ferrey, *The New Rules: A Guide to Electric Market Regulation* 269 (2000) (referencing U.S. Energy Info. Administration, *The Changing Structure of the Electric Power Industry: An Update* (1997)). Since 1975, the industry generally has experienced declining coal prices. Joseph P. Tomain & Richard D. Cudahy, *Energy Law in A Nutshell* 322 (2d Ed. 2011).

33. U.S. Dept. of Energy, *Report on the Solvent Refined Coal Demonstration Plant Program (SRC-II)*, IG-0180 at 3 (March 3, 1982).

34. See Ronald K. Olson, *Coal Liquefaction: Issues Presented by a Developing Technology*, 12 *Tulsa L.J.* 657, 659-60 (1977).

35. *Id.* at 661.

36. *Id.* at 660-64.

37. United States Synthetic Fuels Corporation Act of 1980, Pub. L. No. 96-294, 94 Stat. 633. See generally Findings and Recommendations of the Advisory Panel on Synthetic Fuels, To the Committee on Science and Technology, U.S. House of Representatives (1980) (on file with author); U.S. Energy Research & Dev. Administration, *Proposed Synthetic Fuels Commercial Demonstration Program: Fact*

is that, by the late 1970s and early 1980s, with DOE assistance, North Dakota became home to the Great Plains Coal Gasification Project, converting lignite coal into synthetic natural gas.³⁸

Federal public lands naturally became a prime source for feeding the nation's appetite for more coal.³⁹ At the time, the United States was believed to own 200 billion tons of coal.⁴⁰ The 1970 Clean Air Act (CAA) indirectly advantaged western coal, by mandating reductions of sulfur emissions.⁴¹ When utilities switched to burning federal coal, such as in the Powder River Basin (PRB), Congress amended the CAA in 1977 to remove the regional advantage gained by the west.⁴² Despite an intensive litigation campaign,⁴³ federal coal production increased tenfold during the 1970s.⁴⁴

Book (1976) (on file with author); Ad Hoc Panel on Liquefaction of Coal of the Committee on Processing and Utilization of Fossil Fuels, Nat. Acad. of Sci., *Technology for the Liquefaction of Coal: Summary* (1977) (on file with author); Lawrence H. Goulder & Marc S. Robinson, *Synfuels: Justification for and Consequences of Government Intervention* (1982) (on file with author).

38. See U.S. Gen. Acctg. Off., *Synthetic Fuels: Status of the Great Plains Coal Gasification Project*, RCED-88-53FS (Nov. 10, 1987). Eventually President Reagan shuttered the synthetic fuels program. See Tomain, *supra* n. 22, at 372 (noting also that program was destined to fail at the time due to cost and market forces). See also Barbara Rudolph, *Time Magazine*, *Shattered Hopes for Synfuels*, <http://www.time.com/time/magazine/article/0,9171,1050485,00.html> (Apr. 18, 2005).

39. Tarlock, *supra* n. 23, at 318.

40. Tom Arrandale, *The Battle for Natural Resources* 86 (1983).

41. See generally Bruce A. Ackerman, William T. Hassler, *Clean Coal/Dirty Air: Or How the Clean Air Act Became a MultiBillion-Dollar Bail-Out for High-Sulfur Coal Producers and What Should be Done About It*, 15-16 (1981).

42. *Id.* at 42-58. The 1977 Amendments to the CAA reduced the competitiveness of western coal by requiring the use of scrubbers for all new power coal-fired power plants. Congressional Quarterly, *The Battle for Natural Resources* 85 (1983); Richard L. Gordon, *The Worlds of Coal-The Perspective from the U.S.A.*, 10 Case W. Res. J. Int'l. L. 659, 663-64 (1978). For a seminal study, see Bruce A. Ackerman & William T. Hassler, *Beyond the New Deal: Coal and the Clean Air Act*, 89 Yale L.J. 1484, 1466 (1980).

43. Arrandale, *supra* n. 40, 87-99.

44. *Id.* at 82-83, 87. In fact, "Midwestern mines produced 138 million tons of coal" in 1970, while mines in "Montana and Wyoming [only] produced a mere 10 million tons. By 1980, midwestern production had increased about 22 percent to 173 million tons; however, production in Montana and Wyoming had grown over one thousand percent to 124 million tons." R. McGreggor Cawley, *Federal Land, Western Anger: The Sagebrush Rebellion & Environmental Politics* 78 (1993). See also Clawson, *supra* n. 25, at 290 (table on coal leases and production from 1960 to 1980).

Yet, continual controversy best characterizes the modern federal coal program during its first decade.⁴⁵ No structured federal coal-leasing program existed, and lessees were holding federal coal speculatively rather than mining it. In 1974, therefore, federally leased coal only contributed 4% to the nation's coal production.⁴⁶ Two years later, only 59 of the 533 existing leases were producing coal.⁴⁷ The coal-leasing program remained stagnant for most of the decade: no coherent approach toward planning existed, and the recently passed National Environmental Policy Act (NEPA)⁴⁸ required that federal agencies assess the environmental impacts associated with coal leasing. And, shortly before President Carter released the National Energy Plan, Congress finally passed the previously vetoed Federal Coal Leasing Act Amendments of 1975 (FCLAA).⁴⁹ FCCLA primarily sought to promote timely, efficient, and coordinated development of the nation's coal resources.⁵⁰ The idea that leases would be developed diligently, or somewhat quickly, became a principal aspect of the new leasing program.⁵¹ Of course, this idea pervades federal

45. For a history of the prior regulation of federal coal, *see generally* Robert Nelson, *The Making of Federal Coal Policy* (1983); Sam Kalen, *Where Do We Go From Here?: The Federal Coal Leasing Amendments Act – Past, Present, and Future*, 98 W. Va. L. Rev. 1023 (1996); Leo M. Krulitz, *Management of Federal Coal Resources*, 24 Rocky Mtn. Min. L. Inst. 139 (1978); Jerome H. Simonds, *History of Federal Coal Leasing—A Lawyer's Viewpoint*, 13 Tulsa L. J. 671 (1978); Guy R. Martin, *A New Program for the Management of Federal Coal Reserves*, 82 W. Va. L. Rev. 1019 (1980); Tarlock, *supra* n. 23; Gary J. Wicks, *Coal Leasing Program: Department of the Interior*, 13 Tulsa L.J. 664 (1978). The first principal laws affecting the disposition of coal occurred during the post-Civil War period, with too much coal being lost and precipitating the need for an executive withdrawal and ultimately the need for the 1920 Mineral Leasing Act. *See* Shannon L. Bybee, Jr., Richard H. Stahle, Robert L. Schmid & Jeffery L. Haggard, *Legal Study of Coal Resources on Public Lands: Prepared for the Public Land Law Review Commission 2* (1968) (on file with author).

46. De Marchi, *supra* n. 26, at 477.

47. U.S. Government Accountability Off., *Mineral Resources: Federal Coal-Leasing Program Needs Strengthening*, GAO/RCED-94-10 at 15 (Sept. 16, 1994).

48. 42 U.S.C. § 4321–4335. *See infra* nn. 118–120 and accompanying text.

49. Pub. L. No. 94-377, 90 Stat. 1083 (1976). *See generally* Kalen, *supra* n. 45; James M. Voytko, *Western Coal Development Policy: The Federal Coal Leasing Amendments Act of 1975*, 1 Harv. Envtl. L. Rev. 289 (1976).

50. Kalen, *supra* n. 45.

51. *Id.* at 1034–1042. Pre-FCLAA leases could have included the equivalent of diligent development requirements (and in pre-FCLAA 1976 regulations

resource programs, whether correctly or not.⁵² Going into the Regan administration, federally produced coal grew, but only to approximately 10% of total coal production.⁵³ Yet, between 1967 and 1993, federal coal production went from 1% of total U.S. production to 30% of total U.S. production.⁵⁴

The irony perhaps of coal's growth is that it paralleled the rise of environmental regulation and federal land use planning. Dan Tarlock aptly explains that “[f]ederal coal policy since 1973 can be seen as an exercise in futility because incentives for coal use were quickly cancelled by disincentives adopted in the name of regional political equity.”⁵⁵ After all, “[m]any utilities in the 1960s switched from coal to oil to avoid the environmental problem involved in burning coal.”⁵⁶ And the reliance on federal coal also occurred during the same decade that Congress passed the Renewable Resources Planning Act of 1974, the National Forest Management Act of 1976, and the Federal Land Policy and Management Act of 1976.⁵⁷ Although vetoed twice by President Ford,⁵⁸ the Surface

this requirement became expressed, 41 Fed. Reg. 21779 (May 28, 1976)), but disorganized planning characterized the program. See Off. of Tech. Assessment, *Management of Fuel and Nonfuel Minerals in Federal Land: Current Status and Issues* (1979).

52. Soon after the coal leasing program became operational, the General Accounting Office suggested that the program “lack[s] the flexibility needed to take into account all the factors affecting timely development of [the federal coal leases], and could result in either forcing development of certain leases before market demand materializes or forcing their cancellation just about the time demand materializes.” U.S. Gen. Acctg. Off., *Simplifying The Federal Coal Management Program*, EMD-81-109 at 2 (Aug. 20, 1981). For modern concerns about diligent development of federal resources, see U.S. Int. Dept., *Oil and Gas Lease Utilization, Onshore and Offshore: Updated Report to the President*, <http://www.doi.gov/news/pressreleases/upload/Final-Report.pdf> (May 2012).

53. Tarlock, *supra* n. 23, at 319.

54. Robert H. Nelson, *Public Lands and Private Rights: The Failure of Scientific Management* 287 (1995). Overall U.S. production between 1970 and 2001 increased from 520 million tons to over a billion tons. See Tomain & Cudahy, *supra* n. 32, at 324.

55. Tarlock, *supra* n. 23, at 319.

56. Leonard S. Hyman & Robert C. Hyman, *America's Electric Utilities: Past, Present & Future* 39 (8th Ed. 2005). See also Donald P. Irwin & K. Dennis Sisk, *The Fuel Use Act and DOE's Regulations: A Utility Industry Perspective*, 29 U. Kan. L. Rev. 319, 320 (1981).

57. Guy Martin explained how this mélange of laws passed by Congress merged with policy choices and judicial decisions to “profoundly influenced the

Mining Control and Reclamation Act of 1977 became law upon President Carter's August 3, 1977 signature.⁵⁹ This law "revolutionized coal mining in the United States," by enacting a series of programs designed to address the adverse effects of surface coal mining.⁶⁰

II. THE FLUID ELECTRIC UTILITY SECTOR

Amidst this dynamic suite of new programs and ever-changing market forces, electric utilities began to develop coal-fired power plants more rapidly than in the past. These newly developed plants were larger than their predecessors, and eventually between 1970 and the mid-1980s the majority of the nation's current coal generating capacity became operational.⁶¹

The development of these coal plants occurred, moreover, while the electric utility sector began its period of rapid transition. Prior to the 1980s, the electric utility industry seemed somewhat stable, operating under an arguably simple vertically integrated market dynamic.⁶² Starting

manner in which the [Department] manage[d] coal resources." Martin, *supra* n. 45, at 1021.

58. M. McElfish, Jr. & Ann E. Beier, *Environmental Regulation of Coal Mining: SMCRA's Second Decade* 5 (1990).

59. Pub. L. No. 95-87, 91 Stat. 447 (Aug. 3, 1977). For surface mining prior to the Act's passage, see Arnold W. Reitze, Jr., *Old King Coal and the Merry Rapiers of Appalachia*, 22 Case W. Res. L. Rev. 650 (1971).

60. James M. McElfish, *supra* n. 58, at xv. See *Hodel v. Virginia Surface Mining and Reclamation Assn.*, 452 U.S. 264 (1981).

61. See Nat'l Energy Tech. Laboratory, *Tracking New Coal-Fired Power Plants* 8 (Jan. 13, 2013) (available at <http://www.netl.doe.gov/coal/refshelf/ncp.pdf> (noting "Current Coal Capacity Additions by Years"); see also Todd Woody, *Most Coal-Fired Power Plants in the US Are Nearing Retirement Age*, <http://qz.com/61423/coal-fired-power-plants-near-retirement/> (March 12, 2013, (discussing periods of capacity additions).

62. The utility industry as well changed prior to the 1970s. It began as a decentralized system, only to become centralized and controlled by monopolies until the New Deal, and thereafter it experienced an increased focus on expanding generation and tying generating plants into regional grids or power pools. See generally Richard Rudolph & Scott Ridley, *Power Struggle: The Hundred-Year War over Electricity* (1986); Phillip F. Schewe, *The Grid: A Journey Through the Heart of Our Electrified World* (2007) (a non-technical history of how the electric grid developed). "After World War II, it looked as if the electric utilities would continue, inevitably, on the road to lower costs and greater sales, as they did through the mid-1960s, when the process ground to a halt with the most disastrous electrical failure in

with aspects of the 1970's Carter Energy Plan, this all began to change.⁶³ Then, since the 1980s, the idea that monopolistic utilities, in return for a duty to serve customers in a defined region, would generate and transmit energy at cost-of-service based rates eroded significantly when policies fostered deregulation and promoted competitive markets over traditional rate regulation.⁶⁴ Utility planning⁶⁵ and reliability too emerged during the past few decades as critical components of the new paradigm.⁶⁶ And so,

American history.” Hyman, *supra* n. 56, at 151. The “happy state of affairs” for the industry ended in 1970s, “when the direct and indirect effects of the oil price revolution destabilized the entire structure.” Edward Kahn, *Electric Utility Planning & Regulation* 1 (1988).

63. *The Public Utility Regulatory Policies Act of 1978*, Pub. L. No. 95-617, 92 Stat. 3117, began to frame the emerging dialogue about increased wholesale electric competition and restructuring. See generally Jeffery S. Dennis, *Twenty-Five Years of Electricity Law, Policy, and Regulation: A Look Back*, 25 *Nat. Resources & Env.* 33, 34 (2010).

64. See Tomain, *supra* n. 22, at 376, 378, 382, 386–90; see generally Walter R. Hall III, Kenneth A. Barry, Derek Dyson, Janice Moore, Gaye White & Paul Breakman, *History, Objectives, and Mechanics of Competitive Electricity Markets*, in *Capturing the Power of Electric Restructuring* 1 (Joey L. Miranda, ed., 2009); Jim Rossi, *The Common Law “Duty to Serve” and Protection of Consumers in an Age of Competitive Retail Public Utility Restructuring*, 51 *Vand. L. Rev.* 1233 (1998); Sidney A. Shapiro & Joseph P. Tomain, *Rethinking Reform of Electricity Markets*, 40 *Wake Forest L. Rev.* 497 (2005); David B. Spence, *The Politics of Electricity Restructuring: Theory vs. Practice*, 40 *Wake Forest L. Rev.* 417 (2005). For the seminal early work on the dynamics of the push toward deregulation, see Paul L. Joskow & Richard Schmalensee, *Markets for Power: An Analysis of Electric Utility Deregulation* (1983). Former FERC Commissioner Donald F. Santa and his legal advisor Clifford S. Sikora once wrote that the 1992 Energy Policy Act (EPAAct) was not only the first major energy legislation in over a decade, but that it changed the energy landscape by affording the Commission with expanded authority over transmission and promoting new independent market entrants—the exempt wholesale generators (EWGs). Donald F. Santa & Clifford S. Sikora, *New Directions at FERC*, in *Reinventing Electric Utility Regulation* 363, 364 (Gregory B. Enholm & J. Robert Malko eds., 1995).

65. Prior to the 1970s, utility planning was not too difficult, as sales of electricity rose rather predictably; that changed by the 1970s, when “demand for electricity reacted to destabilizing influences, such as the unavailability of other fuels, environmental rules that encouraged users to take electricity instead of burning their own fuels, and sharply higher prices for electricity that discouraged consumption.” Hyman, *supra* n. 56, at 65.

66. Reliability generally encompasses a utility or system’s “ability to react quickly to emergencies,” a utility or system’s ability to satisfy future electric needs

by the first decade of this new century, electric utilities operated in a fundamentally different world than they did 40 years ago.

Several factors, however, are continuing to coalesce and reshape the electric utility energy market, and derivatively, coal's future.⁶⁷ To begin with, it is widely accepted that EPA's various proposed, final, and currently litigated regulations affecting the utility sector have combined to cabin interest in future, newly constructed coal-fired power projects.⁶⁸ These rules include the now-vacated Cross-State Air Pollution Rule (CSAPR),⁶⁹ the Tailoring Rule for GHG emissions,⁷⁰ the Mercury and Air Toxics Standards (MATs) Rule,⁷¹ as well as the New Source Performance Standards (NSPS) for GHG emissions from fossil fuel generating plants.⁷² Also, in December 2012, EPA issued a new proposed

(load) for any defined area, and the dependability of customers receiving electric power when needed. Hyman, *supra* n. 56, at 35–36.

67. See generally Jessica Coomes & Andrew Childers, *Low Natural Gas Prices, EPA Regulations Put Coal-Fired Power Plants at Crossroads*, BNA Daily Env't B-1 (June 6, 2012).

68. See, e.g., Jessica Coomes & Andrew Childers, *Power Industry Argues Adequate Technology Not Yet Available to Meet New EPA Rules*, BNA Daily Env't B-1 (June 27, 2012).

69. *EME Homer City Generation v. EPA*, 696 F.3d 7 (D.C. Cir. 2012), *cert. granted in part*, ___ S. Ct. ___, 2013 WL 1283839 (June 24, 2013). The CSAPR rule replaced the previously remanded 2005 Clean Air Interstate Rule (CAIR). *North Carolina v. EPA*, 550 F.3d 1176 (D.C. Cir. 2008). The *Homer* court directed that EPA continue enforcing CAIR until the agency developed a replacement rule. 696 F.3d at 38.

70. Reconsideration of Interpretation of Regulations That Determine Pollutants Covered by Clean Air Act Permitting Programs, 75 Fed. Reg. 17004, 17009 (Apr. 2, 2010); Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 75 Fed. Reg. 31514 (June 3, 2010). See *Coalition for Responsible Regulation, Inc. v. EPA*, 684 F.3d 102 (D.C. Cir. 2012), *rehearing denied*, 2012 WL 6621785 (D.C. Cir. Dec. 20, 2012).

71. See Reconsideration of Certain New Source Issues: National Emission Standards for Hazardous Air Pollutants From Coal-and Oil-Fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units, 78 Fed. Reg. 24073 (April 24, 2013), 77 Fed. Reg. 9304 (Feb. 16, 2012); see also Proposed Rule; Reopening of Comment Period, Reconsideration of Certain Startup/Shutdown Issues, 78 Fed. 38001 (June 25, 2013).

72. See Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 72 Fed. Reg. 22392 (April 13, 2012). See generally Juliet Eilperin & Phillip Rucker, *EPA May Delay Proposed Greenhouse Gas Limits for Power Plants*, Wash. Post (March 15, 2013); Jim

annual national ambient air quality standard for fine particulate matter.⁷³ Other non-air based regulatory programs include the effort to address cooling water intake structures at thermal power plants pursuant to § 316(b) of the Clean Water Act,⁷⁴ as well as the ongoing debate about whether to regulate the disposal of coal combustion residuals (coal ash) from power plants pursuant to the Resource Conservation and Recovery Act (RCRA).⁷⁵ With compliance deadlines ranging between 2013 and

Efstathiou, Jr. & Mark Drajem, *Coal-Burning Utilities Seek a Role in EPA Rule-Making on Greenhouse Gas Emissions*, Wash. Post (Feb. 3, 2013). EPA's expected date for finalizing the rule apparently has been delayed. See Jean Chemnick, *New Power Plant Rule Running Late, With Major Changes Possible*, E&E News (March 18, 2013).

73. National Ambient Air Quality Standards for Particulate Matter, 78 Fed. Reg. 3086 (Jan. 156, 2013).

74. Section 316(b) of the CWA prescribes the use of best technology available for minimizing adverse environment affects from the location, design, construction and capacity of cooling water intake structures at thermal power plants. 33 U.S.C. § 1326 (2006). E.g. National Pollution Discharge Elimination System—Cooling Water Intake Structures at Existing Facilities and Phase I Facilities, 76 Fed. Reg. 22174 (April 20, 2011); National Pollutant Discharge Elimination System—Final Regulations To Establish Requirements for Cooling Water Intake Structures at Phase III Facilities, 71 Fed. Reg. 35006 (June 16, 2006); National Pollutant Discharge Elimination System—Final Regulations to Establish Requirements for Cooling Water Intake Structures at Phase II Existing Facilities, 69 Fed. Reg. 41575 (July 9, 2004); National Pollution Discharge Elimination System—Amendment of Final Regulations Addressing Cooling Water Intake Structures for New Facilities, 68 Fed. Reg. 36749 (June 19, 2003). These rules have prompted a series of challenges. See e.g., *Entergy Corp. v. Riverkeeper, Inc.*, 556 U.S. 208 (2009). Other organizations are pressing EPA to establish new effluent guidelines under CWA § 304(m) for power plants. See *Defenders of Wildlife v. Jackson*, 284 F.R.D. 1 (D.D.C. 2012); Amena H. Saiyid & Anthony Adragna, *Environmental Groups Tell OMB of Need for Effluent Guidelines for Power Sector*, BNA Daily Env't A-3 (March 8, 2013).

75. See *Appalachian Voices v. Jackson*, No. 12-cv-523 (D.D.C., filed Oct. 11, 2012). A North Carolina study suggests that the impact on water quality from coal combustion residue can be significant. Laura Ruhl, Avner Vengosh, Gary S. Dwyer, Heileen Hsu-Kim, Grace Schwartz, Autumn Romanski & S. Daniel Smith, *The Impact of Coal Combustion Residue Effluent on Water Resources: A North Carolina Example*, *Env'tl. Sci. & Tech.* (Nov. 6, 2012). See generally Uma Outka, *Environmental Law and Fossil Fuels: Barriers to Renewable Energy*, 65 *Vand. L. Rev.* 1679, 1706–1707 (2012) (discussing coal ash); Anthony Adragna, *Restrictions Vary on Coal Ash Reuse, But Most States Seen Active in Regulation*, BNA Daily Env't (Oct. 24, 2012) (describing study Beneficial Use of Coal Combustion Residuals Survey Report, released by the Association of State and Territorial Solid Waste Management Officials). Congress is considering legislation that would alter the regulatory program for CCR. Linda Luther et al., *Analysis of Recent Proposals To*

2018, these various initiatives “represent the most significant environmental regulatory developments of the last two decades for the power sector.”⁷⁶ Some of these initiatives triggered wide-ranging assessments of the potential impact on the reliability of the electric grid, if regulation forces switching to natural gas and the retirement of too many coal-fired power plants;⁷⁷ most assessments, however, suggest little risk to reliability.⁷⁸

EPA’s new regulatory initiatives fortuitously parallel the rise of natural gas as the preferred fuel for electric generation.⁷⁹ Over roughly

Amend the Resource Conservation and Recovery Act (RCRA) to Create A Coal Combustion Residuals Permit Program (Cong. Research Serv. March 19, 2013).

76. Kyle W. Danish et al., *Upcoming EPA Regulations and Potential Impact on Electric Reliability*, 24 *Electricity J.* 7 (April 2011).

77. E.g., Peter Behr, *Wild Cards Lurk in the Speedy Switch to Gas-Fired Power Generation*, *E&E News* (Feb. 25, 2013) (describing speech of senior vice present for research at the Electric Power Research Institute).

78. Several prominent organizations assessed the impact of EPA’s regulations on the reliability of the electric utility grid. See N. Am. Electric Reliability Corp., *2010 Special Reliability Scenario Assessment: Resource Adequacy Impacts of Potential U.S. Environmental Regulations*, http://www.nerc.com/files/EPA_Scenario_Final.pdf (Oct. 2010); see also Analysis Group, *The Positive Outlook for Cleaner Air and Reliable Electric Service*, http://www.analysisgroup.com/uploadedFiles/Publishing/Articles/Tierney_PositiveOutlook_MATSReliability_June_2012.pdf (June 11, 2012); Brattle Group, *Potential Coal Plant Retirements Under Emerging Environmental Regulations*, http://www.brattle.com/_documents/UploadLibrary/Upload1082.pdf (Dec. 8, 2010, Updated Oct. 2012); Charles River Associates, *A Reliability Assessment of EPA’s Proposed Transport Rule and Forthcoming Utility MACT*, <http://www.crai.com/uploadedFiles/Publications/CRA-Executive-Summary-Reliability-Assessment-of-EPA’s-Proposed-Transport-Rule.pdf> (Dec. 16, 2010). FERC issued a policy statement in May 2012, indicating how it would respond to a request to extend the date for compliance with the MATs rule. See The Commission’s Role Regarding the Environmental Protection Agency’s Mercury and Air Toxics Standards, 139 FERC ¶ 131 (May 17, 2012). In July 2012, the Government Accountability Office issued a report suggesting that reliability is legitimate concern, but GOA further found that it was not as serious as some had claimed. Government Accountability Off., *EPA Regulations and Electricity: Better Monitoring by Agencies Could Strengthen Efforts to Address Potential Challenges*, GAO-12-635, <http://www.gao.gov/assets/600/592542.pdf> (July 2012).

79. Legions of articles portray how shale gas development is reshaping energy policy. See e.g. Bryan Walsh, *This Rock Could Power the World: Why Shale Can Solve the Energy Crisis*, *Time Magazine*, 40 (April 2011). See generally Henry D. Jacoby, Francis M. O’Sullivan & Sergey Paltsev, *The Influence of Shale Gas on U.S. Energy and Environmental Policy*, *Econ. Energy & Env’tl. Policy*, 2012. The

the last decade, the U.S. energy resource market has dramatically changed as a consequence of the combination of hydraulic fracturing and horizontal drilling, as well as with the availability of major shale gas formations.⁸⁰ In 2011, the former Chairman of one of the largest electric utilities, Exelon, proclaimed that gas would be the benchmark fuel source and the “queen” for years to come.⁸¹ The International Energy Agency predicts that the U.S. will become the world’s largest gas producer by 2015.⁸² In short,

ability of natural gas to serve as baseload generation is not uniformly accepted. *See e.g.* Arnold W. Reitze, Jr., *Electric Power in a Carbon Constrained World*, 34 Wm. & Mary Env’t. L. & Policy Rev. 821, 830 (2010) (“Natural gas should not be used to produce base load electricity.”). Others suggest that, with appropriate storage and pipeline capacity, natural gas can provide base load operating characteristics. *See* Joel Theis & Peter Balash, *Key Aspects of Transitions Occurring in Electric Power Systems and Baseload Generation* (U.S. Assoc. for Energy Econ. Working Paper No. 12-143, 2012); *see also* U.S. Energy Info. Admin., *Electric Generator Dispatch Depends on System Demand and the Relative Cost of Operation*, <http://www.eia.gov/todayinenergy/detail.cfm?id=7590> (Jan. 3, 2013) (EIA suggesting that efficient natural gas plants can displace coal as baseload generation).

80. *See generally* Gregory S. Mcrae & Carolyn Ruppel, *The Future of Natural Gas: An Interdisciplinary MIT Study* (2011).

81. *See* Nick Schulz, ‘*The Dominant Source of Energy for Electricity*’: *Exelon CEO John Rowe on the Energy Wave of the Future*, Am. Enter. Inst. (March 9, 2011) (available at <http://www.aei-ideas.org/2011/03/the-dominant-source-of-electricity-exelon-ceo-john-rowe-on-the-energy-wave-of-the-future/>); *see also* John W. Rowe, *Energy Policy: Above All, Do No Harm*, Am. Enter. Inst. (March 8, 2011) (on file with author). Exelon owns one of the largest nuclear fleets of any utility and yet Rowe indicated that investment in nuclear power is uneconomic. Jeff McMahon, *Exelon’s “Nuclear Guy”: No New Nukes* (March 29, 2012) (available at <http://www.forbes.com/sites/jeffmcmahon/2012/03/29/exelons-nuclear-guy-no-new-nukes/>) (accessed July 13, 2013). *See also* Nick Juliano, *Exelon Blames Cheap Gas, Subsidized Wind for Sidelining Expansion Plan*, E&E News (Nov. 27, 2012) (noting Exelon’s announcement to delay expanding its nuclear fleet).

82. Int’l Energy Agency, *World Energy Outlook: Executive Summary*, <http://www.iea.org/publications/freepublications/publication/English.pdf> (2012). International Energy Agency (IEA) further predicts that gas will become the U.S.’s dominant overall fuel source by 2030, and that the U.S. will become close to energy independent by 2035. *Id.* at 5. *See also* Elisabeth Rosenthal, *U.S. to Be World’s Top Oil Producer in 5 Years, Report Says*, N.Y. Times (Nov. 12, 2012) (available at http://www.nytimes.com/2012/11/13/business/energy-environment/report-sees-us-as-top-oil-producer-in-5-years.html?_r=0) (accessed July 13, 2013). Some observers warn that low gas prices might retard investment in renewables. *See* Tripp Baltz, *Shale Gas Delays Markets for Low Emission, Renewable Technology, Report Says*, BNA Daily Env’t (Jan. 20, 2012) (discussing International Association for Energy Economics report).

“[c]heap supplies of domestically produced natural gas are undercutting coal prices and usurping coal’s status as the nation’s fuel of choice for electric generation.”⁸³ President Obama even issued an Executive Order in April 2012 promoting the nation’s exploitation of its natural gas resources.⁸⁴

These circumstances then converge with a host of other variables to make investing in new coal-fired power plants difficult. To begin with, investment in new generation must reflect current and projected energy demand, with a sufficient reserve capacity. But the country’s shift from a manufacturing to a service economy, coupled with significant gains in energy efficiency and the impact of the recession all contribute to a slower growth in electric generation demand than previously predicted.⁸⁵ For a variety of reasons, state public utilities also may be reluctant to approve any new coal-fired power plant.⁸⁶ Next, of course, coal plants are less attractive in those states that have adopted renewable portfolio standards designed to shift some percentage of electric generation away from fossil fuels and towards renewables.⁸⁷ And finally, more subtle factors may operate: new coal-fired plants may compete ineffectively with renewables for transmission capacity, and market operators may begin to develop policies that could chill how and whether they dispatch otherwise inexpensive power from coal fired plants.

83. E&E News, *The Demise of Coal-Fired Power Plants*, <http://www.eenews.net/climatewire/2012/11/26/archive/10?terms=+Coal-Fired+Power+Plants%2C> (Nov. 26, 2012).

84. Supporting Safe and Responsible Development of Unconventional Domestic Natural Gas Resources, Exec. Or. 13605, 77 Fed. Reg. 23107 (April 13, 2012).

85. See generally Energy Info. Administration, *Annual Energy Outlook 2012*, DOE/EIA-0383 (2012) (growth dropping proportionally from .3 percent per year from .6 percent per year); Wood Mackenzie, *A Lost Decade of Demand Growth* <http://www.woodmacresearch.com/cgi-bin/wmprod/portal/corp/corpPressDetailOpen.jsp?pass=10742820> (Aug. 21, 2012).

86. See Glicksman, *supra* n. 7, at 523; Powers, *supra* n. 6, at 408.

87. See generally Lincoln L. Davies, *State Renewable Portfolio Standards: Is There a “Race” and is it “To the Top?”* 3 San. Diego J. Climate & Energy L. 3 (2012); Lincoln L. Davies, *Reconciling Renewable Portfolio Standards and Feed-in Tariffs*, 32 Utah Envtl. L. Rev. 311 (2012); Joshua P. Fershee, *When Prayer Trumps Politics: The Politics and Demographics of Renewable Portfolio Standards*, 35 Wm. & Mary Envtl. L. & Policy Rev. 53 (2010); Jim Rossi, *The Future of Energy Policy: A National Renewable Portfolio Standard*, 42 Conn. L. Rev. 1425 (2010).

The panoply of factors influencing the paradigm for new generation affects utilities' decisions for existing plants. Some utilities identify the MATs rule, in particular, as forcing early retirements. In February 2012, for instance, FirstEnergy invoked the MATs rule and announced that it was seeking to retire several of its coal-fired plants.⁸⁸ Colorado recently amended its State Implementation Plan to address regional haze; the plan assumes that older, less efficient coal plants will be replaced by natural gas.⁸⁹

Indeed, the conversation today about coal plants generally involves predicting the level of retirements. EIA projects that over 8 percent of coal-fired capacity might be shuttered by 2016.⁹⁰ A report

88. See FirstEnergy, *FirstEnergy, Citing Impact of Environmental Regulations, Will Retire Three Coal-Fired Power Plants in West Virginia*, https://www.firstenergycorp.com/content/fecorp/newsroom/news_releases/firstenergy_citingimpactofenvironmentalregulationswillretirethre.html (Feb. 8, 2012). Before a utility can retire generation, the system operator in the region must ensure that the grid remains reliable and the operator here requested that the plants remain on line for a while. See Scott DiSavino, *FirstEnergy Keeping 3 Old Ohio Coal Plants Running*, Reuters (May 3, 2012) (available at <http://www.reuters.com/article/2012/05/03/us-utilities-firstenergy-coal-idUSBRE8420W820120503>) (accessed July 13, 2013). In September 2012, PPL Montana similarly referenced the MATs rule when announcing its planned shuttering of its J.E. Corette plant. PPL Corporation, *PPL Montana Announces Plan to Place J.E. Corette Power Plant in Reserve Status*, <http://pplweb.mediaroom.com/index.php?s=12270&item=133034> (Sept. 19, 2012); see also E&E News, *Minnesota Power Will Switch to Natural Gas* (Jan. 31, 2013).

89. Scott Streater, *EPA Grants Final Approval to Colo. Haze Plan Focused on Energy Producers*, <http://www.eenews.net/eenewspm/2012/09/11/archive/2?terms=streater> News (Sept. 11, 2012). Environmental advocates, for instance, are challenging Wyoming's regional haze program (Approval and Promulgation of State Implementation Plans; State of Wyoming; Regional Haze Rule Requirements for Mandatory Class I Areas, 77 Fed. Reg. 73926 (Dec. 12, 2012), claiming that the plan does not go far enough to reduce emissions from coal plants. See KGOS-AM/KERM-FM, *Environmental Group Challenges Wyoming Haze Management*, <http://www.kgoskerm.com/news/regional-news/stories/650-environmental-group-challenges-wyoming-haze-management> (March 6, 2013). A similar challenge exists against Colorado's haze plan. Manuel Quinones, *Group Challenges EPA's Approval of Colo. Haze Plan*, E&E News (Feb. 26, 2013). A tentative agreement between New Mexico and EPA that would shutter some coal-fired plants might avert a similar challenge there. See Jason Plautz, *EPA, N.M. Haze Deal Requires Coal-Fired Power Plant's Shift to Gas*, E&E News (Feb. 18, 2013).

90. See Alan Kovski, *EIA Says 8.5 Percent of Coal-Fired Capacity In U.S. To Shut Down Over Next Five Years*, BNA Daily Env't A-13 (July 30, 2012).

from the Brattle Group suggests that utilities expect to retire between 57 and 77 Gigawatts (GW) of coal-fired electric capacity (many of the older, smaller plants) by 2016.⁹¹ And the Union of Concerned Scientists reports that, as of May 2012, 288 coal-fired power plants were scheduled for closure, with a possible 153 to 353 additional plants that might be ripe for retirement.⁹² The trade press now seems replete with articles about the retirement of coal plants.⁹³ In October 2012, the Tennessee Valley Authority, for instance, announced that it would dedicate \$775 million toward natural gas power plants, switching away from having coal serve as its dominant fuel source.⁹⁴

The campaign to explore further options under the CAA to reduce GHG emissions from existing coal-fired generation continues. In December 2012, the Natural Resources Defense Council suggested that the administration could deploy § 111(d) of the CAA to regulate existing power plants.⁹⁵ This provision would allow EPA to require that states control GHG emissions from existing and unmodified section 111(b)

91. Metin Celebi, Frank Graves, & Charles Russell, *Potential Coal Plant Retirements: 2012 Update*, http://www.brattle.com/_documents/UploadLibrary/Upload1082.pdf (Oct. 2012).

92. Rachel Cleetus et al., *The Case for Closing America's Costliest Coal Plants*, www.ucsusa.org/assets/documents/clean_energy/Ripe-for-Retirement-Executive-Summary.pdf (Nov. 2012); see also Nathanael Massey, *As Economy Turns Against Coal, 100 GW of Generating Capacity May be at Risk*, E&E News (Nov. 13, 2012); Manuel Quinones, *6% of U.S. Power Plants "Ripe for Retirement" – Report*, E&E News (Nov. 13, 2012).

93. See, e.g. Jessica Coomes & Andrew Childers, *As Older Coal-Fired Power Plants Retire, Shift to Natural Gas Expected to Accelerate*, BNA Daily Env't (June 29, 2012); Daniel Cusick, *Aging Coal-Fired Plants, Coal Prices Send Big Independent Power Producer into Bankruptcy*, E&E News (Dec. 18, 2012); Daniel Cusick, *Sagging Economy, Doubts About Coal Prompt Power Companies to Sell More Plants*, E&E News (Sept. 14, 2012); Manuel Quinones, *AEP to Close Ky. Coal-Fired Power Plant*, E&E News (Dec. 20, 2012).

94. See Tom Charlier, *Coal No Longer King in TVA Region As More Gas-Fired Plants Used to Generate Electricity*, <http://www.commercialappeal.com/news/2012/oct/08/coal-no-longer-king-in-tva-region-as-more-gas-to/> (Oct. 8, 2012).

95. Nat. Resources Def. Council, *Using the Clean Air Act to Sharply Reduce Carbon Pollution from Existing Power Plants, Creating Clean Energy Jobs, Improving Americans' Health, and Curbing Climate Change*, <http://www.nrdc.org/air/pollution-standards/files/pollution-standards-IB.pdf> (Dec. 2012).

stationary sources.⁹⁶ It is yet to be determined whether, or how, EPA will address existing power plants, but several proponents of increased regulation suggest a desire for a technology forcing approach.⁹⁷

III. COAL'S CHIMERA?

The coal industry generally has responded to these external pressures on coal consumption by focusing on expanding coal exports to feed a hungry Asian market.⁹⁸ The principle is simple. If the United States reduces its coal consumption,⁹⁹ then it can ship excess coal supply to countries still building new coal-fired electric plants. After all, the United States enjoys sufficient coal supplies to last over 200 years.¹⁰⁰

96. CAA § 111(d), 42 U.S.C. § 7411(d) (2006). See Robert R. Nordhaus, *Modernizing the Clean Air Act: Is There Life After 40?* 33 Energy L.J. 365, 385 (2012) (suggesting that 111(d) may not work well, particularly for other than large stationary sources). Some authors suggest that further efficiency gains might be available from existing sources at low cost. See Joshua Linn, Erin Mastrangelo & Dallas Burtraw, *Regulating Greenhouse Gases from Coal Power Plants under the Clean Air Act* 30 (Resources for the Future, Discussion Paper, 2012) (available at <http://www.rff.org/documents/RFF-DP-11-43-REV.pdf>).

97. E.g., Jean Chemnick, *Browner Urges EPA to Write "Technology Forcing" Rule for Power Plants*, E&E News (Feb. 8, 2013).

98. See generally Debra Bruna, *Natural Gas Isn't Likely to Extinguish China's Love Affair With Coal*, E&E News (Oct. 26, 2012); Felicia Resor, *Heat Exchange: Efforts to Increase Wyoming Coal Exports Turns the Heat Up on Legal Changes to Impacts Both Local and Global*, Wyofile, <http://wyofile.com/2012/05/heat-exchange-efforts-to-increase-wyoming-coal-exports-turns-the-heat-up-on-legal-challenges-to-impacts-both-local-and-global/> (May 22, 2012); Note, *Gas Boom, While Lowering Emissions in U.S., Shifts Coal to Europe – Study*, E&E News (Nov. 1, 2012) (noting that more than half of U.S. exports went to Europe). To date, most of the U.S. coal exports have been bituminous coal from the east, and most of the PRB coal has been exported to Europe. Resor, *supra*. Australia too has become somewhat dependent upon its export of commodities, including coal, to Asian markets. See Steve LeVine, *Australia's Resource-Based Economy Swallows A Bitter Pill as Coal Prices Drop*, E&E News (Aug. 14, 2012).

99. IEA suggests that, by 2017, U.S. coal demand will fall from 697 million metric tons to 600 million metric tons. See Manuel Quinones, *Coal Demand up Everywhere But in the U.S. – Report*, E&E News (Dec. 18, 2012) (discussing IEA's December 2012 Medium-Term Coal Market Report).

100. See U. S. Energy Info. Administration, *What Is the Role of Coal In the United States?* http://www.eia.gov/energy_in_brief/article/role_coal_us.cfm (accessed July 20, 2103).

And worldwide coal consumption is growing.¹⁰¹ By 2017, world coal consumption will increase by approximately 1 billion tons.¹⁰² China has become the largest importer of coal, recently replacing Japan.¹⁰³ Since 2000, China is responsible for roughly 82 percent of the world's increase in coal consumption, and now consumes approximately the same amount of coal as the rest of the combined world.¹⁰⁴ Even so, Japan is still aggressively pursuing fossil fuel imports and it has increased its import of

101. See E&E News, *China, India Will Continue to Drive High Demand* (Nov. 14, 2012). Europe's coal demand remains high, to the degree that the Economist described it as still experiencing a golden age of coal. The Economist, *Europe's Dirty Secret: Europe's Energy Policy Delivers the Worst of All Possible Worlds*, <http://www.economist.com/news/briefing/21569039-europes-energy-policy-delivers-worst-all-possible-worlds-unwelcome-renaissance> (Jan. 5, 2013). E.g., Paul Homewood, *Germany to Open Six More Coal Power Stations in 2013*, <http://wattsupwiththat.com/2013/04/23/germany-to-open-six-more-coal-power-stations-in-2013/> (accessed July 13, 2013).

102. E&E News, *Coal Consumption to Rise Globally Despite Drop in U.S.*, *IEA Says*, www.eenews.net/public/climatewire/2012/12/18/1 (Dec. 18, 2012).

103. *Id.* "China, now the world's largest coal producer and consumer, will lead the world's growth over the next five years along with India," and "will make it the largest seaborne coal importer and second largest consumer." Manuel Quinones, *Coal Demand Up Everywhere But in the U.S. – Report*, E&E News (Dec. 18, 2012). China's energy demand is so great that, while it has announced an aggressive plan for developing approximately 11 percent of its energy resources from renewables by 2015, it must continue to expand its use of fossil fuel as well. See Leslie A. Pappas, *China to Add 49 Gigawatts of Renewable Energy Capacity This Year, Agency Says*, *BNA Daily Env't A-14* (Jan. 10, 2013) (describing White Paper issued by the National Energy Administration).

104. Daniel Cusck, *China's Soaring Coal Consumption Approaches the Combined Use of All Other Nations*, E&E News (Jan. 30, 2013). Countervailing reports, however, suggest that China's coal imports may not be sustainable. See Daniel Cusick, *China's Imports May Peak Then Plummet Before 2020—Study*, E&E News (Feb. 8, 2013); Manuel Quinones, *Industry Overly Optimistic About Chinese Demand—Greenpeace*, E&E News (Feb. 27, 2013). In 2010, Stanford's Program on Energy and Sustainable Development explained how China's "restructuring of its coal and power sectors" is dramatically affecting the world market. Dr. Huaichuan Rui, et al., *Remaking the World's Largest Coal Market: The Quest to Develop Large Coal-Power Bases in China* (Program on Energy & Sust. Dev., Stanford, Working Paper No. 98, Dec. 2010) (available at http://iis-db.stanford.edu/pubs/23050/WP_98%2C_Rui%2C_He%2C_Morse_China_Coal_Power_Bases_DEC10.pdf) (accessed July 13, 2013).

coal.¹⁰⁵ Although India sits on untapped coal deposits, it, too, is desperately working to expand its generation capacity and could become the world's largest coal importer by 2020.¹⁰⁶

A. The Ports

Several different proposals have surfaced for increasing west coast port capacity to handle increased exports. Most notably, in 2011, Ambre Energy acquired the site for the Millennium Bulk Terminals in Longview, Washington (MBTL), located on the Columbia River, and is jointly promoting the terminal with its partner, Arch Coal. The MBTL would export up to 44 million metric tons annually. Peabody Coal has promoted exporting 48 million metric tons annually from the Puget Sound Gateway Pacific Terminal, located at Cherry Point, eight miles from Bellingham, Washington. The Port Morrow Pacific Project on the Columbia River, located near Boardman, Oregon, would receive by rail roughly 8.8 million tons of coal from the PRB; the project contemplates that the coal would be shipped by barge to a facility at Port of St. Helens and then loaded onto ships destined to Asian markets. Other projects include Kinder Morgan's Port Westward proposal at Port of St. Helens,¹⁰⁷ as well as the planned project at Coos Bay, one of the largest deep draft harbors along the northwest coast.¹⁰⁸

But a vibrant and vocal campaign against increased capacity for coal exports has emerged.¹⁰⁹ Local communities worry about greater rail

105. See Mari Iwata, *Japan's Fossil-Fuel Needs Test the New Government*, Wall St. J. (Jan. 24, 2013); Toshio Aritake, *Japanese Panel Urges More Generation From Coal to Fill Gap Left by Nuclear Retreat*, BNA Daily Env't A-9 (April 4, 2013).

106. Simon Denyer & Rama Lakshmi, *Satisfying India's Thirst for Power Could Be Nation's Biggest Challenge*, Wash. Post (Aug. 22, 2012). India's pollution from coal-fired generation reportedly has contributed annually up to 115,000 premature deaths, costing the country roughly \$4.6 billion. Lisa Friedman, *In India, Coal-Fired Energy Leads to 115,000 Premature Deaths Each Year—Study*, E&E News (March 11, 2013).

107. Kinder Morgan, *Port Westward Project*, <http://portwestwardproject.com> (accessed July 13, 2013).

108. EarthFix, *How Coal Helped Build the Port of Coos Bay*, <http://earthfix.opb.org/energy/article/how-coal-helped-build-the-port-of-coos-bay/> (April 18, 2012).

109. See, e.g., The Power Past Coal, <http://www.powerpastcoal.org> (accessed July 13, 2013); Coal Export Action group, <http://coalexportaction.org> (accessed July 13, 2013). See also Natl. Wildlife Federation, *The True Cost of Coal*:

traffic through their neighborhoods, concerned about noise, safety, and potential health effects from coal dust flying off the rail cars.¹¹⁰ These communities have convened public hearings to voice their opposition, even though they can exercise little regulatory control over the outcome of these proposed projects.¹¹¹ Others emphasize the potential impact on coastal resources, as well as the downstream GHG emissions once the coal reaches its destination and is utilized in power plants. The northwestern state politicians generally have responded to the local opposition by expressing concern about increased exports, a significant obstacle given the patchwork of federal and state regulatory requirements that will need

The Coal Industry's Threat to Fish and Communities in the Pacific Northwest, http://www.nwf.org/~media/PDFs/GlobalWarming/Reports/NWF_PacificCoal_FINAL.ashx (2012). A similar examination into the effects of increased northwest port capacity occurred during the early 1980s, when the country previously witnessed expanding exports. See Kramer, Chin & Mayo, Inc., *Potential Coal Export Facilities in Washington: An Environmental Impact Analysis* (1982) (on file with author).

110. See Nathanael Massey, *Coal Dust from Rail Cars Raises Liability Questions*, E&E News (March 11, 2013). Several organizations recently filed a lawsuit alleging that the coal dust from the trains violates the Clean Water Act, when that dust lands in waters of the United States. *Sierra Club, et al. v. BNSF Railway Co., et al.*, Complaint, 13-cv-00967 (W.D. Wash. June 4, 2013). Cf. *Alaska Community Action on Toxics v. Aurora Energy Services, LLC*, 2013 WL 1614436 (D. Alaska March 28, 2013) (Clean Water Act re coal). Coal's utilization has been inextricably tied to the railroad industry. "The problem of how to transport [coal] efficiently is nearly as old as our romance with coal." Jeff Goodell, *Big Coal: The Dirty Secret behind American's Energy Future* 75 (2006). On the one hand, coal-mining companies appear to be working cooperatively with the railroads to promote exports. This is understandable, because the decline in coal traffic adversely affects their revenues. Daniel Cusick, *Coal's Hard Times are Felt by the Nation's Railroads*, E&E News (Aug. 9, 2012).

111. Coal Age, *Additional Environmental and Federal Oversight to Delay Development of West Coast Coal Ports*, <http://www.coalage.com/index.php/news/latest/2327-additional-environmental-and-federal-oversight-to-delay-development-of-west-coast-coal-ports.html> (Oct. 14, 2012). At public hearings convened by the COE, the overwhelming majority of speakers opposed the export facilities. Paul Shukovsky, *Opponents of Proposed Terminal for Shipping Coal to Asia Call for EIS Covering Wider Area*, BNA Daily Env't A-1 (Oct. 30, 2012). While local opposition undoubtedly contributed to some of these projects being abandoned, local opposition has not prevented state agencies from continuing the permitting process for Ambre Energy's Morrow Pacific Project. See Nathanael Massey, *State Regulators Advance Permitting Process for Ore. Coal Terminal*, E&E News (June 4, 2013).

to be navigated.¹¹² Oregon's Senator Jeff Merkley, for instance, suggested that these federal agencies conduct a comprehensive programmatic assessment of coal export facilities.¹¹³ The State's governor, John Kitzhaber, similarly requested a comprehensive study.¹¹⁴ Some of the proposed projects, therefore, have stalled: during the 2012 summer, the proponents of the Port of Grays Harbor proposal announced that they were abandoning plans to build that storage and export facility.¹¹⁵

B. Programmatic Reviews, Federal Coal Leasing & GHG Emissions

Federal agencies, too, have become critical players in the conversation about coal exports. Unlike with the export of liquefied natural gas (LNG) or cross-border oil pipelines (such as the proposed Keystone XL project), no federal agency is charged specifically with determining whether the national interest warrants allowing coal exports.¹¹⁶ This regulatory void has prompted coal's opponents to

112. See generally Columbia Law School Center for Climate Change, *Carbon Offshoring: The Legal and Regulatory Framework for U.S. Coal Exports*, http://www.law.columbia.edu/null/download?&exclusive=filemgr.download&file_id=59591 (July 2011). States can review any federal authorization for consistency with the state's enforceable policies in an approved coastal management program, 16 U.S.C. § 1456(c) (2006), and a state can deny a Clean Water Act § 401 certification if it finds that the activity may result in a discharge that is inconsistent with a state water quality program. 33 U.S.C. § 1341(a) (2006).

113. *Merkley Calls for Programmatic Environmental Impact Statement on Coal Projects in Oregon*, <http://www.merkley.senate.gov/newsroom/press/release/?id=88ec36c8-e3a4-4bdf-977f-246c98e7b0a7> (July 18, 2012). Other Senators suggest that the agencies examine the proposals on a project-by-project basis, consistent with the existing agency practice. See Manuel Quinones, *Wyo. Senators Urge Approval of Proposed Northwest Terminals*, E&E News (Aug. 3, 2012) (describing letter to the agencies).

114. Nathanael Massey, *Ore.'s Governor Wants Comprehensive Study of Export-Site Impacts*, E&E News (April 27, 2012). The Affiliated Tribes of the Northwest Indians also requested a comprehensive analysis of the cumulative effects occasioned by increased northwest exports. See Jessie Higgins, *Tribes Request Coal Export Study*, http://theworldlink.com/news/local/tribes-request-coal-export-study/article_3907f0c7-7a6c-5271-ad63-08b82e25d7a3.html (Oct. 30, 2012).

115. Manuel Quinones, *Company Cancels Pacific Northwest Shipping Plans*, E&E News (Aug. 15, 2012).

116. See *infra* nn. 126–131 (for LNG export facilities); Issuance of Permits with Respect to Certain Energy-Related Facilities and Land Transportation Crossings on the International Boundaries of the United States, Exec. Or. 13337, 69 Fed. Reg. 25299, 25299 (May 5, 2004) (for cross-border oil pipelines).

explore possible avenues for programmatic review: exploring the cumulative effect of increased railway and barge traffic, the cumulative effect on the coastal communities and ecosystems, and the cumulative effect on GHG emissions from the overseas burning of coal. Two avenues, in particular, have surfaced. First, new or expanded ports require review and approval by the U.S. Army Corps of Engineers (COE). Second, much of the coal, particularly in the PRB, is on federal public land, with leasing and mining activities regulated by federal agencies. Both of these areas of federal involvement present likely arenas for exploring the macro-issue of increased coal exports.

To date, the COE has become the primary agency charged with reviewing the array of effects precipitated by increased coal exports pursuant to the NEPA.¹¹⁷ NEPA requires the preparation of an environmental impact statement (EIS) for any major federal action significantly affecting the quality of the human environment.¹¹⁸ NEPA, as it has been interpreted, is designed to ensure that agencies reach informed decisions about the environmental consequences of pursuing a proposed action, with a meaningful opportunity for public participation and review, by taking a “hard look” at the environmental and related effects before embarking upon the action.¹¹⁹ NEPA also requires that the agency review a reasonable range of alternatives to the proposed action, before it proceeds.¹²⁰

The COE determined that the largest of the proposed terminal projects, the Gateway Pacific Terminal, located north of Bellingham, Washington and just shy of the Canadian border, requires the preparation of an EIS. Conversely, the COE determined that the smaller Port Morrow

117. 42 U.S.C. § 4321–4335 (2006).

118. 42 U.S.C. § 4332(C) (2006). See *Winter v. Nat. Resources Def. Council, Inc.*, 555 U.S. 7, 15–16, 23 (2008); *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349–50 (1989).

119. 555 U.S. at 23; see also *id.* at 35 (Breyer, J., concurring in part and dissenting in part), 47 (Ginsburg, J., dissenting) (discussing informational and participatory purposes). See also *Brodsky v. U.S. Nuclear Regulatory Comm’n*, 704 F.3d 113 (2d Cir. 2013) (discussing public participation). While NEPA is considered a procedural statute, I have argued elsewhere that the intent of the Act reflects a much more complicated picture. Sam Kalen, *Ecology Comes of Age: NEPA’s Lost Mandate*, 21 *Duke Envtl. L. & Policy Forum* 113 (2010).

120. 42 U.S.C. § 4332(2)(C)(iii) (2006); see also *Beyond Nuclear v. U.S. Nuclear Regulatory Comm’n*, 704 F.3d 12, 19 (1st Cir. 2013) (“NEPA requires . . . consideration of reasonable alternatives”).

project could be “fast tracked” by completing an environmental assessment (EA) rather than a longer and more complex EIS.

The COE’s approach to the Port Morrow proposal triggered a negative reaction from EPA, with EPA suggesting that the COE prepare an EIS in lieu of an EA.¹²¹ EPA specifically lodged concern over the potential health effects from project-related coal dust and diesel emissions, as well as the contribution to cumulatively significant impacts from at least five other such port projects.¹²² The agency suggested that the COE should consider “the cumulative impacts to human health and the environment from increases in greenhouse gas emissions, rail traffic, mining activity on public lands, and the transport of ozone, particulate matter, and mercury from Asia to the United States.”¹²³ This led EPA Region 10 to suggest that the COE prepare “a thorough and broadly-scoped cumulative impacts analysis of exporting large quantities of Wyoming and Montana-mined coal through the west coast of the United States to Asia,” and that this analysis—almost, in effect, a programmatic EIS—should become the focal point for integrating other review and consultation requirements triggered by the port projects.¹²⁴ In May 2013,

121. Memo from Kate Kelly, Director, Office of Ecosystems, Tribal and Public Affairs, U.S. Env'tl. Protec. Agency, Region 10, to Steve Gagnon, Project Manager, U.S. Army Corps of Eng'rs, *Comments on Public Notice for Permit Application under Section 10 of the Rivers and Harbors Act for a Coal Transloading Facility, Port of Morrow, Oregon*, http://media.oregonlive.com/environment_impact/other/EPA%20letter%20about%20PEIS.PDF (April 5, 2012).

122. *Id.*

123. *Id.* at 2. CEQ currently is considering finalizing draft guidance addressing how agencies could or should consider climate change when preparing NEPA documents. See Council on Env'tl Quality, *Draft Guidance for Greenhouse Gas Emissions and Climate Change Impacts*, <http://www.whitehouse.gov/administration/eop/ceq/initiatives/nepa/ghg-guidance> (accessed July 10, 2013).

124. Memo from Kate Kelly, *supra* n. 121, at 3. EPA Region 10 specifically stopped short of suggesting a programmatic EIS, however. Scott Learn, *Northwest Coal Export Projects Could Have “Significant” Public Health Impacts, EPA Says*, http://www.oregonlive.com/environment/index.ssf/2012/04/northwest_coal_export_projects.html (April 13, 2012). In other instances, EPA has suggested that area wide programmatic statements might be appropriate. See Memo from Thomas C. Welborn, Chief, Wetlands Coastal and Oceans Branch & Heinz Mueller, Chief, NEPA Program, U.S. Env'tl. Protec. Agency, Region 4, to Colonel Alfred A. Pantano, Jr., District Eng'r, Jacksonville District Corps of Eng'rs, *Need for Area Wide Environmental Impact Statement: “Bone Valley” Phosphate Mining Region (Peace River Watershed,*

EarthJustice expanded upon EPA's position and filed a petition with the COE, requesting that the COE undertake an area-wide EIS.¹²⁵

This debate over the breadth of environmental review for coal exports partially mirrors an effort to expand the scope of environmental review associated with liquefied natural gas (LNG) export terminals.¹²⁶ Some courts currently appear reluctant to require detailed analysis of the possible effects of burning the LNG in foreign markets.¹²⁷ The same appears true for induced effects of increased shale gas development in the United States, if the Federal Energy Regulatory Commission (FERC) approves new pipelines being built to transport the LNG to foreign ports for export.¹²⁸ Yet, while the possible effect on U.S. consumers captures most of the attention on LNG exports,¹²⁹ the Sierra Club also argues that

Florida), <http://protectpeace river.org/resources/wp-content/uploads/2010/04/EPA-Recommendation-for-Areawide-EIS.pdf> (March 10, 2010).

125. Petition to the United States Army Corps of Engineers, *Petition to Undertake Area-Wide Environmental Impact Statement on All Proposed Coal Export Terminals in Washington and Oregon* (May 22, 2013) (on file with author).

126. FERC must approve the construction of the facilities, and the DOE must approve a long-term authorization for export. DOE authorization is not required for export transactions less than two years. *See generally* 15 U.S.C. § 717b (2006); 10 C.F.R. Ch. II, Subch. G, Pt. 590 (2012) (DOE regulations). To the extent that a blanket exporter does not require any structural changes to its facility, but rather only requires operational changes, the DOE has applied categorical exclusions to some of these transactions. *See* Comment on Record of Categorical Exclusion (CX) Determination, FE Dkt. No. 10-110-LNG, http://www.fossil.energy.gov/programs/gasregulation/10_110_CX.pdf, (U.S. Dept. of Energy Dec. 2, 2010) (noting application of exclusion for Sempra LNG Marketing, LLC). *See generally* Sean Dixon, *Liquefied Natural Gas Exports and Export Facilities: A Statutory Framework*, 43 Trends (newsltr. of the ABA Sec. Envr., Energy, & Resources) 6 (July/August 2012).

127. *E.g.*, *South Coast Air Quality Management Dist. v. FERC*, 621 F.3d 1085, 1094 (9th Cir. 2010) (“FERC’s analysis was reasonably thorough, given circumstances that suggest a significant amount of uncertainty regarding the issue of the ultimate impact of burning imported natural gas delivered by North Baja.”).

128. *Central New York Oil and Gas Co., LLC*, 138 F.E.R.C. ¶ 61,104 (U.S. F.E.R.C. 2012), *petition for review denied*, 485 Fed. Appx. 472 (2nd Cir. 2012) (unpublished order). *See also Transcontinental Gas Pipe Line Co., LLC*, 141 F.E.R.C. ¶ 61,091 (U.S. F.E.R.C.2012) (FERC not required to examine in detail induced shale gas development); *see also* Ellen M. Gilmer, *River Agency Rejects Call to Consider Pipelines’ Broad Effects*, E&E News (Dec. 7, 2012).

129. *See* Notice of Availability of 2012 LNG Export Study and Request for Comments, 77 Fed. Reg. 73627 (Dec. 11, 2012). Several congressional members have voiced concerns over LNG exports. *See* Cong. Markey to Secretary Chu, May 8,

either the DOE or the FERC should address the cumulative environmental impact associated with approving individual or multiple LNG export facilities.¹³⁰ To date, efforts to force a programmatic assessment of the cumulative effects of increased unconventional gas development have proven unsuccessful.¹³¹

The same fate appears quite possible for proponents of a comprehensive analysis of coal exports. An expanded world market for western coal shipped from the Pacific Northwest undoubtedly will affect decisions regarding the leasing and development of federal coal, the amount of rail traffic, and ultimately the amount of emissions from coal use. But it seems questionable whether the COE is institutionally capable of assessing the panoply of issues and rendering an effective policy decision. Apparently attempting to coordinate the federal agencies' views on the scope of any environmental review, the Council on Environmental Quality reportedly convened a meeting on August 10, 2012.¹³² Whatever the contents of that meeting, the COE recently indicated in testimony before Congress that it would not prepare any programmatic EIS and would avoid examining the GHG emissions that might occur in overseas coal markets.¹³³ To date, nothing suggests that the COE's position reflects an Administration consensus.

2012 (on file with author); Press Release, Wyden: *U.S. Should Reconsider Rubber Stamping LNG Exports as Part of a 21st-Century Energy Policy*, <http://www.wyden.senate.gov/news/press-releases/wyden-us-should-reconsider-rubber-stamping-lng-exports-as-part-of-a-21st-century-energy-policy> (Nov. 2, 2012); see generally Hannah Northey, *Markey Wants Do-over of DOE Study on Exports*, <http://www.eenews.net/EEDaily/rss/2012/12/18/6> (Dec. 18, 2012). Cf. Hannah Northey, *Western Lawmakers Urge Chu to Fast-track Review of Export Projects*, <http://www.eenews.net/Greenwire/2012/09/25/> (Sept. 25, 2012).

130. Sabine Pass Liquefaction, LLC & Sabine Pass LNG, L.P., Order Denying Rehearing and Stay, 139 FERC ¶ 61,039 (U.S. FERC July 26, 2012); Sierra Club's Mot. to Intervene Out of Time, Protest, and Comments, *In Re Sabine Pass Liquefaction, LLC & Sabine Pass LNG, L.P.* (U.S. Dept. of Energy, Off. of Fossil Energy Undated) (FE Docket No. 10-111-LNG) (on file with author).

131. See Craig Segall, Sierra Club, *Look Before the LNG Leap: Why Policymakers and the Public Need Fair Disclosure Before Exports of Fracked Gas Start*, <http://www.sierraclub.org/naturalgas/downloads/LOOK-BEFORE-YOU-LEAP.pdf> (accessed July 10, 2013).

132. Paul Shukovsky, *White House Intervenes in Dispute Over Plans to Export Coal to Asia Through Northwest*, BNA Daily Env't A-16 (Oct. 4, 2012).

133. Hal Bernton, Seattle Times, *Corps Review Won't Weigh Impact of Coal Beyond* NW, ,

Whether or not proponents of an expanded COE's scope of review for coal exports are successful, the federal coal leasing process provides yet another forum for exploring a broader review of exports. One environmental advocate, for instance, suggests that the "main threat" of increased coal exports is from the Department of the Interior's (DOI) "selling mining rights to an estimated 3.7 billion tons of Power River Basin coal."¹³⁴ Recent estimates suggest that the Powder River Basin contains more than 1 trillion short tons of coal reserves.¹³⁵ Examining the leasing process, therefore, could become the next logical avenue for addressing coal's long-term prospects. Before the Bureau of Land Management (BLM) can issue coal leases, it must comply with NEPA by analyzing an appropriate range of alternatives and the environmental impacts of its leasing decision.¹³⁶ The question is whether this review *must* or *ought* to include a review of the impacts of utilizing the coal—particularly in Asian markets? Several organizations have sought to force BLM and the USFS to examine the climate change impacts triggered by the leasing activity, and not just project the resulting emissions levels from both mining and utilizing the coal.¹³⁷ While standing has become

http://seattletimes.com/html/localnews/2021218066_coalterminalshearingxml.html. (June 18, 2013).

134. Ted Williams, *Kicking the Coal Habit*, Audubon Magazine 81, 98 (May-June 2012).

135. Manuel Quinones, *Region's Coal Reserves Top 1 T Tons—USGS*, E&E News (Feb. 26, 2013) (reporting on USGS February 2013 estimate).

136. See *supra* nn. 116–119 and accompanying text. The U.S. Forest Service must issue its consent to a lease for lands it administers. 30 U.S.C. § 201(a)(3)(A)(iii) (2006).

137. In their motion for summary judgment, the plaintiffs assert:

BLM's consideration of climate impacts from its Leasing authorizations falls short in three ways. First, BLM failed to analyze direct impacts to climate from CO₂ emissions from coal mining activities on the Leases. Second, BLM failed to analyze impacts to climate from cumulative CO₂ emissions from coal mining activities on the Leases in combination with coal mining activities on 10 other Federal coal leases in Wyoming's PRB. Third, BLM failed to analyze the indirect impacts to climate from CO₂ emissions caused by combustion of the Belle Ayr North and Caballo West coal in combination with coal combustion from 10 other Federal coal leases. Instead, the agency attempted to excuse its lack of meaningful analysis on the basis of alleged complexities

problematic for some of these climate change related claims,¹³⁸ the issue of the scope of environmental review is likely to remain at the forefront.

C. Constrained by Coal's Earlier Entanglement with NEPA?

The issue surrounding the scope of review surfaces because of the perceived difference between how comprehensively an agency can perform a cumulative impact analysis in a project-specific case and what that same agency can review when it prepares a programmatic environmental analysis. Arguably, a programmatic review can include upstream and downstream environmental, cultural, and economic effects, and provide a better avenue for deciding significant policy issues.¹³⁹ After all, the DOI has engaged in programmatic reviews for the development of wind,¹⁴⁰ solar,¹⁴¹ and geothermal resources on the public lands.¹⁴² It similarly develops a programmatic environmental document

and uncertainties as to future regulation of CO2 emissions and climate impacts.

Pl.'s Mot. for S.J., *WildEarth Guardians, et. al. v. BLM*, No. 11-CV-01481, slip op. at 30 (D.D.C. Filed Dec. 13, 2012). A similar challenge exists for the USFS's consent to activities within the Thunder Basin National Grassland, in Wyoming. Compl. for Declaratory and Injunctive Relief and Petit. for Rev. of Agency Action, *WildEarth Guardians v. U.S. Forest Service*, No. 11-03171 (D. Colo. Filed Dec. 6, 2011), transferred to D. Wy. (April 24, 2012)

138. See, e.g., *WildEarth Guardians, et. al. v. Salazar*, 880 F. Supp. 2d 77 (D.D.C. 2012) (dismissed NEPA claims on standing), *appeal pending*, *WildEarth Guardians et. al. v. Salazar*, Case No. 12-5312 (D.C. Cir.).

139. The D.C. Circuit explained that such a review "reflects the broad environmental consequences attendant upon a wide-ranging federal program," and it assumes that "a systematic program is likely to generate disparate yet related impacts." *Found. on Econ. Trends v. Heckler*, 756 F.2d 143, 159 (D.C. Cir. 1985) (quoting *Nat'l Wildlife Fed'n v. Appalachian Reg'l Comm'n*, 677 F.2d 883, 888 (D.C. Cir. 1981)).

140. Bureau of Land Mgt., *Wind Energy Development Programmatic EIS Information Center*, <http://windeis.anl.gov> (accessed July 10, 2013).

141. Bureau of Land Mgt., *Solar Energy Development Programmatic EIS Information Center*, <http://solareis.anl.gov> (accessed July 10, 2013).

142. Bureau of Land Mgt., *Geothermal Resources Leasing Programmatic EIS*, http://www.blm.gov/wo/st/en/prog/energy/geothermal/geothermal_nationwide.html (last accessed July 10, 2013). *But cf. Cal. Wilderness Coalition v. Dept. of Energy*, 631 F.3d 1072 (9th Cir. 2011) (agency violated NEPA by failing to prepare environmental document for national interest electric transmission corridors); *Nevada*

for oil and gas leasing on the Outer Continental Shelf.¹⁴³ Indeed, when agencies have identified cumulative effects to certain ecosystems, they have prepared programmatic documents designed to facilitate coordinated planning.¹⁴⁴ And CEQ's regulations contemplate that agencies will prepare a single environmental document when actions are "connected," "cumulative," or "similar," warranting consideration in a single document.¹⁴⁵ A classic example is the COE's Programmatic Environmental Impact Statement (PEIS) for the issuance of nationwide permits under the Clean Water Act Section 404 (wetlands) program.¹⁴⁶ But an agency cannot be forced to prepare a programmatic document, unless the agency specifically proposes a programmatic action—at least, arguably, according to the Supreme Court's decision in *Kleppe v. Sierra Club*.¹⁴⁷

v. Dept. of Energy, 457 F.3d 78 (D.C. Cir. 2006) (NEPA PEIS for Yucca Mountain project).

143. See Bureau of Ocean Energy Mgt., *Outer Continental Shelf Oil and Gas Leasing Program: 2012-2017: Final Programmatic Environmental Impact Statement*, <http://www.boem.gov/5-Year/2012-2017/PEIS.aspx> (July 2012); see also *Ctr. for Biological Diversity v. U.S. Dept. of Interior*, 563 F.3d 466 (D.C. Cir. 2009) (discussing challenge to programmatic leasing plan).

144. E.g. U.S. Army Corps of Engineers, *Final Programmatic Environmental Impact Statement: Florida Keys Water Quality Improvements Program* (2004); U.S. Department of Agriculture, Farm Service Agency, Biomass Crop Assistance Program Programmatic Environmental Impact Statement (2010); Columbia River Ecosystem Study; *Laub v. U.S. Dept. of Interior*, 342 F.3d 1080 (9th Cir. 2003) (noting PEIS for the management of the California Bay-Delta water resources).

145. 40 C.F.R. § 1508.25(a) (2012). If an agency prepares a PEIS, it may then "tier" off that document by preparing subsequent smaller NEPA documents that incorporate by reference information contained in the PEIS. 40 C.F.R. §§ 1508.28 (defining tiering), 1502.20 (encouraging tiering), 1502.21 (incorporation by reference). As a consequence, the PEIS need not include all site-specific impacts that will be analyzed later, if to do so in the PEIS is not reasonably possible. See *Pacific Rivers Council v. U.S. Forest Service*, 689 F.3d 1012, 1025-26 (9th Cir. 2012). For the use of tiering in the offshore oil and gas leasing program, see Sam Kalen, *The BP Macondo Well Exploration Plan: Wither the Coastal Zone Management Act?*, 40 *Envtl. L. Rep.* 11079, 11082-3 (2010); Sam Kalen, Ryan M. Seideman, James G. Wilkins & Megan K. Terrell, *Lingering Relevance of the Coastal Zone Management Act to Energy Development in Our Nation's Waters?* 24 *Tul. Env'tl. L.J.* 73, 95 (2010).

146. E.g., 64 *Fed. Reg.* 13782 (March 22, 1999) (notice of proposed scoping for programmatic EIS).

147. *Kleppe*, 427 U.S. at 390 (1976). For a discussion of *Kleppe*, see Sam Kalen, *The Devolution of NEPA: How the APA Transformed the Nation's*

Kleppe involved the U.S.'s early effort to develop a national coal program. By the early 1970s, the Department had been leasing federal coal resources on an *ad hoc* basis.¹⁴⁸ In 1971, the Department stopped issuing any new coal leases or permits until it could develop a modern federal coal leasing program.¹⁴⁹ Two years later, the Department issued a formal moratorium, announcing that it would develop a federal coal program and prepare an accompanying EIS.¹⁵⁰ The Department released its EIS on the national program in 1975, and in the following year it proposed the Energy Minerals Activity Recommendation System (EMARS). Concurrently, Secretary *Kleppe* announced that the Department would develop a programmatic EIS and, among other things, establish a Northern Great Plains coal resource program.¹⁵¹

While these events were occurring, another lawsuit proceeded apace. Filed in June of 1973, a lawsuit challenged the DOI's failure to prepare a regional EIS covering northeastern Wyoming, eastern Montana, and the western parts of North and South Dakota (together referred to as the Northern Great Plains). Although the DOI had agreed to prepare a national programmatic EIS and intimated that it would likely prepare site-specific EIS's for particular leases, it concluded that no EIS was required at the regional level, because DOI had neither undertaken nor proposed to undertake any particular "plan" or "program" covering a particular region. DOI later explained that it was concerned that any regional programmatic document might halt any new lease sales or mine plan approvals until the

Environmental Policy, 33 Wm. & Mary Env'tl. L. & Policy Rev. 483, 524–530 (2009); Richard Lazarus, *The National Environmental Policy Act in the U.S. Supreme Court: A Reappraisal and Peek Behind the Curtains*, 100 Geo. L.J. 1507, 1541 (2012). And agencies enjoy discretion when deciding whether to prepare a PEIS. See *Nevada v. Dept. of Energy*, 457 F.3d 78, 92 (D.C. Cir. 2006); *Izaak Walton League of Am. v. Marsh*, 655 F.2d 346, 374 n.73 (D.C. Cir. 1981).

148. See John D. Leshy, *Non-NEPA Legal Aspects of Federal Coal Leasing and Development Policy: An Environmental Attorney's Analysis*, 9 Nat. Resource L. 495, 496 (1976); John L. Watson, *The Federal Coal Follies—A New Program Ends (Begins) A Decade of Anxiety?* 58 Denv. L.J. 65, 78 (1980).

149. Horwitch, *supra* note 27, at 79–81, 92. The DOI had examined the nation's coal resources and concluded that revisions to the leasing program were necessary. See 35 Fed. Reg. 3815-01 (Feb. 27, 1970); Robert H. Nelson, *Public Lands and Private Rights: The Failure of Scientific Management* 287 (1995).

150. 38 Fed. Reg. 4682 (1973).

151. *Kleppe*, 427 U.S. at 397–398.

completion of the EIS.¹⁵² The district court agreed, but a divided panel of the court of appeals thought otherwise; and the appeals court held that NEPA required a regional EIS if the DOI continued to “contemplate” federal action in the Northern Great Plains Region.¹⁵³

The court of appeals observed that the government could adequately address the cumulative impact of the numerous development activities occurring in the region only through a regionally focused EIS. The government conceded that its EIS for the national coal program did not address the cumulative impact of development in the region.¹⁵⁴ The court’s narrow decision noted the importance of addressing cumulative impacts—but did not require an EIS unless the government actually engages in some “regional” program. Here, the court found sufficient evidence that the government had treated the Northern Great Plains as a distinct region warranting a regional program.¹⁵⁵ According to the court, “when the federal government, through exercise of its power to approve leases, mining plans, rights-of-way, and water option contracts, attempts to ‘control development’ of a definite region, it is engaged in a regional program constituting major federal action within the meaning of NEPA, whether it labels its attempts a ‘plan,’ a ‘program,’ or nothing at all.”¹⁵⁶ But the majority added that such a conclusion did not necessarily dictate the development of a comprehensive regional EIS.¹⁵⁷ Instead, a court must still assess whether the government’s contemplation of a regional program has ripened sufficiently to progress beyond a “dream” stage, an assessment initially reserved to the agency—although here the majority noted that the record supported that it had.¹⁵⁸

The Supreme Court disagreed, affirming the government’s approach to NEPA.¹⁵⁹ The Court addressed two issues: first, whether a

152. Petition for Writ of Certiorari at 12-13, *Sierra Club v. Morton*, 514 F.2d 856 (D.C. Cir. 1975), appealed sub nom. *Kleppe*, 427 U.S. 390 (1976) (No. 75-552).

153. *Sierra Club*, 514 F.2d at 864-66, 71.

154. *Id.* at 872 n. 23. The potential threat posed by the cumulative impact of individual activities in the Northern Great Plains region dominated the court’s discussion about the need for an EIS. *Id.* at 868-873. EPA notably promoted analyzing cumulative impacts. *Id.* at 878 n.28.

155. *Id.* at 876.

156. *Id.* at 878.

157. *Id.* at 879.

158. *Id.* at 879-880.

159. Of course, the Court arguably rendered little more than an advisory opinion. A former Solicitor of the DOI has explained how the agency already had

comprehensive EIS would be required “when a number of federal actions are closely related,” such that “the environment impact and effects of one of them cannot be analyzed without considering the impact and effects of other related actions”;¹⁶⁰ and, second, whether the circumstances surrounding activities in the Northern Great Plains region presented such a situation. Counsel explained that the DOI’s failure to engage in a sufficiently broad cumulative impact analysis for each leasing project made such a comprehensive analysis necessary.¹⁶¹ The Court refused to infer the presence of a regional program and concluded that an EIS was required only if there has been “a report or recommendation on a proposal

been engaged in various pieces of litigation and had decided to propose the type of regional activity being argued about in *Kleppe*. Leo M. Krulitz, *Management of Federal Coal Resources*, 24 Rocky Mt. Mineral L. Inst. 139, 177 (1978). Also, the Interior DOI’s 1975 national coal leasing proposal generated controversy and was enjoined in 1977 in a separate lawsuit due to lack of adequate NEPA compliance. Congress too was not sitting idly by, passing the Federal Land Policy and Management Act of 1976 and, in 1977, the Federal Coal Leasing Amendments Act of 1976 and the Surface Mining Control Reclamation Act in 1977. See Martin, *supra* n. 45, at 1021–22.

160. Brief for Respondents on Writ of Certiorari at 49, *Sierra Club v. Morton*, 514 F.2d 856 (D.C. Cir. 1975), appealed sub nom. *Kleppe*, 427 U.S. 390 (1976) (No. 75-552). Respondents cited several cases supporting the need for a comprehensive EIS that included a cumulative impact analysis—although not distinguishing between site specific and programmatic actions: *Nat. Resources Def. Council v. Morton*, 458 F.2d 827 (D.C. Cir. 1972); *Jones v. Lynn*, 477 F.2d 885 (1st Cir. 1973); *Greene County Planning Board v. FPC*, 455 F.2d 412 (2nd Cir. 1971); *Cady v. Morton*, 527 F.2d 786 (9th Cir. 1975); *Chelsa Neighborhood Ass’n v. U.S. Postal Service*, 516 F.2d 378 (2nd Cir. 1975); *Nat. Resources Def. Council v. Callaway*, 524 F.2d 79 (2nd Cir. 1975). The leading case, according to both the D.C. Circuit and Respondents, was *Scientists’ Institute for Public Information v. AEC*, 481 F.2d 1079 (D.C. Cir. 1973). Brief for Respondents on Writ of Certiorari at 52, *supra*.

161. Responding to a question, counsel explained:

if the government’s position had ever been that what they propose to do was in the context of an individual project, to look at the entire interrelationship in a region, there would not have been any litigation. The government’s position from the start, and it still is today, that they do not have to look beyond the specific project.

Transcr. of Oral Argument at 50-51, *Kleppe v. Sierra Club*, 427 U.S. 390 (No. 75-552). Counsel further added that they could have proceeded by challenging each individual EIS, but judicial economy dictated otherwise. *Id.* at 51. He also admitted that the DOI was preparing an assessment of regional impacts, although disclaiming mootness because the DOI was doing so voluntarily rather than being required to do so. *Id.* at 59-60.

for a major federal action,” and no such report or recommendation existed.¹⁶² Absent such a proposal, the Court reasoned, an EIS would be transformed into a generalized study document rather than a detailed statement outlining the alternatives and effects of any proposed plan. In short, “[t]here would be no factual predicate for the production of an environmental impact statement of the type envisioned by NEPA.”¹⁶³ Consequently, the Court concluded that NEPA could not be used to force planning in advance of any proposal.¹⁶⁴

The Court also addressed whether a programmatic (regional) EIS might be necessary when a number of site-specific activities are “intimately related.”¹⁶⁵ While the Court accepted that a comprehensive EIS might be appropriate when several activities with cumulative or synergistic impacts are being proposed in a region,¹⁶⁶ it concluded that the failure to prepare such an EIS would be judged under—the albeit lenient standard—of arbitrariness.¹⁶⁷ Here, the Department easily satisfied that standard because the record purportedly lacked any evidence of *arbitrary* behavior by the Department.¹⁶⁸

While *Kleppe* suggests that—absent a regional proposal or decision—neither the COE nor the BLM must prepare a programmatic EIS for exports of federal coal,¹⁶⁹ NEPA still requires for each specific

162. *Kleppe*, 427 U.S. at 399.

163. *Id.* at 402.

164. *Id.* at 405–406.

165. *Id.* at 408.

166. *Id.* at 409–410. Later, the Court emphasized this point by observing “[c]umulative environmental impacts are, indeed, what require a comprehensive impact statement.” *Id.* at 413.

167. *Kleppe*, 427 U.S. at 412.

168. *Id.* at 412–14. *E.g.*, *Marsh v. Oregon Nat. Resources Council*, 490 U.S. 360, 378 (1989) (arbitrary and capricious standard).

169. In *Churchill County v. Norton*, 276 F.3d 1060 (9th Cir. 2001), the Ninth Circuit reviewed the case law and upheld the decision not to prepare a PEIS, suggesting that an agency’s decision to avoid a PEIS does not violate NEPA unless the decision impermissibly segments the analysis to minimize possible cumulative impacts. *Id.* at 1078–80. *See also Found. Econ. Trends v. Lyng*, 817 F.2d 882, 884 (D.C. Cir. 1987) (PEIS not required for animal productivity research program). Also, even though the CEQ regulations contemplate that agency programs relevant to policy decisions ought to be included in a single document, 40 C.F.R. § 1502.4(b), Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations, Question 24a, 46 Fed. Reg. 18026, 18033 (March 23, 1981), a court might be reluctant to intercede and require the preparation of a NEPA document when

project a thorough environmental document that analyzes the upstream and downstream environmental effects, as well as the cumulative impacts. This would include the direct impact from increased rail traffic (and coal dust); the direct impact to coastal resources where the ports are located; the indirect effects associated with coal utilization; any effects flowing from mining activities, if those activities are induced by the exports; and then, of course, the “incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.”¹⁷⁰

The difficulty of meaningfully examining the array of effects is that much of the analysis is necessarily generalized and often beyond the expertise of the particular agency. How, for instance, will either the COE or the BLM assess the likely amount of coal being shipped to still undetermined countries, over an un-determined period of time, to be utilized by power plants with an un-determined and possibly changing technological future?¹⁷¹ How much PRB coal, by contrast, will be

an agency only has begun to announce its policy. *See, e.g., Pub. Citizen, Inc. v. Nuclear Reg. Comm'n*, 940 F.2d 679, 684–685 (D.C. Cir. 1991).

170. 40 CFR § 1508.7 (Cumulative Impact). In *N. Plains Resource Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1077-83 (9th Cir. 2011), the court required a broader cumulative impact analysis of the combined effect of regional coal bed methane well development and the construction of a railroad.

171. To the extent that the GHG emissions from the end use of coal is an indirect—yet albeit potentially significant—effect, no matter how generalized the discussion the NEPA document must include some credible analysis. *See* Council of Env'tl Quality Climate Guidance; *Ctr. for Biological Diversity v. National Highway Traffic Safety Admin.*, 538 F.3d 1172 (9th Cir. 2008). Of course, the doctrine of standing may prevent parties from pressing the NEPA claim. *E.g., Ctr. for Biological Diversity v. U.S. Dep't of the Interior*, 563 F.3d 466, 475 (D.C. Cir. 2009) (GHG emissions from offshore oil and gas leasing program); *Montana Env'tl Info. Ctr. v. Bureau of Land Mgt*, No. 11-00015, slip op. (D. Mont. June 14, 2013) (denying standing to oil and gas leasing decision); *WildEarth Guardians v. Salazar*, 859 F. Supp. 2d 83 (D.D.C. 2012) (denying standing in challenge involving recertification of coal region). *See also* Manuel Quinones, *Groups Take Fight Against BLM Coal Lease to Appellate Court*, E&E News (March 13, 2013); Mark Squillace, Alexander N. Hood, NEPA, Climate Change, and Public Lands Decision-Making (U. of Colo Law, Legal Studies Research Paper No. 11-13, available at <http://ssrn.com/abstract=1912811>) (accessed July 13, 2013).

Because the federal activities are occurring here in the U.S., with impacts quite possibly to the global commons—and not necessarily limited to extraterritorial impacts, it would be difficult to argue that NEPA does not require an examination into these effects. *See Env'tl. Def. Fund v. Massey*, 986 F.2d 528 (D.C. Cir. 1993) (NEPA applied to National Science Foundation program in Antarctica); *Nat. Resources Def. Council v. Nuclear Reg. Comm'n*, 647 F.2d 1345, 1353, 1362 (D.C. Cir. 1981)

consumed here in the U.S., possibly displacing eastern coal, and correspondingly how much coal will be leased and then subject to federal diligent development requirements? These and other similar questions underscore the degree of speculation inherent in any attempted analysis.¹⁷² Absent a forum and opportunity for fundamental initial policy determinations, including how much federal coal the U.S. should develop, and when, and quite possibly under what conditions it can be used, any generalized discussion will not necessarily lead to an informed, or at least, coordinated policy decision.

(Nuclear Regulatory Commission examined the impact on the global commons for the exports of nuclear reactors, although asserting that foreign impacts not required under NEPA); *Gov't of the Province of Manitoba v. Salazar*, 691 F. Supp. 2d 37, 51 (D.D.C. 2010) (impacts in Canada must be assessed when federal actions occurring in the U.S.); *Friends of Earth, Inc. v. Mosbacher*, 488 F. Supp. 2d 889, 908 (N.D. Cal. 2007) (plaintiffs argued that OPIC's actions affected "domestic environment"); *Border Power Plant Working Group v. Dep't of Energy*, 260 F. Supp. 2d 997, 1017 (S.D. Cal. 2003) (cross-border power line); *Nat. Resources Def. Council v. U.S. Dep't of Navy*, 2002 WL 32095131 (C.D. Cal. 2002) (NEPA applied to Navy operations having effect in U.S. exclusive economic zone). See generally Jeffrey E. Gonzalez-Perez & Douglas A. Klein, *The International Reach of the Environmental Impact Statement Requirement of National Environmental Policy Act*, 62 Geo. Wash. L. Rev. 757 (1994); Lilly Fang, Note, *Environmental Review Problems of Cross-Border Projects Under NEPA: Lessons from the Tar Sands Pipelines*, 31 Stan. Envtl. L.J. 285 (2012); Note, *The Extraterritorial Scope of NEPA's Environmental Impact Statement Requirement*, 74 Mich. L. Rev. 349 (1975).

172. While speculation or hypothesizing may not be precluded, detailed analysis may not be necessary where too much uncertainty exists. See *Fund for Animals v. Kempthorne*, 538 F.3d 124, 137 (2nd Cir. 2008); see also *Reed v. Salazar*, 744 F. Supp. 2d 98, 118 (D.D.C. 2010) (uncertain effects distinguished from uncertainty surrounding agency's own action); *Selkirk Conservation Alliance v. Forsgren*, 336 F.3d 944, 962 (9th Cir. 2003) (noting that NEPA requires some level of speculation and labeling effects as speculative does not obviate need to review). In *S. Coast Air Quality Mgt. Dist. v. Fed. Energy Reg. Comm'n*, 621 F.3d 1085 (9th Cir. 2010), for example, the court did not require a detailed analysis of the end use burning of foreign LNG. FERC also declined to assess in any detailed fashion induced shale gas development from either a pipeline or a LNG export terminal, because of the degree of uncertainty and amount of speculation required. *Coalition for Responsible Growth and Resource Conservation v. FERC*, 485 Fed. App. 472 (2nd Cir. 2012); *Sabine Pass Liquefaction, LLC & Sabine Pass LNG, L.P., Order Denying Rehearing and Stay*, 139 FERC ¶ 61,039 (U.S. FERC July 26, 2012).

IV. EMPOWERING A NEW PARADIGM

The pragmatic problem, therefore, is how can either the COE or the BLM prepare a meaningful analysis, without first making certain assumptions that are well beyond their primary mission? Implementing a coordinated energy, climate change, and natural resource policy entails a multi-disciplinary, multi-jurisdictional systems analysis,¹⁷³ by an agency or department charged with examining fundamental policy alternatives. That function—whether appropriate or not—is performed by the State Department for cross-border oil pipelines, such as TransCanada's Keystone XL project;¹⁷⁴ it is performed jointly by the Department of Energy and FERC for LNG exports;¹⁷⁵ it is performed somewhat asymmetrically by EIA working with the DOI for offshore oil and gas leasing;¹⁷⁶ and, in the 1970s, the Department of Energy performed that function for coal exports.¹⁷⁷ But for the fundamental challenges confronting coal, no agency or department is charged with examining the possible paths for coal and the correspondingly commensurate decisions: Should we expand our coal export capacity, and if so under what conditions, or should we lease more federal coal, and if so under what conditions, or should we continue with diligent development requirements, and if so under what scenarios? And, each of these issues requires an acute appreciation for the ever-changing U.S. and world-wide electric energy feedstock (renewables, fossil fuels, efficiency and conservation) market, as well as how GHG emissions will be reduced both domestically and internationally.

173. See Sam Kalen, *Replacing A National Energy Policy With a National Resource Policy*, 19 Nat. Resources & Env. 9 (Winter 2005).

174. See generally Sam Kalen, *Thirst for Oil and the Keystone XL Pipeline*, 46 Creighton L. Rev. 1 (2012).

175. See *supra* n. 126 and accompanying text.

176. See Kalen, *supra* n. 23.

177. E.g., U.S. Dep't of Energy Interagency Coal Export Task Force, *Interim Report of the Interagency Coal Export Task Force: Draft I-2* (1981) (noting Presidential Dec. 1980 conference on coal exports and creation of interagency task force) (on file with author). DOI also had established a Coal Review Group, tasked with developing a "workable, environmentally sound" program for responding "to the country's need for coal production." Wicks, *supra* n. 45, at 667. For a description of how the Interior Department program in the late 1970s sought to assess leasing needs, see Martin, *supra* n. 45, at 1035–1036, 1038.

One possible solution would be to task the Department of Energy with the responsibility of undertaking the requisite analysis and developing the administration's overall policy. When the government attempted a similar analysis in the 1970s,¹⁷⁸ neither modeling nor computer technology permitted a sufficiently reliable assessment. Today, our ability to model future scenarios with multiple inputs and variables is quite different—and, while not perfect, is capable of serving as a foundation for sound decision-making. EIA's energy projections routinely serve this function. And, to the extent that the Department of Energy engages in a holistic analysis of what will best serve the national energy and climate interest, a comprehensive programmatic EIS that examines the direct, indirect, and cumulative effects, as well as explores the array of reasonable alternatives, is appropriate and necessary. This is precisely the sort of function a Department of Energy could and perhaps should serve.

Of course, congressional action is presumably the predicate for any such Departmental undertaking. Review and control over certain exports can occur when emergencies exist,¹⁷⁹ but it is not clear that DOE presently possesses sufficient authority to warrant the Department's investment of time and resources. It would be meaningful legislation, therefore, only if the Department had sufficient capacity to explore all options and the *authority* to make appropriate decisions or provide other agencies with "the Administration's" recommendations for how to proceed. The legislative effort also might require an accompanying Administration initiative to ensure that the agency possesses the requisite resources, expertise, and commitment to excellence necessary to accomplish what has alluded this country for quite some time—a holistic, coordinated and thoughtful energy policy. This might, then, facilitate a forward-looking review that decides what paths might exist for coal, particularly coal from our public lands.

178. See *supra* nn. 26, 29.

179. E.g., International Emergency Economic Powers Act (IEEPA), 50 U.S.C. §§ 1701–1707 (2012). An exercise of this authority generally involves international emergencies, such as when President Carter exercised authority to block all property and interests in property of the Government of Iran. Exec. Order No. 12170, 3 C.F.R. 457 (Nov. 14, 1979). Cf. *Regan v. Wald*, 468 U.S. 222 (1984) (discussing the statute); *Rubin v. Islamic Republic of Iran*, 709 F.3d 49, 55 (1st Cir. 2013) ("We have described the IEEPA as codifying 'Congress's intent to confer broad and flexible power upon the President to impose and enforce economic sanctions against nations that the President deems a threat to national security interests.'").

V. CONCLUSION: COAL'S THREE-WAY JUNCTION

Assuming the United States neither reverses its policy toward reducing GHG emissions nor rejects further unconventional gas development, the future U.S. market for coal appears somewhat bounded. Even if 25 percent of coal-fired capacity is retired by 2035, coal will continue to feed the fleet of existing coal-fired power plants not slated for retirement, and a growing percentage of that coal will likely be western coal.¹⁸⁰ The coal industry undoubtedly can, and likely will, continue its quest for frontier markets—possibly China or India. This will require public support and approval for increasing the capacity of our ports—a considerable challenge. Two alternative paths, however, could become viable: first, utilities could be convinced that newer technologies could become commercially available and competitive, providing utilities with sufficient security that coal can be utilized in a carbon-constrained world; second, the coal industry could return to its past and become a transportation fuel—this time, not for railroads, but rather by converting coal's energy potential into a liquid transportation fuel.

But other known technology paths persist, and necessarily supplement what are likely as yet un-conceived options for coal. For several decades, the concept of “clean coal” technologies seemingly captured coal's promise.¹⁸¹ It was a component of President Bush's National Energy Strategy.¹⁸² Only recently, however, has the nation's

180. U.S. Gov't Accountability Off., *Electricity: Significant Changes Are Expected in Coal-Fueled Generation, But Coal is Likely to Remain a Key Fuel Source*, GAO-13-72 (Oct. 2012).

181. See Horwitch, *supra* n. 27, at 102 (noting emerging focus on new technologies on the burning of coal during the 1970s). As one author describes it:

For the coal industry, the term “clean coal” is an advertising slogan; for many in the environmental movement, it is an insulting oxymoron. But two ideas that underlie the term are taken with complete seriousness by businesses, scientists, and government officials in China and America, and are the basis of most extensive cooperation now under way between the countries on climate issues. One is that coal *can* be used in less damaging, more sustainable ways than it is now. The other is that it *must* be used in those ways . . .

James Fallows, *Dirty Coal, Clean Future*, *The Atlantic* 64, 66 (Dec. 2010).

182. See Donald A. Crane, Lynn L. Schlosser & Christopher P. Neme, *Coal and Emerging Energy and Environmental Policy*, 6 *Nat. Resources & Env.* 26 (1992); Linda Stuntz, *The National Energy Strategy*, 6 *Nat. Resources & Env.* 3, 5 (1991) (a Department of Energy political appointee describing the strategy); see also George R.

first ultra-supercritical coal fired power plant commenced operations.¹⁸³ And, the same is true with the development of Integrated Gasification Combined Cycle (IGCC) power plants, which use a gasifier to convert coal into a syngas and ultimately electricity.¹⁸⁴ The National Energy Technology Laboratory suggests that such plants offer “unprecedented levels of operating efficiency.”¹⁸⁵ Yet, of the various proposed IGCC projects, very few have proceeded.¹⁸⁶ Today, instead, most topical discussions about coal and technology focus on the prospects for and commercial viability of carbon capture and sequestration (CCS).¹⁸⁷ President Obama, for instance, issued a memorandum establishing an Interagency Task Force on Carbon Capture and Storage, with the goal of

Hall, *The National Energy Strategy 1991/1992: A Historical Perspective*, 6 Nat. Resources & Env. 6 (1991) (comparing the Carter National Energy Plan with the National Energy Strategy (NES)); Richard Heede, *The NES Strikes a Dry Hole*, 6 Nat. Resources & Env. 13 (1991) (criticizing the NES for its alleged failure to rely more heavily on efficiency improvements); Donald Paul Hodel, *The Theory of Energy Policies and Programs*, 6 Nat. Resources & Env. 10 (1991) (discussing the NES).

183. E&E News, *Ultra-Supercritical Power Plant Gears Up in Ark.*, www.eenews.net/Greenwire/2012/12/21/18 (Dec. 21, 2012).

184. See Reitze, *supra* n. 71, at 847. The Department of Energy maintains a webpage for coal gasification research and development. See <http://www.fossil.energy.gov/programs/powersystems/gasification/>.

185. See Dept. of Energy, *Key Issues & Mandates: Secure & Reliable Energy Supplies-Coal Becomes a “Future Fuel”*, http://www.netl.doe.gov/Keyissues/future_fuel.html (accessed July 13, 2013).

186. Although still confronting considerable challenges, the principle IGCC facility to begin construction is Mississippi Power’s Kemper County power plant. See Jeff Amy, *Southern Company Faces Risks on Mississippi Power’s Kemper County Plant*, http://blog.gulflive.com/mississippi-press-business/2012/12/southern_company_faces_risks_o.html (Dec. 28, 2012); Christa Marshall, E&E News, *Legal Settlement Reached Over “Clean” Coal Plant in Miss.*, (Jan. 25, 2013); E&E News, *Cost Overruns Continue at Planned Miss. Coal Plant*, (July 2, 2013). See also Manuel Quinones, *Duke Debuts ‘One of the World’s Cleanest’ Power Plants*, E&E News (June 10, 2013) (Edwardsport integrated gasification combined cycle Generating Station in Indiana).

187. See Tomain & Cudahy, *supra* n. 32, at 342 (“clean coal technology generally refers to carbon capture and storage”); see also Victor B. Flatt, *Paving the Legal Path for Carbon Sequestration from Coal*, 19 Duke Envtl L. & Policy Forum 211 (2009); Arnold W. Reitze, Jr., *State and Regional Control of Geological Carbon Sequestration (Part 1)*, 41 Envtl. L. Rep 10348 (2011). See generally M. Granger Morgan & Sean T. McCoy, *Carbon Capture and Sequestration: Removing the Legal and Regulatory Barriers* (2012).

facilitating the commercial deployment of the technology.¹⁸⁸ The U.S. apparently has the capacity to store approximately 2,400 billion metric tons of CO₂.¹⁸⁹ Until recently, the initial movement toward an early embrace of CCS waned, as funding constraints and low natural gas prices combined to retard some of the early enthusiasm.¹⁹⁰ Lately, the Obama Administration touts the need to become even more engaged in efforts to develop commercially viable CCS technologies.¹⁹¹ Industry's poster child for future CCS projects has been the FutureGen zero emission project,¹⁹² whose history has reflected the struggle to deploy the technology commercially. The project received a major boost initially, in December 2012, when the Illinois Commerce Commission approved a power purchase agreement from the project and then two months later upon DOE's announcement of continued support.¹⁹³

188. See Report of the Interagency Task Force on Carbon Capture and Storage (Aug. 2012) (on file with author).

189. Off. of Fossil Energy, U.S. Dep't of Energy, *Carbon Utilization and Storage: The United States Atlas 2012* (4th Ed. 2012); Manuel Quinones, *Interior Study Finds U.S. Can Store 'Enormous Amount' of CO₂*, E&E News (June 26, 2013) (between 2,400 and 3,700 metric gigatons).

190. See Umair Irfan, *Researchers Develop Coal Reactor that Cheaply Separates CO₂*, E&E News (Feb. 14, 2013); Manuel Quinones, *Rockefeller Seeks Input on Carbon Capture Bill He's Drafting*, E&E News (Aug. 8, 2012). For one survey of existing CCS projects worldwide, see Global CCS Institute, *The Global Status of CCS: 2012* (2012) (projects in 2011 and first half of 2012) (on file with author); Nat'l Energy Tech. Lab., *U.S. Department of Energy Carbon Storage*, http://www.netl.doe.gov/technologies/carbon_seq/infrastructure/knowledgesharing.html (July 13, 2013).

191. See Ari Natter, *U.S. Urged to Step Up Efforts on Carbon Sequestration to Keep Coal in Energy Mix*, BNA Daily Env't (June 24, 2013). The Administration's Climate Action Plan includes promoting clean coal technologies world-wide. See White House, *Fact Sheet: President Obama's Climate Action Plan*, <http://www.whitehouse.gov/the-press-office/2013/06/25/fact-sheet-president-obama-s-climate-action-plan> (accessed July 10, 2013); Jean Chemnick, *U.S. and China to Focus on CCS, Efficiency in Joint Warming Initiatives*, E&E News (July 10, 2013). DOE recently announced that it would provide \$167 million in funding for a CCS project in Texas. Christa Marshall, E&E News, *Texas Coal Project to Get \$167 Million*, (May 24, 2013).

192. See FutureGen Alliance, <http://www.futuregenalliance.org> (accessed July 13, 2013).

193. See *Durbin Asks Feds to Approve Next FutureGen Phase*, The State Journal-Register (Dec. 19, 2012) (available at <http://www.sj-r.com/breaking/x1665851856/Durbin-asks-feds-to-approve-next-FutureGen-phase>); Ari Natter, *Energy Department Moving Forward with FutureGen Carbon Capture*

Lately, some companies are exploring—yet again—the possibility of converting coal to liquids for use as a transportation fuel.¹⁹⁴ A vibrant dialogue surrounds promoting how the modern transportation system might become more flexible and accommodate sources other than crude oil. The transportation sector, heavily dependent upon oil, accounts for roughly one-third of our GHG emissions.¹⁹⁵ To the extent, therefore, that the nation can replace oil with less GHG intense fuels, climate advocates urge the development of new fuels, including natural gas or natural gas liquids. When oil became scarce in South Africa many decades ago, for instance, Sasol used coal to produce synthetic oil.¹⁹⁶ Today, new initiatives are peering over the horizon to promote not only a greater use of natural gas vehicles,¹⁹⁷ but also to produce natural gas liquids from either natural gas or coal.¹⁹⁸ The Sasol chief executive describes the possible wide-scale deployment of gas to liquids as a potential “game-changer.”¹⁹⁹ But the allure of using coal as a feedstock for either diesel or gasoline exists, as well. China apparently is still exploring the potential of

Project, BNA Daily Env't (Feb. 6, 2013). In June 2013, the Illinois Com. Commission issued final approval and clarification for the power purchase agreement. See Illinois Commerce Comm'n, *ICC Approves Additional Issues in FutureGen Sourcing Agreement* (June 26, 2013) (available at <http://www.icc.illinois.gov/rss/news.rss>).

194. See *supra* nn. 33–38 and accompanying text. China too has been exploring coal liquefaction. See Karl Schulz, *Recent Development, China's Confidence in Coal Liquefaction Rests on an Unsteady Foundation*, 3 *Envtl. & Energy L. & Policy J.* 184 (2008).

195. See Env'tl Protec. Agency, *Sources of Greenhouse Gas Emissions*, <http://www.epa.gov/climatechange/ghgemissions/sources/transportation.html> (last accessed July 10, 2013) (transportation sector accounted for 28% of emissions in 2011).

196. John M. Broder & Clifford Krauss, *A Big, and Risky, Energy Bet*, N.Y. Times, http://www.nytimes.com/2012/12/18/business/energy-environment/sasol-betting-big-on-gas-to-liquid-plant-in-us.html?pagewanted=all&_r=0 (Dec. 17, 2012).

197. Ari Natter, *Large-Scale Move to Natural Gas Vehicles “Likely Mistake,” DOE Researcher Testifies*, BNA Daily Env't (July 27, 2012) (existing natural gas supply not enough to fuel transportation sector).

198. Broder & Krauss, *supra* n. 196. See also Bill White, Alaska Nat. Gas Transp. Projects, Off. of the Fed. Coord., *Can Gas-to-Liquids Technology Get Traction*, <http://www.arcticgas.gov/can-gas-liquids-technology-get-traction> (June 29, 2012).

199. Broder & Krauss, *supra* n. 196. See also Clifford Krauss, *South African Company to Build U.S. Plant to Convert Gas to Liquid Fuels*, N.Y. Times, <http://www.nytimes.com/2012/12/04/business/energy-environment/sasol-plans-first-gas-to-liquids-plant-in-us.html> (Dec. 3, 2012).

converting its coal resources into a transportation fuel.²⁰⁰ Domestically, DKRW Advanced Fuels Company is exploring the development of a Wyoming facility that would convert coal from the PRB into liquids.²⁰¹

Assessing which, if any, of these options might be economically realistic and comport with sound policy choices will require a new administrative structure. It will require some sort of programmatic review, by an agency capable of weighing economic, social, and environmental policy considerations. It will require developing, realistically for the first time since the 1970s, a national energy policy that merges economic, environmental and public land policies into a coherent and coordinated strategy. It will require carefully examining existing programs and, quite possibly, suggesting administrative or legislative changes. Consequently, it will require that the Department of Energy assume the type of responsibility necessary to carry the U.S. through the 21st century.

200. See Joel Kirkland, *Gas Technology Deals Emerge From Aggressive Pursuit of Partners in China*, E&E News, www.eenews.net/public/energywire/2013/01/14/1 (Jan. 14, 2013).

201. See Manuel Quinones, *Coal-to-Liquids' Prospects Dim, But Boosters Won't Say Die*, E&E News (May 17, 2013).