UNIVERSITY OF
COLORADO LAW REVIEW
Volume 73, Number 2 *2002*

THE NATIONAL ENERGY POLICY: ASSESSING ENERGY POLICY CHOICES

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INTRODUCTION

Energy policy-making in the United States is a cyclical enterprise. When energy prices rise rapidly because of limited supplies, energy dominates the political agenda. When supplies are plentiful and prices stable, it fades into the background. The first energy crisis in the United States occurred during the 1973 Arab Oil Embargo. Over the next quarter century, energy policy has been dominated by fears that oil supplies will again be severely reduced, producing higher prices, long lines at gas stations, and even rationing. Skyrocketing electricity prices in California and other states and the threat of shortages in 2001 brought energy policy to the center of attention once again. The Bush administration responded with a major initiative for energy policy in May 2001, replete with recommendations for administrative and congressional action, international diplomacy, and industry initiatives to secure the nation's energy supply. Within a few months, gasoline prices had fallen, blackouts did not materialize because conservation efforts and moderate weather reduced demand, and the sense of crisis dissipated. Other issues came to dominate the political agenda, particularly national and personal security in the wake of the September 11, 2001, terrorist attacks.

While public interest in energy policy may continue to be cyclical as prices and supplies rise and fall, energy policy is increasingly an unremitting challenge because it is inextricably

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linked to environmental issues. The development and production of energy resources have enduring environmental implications. Nowhere is this clearer than in the impacts of energy development and use on climate change, air quality, and water. The threat of climate change and the most promising ways to reduce that threat are inextricably bound up with energy decisions. This intersection of energy and environment is found in other areas as well, including local air pollution, water quality and quantity, wilderness, and sprawl. The way we produce and use energy has such profound implications for environmental values that energy policy simply cannot be limited to addressing gyrating energy prices and temporary shortages, or even expanding the long-term supply of energy resources.

The assumptions that underlie alternative approaches to energy policy are critical. If one begins with the assumption that economic growth is the primary imperative in American politics and energy policies must serve that overriding economic goal, then the plan can be viewed as a plausible way of maintaining relatively cheap and stable energy prices and a reasonable way to achieve that goal, at least in the short run. If one begins with this assumption, that economic growth is the dominant goal, then one must simply learn to live with and adapt to whatever ecological consequences occur. However, if one begins with the view that ecological sustainability is the primary political goal and a prerequisite for every other activity, then energy policy must be shaped in ways that are consistent with that overriding imperative. In other words, if our decisions are to be driven by ecological preservation, we need to live with and adapt to whatever energy supplies and prices result from those decisions. Those who start from these two very different original views will find it difficult to come to an agreement over what our energy policy should look like. The debate over energy policy is ultimately a question of which original position is the most compelling, best supported by the relevant scientific research, and most plausible as a guide for a sustainable future.

Part I of this Article traces the evolution of the National Energy Plan and parallel efforts in Congress. Part II assesses the Plan and related legislation and discusses their strengths and weaknesses. In Part III, I argue that the National Energy Plan begins with the wrong question. Rather than asking what is required to ensure a continued supply of fossil fuels at the

lowest possible price, the plan should begin with the question of what is required to secure an ecologically sustainable future. The Bush administration's prescriptions and recommendations point the nation in the wrong direction, toward maintenance of practices that are not ecologically tenable. The Administration's energy policy, because it is ultimately rooted in a short-term goal of expanding fossil fuel supply, rather than moving the nation toward a more sustainable energy future, needs to be reformulated. Part III suggests some elements that ought to be considered in fashioning a sustainable energy future that better balances economic and environmental goals. Given the growing concern with national security in the wake of terrorist attacks in the United States, ecologically sustainable energy policies can also contribute to reduced reliance on imported oil as the nation shifts from fossil fuels to renewable resources that are domestically available.

I. THE EVOLUTION OF THE NATIONAL ENERGY PLAN

In May 1999, then Texas Governor George W. Bush convened a meeting in Austin with a small group of policy advisers. "I will be the next president of the United States," he reportedly told them, "and when I leave office, the air will be cleaner, the water will be cleaner, and the environment will be better. Tell me how I'm going to make that happen."[1] The ensuing discussion focused on a number of issues, including the development of new energy sources in Alaska and the West. Energy and environmental issues were not major themes of the Bush presidential campaign in 2000, however, and not until energy problems captured public attention in early 2001 did energy and environmental issues resurface as priorities. On May 17, 2001, two years after the Austin meeting, the National Energy Policy Development Group released the Bush administration's National Energy Policy report, subtitled "Reliable, Affordable, and Environmentally Sound Energy for America's Future.[2] The report contained many of the ideas that had been discussed in that meeting.

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1. Mark Hertsgaard, *The New Wild Order*, OUTSIDE, Apr. 2001, at 33.

2. NAT'L ENERGY POL'Y DEV. GROUP, NATIONAL ENERGY POLICY: RELIABLE, AFFORDABLE, AND ENVIRONMENTALLY SOUND ENERGY FOR AMERICA'S FUTURE (2001).

On March 29, 2001, in the second press conference of his administration, President Bush stated that the United States is "now in an energy crisis."[3] Although he later amended his comments and argued that the crisis was primarily limited to California, a crisis loomed in other states, he warned, and called for aggressive oil and gas exploration and development in Alaska, the western United States, and Canada's Northwest Territories. The Bush administration initially focused attention on the need to develop oil reserves in Alaska's Arctic National Wildlife Refuge (ANWR). In the face of strong opposition to the idea in Congress and throughout the nation, however, administration officials said that exploration and development would occur elsewhere as well.[4]

The Bush administration's first formal expression of its energy policy was its proposed fiscal year 2002 budget. As reported in the *New York Times*, the budget called for major increases in funding for "clean coal" technology research and expansion of oil and gas leasing on Bureau of Land Management (BLM) lands.[5] The proposed budget cut funding for energy efficiency and renewable sources. The budget proposed to cut spending for the Federal Energy Management Program, aimed at encouraging energy efficiency in federal buildings, by forty-eight percent,[6] although the administration later touted that program as evidence of its support for energy conservation.[7] The budget also proposed a thirty percent reduction in spending on the partnership for a new generation of energy efficient vehicles[8] and a fifty percent reduction in spending on alternative energy sources such as wind, solar, and fuel cells.[9] Overall, spending on energy resources was budgeted to decrease by 7.9 percent below fiscal year 2001 levels, and spending on environmental quality-related projects was budgeted to decrease by 3.6 percent. The budget suggested that funding for these projects would be restored, perhaps as early as 2004, when the

3. Katharine Q. Seelye, *Facing Obstacles on Plan for Drilling for Arctic Oil, Bush Says He'll Look Elsewhere*, N.Y. TIMES, Mar. 30, 2001, at A13.

4. *See Bush Task Force Seeks More Land for Drilling*, WALL ST. J., Apr. 6, 2001, at A4.

5. Editorial, *A Blinkered Energy Strategy*, N.Y. TIMES, May 6, 2001, § 4, at 14.

6. Joseph Kahn, *U.S. Agencies in California Will Be Energy Conscious*, N.Y. TIMES, May 3, 2001, at A1.

7. *Id.*

8. *A Blinkered Energy Strategy*, supra note 5, at 14.

9. Kahn, *supra* note 6, at A1.

federal government begins receiving revenues from drilling in ANWR.[10] The Department of Energy (DOE) Fiscal Year 2002 Budget cut spending on energy research and development as department officials promised to rethink existing energy policies.[11]

The administration also took some modest steps to help address California's power shortages, such as streamlining the process for approving the construction of new power plants. It primarily focused its efforts on developing long-term solutions to increase energy supplies, however, rather than short-term help to ease California's shortages and skyrocketing prices.[12] President Bush issued a memorandum on May 3, 2001, directing heads of federal agencies and departments to "take appropriate actions to conserve energy at their facilities to the maximum extent consistent with the effective discharge of public responsibilities."[13] Administrative officials discussed a separate order that would require federal facilities in California to decrease their energy use by ten percent during peak hours.[14]

A. The National Energy Plan

The Bush administration's National Energy Plan, "Reliable, Affordable, and Environmentally Sound Energy for America's Future," was a product of the National Energy Policy Development Group. The group was chaired by Vice President Dick Cheney, and included seven cabinet members and six other senior administration officials, including the administrator of the Environmental Protection Agency (EPA). The report begins by stating:

> America in the year 2001 faces the most serious energy shortage since the oil embargoes of the 1970s. The effects

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10. *A Blinkered Energy Strategy*, *supra* note 5, at 14.

11. Maureen Lorenzetti, *DOE Would Cut R&D Outlays for Oil, Gas but Boost Clean Coal*, OIL & GAS J., Apr. 16, 2001, at 28.

12. Jeanne Cummings & Jim VandeHei, *Bush Energy Plan Takes Risk by Focusing on Long Term*, WALL ST. J., May 11, 2001, at A16.

13. Kahn, *supra* note 6, at A1; *see also* Memorandum on Energy Conservation at Federal Facilities, 37 WKLY. COMP. PRES. DOC 698 (May 7, 2001), *available at* http://www.whitehouse.gov/news/releases/2001/05/20010507-2.html.

14. Kahn, *supra* note 6, at A1; *see also* John J. Fialka & Bob Davis, *Cheney Panel Considers Helping Utilities Expand Hydro Power, Transmission Lines*, WALL ST. J., May 3, 2001, at A2.

> are already being felt nationwide. Many families face energy bills two or three times higher than they were a year ago. Millions of Americans find themselves dealing with rolling blackouts or brownouts; some employers must lay off workers or curtail production to absorb the rising cost of energy. Drivers across America are paying higher and higher gasoline prices.[15]

The report includes 105 specific recommendations, including forty-two suggestions for policies to promote conservation, efficiency, and renewable energy sources, and thirty-five that deal with expanding supplies of fossil fuels.[16] The report, however, clearly emphasizes and gives priority to expanding the supply of traditional energy sources by opening new lands for exploration, streamlining the permitting process, easing regulatory requirements, and enlarging the nation's energy infrastructure. The report emphasizes that oil and gas "are the dominant fuels in the U.S. economy, providing 62 percent of the nation's energy and almost 100 percent of its transportation fuels."[17] It concludes that by 2020 the nation "will need about 50 percent more natural gas and one-third more oil to meet demand."[18] The report projects that oil production will continue to decline over the next two decades, and that demand for natural gas will likely exceed domestic production.[19] The plan summarizes the energy challenge this way:

> Even with improved efficiency, the United States will need more energy supply.... The shortfall between projected energy supply and demand in 2020 is nearly 50 percent. That shortfall can be made up in only three ways: import more energy; improve energy efficiency even more than expected; and increase domestic energy supply.[20]

The recommendations strongly encourage the development of coal resources and offer federal support for research and development for cleaner coal technologies.[21] The report calls for

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15. NAT'L ENERGY POL'Y DEV. GROUP, *supra* note 2, at viii.
16. Joseph Kahn, *The Details: Excessive Regulation is Blamed for Energy Woes*, N.Y. TIMES, May 18, 2001, at A15.
17. NAT'L ENERGY POL'Y DEV. GROUP, *supra* note 2, ch. 5, at 3.
18. *Id.*
19. *Id.*
20. *Id.*
21. *Id.* ch. 5, at 13–15.

an expansion of nuclear power,[22] although it does not offer any recommendations for resolving the difficulties in transporting and storing spent fuel. It also strongly endorses United States' diplomatic efforts to expand global oil exploration and production.[23] Among its most striking features are its conclusions that in order to meet future energy demand, the United States needs to lay at least 38,000 miles of new natural gas pipelines[24] and build 1,300 to 1,900 new power plants over the next twenty years (a new electricity-generating power plant every week for two decades).[25] Congressional officials have suggested that about eighty percent of the proposals could be implemented through executive orders, regulations, and other actions the Bush administration could take itself.[26] Some twenty percent of the recommendations require congressional action, including some of the most controversial measures, such as drilling in ANWR.[27] The proposals would likely take from two to eight years to implement, and are largely aimed at long-term energy supply issues, rather than responding to the immediate energy shortages and price jumps in California and elsewhere.[28] The main recommendations of the plan include the following major themes:

1. expand energy development on federal lands, including opening ANWR to oil exploration and expanding the development of resources on other public lands and in the Outer Continental Shelf;[29]
2. expand the production and transmission of electricity by streamlining the regulatory process, increasing nuclear power, obtaining new corridors for electrical transmission lines, and reviewing clean air requirements on coal-fired power plants;[30]
3. encourage energy efficiency by exploring the feasibility of establishing energy efficiency standards for

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22. *Id.* ch. 5, at 15–17.
23. *Id.* ch. 8, at 3.
24. *Id.* ch. 7, at 12.
25. *Id.* ch. 5, at 10.
26. Philip Shenon, *Battle Lines in Congress Are Quickly Drawn by Republicans and Democrats*, N.Y. TIMES, May 18, 2001, at A16.
27. *Id.*
28. Tom Kenworthy, *Open Land to Drilling, Report Urges*, USA TODAY, Apr. 5, 2001, at 1A.
29. NAT'L ENERGY POL'Y DEV. GROUP, *supra* note 2, app. 1, Summary of Recommendations, ch. 5.
30. *Id.* at ch. 7.

products that currently do not have them, reviewing the need for new Corporate Average Fuel Economy (CAFE) standards, and ordering federal agencies to reduce energy use;[31]

4. encourage the development and use of alternative fuels through tax credits and research.[32]

The Bush energy policy also recommends that the president issue an executive order requiring all federal agencies to include a statement in any regulatory action they take that might "significantly and adversely affect energy supplies, distribution, or use."[33] That statement should include information on "(1) the energy impact of the proposed action, (2) any adverse energy effects that cannot be avoided should the proposal be implemented, and (3) alternatives to the proposed action."[34] Agencies will be required to include this statement in submissions made to the Office of Management and Budget under Executive Order 12,866, a 1993 order from President Clinton that required agencies to identify the costs and benefits of major regulations they propose and with proposed actions announced in the *Federal Register*.[35] President Bush issued that executive order on May 18, 2001.[36] Another executive order he issued requires agencies to expedite permits and coordinate federal, state, and local actions necessary for energy-related project approvals on a national basis in an environmentally sound manner.[37]

The Bush plan was greeted with widespread criticism that the administration struggled to overcome throughout the summer of 2001. Journalists emphasized the contributions made by energy companies to the Bush campaign, the close ties between senior Bush advisers and energy corporations, and the secrecy surrounding the formulation of the energy plan and the lack of participation by environmentalists.[38] The report quickly

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31. *Id.* at ch. 4.
32. *Id.* at ch. 6.
33. *Id.* at ch. 1.
34. *Id.*
35. *Id.*
36. Exec. Order No. 13,211, 66 Fed. Reg. 28,355 (May 18, 2001), *available at* http://www.whitehouse.gov/news/releases/2001/05/print/20010518-6.html.
37. Exec. Order No. 13,212, 66 Fed. Reg. 28,357 (May 18,2001), *available at* http://www.whitehouse.gov/news/releases/2001/05/print/20010518-5.html.
38. *See* Joseph Kahn, *Bush Advisers On Energy Report Ties to Industry*, N.Y. TIMES, June 3, 2001, § 1, at 30; Michael Isikoff & T. Trent Gegax, *Where There's*

generated sharp partisan differences. Republicans endorsed the president's plan as an important part of the nation's response to the immediate problem of the power shortages in California, as well as the nation's chronic dependence on imported energy. "Today we have an energy policy," said Senate Energy and Natural Resources Committee chair Frank Murkowski (R-Alaska). "Yesterday we didn't."[39] Senate Minority Leader Tom Daschle (D-S.D.) disagreed, stating that, "it's not a plan for America's future, it's a page from our past. It relies almost exclusively on the old ways of . . . drilling more oil wells, burning more coal, and using more natural gas."[40]

Environmental groups criticized the emphasis on drilling in ANWR and burning more coal, while simultaneously decrying the lack of emphasis on conservation and renewable energy. One called the energy plan the "pollution solution" to meeting the country's energy needs.[41] These groups were also critical of the secrecy in which the task force developed its proposals.[42] Energy industry officials championed the plan, however, explaining that "[w]e need to put energy on the table as one of the issues the federal agencies consider" when determining limits on the use of federal lands and issuing new regulations.[43] Oil company executives vigorously defended the administration's view that the supply of fossil fuels was the key problem. "The United States is operating at or near its maximum in most energy production areas," said the president of the American Petroleum Institute. "We need everything."[44]

By June 2001, the administration began retreating from some of the plan's provisions, particularly from the fact that it

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Smoke . . ., NEWSWEEK, Mar. 26, 2001, at 34, 34; Bill McKibben, *Some Like It Hot*, N.Y. REV. BOOKS, July 5, 2001, at 35, 35–38.

39. Shenon, *supra* note 26, at A16.

40. *Id.*

41. Jim VandeHei, *Cheney Sees Little Role for Conservation in Energy Plan Aimed at Boosting Supply*, WALL ST. J., May 1, 2001, at A12.

42. When the Enron Corporation declared bankruptcy in December 2001, members of Congress began pressing for disclosure of information about meetings between the company's executives and Vice President Cheney's energy task force, and the United States General Accounting Office announced in January 2002 that it intended to sue the White House to force disclosure of the records of the task force. Mike Allen, *GAO to Sue Cheney Within 2 or 3 Weeks; Hill Agency Seeks Energy Panel Records*, WASH. POST, Jan. 31, 2002, at A4.

43. Margaret Kriz, *Power Struggle*, 33 NAT'L J. 942, 943 (2001).

44. Peter Behr & Eric Pianan, *With Energy Woes, Differing Solutions*, WASH. POST, Apr. 9, 2001, at A3.

did not address the threat of global warming. One administration official, for example, said in June that the plan's suggestion of 1,300 new power plants are "sober projections," and "bad numbers that make people realize that we have to do something. It's a statement of reality, not a projection of where we'd like to take things."[45] In July, the administration began a campaign-style effort to generate support for its energy plan in the face of gasoline prices that had fallen by twenty-five cents a gallon, an even bigger decline in natural gas prices, and a decline in electricity prices in California. State officials, after scrambling during the winter and spring to find new sources of energy, actually began selling excess energy in July 2001 at a loss.[46] High gasoline prices in the spring stimulated increased production that led to a fall in prices. Soaring natural gas prices also resulted from limited supplies, leading to a major increase in drilling: the number of active drilling rigs doubled from 550 in early 1990 to 1,050 in July 2001, without new lands being opened for exploration.[47] California energy prices fell in the summer of 2001 as a result of a conservation program that reduced consumption by eleven percent from 2000 levels, the construction of new power plants, and federal price controls.[48] The sense of urgency that the administration had planned on in order to push its proposals through Congress had not materialized by the summer of 2001, and the only proposals that garnered widespread, bipartisan support were energy conservation initiatives.[49]

By the time the president sent his legislation to Congress, the administration had made major efforts to reshape the perceptions surrounding its energy policy. Despite the emphasis on the idea of an energy crisis, the administration did not send legislation to Congress until June 28, prompted by a letter from Senate Majority Leader Daschle on June 19 asking that the legislation be submitted.[50] Reversing its earlier budgetary po-

45. Joseph Kahn, *Bush Is Revising Energy Policy to Address Global Warming*, N.Y. TIMES, June 10, 2001, at A32.

46. James Sterngold, *California's New Problem: Sudden Surplus of Energy*, N.Y. TIMES, July 19, 2001, at A1.

47. Joseph Kahn, *Drop in Fuel Price May Weaken Push for Energy Plans*, N.Y. TIMES, July 16, 2001, at A1.

48. *Id.*

49. *Id.*

50. Mike Allen, *Bush Orders White House Staff to Cut Energy Use*, WASH. POST, June 29, 2001, at A35.

sitions and its rejection of the importance of conservation, the administration sought to restore $300 million for conservation research that it had cut a few months earlier in the budget process. The president also ordered White House staff to cut electricity use and championed "vampire slayers"—devices that can reduce power used by appliances like copiers and fax machines that draw electricity as they await use.[51]

In July, the Bush administration announced plans to open 1.5 million acres of the eastern Gulf of Mexico to oil and gas drilling, a retreat from its earlier plan to open a larger area to drilling. The president's brother, Florida Governor Jeb Bush, hailed the agreement because the leases "will occur off the coast of Alabama, not Florida,"[52] and thus protect Florida beaches from the possibility of oil spills or unsightly oil rigs. Also in July, administration officials and congressional Republicans launched a series of town hall meetings throughout the nation to "show compassion" by party leaders for energy shortages and price spikes, and to attempt to deflect criticism that they had been insensitive to the impact of higher energy prices on consumers and unduly responsive to industry demands for expanding production.[53] As one aide to the Republican congressional leadership put it, "Democrats have been saying, 'We want to help you with your problems,' and we've been saying, 'Drill, drill, drill.'"[54]

B. Congress and Energy Policy

Many of the recommendations in the Bush energy plan had already been proposed in bills introduced by members of Congress. A flurry of energy related bills were introduced early in the 107th Congress, in response to the problems in meeting demand in California, as well as in anticipation of the Bush administration's effort to develop a national energy policy. Republican and Democratic leaders both introduced omnibus bills; a number of bills addressing specific issues were also proposed. The energy plan's recommendations thus compete with

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51. *Id.*

52. Eric Pianin & Sue Anne Pressley, *Bush Will Open Gulf Tract for Drilling*, WASH. POST, July 3, 2001, at A1.

53. Mike Allen, *White House Plans Town Meetings on Energy Policy*, WASH. POST, July 10, 2001, at A5.

54. *Id.*

a host of congressional initiatives. While much of the energy plan can be pursued unilaterally by the executive branch, many of the most controversial proposals, even if pursued by federal agencies, will require congressional action. Throughout 2001, the Bush administration was unable to get Congress to enact key provisions of the plan.

On February 26, 2001, Senate Republicans, led by Energy and Natural Resources Chair Frank Murkowski (R-Alaska), introduced an omnibus energy bill primarily aimed at expanding energy production and reducing United States' dependence on imported oil from fifty-six percent, the current figure, to fifty percent, by 2011.[55] The bill included many of the provisions that eventually surfaced in the Bush energy plan, such as opening ANWR for exploration and drilling, encouraging nuclear power, expanding transmission lines, repealing public utility regulatory programs, transferring some of the authority over oil and gas leases on public lands to state governments, and funding clean coal technologies, energy conservation, and renewable energy programs.[56]

Senators Jeff Bingaman (D-N.M.) and then Minority Leader Tom Daschle (D-S.D.) countered with the Democratic bill that emphasized conservation, energy efficiency, and renewable energy more than drilling for new sources.[57] This bill proposed the following actions. It (1) encouraged the construction of a natural gas pipeline from Prudhoe Bay in Alaska to the lower forty-eight states; (2) ordered federal agencies to ensure that total petroleum consumption by cars and light trucks not increase by more than five percent between 2000 and 2008; (3) required federal vehicle fleets to use alternative fuels to meet half their needs by 2003; (4) required federal agencies to purchase three percent of their electricity from renewable sources in 2002 and seven and a half percent by 2010; and (5) established new tax credits for investments in renewable en-

55. S. 388, 107th Cong. (2001); S. 389, 107th Cong. (2001); *see* Chuck McCutcheon, *Democratic Bills Stress Energy Conservation: Bush Presses Case for Enhanced Production*, 59 CQ WKLY. 667, 667 (Mar. 24, 2001).

56. S. 388, 107th Cong. (2001); S. 389, 107th Cong. (2001); *see* McCutcheon, *supra* note 52, at 667.

57. S. 596, 107th Cong. (2001); S. 597, 107th Cong. (2001); *see* McCutcheon, *supra* note 52, at 667.

ergy technologies and more fuel-efficient, coal-fired electricity production.[58]

Other bills focused on a wide range of issues, from helping California deal with power shortages during the summer of 2001, to broader issues such as climate change.[59] Nine senators proposed giving consumers a fifty-cents per gallon tax credit for buying alternative fuels and for purchasing vehicles powered by alternative fuels, fuel cells, batteries, and other cleaner alternatives.[60] In March, a bipartisan group of legislators introduced bills in the House and Senate that would require polluting power plants to modernize and reduce emissions of nitrogen oxide, sulfur dioxide, carbon dioxide, and mercury.[61] These bills were aimed, at least in part, to respond to the Bush administration's decision announced March 13, 2001, that it would not seek to regulate carbon dioxide emissions from power plants.[62] Senators Olympia Snowe (R-Me.), Susan Collins (R-Me.), and Diane Feinstein (D-Cal.) introduced legislation in May 2001 that would require SUVs, minivans, and light trucks to meet the 27.5 mile-per-gallon fuel efficiency standard required of other vehicles by 2007.[63]

California's energy problems were the subject of several bills. Senators Diane Feinstein (D-Cal.) and Gordon Smith (R-Or.) introduced legislation in April to impose price controls on wholesale electricity prices.[64] The bill required the Federal Energy Regulatory Commission (FERC) to set a temporary price cap or cost-based rates within sixty days. The rates would remain in effect until March 2003 in order to give states time to develop new sources of electrical power. On April 25, 2001, FERC approved a limited form of wholesale electricity price controls for California, but western lawmakers criticized the

58. S. 596, 107th Cong. (2001); S. 597, 107th Cong. (2001); *see* McCutcheon, *supra* note 52, at 667.

59. For an overview of congressional efforts, see Margaret Kriz, *Energy Debate Uncaps a Deep Well of Philosophical Division*, LEGIS. FOCUS (Supp. to NAT'L J.), Apr. 25, 2001, at 40; Cyril T. Zaneski, *Deja Vu All Over Again: Another Bush, Another Clean Air Debate*, LEGIS. FOCUS (Supp. to NAT'L J.), Apr. 25, 2001, at 42.

60. Fialka & Davis, *supra* note 14, at A2.

61. Kriz, *supra* note 59, at 43.

62. *See id.* at 41.

63. Bart Jansen, *Snowe-Feinstein Bill Would Force SUVs to Guzzle Less*, PORTLAND PRESS HERALD, May 2, 2001, at 2B.

64. Chuck McCutcheon, *Democratic Bills Stress Energy Conservation: Bush Presses Case for Enhanced Production*, 59 CQ WKLY. 666, 669 (Mar. 24, 2001).

measure as inadequate and insufficient to address problems elsewhere.[65] House Democrats, led by Minority Leader Richard Gephardt (R-Mo.) and Representative Jay Inslee (D-Wash.) introduced a similar price cap bill in April 2001.[66] On April 24, 2001, the Senate Banking, Housing, and Urban Affairs Committee approved a bill sponsored by Senator Richard Shelby (R-Ala.) that would repeal federal legislation governing public utilities, and transfer oversight of utility holding companies from the Securities and Exchange Commission to FERC.[67]

Representative Joe Barton (R-Tex.), chair of the House Energy and Commerce Committee's Air Quality subcommittee, took the lead in clean air legislation and energy development. He prepared draft legislation aimed at preventing or minimizing power shortages that would allow federal regulators to ease air quality regulations, protections for fish, and barriers to the construction of new power plants.[68] His draft bill ordered FERC to do three things: (1) allow electricity buyers to auction off power, and western electricity consumers to resell power; (2) permit states to allow power plants to temporarily exceed emission limits if offsetting emissions reductions occurred at other sources; and (3) authorize states to delay the application of certain nitrogen oxide emissions requirements for new power plants.[69]

Congress also considered elements of the Bush energy plan in appropriations bills during the summer of 2001. In June, the House voted to bar new drilling and mining leases in national monuments unless development had already been authorized.[70] The Senate passed a similar measure in July.[71] But

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65. Chuck McCutcheon, *Fear of Widening Electricity Shortages Erodes Resistance to Regional Price Caps*, 59 CQ WKLY. 915, 915 (April 28, 2001).

66. *See id.*; H.R. 1468, 107th Cong. (2001).

67. Public Utility Holding Company Act of 2001, S. 206, 107th Cong. (2001).

68. Democrats were critical of the bill for seeking air pollution waivers and failing to put a cap on energy prices. The House committee's ranking minority member John Dingell (D-Mich.) argued that witnesses speaking before the committee had not identified environmental regulations as a cause of the problems in California and it was not necessary to suspend clean air laws. Chuck McCutcheon, *GOP Energy Bill Attacked for Pollution Control Waivers, Lack of Wholesale Price Caps*, 59 CQ WKLY. 878, 878 (April 21, 2001).

69. *See id.*

70. *See* David Rogers, *House Approves an $18.9 Billion Budget for Natural Resources, Bars New Drilling*, WALL ST. J., June 22, 2001, at A2.

71. Bill McAllister, *Senate Deals Bush Loss, Bans Monument Drilling*, DENV. POST, July 12, 2001, at 1A.

the House and Senate approaches taken in the authorizing legislation (authorizing action rather than appropriating funds) differed considerably.

In July, the House Energy and Commerce Committee "reported out"[72] legislation that would open ANWR to oil and gas exploration. The legislation would also require the Department of Transportation to increase fuel efficiency standards sufficiently to result in reduced gasoline use by SUVs and light trucks of five billon gallons during a six-year period (a much more ambitious plan than that proposed by Senate Democrats).[73] The House Ways and Means Committee proposed providing $2 billion in tax credits for fuel-cell-powered vehicles and nearly $900 million for oil and gas production from marginal wells.[74] The House Science Committee drafted legislation for renewable energy projects, clean coal technology, and nuclear power.[75] The Senate moved much more slowly, due in part to the change in party control of the chamber. The Democratic Senate leadership indicated that the Bush proposal to drill for oil and gas in ANWR was "dead on arrival" and could not escape a Democratic-led filibuster if it were proposed.[76]

When Congress eventually began passing energy legislation, the House moved first. House Republican leaders introduced four energy-related bills that addressed production, conservation, taxes, and research. The energy production bill emphasized, according to Resources Committee Chair Hansen, the elimination of "unrealistic and over-burdensome regulatory obstacles" to energy production.[77] It would:

1. allow more oil and gas production in national forests by removing the Forest Service's power to veto approvals for development issued by the BLM;[78]
2. require the Forest Service and the Interior Department to remove unnecessary impediments to energy production on public lands;[79]

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72. This term means the Committee voted on a bill and sent it on to the entire House of Representatives.

73. H.R. 4, 107th Cong. (2001).

74. Eric Pianin & Juliet Eilperin, *House Panels Speed Up Work on Energy Bills*, WASH. POST, July 19, 2001, at A2.

75. *Id.*

76. Mike Soraghan, *Bush's Energy Policy: Bill Backs Drilling on Public Lands*, DENV. POST, July 12, 2001, at A12.

77. *Id.*

78. *Id.*

3. discourage the BLM from citing the Endangered Species Act and other federal laws when it withholds approval of a project;[80]
4. extend and expand royalty breaks for offshore drilling and low production "stripper wells."[81]

The conservation bill included five main provisions: (1) increasing the fuel economy of small trucks and SUVs; (2) authorizing projects to encourage the use of clean coal technologies; (3) easing the restrictions on refineries that produce different gasoline blends during different seasons; (4) imposing mandatory efficiency requirements for federal buildings; and (4) providing grants to homeowners to weatherize homes and to low-income residents to pay for home heating.[82]

The energy tax bill included tax credits for investments in clean coal technologies and facilities that produced fuel from non-traditional sources such as shale and tar sands. It also allowed tax credits on the purchase of low emission vehicles and the installation of energy efficient home improvements and solar energy systems.[83] The energy research bill promised to fund commercial applications for alternative-fueled vehicles, energy conservation, renewable energy programs, coal technology, oil and gas research and development, and nuclear energy research.[84]

The four bills were aggregated into a five-hundred-page bill passed by the House in early August.[85] The bill called for $33.5 billion in tax cuts and incentives to encourage the development of new energy resources, nuclear power, and renewable fuels. This was more than triple the $10 billion in tax breaks proposed in the Bush plan.[86] The House also defeated measures to block exploration in ANWR and to significantly increase the CAFE standard to 27.5 miles-per-gallon by 2007.[87]

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79. *Id.*
80. *Id.*
81. *Id.*
82. *See* Chuck McCutcheon, *GOP Races to Enact Bush Energy Plan as Public's Sense of Crisis Subsides*, 59 CQ WKLY. 1768, 1768–69 (July 21, 2001).
83. *Id.* at 1769; H.R. 2511, 107th Cong. (2001).
84. McCutcheon, *supra* note 82, at 1769; H.R. 2460, 107th Cong. (2001).
85. *See* Juliet Eilperin & Eric Pianin, *House GOP Energy Bill Trims President's Plan*, WASH. POST, Aug. 1, 2001, at A2; McCutcheon, *supra* note 82, at 1768.
86. *See* Eilperin & Pianin, *supra* note 85, at A2.
87. *See* Shailagh Murray, *House Rejects Bids to Block Alaska Drilling, Boost Fuel Efficiency*, WALL ST. J., Aug. 2, 2001, at A16.

The failure of the vote to block ANWR drilling was a surprise to environmentalists and Democrats, who believed the House would reverse the Resources Committee's plan to open the reserve. Strong lobbying by labor unions, particularly the Teamsters, and the promise of 700,000 new jobs nationwide, helped produce a victory for a major plank of the Bush energy plan.[88] The bid to increase the CAFE standard had been bolstered by the release of a National Academy of Sciences report at the end of July that concluded that auto manufacturers possessed the technologies required to significantly improve fuel efficiency without compromising safety,[89] but the House accepted the Bush proposal for only a slight increase in the standards. The House bill required auto-makers to reduce gasoline consumption of SUVs and minivans by five billion gallons between 2004 and 2010, rather than the much greater increase in the standard that some members had proposed.[90]

The Senate was scheduled to take up consideration of energy bills in August 2001. Senators warned that their bill would be much different from the House version, particularly in preventing development of ANWR.[91] The terrorist attacks on September 11 and subsequent events resulted in a decision by the Senate Democratic leadership in October to suspend work on the national energy bill,[92] despite pleas from President Bush to pass legislation opening ANWR to development as a way to increase domestic oil production, reduce dependency on imported oil, and promote national security.[93] In December 2001, Senate Democrats introduced their energy bill, which emphasized energy conservation through measures such as new efficiency standards for consumer and commercial products, voluntary efforts by industries to improve energy efficiency, design standards for constructing more energy efficient schools, increased access to natural gas through the construc-

88. *See id.*
89. *See id.*
90. *See id.*
91. *See* Jeanne Cummings et al., *Bush Racks Up Big Successes, But Fights Loom in Senate*, WALL ST. J., Aug. 3, 2001, at A8.
92. Liz Ruskin, *Senator Turns Out the Light on Energy Bill*, ANCHORAGE DAILY NEWS, Oct. 10, 2001, at A1.
93. Katharine Q. Seelye, *Bush Promotes Energy Bill as Security Issue*, N.Y. TIMES, Oct. 12, 2001, at A12.

tion of a pipeline from Alaska to the lower forty-eight states, and facilitating domestic oil and gas leasing.[94]

II. ASSESSING THE NATIONAL ENERGY PLAN

The Bush administration's National Energy Policy is a menu of recommendations. Many are calls for more studies, research, and planning activities. Some of the recommendations are largely hortatory, while others propose specific actions to be taken. The list of recommendations is much longer than the administration is likely to be able to undertake during the next few years without strong congressional support. The same is true of the bills introduced in the 107th Congress.

It is difficult to predict what recommendations Congress will eventually enact, and the Interior, Energy, and other departments will implement. The policy process will be shaped by temperatures and demand for gasoline, global events affecting the stability of global oil markets, the nation's war against terrorism and its impact on the United States' relations with oil exporting nations, long-term issues such as the evolution of the threat of climate change and other environmental concerns, and other factors difficult to predict. Exploring how well the problem of energy is defined provides a useful starting point, since that is a critical step in the development of effective policies. A key issue is the interaction of the current sources of energy (primarily fossil fuels), with options for conservation, improved efficiency, and development of alternative energy sources that are central to the shift towards a more ecologically sustainable economy.

A. Defining the Nation's Energy Challenge as Increasing Energy Production

The National Energy Plan defines the nation's primary energy challenge as increasing supply. The plan asserts that "[e]ven with improved efficiency, the United States will need more energy supply . . . . The shortfall between projected energy supply and demand in 2020 is nearly 50 percent."[95] The

94. S. 1766, 107th Cong. (2001). The Senate began debating the bill in March 2002.

95. NAT'L ENERGY POL'Y DEV. GROUP, *supra* note 2, ch. 5, at 3.

DOE projects that in two decades electricity use will increase by forty-five percent, natural gas by sixty-two percent, and oil by thirty-three percent.[96] These kinds of projections of mismatches between supply and demand were important assumptions on which the Bush energy plan rested. In response to criticism from Democrats and moderate Republicans, however, the Bush White House softened its emphasis on expanding supply to include some modest conservation measures. Nonetheless, the administration clearly opposed calls for conservation measures to ease short-term shortages, as well as employing them as a long-term strategy. Political advisers reportedly feared that talk of conservation would remind voters of rationing, long lines at the gas pumps, and the stagflation of the late 1970s.[97]

The president, vice president, and others repeatedly emphasized the problem of inadequate supply. In a speech to the Associated Press on April 30, 2001, Vice President Cheney said that "[s]ome groups are suggesting that government step in to force Americans to consume less energy, as if we could simply conserve or ration our way out of the situation we're in."[98] But, he continued, "[t]o speak exclusively of conservation is to duck the tough issues. Conservation may be a sign of personal virtue, but it is not a sufficient basis for a sound, comprehensive energy policy."[99] Rather than conservation, Cheney argued for expanding supplies and investing in more efficient technologies. "New technologies," Cheney explained, "are proving that we can save energy without sacrificing our standard of living. And we're going to encourage it in every possible way."[100] The vice president, however, opposed any action that is "based on the premise that Americans 'live too well' or that people should 'do more with less.'"[101] White House spokesperson Ari Fleischer reported that President Bush would not be urging Americans to conserve. "That's a big no," he said. "The president believes that it's an American way of life, and that it should be the goal of policy-makers to protect the American way of life. The

96. Kriz, *supra* note 43, at 943.

97. Cummings & VandeHei, *supra* note 12, at A16.

98. Anne E. Kornblut, *Energy Plan to Promote New Supply*, BOSTON GLOBE, May 1, 2001, at A1.

99. *Id.*

100. *Id.*

101. Joseph Kahn, *Cheney Promotes Increasing Supply as Energy Policy*, N.Y. TIMES, May 1, 2001, at A1.

American way of life is a blessed one."[102] Similarly, an eight-page, single-spaced speech by Energy Secretary Spencer Abraham in March 2001 had but one line discussing energy conservation, and only a minor reference to renewable sources other than hydroelectric.[103]

During a CNN interview on May 8, 2001, Vice President Cheney reported that the energy policy development group would recommend tax credits to encourage the purchase of gas-electric hybrid cars and the development of renewable resources such as burning biomass (agricultural, animal, and human waste) to generate electricity.[104] He reiterated, however, that the thrust of the report would be to expand the number of power plants in the nation.[105] Cheney blamed California's blackouts on a policy of "relying only on conservation."[106] California policy makers, he claimed, have "taken the route of saying, 'Well, we can conserve our way out of the problem. All we have to do is conserve; we don't have to produce any more power.' . . . They've got a whole complex of problems that are caused by relying only on conservation and not doing anything about the supply side."[107] Furthermore, said Cheney, "[w]e're going to get a lot from conservation. . . . The bottom line is we can't close the gap all the way . . . unless we provide additional supplies."[108] The solutions he urged included making greater use of nuclear power ("a safe, clean and very plentiful energy source"[109]), burning more coal (America's "most plentiful source of affordable energy"[110]), and tripling the amount of energy produced by renewable fuels (solar, biomass, and wind power) from two percent of total supply today to six percent in twenty years.[111] He also expressed confidence in the environmental benefits of new technologies, as well as their promise of improved efficiency: "We can explore for energy, we can produce

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102. *It's the Stupidity, Stupid*, DAILY GRIST, May 9, 2001, *at* http://www.gristmagazine.com/grist/daily/daily050901.stm.

103. Kriz, *supra* note 43, at 944.

104. Mike Allen & Eric Pianin, *Cheney Panel Backs Power Plant, Hybrid-Car Incentives*, WASH. POST, May 9, 2001, at A14.

105. *Id.*

106. *Id.*

107. *Id.*

108. *Id.*

109. Kahn, *supra* note 101, at A1.

110. *Id.*

111. *Id.*; *see also* Mike Allen, *Bush Energy Plan Will Emphasize Production*, WASH. POST, May 1, 2001 at A1.

energy and use it, and we can do so with a decent regard for the natural environment."[112] In other settings, the vice president emphasized drilling for oil and gas throughout the western states and building more nuclear power plants ("the environmentally sound way to go").[113]

1. Energy Supply and Demand

The heart of the Bush administration's energy policy is increasing domestic energy supplies. As described above, virtually every speech and interview from the president, vice president, and other senior administration officials emphasized the importance of expanding domestic energy production. The energy plan:[114]

1. calls on federal agencies to promote enhanced recovery of oil and gas from existing wells, encourage oil and gas technology through public-private partnerships, reduce impediments to federal oil and gas leases, and reduce royalties and create other financial incentives to encourage environmentally sound offshore oil and gas development;
2. recommends additional oil and gas development in the National Petroleum Reserve in Alaska and the opening of an area (called section 1002) in ANWR for exploration;
3. calls for streamlining the regulatory process, "greater regulatory certainty" for power plant operators, and reducing the time and cost involved in licensing hydroelectric power plants;
4. urges continued development of clean coal technology through a permanent extension of the research and development tax credit and investing $2 billion in research and development over ten years;
5. suggests the president issue an executive order to "rationalize permitting for energy production in an

112. Patrice Hill, *Cheney Seeks More Sources of Energy*, WASH. TIMES, May 1, 2001, at A1.

113. Greg Pierce, *Inside Politics: Going Nuclear*, WASH. TIMES, Apr. 9, 2001, at A6.

114. The provisions that follow are listed in NAT'L ENERGY POL'Y DEV. GROUP, *supra* note 2, app. 1, Summary of Recommendations, ch. 5, *Energy for a New Century: Increasing Domestic Energy Supplies*, unless otherwise noted.

> environmentally sound manner" and federal agencies "expedite permits and other federal actions necessary for energy-related project approvals."[115]

The September 11 terrorist attacks prompted renewed emphasis by Bush administration officials on opening ANWR and other areas for development. Interior Secretary Gale Norton, for example, in a November 2001 speech to an oil producers' association, noted that the United States imports 700,000 barrels of oil a day from Iraq and "it's time to start investing that money in our own backyard and not in the back pocket of Saddam Hussein."[116]

How compelling is the Bush administration's analysis of the United States energy situation? The short-term energy problems in the United States are largely cyclical in nature: low energy prices in the late 1990s discouraged investments in new energy production and distribution facilities. One analyst observed that "[t]here's plenty of crude oil around. What we have is an infrastructure problem—not enough pipelines, transmission lines, generating capacity, refining capacity, or ships to move [energy] products."[117] Another argued that "[w]e hadn't done any drilling in three years, and the reason for that was the price of oil was $12 a barrel."[118] British Petroleum's global energy assessment, issued in June 2001, found that there are abundant supplies of oil and gas and there is "no fundamental energy shortage."[119] The American Automobile Association reported in June 2001 that the national average price of gasoline was $1.55 per gallon, down from $1.71 per gallon a month earlier and $1.66 the year before.[120]

The spike in gas prices in the spring of 2001 resulted not from shortages in crude oil, but from inadequate refinery capacity.[121] A surge in demand during the past few years of economic growth and the burst in popularity of gas-guzzling SUVs

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115. *Id.* at ch. 3, *Protecting America's Environment: Sustaining the Nation's Health and Environment.*

116. Quoted in Brad Knickerbocker, *New Push to Pump Oil from Alaska Refuge*, CHRISTIAN SCI. MONITOR, Nov. 26, 2001.

117. Peter Behr & Eric Pianin, *Energy Problems Seen for Summer; But Some Question Bush's Domestic Strategy*, WASH. POST, Apr. 9, 2001, at A3.

118. *Id.*

119. Mike Allen & Juliet Eilperin, *Bush, GOP Mount Effort to Sell Energy Plan,* WASH. POST, June 27, 2001, at A1.

120. *Id.* Gas prices continued to decline through 2001 and early 2002.

121. Paul Krugman, Editorial, *The Unrefined Truth*, N.Y. TIMES, May 9, 2001, at A1.

simply outstripped supply as refiners were caught by surprise. Prices are also sensitive to weather, such as increased demand for air conditioning during a heat wave and decreased supply as droughts reduce hydroelectric power production. Shortages and price increases have been a function of market forces: energy prices were low during the mid to late 1990s, for example, and exploration and development of new sources were simply not profitable.[122] Since drilling declined due to the low prices of the late 1990s, supplies have been tight and are expected to continue to be so until new sources go on line. In contrast, coal-fired power plants produce more than half of the power produced by electric utilities.[123] Coal is the most plentiful fossil fuel in the United States; reserves will likely last for 250 years if consumption rates remain constant, but the environmental costs of continued reliance on coal are daunting.[124]

The power shortages in California during the spring and summer of 2001 resulted from increased demand, lack of new power generating facilities, and the state's electricity deregulation program.[125] According to one account, deregulation in California discouraged utilities from investing in energy conservation and new power generating capacity, leaving the state with inadequate supplies.[126] California officials deregulated the generation and wholesale trading of electricity, but also required California utilities to lease at least half of their generating plants and prohibited them from signing long-term contracts.[127] During 1998 and 1999, deregulation worked because demand was soft and prices on the spot market fell. But as consumption increased, and California continued its policy of not building new plants (no new plants had been built in a decade due to local opposition and uncertainties about deregulation), utilities were trapped. Rising demand and diminished supply resulted in utilities paying prices as high as $1 per kilowatt-hour, while selling it to consumers at the state legisla-

122. For an overview of energy trends, see U.S. DEP'T OF ENERGY, ANNUAL ENERGY OUTLOOK 2001, at 1–8 (2000).

123. *Id.* at 220.

124. WALTER A. ROSENBAUM, ENVIRONMENTAL POLITICS AND POLICY 295 (5th ed. 2002).

125. *See* Rebecca Smith & Richard B. Schmitt, *Electricity Price Controls in West Are Set*, WALL ST. J., June 19, 2001, at A2.

126. Gregg Easterbrook, *Brown and Out*, THE NEW REPUBLIC, Feb. 19, 2001, at 20, 22.

127. *Id.* at 22.

ture-mandated price cap of 6.5 cents per kilowatt-hour.[128] California eventually raised consumer electricity prices, allocated billions of dollars to purchase power, implemented conservation programs, and successfully lobbied the FERC to impose price controls on wholesale electricity throughout the western United States through September 2002.[129] By July 2001, thanks to cool weather and effective conservation efforts, California had excess power and began selling power back to the market, sometimes at a loss.[130]

Government regulation has also contributed to some temporary, localized power shortages. Natural gas is a much cleaner fuel than electricity and produces far fewer greenhouse gases, but gas industry officials warn that conflicting and burdensome regulations make it difficult to drill for gas and transport the fuel.[131] Oil companies complain that clean air regulations governing the composition of gasoline also lead to higher costs and short supplies. A related factor has been environmental rules that differ by region and make it difficult to shift supplies from one area to another. For example, some midwestern states require gasoline retailers to sell ethanol blends.[132] Clean air programs requiring specific mixes of fuels for different regions have limited the ability of oil companies to shift motor vehicle fuels from one region to another.[133]

There is no question that the growing dependence on imported oil constitutes a major long-term energy supply issue. The Bush energy initiative seeks to meet growing demand and reduce United States dependence on imported oil, which increased during the late 1990s as domestic production fell due to declining prices. In 1990, crude oil was selling at $20 per barrel.[134] Prices fluctuated throughout the decade, falling to a low

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128. *Id.*

129. *See* John Harwood & Mitchel Benson, *Power Politics: Strategist for Gov. Davis Toughens Energy Policy*, WALL ST. J., June 19, 2001, at A24.

130. The state's main purchaser of power, the Department of Water Resources, was paying an average of $133 per megawatt-hour for power and selling excess power back to the market for as little as $15 per megawatt-hour, prompting opponents to renew their criticism of California's power deregulators. James Sterngold, *California's New Problem: Sudden Surplus of Energy*, N.Y. TIMES, July 19, 2001, at A1.

131. *See* Kriz, *supra* note 43, at 945.

132. Krugman, *supra* note 121, at A1.

133. *See* Kriz, *supra* note 43, at 942.

134. ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, ANNUAL ENERGY REVIEW 2000, at 157 (2001) [hereinafter ANNUAL ENERGY REVIEW 2000].

of $11 per barrel in 1998, and then surging above $25 per barrel in 2000.[135] Declining domestic production has also resulted from dwindling opportunities to produce oil. Domestic oil production peaked in 1985 at 8.97 million barrels of oil a day, and gradually fell from an average of 7.2 million barrels a day in 1992 to 5.8 million in 2000.[136] Between 1985 and 2000, imports of crude oil nearly tripled from 3.2 million to 8.9 million barrels a day, and net imports of oil more than doubled from 4.3 million barrels of oil per day in 1985 to 10.1 million barrels in 2000.[137]

The United States imports about sixty percent of the oil it uses each day, and that percentage will likely climb as domestic energy production declines and consumption increases. Even if the United States increases domestic output significantly, the nation is projected to become more and more dependent on imports because of growing demand and will, therefore, continue to be vulnerable to energy shocks.[138] The future of oil imports is quite uncertain. The United States imports some 1.6 million barrels of oil a day from Saudi Arabia,[139] and that country warned in October 2001 that the Bush administration's failure to negotiate peace between Israel and the Palestinians might jeopardize United States-Saudi relations.[140] Iraq, exporter of 0.6 million barrels of oil a day to the United States,[141] might withhold oil from global markets in retaliation for United Nations' sanctions[142] or in response to the war on global terrorism. Neither the leading congressional bills nor the Bush plan offer a solution to this quandary of our major dependence on imported oil. Critics have repeatedly argued that opening ANWR to oil development, the Bush administration's major response to American reliance on imported oil, would not produce oil for at least seven years, and then would likely yield only the equivalent of 140 days worth of oil.[143]

The United States simply lacks the domestic oil resources to be able to become self-sufficient by expanding production. It

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135. *Id.*
136. *Id.* at 123.
137. *Id.*
138. *See* Behr & Pianin, *supra* note 117, at A3.
139. ANNUAL ENERGY REVIEW 2000, *supra* note 134, at 128.
140. *Id.*
141. *Id.*
142. Peter Behr, *Fears of an Energy Crisis Begin to Dim,* WASH. POST, June 8, 2001, at E1.
143. Seelye, *supra* note 93, at A12.

has not been self sufficient in energy for more than forty years.[144] Those who make projections about the availability of resources often assume that the rate of consumption will be constant and, thus, create overly optimistic expectations concerning available supplies. In fact, steady growth in consumption results in enormous increases because of the profound power of exponential growth. For example, a resource that would last one hundred years at current consumption levels will only last sixty-nine years at a one percent growth rate, fifty-five years at a two percent growth rate, and only thirty-six years at a five percent growth rate.[145] Projections of energy resources at current consumption rates can give a false sense of security that resources will be plentiful in the future, when, in reality, population and consumption growth rates make the future of energy resources quite uncertain. While energy use per dollar of gross domestic product has fallen dramatically in the United States (fifty percent between 1950 and 2000), energy consumption per person in the United States has increased significantly during the past half century.[146] Given the nation's steady population growth, an energy policy that relies on a continuance of existing policy, and even a temporary expansion in domestic fossil fuel production, will result in even greater reliance on imported energy in the future.

The national security implications of increased dependence on imported oil are a clear incentive to reduce those imports. Two solutions are obvious: (1) increase domestic production of oil and other fuels that are domestically plentiful, such as coal, and (2) decrease imported oil through conservation, efficiency, and expanded use of renewable resources. The Bush plan emphasizes the first solution. The second solution, however, is more likely to contribute to national security and reduce dependence on uncertain foreign oil supplies, as opposed to trying to expand domestic production of a resource that has already peaked in supply.

144. ANNUAL ENERGY REVIEW 2000, *supra* note 134, at xvii.

145. Albert A. Bartlett, *Reflections in 1998 on the Twentieth Anniversary of the Publication of the Paper: Forgotten Fundamentals of the Energy Crisis*, 1998 NEGATIVE POPULATION GROWTH 2.

146. ANNUAL ENERGY REVIEW 2000, *supra* note 134, at xvii.

2. The Role of Energy Efficiency and Renewables in Meeting Energy Demand

The Bush energy plan does not ignore the need to foster energy efficiency and develop renewable energy sources, but gives low priority to these goals in comparison to expanding fossil fuel production. Several recommendations in the plan are aimed at expanding energy efficiency standards and other energy efficiency programs. The plan:[147]

1. directs the DOE to examine the feasibility of setting energy efficiency standards for products that currently do not have them, such as televisions and computers, and setting higher standards for existing products, if such standards are "technologically feasible and economically justified";
2. directs the DOE to expand the Energy Star program to promote energy efficiency in schools, retail buildings, health care facilities, and homes;
3. directs the DOE to review energy efficiency funding in light of the report (the Fiscal Year 2002 budget made major cuts in DOE energy efficiency programs);
4. directs the Secretary of Transportation to consider raising the CAFE standard in response to the National Academy of Science study on the issue;
5. suggests the president order federal agencies to take appropriate actions to conserve energy in federal facilities.

The plan also offers numerous recommendations for increasing the nation's reliance on renewable and alternative energy sources. The energy plan:[148]

1. directs federal agencies to reassess limitations placed on developing renewable energy resources on public lands and to reduce delays in the processing of geothermal leases;

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147. The provisions that follow are listed in NAT'L ENERGY POL'Y DEV. GROUP, *supra* note 2, app. 1, Summary of Recommendations, ch. 4, *Using Energy Wisely: Increasing Energy Conservation and Efficiency*.

148. The provisions that follow are listed in NAT'L ENERGY POL'Y DEV. GROUP, *supra* note 2, app. 1, Summary of Recommendations, ch. 6, *Nature's Power: Increasing America's Use of Renewable and Alternative Energy*.

2. recommends a review of funding for renewable and alternative energy research and development projects, and endorses performance-based, public-private partnerships;
3. suggests tax credits and research to encourage the production of energy through biomass (agricultural, animal, and human waste), wind and solar power, geothermal sources, and landfill methane projects;
4. recommends the EPA develop new renewable energy partnership programs to encourage companies and consumers to purchase energy from renewable sources;
5. recommends the DOE develop hydrogen, fusion, and other next-generation technologies, and a public education campaign to tout their benefits;
6. proposes tax credits for the purchase of fuel-efficient vehicles such as hybrid or fuel cell vehicles between 2002 and 2007;
7. encourages the development of combined heat and power units that are highly efficient and have low emissions.

Despite these recommendations, the National Energy Plan falls far short in acknowledging the extent to which America's energy needs can be supplied by renewable resources, and in encouraging the development of energy sources that can be domestically produced with less environmental impact than fossil fuels. A November 2000 study by the DOE, "Scenarios for a Clean Energy Future,"[149] for example, identified increased energy production from efficiency and clean energy technology as ways to meet demand and also reduce carbon dioxide emissions and improve air quality. The scenarios outlined in the report include measures that would reduce energy consumption, reduce the carbon intensity of the energy used by switching to cleaner-burning fuels, and increase the amount of carbon sequestered in plants, trees, and soil. The report's most ambitious scenario includes some fifty policy initiatives, including the following:

1. efficiency standards for equipment;

149. U.S. DEP'T OF ENERGY, INTERLABORATORY WORKING GROUP ON ENERGY-EFFICIENT AND CLEAN ENERGY TECHNOLOGIES, *Scenarios for a Clean Energy Future*, at ES.3–ES.5 (2000), *available at* http://www.nrel.gov/publications/newpubs.html (last visited Mar. 12, 2002).

2. voluntary labeling and deployment programs;
3. voluntary agreements with individual industries and trade associations;
4. voluntary fuel economy agreements with auto manufacturers;
5. renewable energy portfolio standards and production tax credits;
6. electric industry restructuring;
7. doubled federal research and development;
8. domestic carbon trading system.

The scenario proposed by the DOE report demonstrates that employing these technologies would allow the United States to consume no more energy in 2020 than it did in 1997, and to emit no more carbon dioxide than it did in 1990.[150] This represents a twenty percent reduction in energy consumption, and a thirty-two percent reduction in carbon dioxide emissions, from those forecast under a business-as-usual (BAU) projection.[151] The costs of energy also fall from the BAU forecast by $124 billion.[152]

Alternative energy investments are much more economically and environmentally beneficial than reflected in the Bush plan. For example, a National Academy of Sciences study of thirty-nine research and development programs funded by the DOE since 1978 found that the programs produced returns of $40 billion while costing only $13 billion, and may have avoided more than $60 billion in damage and mitigation costs that typically occur in projects emphasizing traditional fossil fuel production. Included in the programs were seventeen that centered on energy efficiency, and twenty-two that focused on cleaner fossil fuels.[153] Much of the economic benefits resulted from the energy efficiency projects, but the fossil fuel projects also produced significant environmental benefits.

The National Academy of Sciences study identified two technologies that promise major environmental and economic benefits. These included the Partnership for a New Generation of Vehicles, aimed at producing cleaner and more fuel efficient

150. *Id.*
151. *Id.* at ES.6.
152. *Id.* at ES.8.
153. Cat Lazaroff, *Efficiency, Renewables Research Proves Wise Investment*, Environment News Serv. (July 18, 2001), *at* http://www.ens.lycos.comens/jul2001/2001L-07-18-06.html.

cars, and the integrated gasification combined cycle for power plants, designed to produce electricity with much less pollution.[154] The study also acknowledged that many projects were not successful, such as the development of fuel cells for home use. The director of the study, Richard Campbell, observed that government-funded energy research and development (R&D) has been unfairly criticized: "A lot of people think that if it was anything worthwhile, industry would undertake the research. But there is a role for government funding R&D in this area. The big areas where both programs have excelled were in areas where industry would not want to invest money."[155] The chair of the committee, Robert Fri, argued that "[g]overnment funding can stimulate R&D benefits in areas where there is little incentive to improve existing technologies."[156]

These studies demonstrate that there is an alternative to maintaining current levels of fossil fuel use by expanding conservation and renewable energy efforts well beyond what the Bush plan proposes. Some utilities have challenged the administration's criticism of conservation. They argue that conservation is popular with consumers, that investments in conservation and efficiency can reduce by up to half the energy needed to meet growing demand, and that conservation can be a major element of the nation's plan to meet future energy demand.[157] These utilities have aggressively promoted conservation, including paying customers for reducing their electricity use, distributing coupons for discounts on energy efficient light fixtures, offering cash rebates for conversion of homes to solar energy, and giving businesses and schools financial incentives to invest in energy efficiency. The Sacramento Municipal Utility District, for example, has "conserved enough energy to save . . . the equivalent of having to build one huge new power plant."[158] At least ten states require utilities to meet goals

154. In January 2002, the Bush administration announced it was canceling the Partnership for a New Generation of Vehicles and replacing it with the "Freedom CAR" project—the Cooperative Automotive Research initiative that will focus on research needed to develop vehicles that run on hydrogen powered fuel cells. *Feds Dump Fuel Efficiency for Fuel Cells*, Environment News Serv. (Jan. 9, 2002), *at* http:// www.ens-news.com/ens/jan2002/2002L-01-09-04.html.

155. Elizabeth Shogren, *Study Sees Green in U.S. Energy Research*, L.A. TIMES, July 18, 2001, at A13.

156. Lazaroff, *supra* note 153.

157. Timothy Egan, *Many Utilities Call Conserving Good Business*, N.Y. TIMES, May 11, 2001, at A1.

158. *Id.*

mandated by the state for producing electricity from renewable sources (renewable portfolio standards).[159]

One of the most important sources of greater energy efficiency would be an improvement in the fuel efficiency of motor vehicles. Average fuel efficiency peaked in 1988 at twenty-six miles-per-gallon but has fallen to twenty-four miles-per-gallon as light trucks and SUVs have become increasingly popular. Raising the CAFE standard to thirty-five miles-per-gallon would save 1.5 million barrels of oil a day, much more than the 580,000 barrels a day the United States Geological Survey (USGS) projects might be available from ANWR if developed.[160] Critics have argued that increasing fuel efficiency would result in increased motor vehicle fatalities since cars and trucks would weigh less and offer less protection to drivers and passengers.[161] But the research is not clear. Lighter vehicles might pose a greater threat to occupants when they strike objects like trees and utility poles, but may reduce the severity of injuries when lighter vehicles collide.[162]

The energy bill passed by the House of Representatives in early August 2001 exceeded the president's plan in encouraging investment in wind and biomass electricity production, thermal energy, and nuclear power. In addition, it included construction of more energy efficient homes, purchasing electric, fuel-cell, and clean-fuel cars, and developing more power from solar, wind, and incinerators that burn waste from landfills.[163] But both the White House and congressional proposals have been heavily oriented toward continuing the subsidies enjoyed by the fossil fuel industries. Only ten percent of the tax incentives in the House bill go to individuals, according to the Congressional Joint Committee on Taxation.[164] About one-third of the tax benefits go to electricity producers, and one-third to domestic oil and gas producers and distributors, prompting one mem-

159. ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, ANN. ENERGY OUTLOOK 2001 WITH PROJECTIONS TO 2020, at 12 (2000) [hereinafter ANN. ENERGY OUTLOOK 2001].

160. Kahn, *supra* note 101, at A1.

161. See PIETRO S. NIVOLA & ROBERT W. CRANDALL, THE EXTRA MILE: RETHINKING ENERGY POLICY FOR AUTOMOTIVE TRANSPORTATION (1995) for a discussion of these issues, including a critical assessment of fuel efficiency standards and an argument for raising gasoline taxes to reduce consumption.

162. *Id.*

163. Greg Hitt & Shailagh Murray, *House GOP Pumps Industry Tax Breaks Into Energy Bill*, WALL. ST. J., Aug. 2, 2001, at A16.

164. *Id.*

ber of Congress, Lloyd Doggett (D-Tex.) to complain that "[t]his is not so much an energy policy as it is a collection of unjustified tax breaks disguised as energy policy."[165] It may not be possible for Congress to pass a carefully tailored set of tax incentives that encourages the development of a new generation of clean, renewable energy without the bill becoming a Christmas tree of subsidies, but the Bush plan falls well short in providing a blueprint for the transition to a sustainable energy future.

3. Expanding the Production and Transmission of Electricity, Clean Air, and Power Plants

The Bush energy plan recognizes the importance of upgrading the nation's electricity production and distribution infrastructure, and proposes a number of actions to reduce the problems encountered in California and elsewhere in 2000 and 2001. The oil industry lobbied the task force to include a long list of pro-industry incentives. This list included: (1) providing more flexibility to companies in complying with environmental regulations; (2) simplifying and shortening the permitting process refineries must follow when making changes in production; (3) simplifying and increasing the flexibility of the EPA's review of modifications to existing refineries (that can result in sanctions if major modifications are made without obtaining permission); and (4) creating a regional approach for reformulated gasoline used to reduce urban smog so that refineries have fewer fuel mixes to produce.[166] The Bush plan is quite responsive to these demands. It includes a number of provisions aimed at expanding electrical power, reducing regulatory requirements, and obtaining new corridors for power transmission. The plan:[167]

1. recommends actions be taken to improve the reliability of the interstate power transmission system, create a self-regulating body subject to federal oversight, and conduct a study of the feasibility of establishing a national electrical grid;

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165. *Id.*

166. Mike Allen & Eric Pianin, *Cheney Panel Backs Power Plant, Hybrid-Car Incentives*, WASH. POST, May 9, 2001, at A14.

167. NAT'L ENERGY POL'Y DEV. GROUP, *supra* note 2, Summary of Recommendations, ch. 7 (unless otherwise noted).

2. proposes legislation that would increase the use of the government's eminent domain power to obtain corridors for new electrical transmission lines and other actions to remove constraints on interstate transmission of electrical power;
3. instructs the EPA and Justice Department to review clean air requirements on coal-fired power plants (the New Source Review program) and existing enforcement actions aimed at getting old power plants to install more stringent controls when they modernize;
4. proposes spending $2 billion over ten years to develop clean-coal technologies and extend permanently the existing research and development tax credit;
5. calls for increasing energy imports from Canada and Mexico[168];
6. proposes repeal of the 1935 Public Utility Holding Company Act (PUHCA) that creates regulated utility monopolies and requires them to provide power to all users at rates mandated by states (the federal government regulates interstate and wholesale rates)[169];
7. proposes repeal of the 1978 Public Utility Regulatory Policies Act (PURPA) that requires utilities to purchase power from renewable sources at the same rate they would pay if they were producing the power themselves[170];
8. calls for comprehensive regulations for power plants and suggests the EPA propose to Congress a "flexible, market-based," multi-pollutant regulatory program to cap nitrogen oxide, sulfur dioxide, and mercury (but not carbon dioxide) emissions from power plants.[171]

Other issues are part of the complex mix of proposals aimed at increasing electricity production. To help the electric power industry, the vice president's energy task force planned to urge the FERC to allow utilities to raise the rates they

168. *Id.* at ch. 8.
169. *Id.* at ch. 5.
170. *Id.*
171. *Id.* at ch. 3.

charge consumers for transmitting power in order to create an incentive to construct new power lines.[172] The FERC had already proposed boosting the return on investments by several percentage points if new facilities were built within six months, but utility groups complained that the increases were insufficient.[173] To expand hydropower, utilities lobbied the task force to streamline the licensing process for new plants (it currently takes from eight to ten years to obtain a license for a new hydroelectric plant) so that it would lessen opportunities for environmentalists and Indian tribes to push for limits on power production.[174] The Western Governors Association proposed to develop a preliminary plan by July 2001 in order to develop a regional solution to the problem of inadequate transmission lines in the West.[175] The existing western grid includes 115,400 miles of lines and has not been significantly expanded during the past seven years.[176] It is not clear, however, whether the governors would welcome the expansion of the federal government's eminent domain power to claim land for new power lines.[177]

The Bush administration has also greatly emphasized developing nuclear power. Its energy plan recommends the expansion of nuclear energy in the United States as a "major component of our national energy policy" through:[178]

1. expediting the licensing of new advanced-technology reactors;
2. relicensing plants that meet safety standards;
3. assessing the potential of nuclear power in improving air quality (since nuclear power production does not result in the release of air pollutants);
4. providing a deep geologic repository for nuclear waste;
5. extending the Price-Anderson Act (which limits liability of power plant operators in the event of accidents);

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172. Fialka & Davis, *supra* note 14, at A2.

173. *Id.*

174. *Id.*

175. Michael Janofsky, *Western Governors Turn Focus to Need for More Power Lines*, N.Y. TIMES, May 10, 2001, at A30.

176. *Id.*

177. *Id.*

178. NAT'L ENERGY POL'Y DEV. GROUP, *supra* note 2, Summary of Recommendations, ch. 5.

6. developing reprocessing and fuel treatment technologies that are "cleaner, more efficient, less waste-intensive, and more proliferation-resistant."

Expanding electricity production and maintaining air quality are daunting challenges. According to the most recent Annual Energy Outlook published by the DOE's Energy Information Administration,[179] electricity demand is expected to increase by 1.8% per year from 1999 until 2020, a higher rate than the 1.3% per year that was forecast just a year ago. In fast growing regions, demand may grow even more rapidly. Meeting this increased demand and complying with a host of environmental requirements will be extraordinarily difficult. The amount of electricity produced by natural gas is expected to increase from sixteen percent in 1999 to thirty-six percent in 2020, and the share produced from coal is expected to decline from fifty-one percent to forty-four percent during the same period.[180] Coal will remain the dominant fuel, however, and total coal use will increase steadily during the next two decades.[181] Clean coal technologies may reduce emissions, but there are major technological barriers and great uncertainties in reducing the environmental consequences of burning coal for electricity.[182] The siting of new power plants is a politically difficult and time-consuming enterprise, even if the process for granting construction permits for new facilities is streamlined.

Among the most serious environmental consequences of the Bush plan is its impact on recent efforts to upgrade air quality requirements for older power plants. Expanding energy policy by increasing production from highly polluting power plants may produce lower energy costs in the short run but is not environmentally sustainable. One of the most significant failures of the Clean Air Act is the lack of effective regulation of older power plants and the failure to encourage the replacement of aging, high polluting facilities with cleaner, more efficient ones. The Clean Air Act requires new major stationary sources, such as power plants, and major modifications of existing sources to obtain permits, perform air quality analysis, and install more stringent controls than are required for

179. ANN. ENERGY OUTLOOK 2001, *supra* note 159, at 4.

180. *Id.* at 5.

181. *Id.*

182. John J. Fialka, *Clean Coal Exists in Name Only for Years to Come*, WALL ST. J., May 18, 2001, at A20.

existing sources.[183] The EPA must issue New Source Performance Standards (NSPS) for categories of stationary sources that are to be constructed or modified in areas that have not attained the national air quality standards.[184] These standards require sources to install the "best system of emission reduction," taking into consideration the costs of achieving that goal.[185] NSPS are therefore technology-based standards and must be met by every new source within specified categories of industry, provided the source is constructed after the EPA has proposed an NSPS for that industry. Modifications to existing sources are also subject to NSPS if the modification results in the emission of any new pollutant or the increased emission of any existing pollutant.[186] Maintenance and modifications that do not result in increasing overall emissions do not trigger the NSPS requirements.[187] The agency can delegate responsibility to states for devising and implementing NSPS.[188]

In the 1980s, industries began spending money to keep plants operating longer, rather than retiring them and building new ones. As a result, these older, grandfathered plants dominate emissions of nitrogen oxides and other pollutants. Industry officials have claimed that these investments constitute routine maintenance, but some environmentalists charge that these projects are actually increasing capacity.[189] The EPA's rules define routine maintenance as any project that increases a facility's ability, either technically or economically, to generate electricity above the capacity existing before the investment.[190] These rules are quite generous to sources, allowing them to use the maximum polluting hour and the average of the two highest polluting years in determining the limits that they must stay within when making routine maintenance investments.[191] The EPA has argued that determining whether or not a project is routine maintenance is a highly fact-specific decision, and for thirty years it has issued "applicability deter-

183. 42 U.S.C. § 7411 (1994).
184. *Id.*
185. 42 U.S.C. § 7411(a)(1) (1994).
186. 42 U.S.C. § 7411(a)(4) (1994).
187. DAVID R. WOOLEY, CLEAN AIR ACT HANDBOOK, §1.07[5] (8th ed. 1998).
188. 42 U.S.C. § 7411(c) (1994).
189. Memorandum from David Hawkins, Natural Resources Defense Council, to groups following NSR Enforcement (Feb. 4, 2000) (on file with author).
190. *Id.*
191. *Id.*

mination" letters to resolve questions about whether specific projects can or cannot count as maintenance.[192]

In 1998, the EPA announced an initiative to target violations of the Clean Air Act's New Source Review (NSR) programs.[193] In its first major enforcement effort under this initiative, the agency issued complaints against seven electric utility companies in 1999, charging that these companies had made major modifications at their facilities without meeting the NSR requirements.[194] For example, during the end of the Clinton administration, the EPA and the state of New York charged Dominion Resources, Inc. with violating the new source standard by installing some equipment at its Mount Storm, West Virginia plant.[195] In negotiations, the company agreed to install pollution control equipment at three units and convert another from coal to natural gas.[196] The Clinton administration eventually took action against some fifty-one older power plants.[197]

Coal fired utility companies have focused on the EPA's enforcement of the NSR requirements, and lobbied the vice-president's task force to direct the EPA to return to the pre-1999 interpretation of what constitutes the development of a new source.[198] Coal industry officials have argued that operators of old plants often reduce their capacity rather than buy new equipment that could trigger a new source review and imposition of the more stringent emission standards that might result from that review.[199] If the previous interpretation were reinstated, it would allow companies to make more modifications without triggering the new source review. Existing power plants could increase their capacity by 40,000 megawatts within three years, the equivalent of building forty new major power plants, but instead of newer plants operating under the

192. *Id.*

193. Clara Poffenberger, *NSR Enforcement Initiative—A Historical Perspective,* EM, Apr. 2000, at 25–31.

194. *Id.*

195. Peter Behr, *Coal Is Vital, Utilities Say*, WASH. POST, May 3, 2001, at E1.

196. *Id.*

197. Eric Pianan, *Suits Against Power Firms Justified, Justice Dept. Says*, WASH. POST, Jan. 16, 2002, at A17.

198. John J. Fialka, *Coal Industries Seek Fewer EPA Reviews*, WALL ST. J., May 1, 2001, at A3. *See also* Behr, *supra* note 195, at E1.

199. Fialka, *supra* note 198, at A3.

more stringent new source emission standards, this increased power would be generated by older, dirtier facilities.[200]

The Bush administration reviewed the Clinton policy as part of its energy policy and its review of environmental regulation in general,[201] and the Justice Department announced in January 2002 that it would continue to pursue the cases initiated during the Clinton years.[202] Justice Department officials suggested, however, that they are not obligated to bring additional suits in the future.[203] The future of the initiative to clean up old power plants is further clouded by Bush administration plans to issue a new regulatory program for power plants that would reduce air pollution standards for older power plants even further to spur increased production.[204] A decision to expand energy production by reversing the new EPA policy on new source reviews will come at the expense of increased air pollution and a failure to remedy one of the inequities in the Clean Air Act that has allowed many old power plants to escape the obligation to reduce their emissions.

The emphasis on increased production of energy through fossil fuel-powered generating plants threatens air quality in other ways. Power plant emissions are also subject to regulations contained in State Implementation Plans—state plans to bring air quality into attainment of the national standards for sulfur dioxide, nitrogen oxides, and particulate matter.[205] The EPA's review of its new fine particle standard, issued in 1997[206] and recently upheld by the Supreme Court,[207] is expected to be completed in 2002. Current and future regulation of these pollutants may be combined with a multi-pollutant strategy in which both members of Congress and officials from the Bush administration have expressed some interest. Bills with bipartisan support have been introduced in Congress that order the EPA to regulate nitrogen oxides, sulfur oxides, mercury, and carbon dioxide emissions from power plants, but the Bush ad-

200. *Id.*

201. Richard B. Schmitt, *Review of Clean-Air Lawsuits Confronts Clouds of Opposition*, WALL ST. J., May 18, 2001, at A6.

202. Pianan, *supra* note 197.

203. *Id.*

204. *Id.*

205. 42 U.S.C. § 7410 (1994).

206. National Ambient Air Quality Standards for Particulate Matter, 62 Fed. Reg. 38,652 (July 18, 1997) (to be codified at 40 C.F.R. pt. 50).

207. Whitman v. Am. Trucking Ass'n, 531 U.S. 457 (2001).

ministration announced its opposition to these four-pollutant bills in March 2001, preferring instead to limit regulation to the first three pollutants and not take on reductions of carbon dioxide and other greenhouse gases.[208] Power plants are also regulated by states under the EPA's regional haze rule, aimed at reducing pollution in national parks, wilderness areas, and other undeveloped regions to background levels within sixty years.[209] The Western Regional Air Partnership has proposed a regulatory program for improving air quality in these undeveloped areas that requires states to devise new regulations on power plants and other pollution sources.[210] Both of these initiatives to improve air quality will be threatened if the Bush administration decides to weaken enforcement of the new source standards for power plants.

Finally, as indicated above, another major plank of the Bush administration energy plan calls for the expansion of nuclear power. Utilities that rely on nuclear power plants are well acquainted with the challenges posed by the disposal of nuclear wastes and the uncertainties surrounding the federal government's plan to store these wastes at Yucca Mountain, Nevada, including opposition to the plan by many Nevada lawmakers such as Senate Majority Whip Harry Reid (D-Nev.).[211] Disputes have swirled around the Nevada site as a permanent, centralized nuclear waste storage site for the entire nation for more than two decades. The DOE announced in January 2002 its decision to recommend to the president that he designate Yucca Mountain as the site for 78,000 tons of radioactive waste.[212] In February 2002, President Bush approved the recommendation, which, if it becomes effective, triggers the next stage of scientific and technical review of the project under

208. Rebecca Adams, *Bush's Decision Not to Curb Carbon Dioxide Casts Shadow on Emission Control Legislation*, CQ WEEKLY, Mar. 17, 2001, at 607.

209. 64 Fed. Reg. 35,714 (July 1, 1999).

210. GRAND CANYON VISIBILITY TRANSPORT COMM'N, VOLUNTARY EMISSIONS REDUCTION PROGRAM OF MAJOR INDUSTRIAL SOURCES OF SULFUR DIOXIDE IN NINE WESTERN STATES AND A BACKSTOP MARKET TRADING PROGRAM: AN ANNEX TO THE REPORT, Sept. 29, 2000.

211. John J. Fialka, *Nevada Hones Effort to Block Yucca Mountain Nuclear-Waste Dump*, WALL ST. J., July 5, 2001, at A14.

212. Matthew L. Wald, *Nevada Site Urged for Nuclear Dump*, N.Y. TIMES, Jan. 11, 2002, at A1.

Nuclear Regulatory Commission licensing processes.[213] Nevada political leaders and community activities vowed to fight the decisions in Congress, the courts, and through protests.[214] Nevertheless, nuclear industry officials have predicted that the site will be opened by 2010.[215] A draft United States General Accounting Office report released in November 2001, however, reportedly found that the construction company hired by the DOE to oversee the project indicated that it would take until 2006 to complete cost estimates and resolve hundreds of outstanding issues before the designation decision could be made.[216] In the meantime, nuclear plants are storing 40,000 tons of spent fuel at seventy-two sites in thirty-six states.[217]

The transportation of nuclear wastes is similarly fraught with controversy. Industry groups are touting new designs for power plants that cost less to build and are safer than those in operation, but it is difficult to envision how nuclear power generation can be expanded until issues of transporting and storing wastes are resolved.[218]

III. ENERGY POLICY AND ECOLOGICAL SUSTAINABILITY

The discussion above of the Bush energy plan and similar proposals in Congress has identified only some of the serious environmental consequences of pursuing a plan of expanded use of fossil fuels. A multitude of problematic environmental consequences result from expanded fossil fuel development, however. One of the most striking elements of the National Energy Plan is the lack of discussion about how energy policy affects the environment. The chapter on protecting America's environment, for example, only offers three recommendations: multi-pollutant legislation for power plants, an executive order

213. *Bush Greenlights Yucca Mountain Nuclear Waste Dump*, Environment News Serv. (Feb. 15, 2002), *at* http://ens-news.com/ens/feb2002/2002L-02-15-01.html.

214. Nevada Governor Kenny Guinn announced he will exercise his Notice of Disapproval (the "governor's veto") to the United States Congress; Congress then has ninety legislative days to override the veto though a simple majority vote. *Id.*

215. Eric Pianin, *GAO Challenges Plans for Storage of Nuclear Waste*, WASH. POST, Nov. 30, 2001, at A3.

216. *Id.*

217. *Id.*

218. Rebecca Smith, *Nuclear Power: Revival or Relapse?* WALL ST. J., May 2, 2001, at B1.

"rationalizing energy production in an environmentally sound manner," and the creation of a conservation fund from royalties generated by the opening of ANWR to be used for land conservation efforts and maintenance and improvements on federal lands.[219]

The compelling goals of energy independence and reduced reliance on imported oil as a means of contributing to national security fits nicely with energy efficiency and conservation goals. These goals include shifting to renewable and alternative energy sources, decentralizing and improving the efficiency of energy production, and other actions that better balance energy and environmental needs than do a futile effort to produce our way to fossil fuel energy efficiency. The United States will not be able to reach energy security until it weans itself from its overwhelming reliance on oil. Nor will it be able to help the swelling population of poor people throughout the world improve their quality of life unless fossil fuels are replaced with cleaner, more ecologically sustainable sources of energy.[220]

A cautious, conservative, ethically defensible, and balanced energy policy can be rooted in the idea of ecological sustainability. The idea of ecological sustainability is evolving. There is no universal definition or shared understanding; rather, it is a broad and vague term that can be interpreted in many ways. Nevertheless, ecological sustainability can serve as a core principle for guiding the development of energy policy. The values encapsulated by sustainability include the following:

1. preservation of the ecological services that natural systems perform, such as filtering air and water;
2. preventing pollution rather than simply treating emissions, thereby ensuring the sustainable yield of renewable resources;
3. relying on the precautionary principle and preservation of ecological values in the face of uncertainty;
4. using true-cost prices that internalize environmental costs in market exchanges, and developing economic indicators and measures that reflect depletion of natural resources;

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219. NAT'L ENERGY POL'Y DEV. GROUP, *supra* note 2, Summary of Recommendations, ch. 3.

220. *See* Timothy E. Wirth, *A Strategy for Tomorrow*, paper presented at the Natural Resources Law Center, University of Colorado School of Law, Roundtable on Energy and the Environment, Nov. 27, 2001 (on file with author).

5. considering equity and fairness in the distribution of benefits and burdens, and preserving ecological conditions and options for future generations.[221]

Sustainability can be viewed as either a modest, weak, and thin agenda for change, or a thicker, deeper, more radical prescription. A weak and thin form of sustainable development posits that economic and environmental concerns can and must be balanced. In the past, economic growth has been given priority and seen as paramount; now it must be refined and balanced by environmental sensitivity. This view, however, holds that fundamental changes are not required—current technologies and patterns of production and consumption are acceptable as long as they are tempered by environmental and resource considerations. Proponents of this agenda argue that we can largely continue to do what we have done in the past as long as we are more "sensitive" to environmental conditions. The goal is to ensure the same level of resources, while permitting some substitution of natural resources for an equivalent amount of capital.[222]

In contrast, a strong and thick form of sustainable development—what I call here ecological sustainability—suggests that environmental preservation is the paramount value. Ecological sustainability places a major constraint on economics; only economic activity that is consistent with the fundamental criterion of ecological sustainability is acceptable. The theory holds that ecosystems must be preserved so that the services they provide are maintained and cannot be exhausted by the current generation. Industrial activities, energy production, transportation, and consumption must be fundamentally transformed to avoid ecological disruptions and protect regenerative processes. Ecological survival simply outweighs economic growth as the primary public priority. Since ecological conditions make all life possible, including economic activities, preserving those conditions should be given priority.[223] Balancing is not enough; ecological values must come first and must de-

221. For an overview of the idea of sustainability, see GARY C. BRYNER, GAIA'S WAGER: ENVIRONMENTAL MOVEMENTS AND THE CHALLENGE OF SUSTAINABILITY 177–85 (2001).

222. For a more detailed discussion of the ideas in this paragraph, see *id.* at 186.

223. *Id.* at 186–88. For more on the argument that the economy must be viewed as a "subset of the environment" and priority given to ecological health, see quote in LESTER R. BROWN, ECO-ECONOMY 1 (2001).

fine and limit what kinds and levels of economic activity are acceptable. Policy goals such as free trade and economic efficiency are subordinated to the preservation of biodiversity, protection of wild lands, and reclamation of damaged areas.[224]

Another important feature of this thick notion of development is its integration of ecological protection and economic activity with social equity and political empowerment. Sustainable development gives priority to reducing poverty and helping the poor gain some measure of self-sufficiency through a more equitable distribution of resources. Political participation helps ensure that decisions affecting economic and environmental conditions are made more inclusive. Sustainability is not an ecological concept alone, but also one of social justice, inclusion, fairness, community well-being, and political engagement.[225] These social and political values are important and valued in their own right because they contribute to ecological protection.[226]

This strong version of sustainability requires the maintenance of each kind of capital to ensure its availability for future generations. One implication of this view is that nonrenewable resources, such as fossil fuels, simply should not be consumed, but that position is obviously not tenable, given past and current energy production patterns. An alternative view of sustainability in this context might allow for depletion of some nonrenewable sources of energy, such as oil, as long as we invest in new technologies such as solar power, so that future generations have at least the same reserve of energy resources that we have. Part of that prescription is to move much more aggressively to renewable energy forms in order to reserve fossil fuels for future use.[227] Market forces can contribute to the goal of sustainable energy use, but additional principles and institutions are needed to shift the focus of economic activity from short-term consumption to long-term preservation.[228]

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224. BRYNER, *supra* note 221, at 186–88.

225. *Id.* at 188–91.

226. For an expanded discussion of sustainability and equity, see Gary C. Bryner, *Assessing Claims of Environmental Justice: Conceptual Frameworks, in* JUSTICE AND NATURAL RESOURCES: CONCEPTS, STRATEGIES, AND APPLICATIONS 31–56 (Kathryn M. Mutz, Gary C. Bryner & Douglas S. Kenney, eds., 2002).

227. BRYNER, *supra* note 221, at 188–91.

228. *See* GEOFFREY HEAL, NATURE AND THE MARKETPLACE: CAPTURING THE VALUE OF ECOSYSTEM SERVICES 176–77 (2000).

Questions over the scope of sustainability and what behaviors should come within its reach are highly contested. Sustainability challenges capitalism and its emphasis on private property rights, corporate incentives that center on short-term profits rather than long-term sustainability, and the inexorable pressure to externalize and reduce costs. Capitalism's reliance on ever-increasing consumption, planned obsolescence, and unequal distribution of wealth to create incentives for production are also threats to sustainability. Sustainability requires new ways of thinking that integrate ideas of individual rights, community responsibility and accountability, material and spiritual well-being, and ecological health. It requires, from this view, a radical set of changes in order to ensure fairness in the distribution of benefits and burdens, a perpetual resource base and ecological services, and a social system that secures the interests of all persons. Sustainability focuses on comprehensive solutions that reflect the interconnections of ecology. It respects the maxim that is at the heart of ecology, "everything is connected to everything else."[229] In order to fulfill the goals of ecological sustainability, we must address a broad range of concerns—sprawl, traffic, air pollution, open spaces, access to recreation, preservation of wild lands, overcrowding, and other ills that threaten our quality of life. All of these problems are intertwined with energy production and use.[230]

More broadly, sustainability requires strong commitments to monitoring, feedback loops, and other means of ensuring that decision-makers learn from experience, and are able to make adjustments as learning occurs. Ecological sustainability requires a reinvigorated politics of deep public participation. It demands an integration of social, economic, ecological, and cultural efforts, with ecological values providing the overriding priority. There is much to learn about how to give more specific content to sustainability and how to measure progress and monitor results. Sustainable energy production and use implicates a great number of issues. Two that are particularly relevant to the Bush energy plan and congressional legislation, and are examples of how sustainability can guide energy policy

229. BARRY COMMONER, MAKING PEACE WITH THE PLANET 8 (1990).

230. For a discussion of some of the environmental impacts of energy production and use, see WALTER A. ROSENBAUM, ENVIRONMENTAL POLITICS AND POLICY 269–304 (5th ed. 2002).

making, are climate change and protection of public lands and natural resources.

A. Climate Change and Energy

Despite the intricate intertwining of energy policy and the threat of climate change, only one item in the Bush energy plan focuses on climate change—a recommendation that the president direct federal agencies to continue to research global climate change and identify cost-effective, market mechanisms and incentives to address the issue.[231] The plan focuses on the goal of strengthening global alliances and offers thirty-five recommendations for foreign policy-related issues, but it ignores the near global consensus that climate change is a major threat facing the planet, and particularly to the poor nations that lack the resources to protect themselves against the consequences of a warming world.[232] Regardless of the administration's attempt to downplay climate change, however, the United States has already committed itself to an international agreement that addresses the threat of climate change. In 1992, the United States, along with most of the other nations of the world, agreed to take action to "mitigate" the risk of climate change.[233] While there was near universal support for the 1992 agreement, subsequent provisions, such as those included in the Kyoto Protocol, have become mired in controversy.[234]

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231. NAT'L ENERGY POL'Y DEV. GROUP, *supra* note 2, ch. 8, *Strengthening Global Alliances: Enhancing National Energy Security and International Relationships.*

232. *Id.*

233. Article 4 of the United Nations Framework Convention on Climate Change, signed by President Bush and ratified by the United States Senate in 1992, commits parties to

> formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removal by sinks of all greenhouse gases . . . . [and to] promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases . . . .

United Nations Framework Convention on Climate Change, May 9, 1992, art. 4, 1771 U.N.T.S. 107, 170.

234. The United States Senate passed a nonbinding resolution in 1996 opposing any climate change treaty unless it required meaningful participation from developing countries and would do no harm to the United States economy. Congress enacted riders to appropriations bills in Fiscal Years 2000 and 2001 that

There is broad agreement in the United States and around the world that the threat of climate change is serious. The National Academy of Science's National Research Council, Committee on the Science of Climate Change, issued a report in 2001 in response to a Bush administration request for an assessment of the certainties and uncertainties surrounding climate change.[235] The report concluded that greenhouse gases are accumulating in earth's atmosphere as a result of human activities, causing surface air temperatures and subsurface ocean temperatures to rise.[236] The causes of these irregularities and the disparities in the timing are not completely understood.[237] The changes observed over the last several decades are likely mostly due to human activities, but we cannot rule out the possibility that some significant part of these changes is also a reflection of natural variability.[238] The wide range of uncertainty in these estimates reflects both the different assumptions about future concentrations of greenhouse gases and aerosols in the various scenarios considered, as well as the differing climate sensitivities of the various climate models used in the simulations.[239]

The likely impacts of climate change are significant. In the short-term, agriculture and forestry might benefit from carbon dioxide fertilization and an increased water efficiency of some plants at higher atmospheric carbon dioxide concentrations.[240] Hydrologic impacts could be significant over the western

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prohibited any spending on implementing the Kyoto Protocol. The Clinton administration signed the Kyoto Protocol in 1998, but never submitted it to Congress for ratification. The administration insisted on flexibility measures, including emission trading and use of carbon sequestration projects such as planting trees and using conservation tilling practices to generate credits. In March 2001, the Bush administration announced the United States would no longer participate in Kyoto negotiations and promised to develop a new approach later that year. Despite United States opposition, Japan, Canada, Russia, Australia, the European Union, and other industrialized nations came to an agreement in July 2001 that paved the way for ratification of the Kyoto protocol, without the United States, in 2002. *See* Gary Bryner, *Congress and the Politics of Climate Change, in* CLIMATE CHANGE AND AMERICAN FOREIGN POLICY 111–30 (2000).

235. COMMITTEE ON THE SCIENCE OF CLIMATE CHANGE, NATIONAL RESEARCH COUNCIL, CLIMATE CHANGE SCIENCE: AN ANALYSIS OF SOME KEY QUESTIONS 1 (2001).

236. *Id.*

237. *Id.* at 3.

238. *Id.* at 1.

239. *Id.* at 3.

240. *Id.*

United States, where much of the water supply is dependent on the amount of snow pack and the timing of the spring runoff, and increased rainfall could impact pollution runoff and flood control.[241] Higher sea levels and increased wind and flood damage might result.[242] Climate change may affect the incidence of infectious disease: cold-related stress would decline in a warmer climate, while heat stress and smog induced respiratory illnesses in major urban areas would increase, if no adaptation occurred.[243]

Uncertainty means that climate threats may be more disruptive and catastrophic than we fear, or, alternatively, more modest and less painful than we envision. A December 2001 National Academy of Sciences report concluded that climate changes could occur with startling speed.[244] Throughout history, abrupt changes have been common when the climate was forced to change rapidly: "The abrupt changes of the past are not fully explained yet, and climate models typically underestimate the size, speed, and extent of those changes. Hence, future abrupt changes cannot be predicted with confidence, and climate surprises are to be expected."[245] The report found that "severe droughts and other regional climate changes during the current warm period have shown similar tendencies of abrupt onset and great persistence, often with adverse effects on societies."[246]

Not only is the Bush administration's (and Congress's) failure to adequately address the threat of climate change in energy policy inconsistent with the predominant view of scientists, it is also well behind the thinking of many business executives.[247] Many companies have voluntarily committed to re-

241. *Id.*
242. *Id.*
243. *Id.*
244. COMMITTEE ON ABRUPT CLIMATE CHANGE, NATIONAL RESEARCH COUNCIL, ABRUPT CLIMATE CHANGE: INEVITABLE SURPRISES 1 (2001).
245. *Id.*
246. *Id.*
247. For a summary of the administration's climate plan, see Press Briefing, National Security Advisor Condoleezza Rice on the President's Trip to Europe, *available at* http://www.whitehouse.gov/news/releases/2001/07/20010713-3.html (last visited Nov. 18, 2001). For more on the president's concerns about climate change, see Katharine Q. Seelye, *In a Shift, White House Cites Global Warming as a Problem*, N.Y. TIMES, June 8, 2001, at A18; John J. Fialka & Geoff Winestock, *Future of Kyoto Protocol Minus U.S. Is Uncertain,* WALL ST. J., July 16, 2001, at A2.

duce their greenhouse gas emissions. The Business Environmental Leadership Council, for example, includes on its roster a number of companies and the commitments they have made to reduce greenhouse gas (GHG) emissions.[248]

A *Wall Street Journal* report on utility companies and climate change reported that many utility companies have been more anxious to address climate change issues than the Bush administration.[249] These utility executives have taken the following stance: "1) Although the science remains incomplete, they must treat global warming as real. 2) Carbon emissions are part of the problem. 3) Electric utilities will be forced to reduce CO_2 emissions while producing more electricity."[250] The major fear of these executives is uncertainty—they may be required to make major investments to reduce sulfur, mercury, and nitrogen emissions, and then have to make a new round of investments to reduce carbon emissions. They also face the daunting task of complying with the new source requirements of the Clean Air Act when they construct new facilities, as well as when they expand the capacity of existing ones. They must simultaneously address State Implementation Plan requirements and state regulations designed to implement the regional haze rule.[251]

The Bush administration has rejected ratification of the Kyoto Protocol. In February 2002, the administration's Council of Economic Advisers (CEA) suggested a modest reduction in United States GHG emissions through a voluntary program

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248. These companies include: Alcoa (reduce GHG emissions twenty-five percent below 1990 levels by 2010); Baxter International (reduce GHG emissions thirty percent from 1990 levels by 2005); British Petroleum (reduce GHG emissions ten percent below 1990 levels by 2010); DuPont (reduce GHG emissions sixty-five percent below 1990 levels by 2010); Entergy (stabilize carbon monoxide emissions at 2000 levels through 2005); IBM (reduce GHG emissions from semiconductor manufacturing by forty percent by 2005); Intel (reduce GHG emissions by ten percent by 2010 from 1995 levels); Ontario Power (stabilize GHG emissions at 1990 levels beyond 2000); Rio Tinto (reduce GHG emissions per unit of production by five percent by 2001); Royal Dutch/Shell (reduce GHG emissions by ten percent below 1990 levels by 2002); Toyota (reduce GHG emissions ten percent below 1990 levels by 2010); TransAlta Corporation (zero net GHG emissions from Canadian operations by 2024). Pew Center on Global Climate Change, *Policymakers' Guide—Science and Impacts, at* http://www.pewclimate.org/belc/ (last visited Feb. 22, 2002).

249. David Wessel, *Utilities May Be Greener Than Bush*, WALL ST. J., May 10, 2001, at A1.

250. *Id.*

251. *See* discussion *supra* notes 183–210.

that was "indexed to economic output or other measures of economic activity."[252] These "emission intensity" targets would expand or contract with economic growth; the nation would have easier targets to meet if economic growth was greater than growth in emissions.[253] The administration proposed an eighteen percent decline in GHG "intensity" (the ratio of emissions to economic activity) over ten years, which, according to economic growth projections, would produce a 4.5 percent decrease in emissions by 2012 from the business as usual projections.[254] The CEA argued that economic growth, energy use, and carbon dioxide emissions are linked, and "a fixed emission limit harms the economy."[255]

While the debate over United States policy continues, utility executives are exploring ways of encouraging companies to reduce their carbon dioxide emissions by giving them credits for those reductions, which could in turn be used when a regulatory program capping emissions is put in place.[256] The uncertainties facing utility executives who make investment decisions in regard to upgrading facilities, building new plants, and determining the mix of power sources are daunting. They fear major investments may quickly become obsolete and wasteful by new regulatory decisions. The CEO of one Midwest company summarized the uncertainty surrounding greenhouse gases: "If CO_2 requirements are imposed that compel massive expenditures, . . . the sizeable investments we will make to install pollution-control equipment over the next 10 years could be wasted."[257] From their perspective, there is a great need to develop a long-term regulatory framework that provides some certainty in which companies can make investment decisions.[258] As one environmental expert for a large international

252. Julie Vorman, *White House Gives Glimpse of Greenhouse Gas Goal*, Feb. 5, 2002, *at* http://www.reuters.com/news_article.jhtml?type=search&StoryID=572494; the CEA report is available at http://www.whitehouse.gov/cea/pubs (last visited Mar. 6, 2002).

253. Dana Milbank & Eric Pianan, *Global Warming Plan Due*, WASH. POST, Feb. 6, 2002, at A2.

254. R. Glenn Hubbard, chairman of the President's Council of Economic Advisers, *Realism in Cutting Emissions*, N.Y. TIMES, Feb. 15, 2002, at A21.

255. *Id.*

256. *Id.*

257. Wessel, *supra* note 249, at A1.

258. A four pollutant bill that includes carbon dioxide, for example, would help provide that context, and at least some companies appear to be willing to accept carbon dioxide regulation as part of a comprehensive package that includes

energy company explained, "[w]hat businesses want is policy certainty. Bush has injected only turbulence."[259]

Part of the strategy developed by these companies is to achieve emission reduction goals through emissions trading programs.[260] These programs encourage corporate officers to aggressively pursue emissions reduction by tying compensation and promotion to achievement of these goals. Divisions generate emission credits through instituting changes in materials or process and by efficiency improvements that reduce emissions. The companies then allow the divisions to meet their goals by buying and selling these emission credits, and by purchasing carbon credits from agricultural practices such as conservation tilling, tree planting, and other activities that sequester carbon.[261]

British Petroleum (BP) was one of the first companies to take action on GHG emissions. In September 1998, CEO Sir John Browne pledged that by the year 2010, BP would reduce its emissions of greenhouse gases by ten percent from 1990 levels.[262] To accomplish that goal, the company instituted a company-wide emissions trading system to meet its goal in the most cost effective way possible.[263] BP put in place a pilot trading system in 1998 and 1999.[264] The company then launched its full trading system in January 2000.[265] During the first year, the company traded over 1.5 million tons of emissions.[266] For example, a BP chemical facility in the United Kingdom that could not reduce its emissions purchased 20,000 metric tons of emissions credits from a BP pipeline in the North Sea.

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market mechanisms that allow firms the flexibility to find the most cost-effective emission reductions. The chief executive of Exelon Corporation, a big Chicago utility, believes that "[t]here's mandatory carbon capping in the long-term future." *Id.*

259. Andrew C. Revkin & Neela Banerjee, *Some Energy Executives Urge U.S. Shift on Global Warming*, N.Y. TIMES, Aug. 1, 2001, at C1.

260. For an overview of emissions trading programs, see GARY C. BRYNER, NEW TOOLS FOR IMPROVING GOVERNMENT REGULATION: AN ASSESSMENT OF EMISSIONS TRADING AND OTHER MARKET-BASED REGULATORY TOOLS (1999).

261. *See* R. LAL ET AL., THE POTENTIAL OF U.S. CROPLAND TO SEQUESTER CARBON AND MITIGATE THE GREENHOUSE EFFECT (1999).

262. Jeff Morgheim, BP's Emissions Trading System: Harnessing Market Forces to Meet Environmental Goals, Cost-Effectively, Presentation at the Annual Convention of the American Association of Petroleum Geologists (June 3–6, 2001).

263. *Id.*

264. *Id.*

265. *Id.*

266. *Id.*

The manager of the pipeline did not believe that his operations produced any GHGs, but he and others discovered leaks of methane, a potent GHG, from pipeline valves.[267] The company replaced the valves for $2 million and the investment produced a sixty percent return in the form of increased methane in the pipeline that could be sold to customers, as well as gaining the proceeds from the sale of the credits. The company also eliminated the equivalent of 450,000 tons of carbon dioxide emissions.[268]

In addition to these actions, BP evaluates managers on how well they achieve their GHG reduction goals along with more traditional evaluation criteria. BP has also joined with PacifCorp to purchase logging rights for 2.2 million acres of Bolivian rain forest.[269] BP has agreed to protect the lands in order to claim 14.5 million tons of carbon dioxide credits over thirty years.[270] BP's early actions in this area are positioning the company for a "carbon constrained" world.[271] BP reduced its GHG emissions by five percent between 1998 and 2001, and expects to reduce the next five percent by 2005, five years ahead of schedule.[272] By 2001, the company also saved $650 million in reduced costs due to improved efficiency and conservation.[273]

Other companies, such as Shell, Dupont, Lockheed Martin, United Technologies, and Ontario Power, have developed voluntary programs to cap and reduce greenhouse gas emissions. They have found that reducing carbon emissions provides marketing opportunities as well as reducing costs, particularly if addressed early in the planning of new projects. Dupont, for example, has reduced GHG emissions worldwide by more than fifty percent below 1990 levels.[274] Shell has created an incentive program for reducing carbon emissions by changing its internal accounting system and charging divisions $5 per ton for

267. *Id.*
268. *Id.*
269. *Id.*
270. *Id.*
271. *Id.*
272. Speech by Bob Malone, President of United States Operations, BP, sponsored by the Wirth Chair for Environmental and Community Development Policy, University of Colorado at Denver, Feb. 11, 2002.
273. *Id.*
274. Keith Bradsher & Andrew C. Revkin, *A Pre-emptive Strike on Global Warming,* N.Y. TIMES, May 15, 2001, at C1.

carbon dioxide emissions.[275] These firms include carbon trading in their programs in order to encourage innovation. Some companies allow trading across divisions or externally to give managers flexibility in meeting emission goals. The companies can generate credits by reducing emissions and by investing in projects that sequester carbon. Some companies have partnered with groups such as the Iowa Farm Bureau and companies such as Weyerhauser to encourage tilling practices that trap carbon in soils, and with conservation groups such as the Nature Conservancy to foster increased tree planting.[276] Five utilities—Enron Corporation of Houston;[277] El Paso Energy Corporation of Houston; Calpine Corporation of San Jose, California; Trigen Corporation of White Plains, New York; and NiSource, Inc. of Merrillville, Indiana—called for a mandatory cap on carbon dioxide emissions that would decline each year if the Bush administration would develop a national emissions trading system.[278] Industry groups are also trying to develop a voluntary program that can generate a consensus.[279] One proposal, called a "soft cap," provides that companies negotiate contracts with the federal government to reduce carbon dioxide; once these contracts are signed they become binding commitments.[280]

There are numerous challenges to be addressed in developing carbon trading programs in the absence of a national mandatory system.[281] These include establishing emission caps for GHGs, identifying the most cost-effective processes wherein

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275. *Id.*

276. *Id.*

277. Enron's bankruptcy filing in December 2001 effectively removed the firm from participating in this venture.

278. John J. Fialka, *Utilities Make Own Plans for CO_2 Curbs*, WALL ST. J., May 4, 2001, at A2.

279. *Id.*

280. *Id.*

281. Skeptics rightly warn that trading programs, if not carefully designed, may allow us to escape tough choices such as changes in behavior and consumption, and will produce only hot air. Trading debates can divert attention from pursuing clearly beneficial actions such as investing in energy efficiency, cleaner fuels, and in mitigation of any effects from climate change. But as the history of other trading programs show, such as the acid rain sulfur dioxide program created in 1990, emissions trading can help generate broad public support for new environmental protection programs and overcome political obstacles to new pollution reduction policies. *See* GARY BRYNER, NEW TOOLS FOR IMPROVING GOVERNMENT REGULATION: AN ASSESSMENT OF EMISSIONS TRADING AND OTHER MARKET-BASED REGULATORY TOOLS 21 (1999).

emission reductions can occur, quantifying emission reductions of GHGs, calculating carbon equivalents to account for differences in GHGs, verifying that reductions have occurred, ensuring emission caps have been achieved, and preserving credits for use in future regulatory requirements.[282] Companies that are leading the way with voluntary carbon trading programs are gaining valuable experience that will shape the carbon regulatory programs to come. Particularly important is the experience companies can gain in trading carbon sequestration credits. Challenges for policy-makers include determining how to quantify GHG reduction equivalents, verifying that sequestration activities have occurred, managing an effective accounting system for trades, and ensuring credits reflect changes in tilling, planting, and harvesting forests. More broadly, policymakers need to determine how to put in place a carbon trading program that provides real, verifiable, and permanent (or at least long-term) reductions in GHGs. All this must take place within a system that is stable, predictable, and flexible. Voluntary carbon trading programs can produce valuable experience that can guide policy-makers in designing more flexible, predictable, and efficient regulatory programs.

Carbon trading is only part of an efficient and effective response to reducing the threat of climate change and achieving energy goals. The Bush administration is lagging well behind industry groups and the governments of other countries in developing energy policies that move the United States beyond fossil fuels. Rather than taking prudent steps to ensure against the serious threats of climate change, the Bush administration has been content to assume that the majority of the world's scientists and governments are wrong. Investing in conservation, efficiency, and cleaner fuels are essential steps in reducing America's contribution to the threat of climate change. That goal is clearly compelled by the simple fact that the United States is the major source of GHGs, yet it is the poorest residents of the world that will suffer the consequences as climate risks unfold. Unlike residents of the wealthy world that will be able to insulate themselves from at least some of the consequences of climate change, poor people will suffer the brunt of the problems for which they are the least responsible. It is morally untenable for the United States to argue that our

282. *Id.* at 22–23.

only concern is, as President Bush puts it, to protect Americans' high consumption way of life.[283] Until the National Energy Plan takes seriously the threat of climate change, and catches up with innovative industry practices already in place, it will be incomplete.

B. Expanding Energy Development and Preserving Federal Lands

The four main solutions to the energy challenges facing the nation proposed by the Bush administration in the National Energy Plan—expanding domestic energy production, expanding production and distribution of electric power, increasing conservation and efficiency in energy use, and producing more power from cleaner fuels—are intricately intertwined. In order to preserve undeveloped public lands, however, energy policies must promote conservation, efficiency, and alternative fuels, and minimize exploration and development of energy resources on these lands. The Bush energy plan urges Congress to open public lands to oil and gas development, although, with the exception of ANWR and the National Petroleum Reserve in Alaska, it does not specify which public lands ought to be opened for exploration. The public lands-related part of the plan:[284]

1. urges Congress to open 1.5 million acres, eight percent of ANWR, to oil exploration;
2. recommends the construction of a pipeline to deliver natural gas from Alaska to the lower forty-eight states;
3. suggests the Interior Department consider additional "environmentally responsible" oil and gas development in the National Petroleum Reserve in Alaska;
4. suggests the Interior Department reassess decisions it has made to withdraw certain lands from energy exploration and development, and to simplify its leasing policy so that more oil and natural gas are produced, including in the Outer Continental Shelf;

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283. Ben White, *Leaked Memo Says GOPers Must "Carterize" the Dems to Win Support for Their Energy Policy*, GRIST MAGAZINE, May 16, 2001, *at* http://www.gristmagazine.com/grist/muck/muck051601.htm.

284. NAT'L ENERGY POL'Y DEV. GROUP, *supra* note 2, at 5-20, 5-21.

5. urges Congress to resolve the legal status of eleven million acres of BLM lands and 1.8 million acres managed by the Fish and Wildlife Service that have been designated by the agencies as wilderness study areas, and to determine which lands could be opened up to energy development.

Congressional Republicans have also vowed to open public lands to energy development. House Resources Committee chair Jim Hansen (R-Utah) said in introducing a March 2001 hearing, "[i]t's time for a course correction in the management of our public lands. It's ironic that we are faced with an energy crisis while we have abundant reserves of oil, coal, natural gas and hydro-electricity locked up in our public lands and waters."[285] Hansen believes that "billions of barrels of oil and natural gas are locked beneath public lands . . . ."[286] Montana governor Judy Martz has complained that the Clinton administration had tried to "lock up the West" and prohibit the development of the region's resources, claiming that "we have seen our ability to responsibly develop those resources grind to a halt . . . ."[287] Wyoming governor Jim Geringer claims that "Wyoming's energy potential could completely replace the entire OPEC production for the next forty-one years."[288]

There is little agreement concerning the role public lands have played in energy development. Representative Hansen, for example, argues that domestic natural gas production has steadily declined since 1973.[289] But natural gas production on public lands has increased while production on private lands has fallen.[290] A Natural Resources Defense Council report found that energy production on public lands steadily increased between 1988 and 1998.[291] During those years, oil production on public lands grew by thirty-nine percent, natural gas by

285. Brent Israelson, *Land, Energy Are Focus Of Hearing*, SALT LAKE TRIB., Mar. 8, 2001, at A9.

286. Lee Davidson, *Hansen Hopes to Open Doors to Develop Energy Resources*, DESERET NEWS (Salt Lake City, Utah), Mar. 7, 2001, at B3.

287. Mike Soraghan, *West's Energy Output Hobbled, Governors Say*, DENV. POST, Mar. 8, 2001, at C1.

288. Kim Murphy, *Wells in the Wilderness?*, MILWAUKEE J. SENTINEL, May 13, 2001, at 13A.

289. Israelson, *supra* note 285, at A9.

290. NATURAL RESOURCES DEFENSE COUNCIL, SLOWER, COSTLIER, AND DIRTIER: A CRITIQUE OF THE BUSH ENERGY PLAN 22–23 (2001).

291. *Id.* This is the latest year for which data are available.

twenty-six percent, and coal by more than twenty percent.[292] The United States Department of the Interior reported in January 2001 on the production of oil, gas, and coal from offshore and onshore Federal and Indian lands:

Years	Oil (billion barrels)	Gas (billion cubic ft.)	Coal (metric short tons)
1993–2000*	18,615	156,705	8,477
1989–1992	10,788	73,933	4,004
1981–1988	25,154	142,674	6,983

*Preliminary data[293]

The contribution of oil and gas production on federal lands grew from thirteen percent of total domestic production in 1992 to twenty-five percent in 1999.[294] Despite this increase, domestic oil production in the United States peaked at 9.6 million barrels a day in 1970 and has declined for three decades.[295] Some industry officials, such as Ed Porter of the American Petroleum Institute, acknowledge that natural gas production had increased, but argue for expanded drilling on public lands to capture the remaining resources.[296] In reality, however, drilling for oil and natural gas and mining coal on public lands will not turn the United States into a self-sufficient producer of energy and allow the nation to be insulated from international developments.[297]

1. Drilling in Alaska

Drilling in ANWR is a particularly complicated, highly contentious, and politically sensitive issue. An adequate dis-

292. *Id.*

293. *Hearing to Consider National Energy Policy With Respect to Development of Domestic Oil and Natural Gas Resource Before the Senate Comm. on Energy and Natural Resources*, 107th Cong. Sess. 1 (2001) (Testimony of David J. Hayes, former Deputy Secretary of the Department of the Interior), *available at* http://energy.senate.gov/ hearings/107-1/full_committee/oil_gas/Hayes.htm.

294. *Id.*

295. *Id.*

296. Brent Israelson, *Panel to Discuss Plans to Increase Drilling for Natural Gas*, SALT LAKE TRIB., Mar. 15, 2001, at D7.

297. The United States has not been self-sufficient in energy since the 1950s and its dependence on imported energy has grown constantly since then. *See* U.S. Department of Energy, Energy Information Agency, ANNUAL ENERGY REVIEW, at xvii (2000).

cussion of it is well beyond the scope of this Article. The last environmental impact statement on drilling for oil in ANWR was completed more than a decade ago, and oil exploration and extraction technologies have evolved considerably since then.

Several issues divide proponents and opponents of drilling. First, oil company officials have repeatedly argued that development of the resources can occur with minimal environmental impacts; environmentalists argue that the area is a unique pristine ecosystem that cannot be preserved intact if development occurs, and the area should be protected as a unique global resource.[298] Second, oil company executives have estimated that the refuge contains ten to fifteen billion barrels of oil, enough to supply national needs for twenty to twenty-five years; environmentalists argue that the likely volume of oil in ANWR would only meet domestic needs for six months.[299] Third, most Alaskan elected officials and some indigenous peoples favor development; the Gwich'in tribe and other native groups seek to preserve the land from further development.[300]

Conservationists have declared protection of the refuge to be a top priority, and Democratic leaders of the Senate regularly declared in the spring and summer of 2001 that opening ANWR to development was simply not an option. But the House of Representatives' passage of an energy bill in the summer of 2001 that included drilling in ANWR[301] demonstrates that the refuge's future is uncertain. The strong opposition to ANWR development has directed attention to drilling in the public lands of the Rocky Mountain region.

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298. For preservationist arguments, see Alaska Wilderness League, *at* http://www.alaskawild.org (last visited Nov. 18, 2001); WILDERNESS SOCIETY'S QUARTERLY NEWSLETTER (Wilderness Soc'y, D.C.), Summer 2001, *available at* http://www.wilderness.org/newsletter/2001summer.htm (last visited Nov. 18, 2001). For an outline of the case for developing ANWR, see *Hearing to Consider National Energy Policy With Respect to Development of Domestic Oil and Natural Gas Resource Before the Senate Comm. on Energy and Natural Resources*, 107th Cong. Sess. 1 (2001) (testimony of Mark Rubin, American Petroleum Institute), *available at* http://energy.senate.gov/ hearings/107-1/full_committee/oil_gas/Rubin.htm (last visited Nov. 18, 2001).

299. *See* sources cited *supra* note 298.

300. *See* sources cited *supra* note 298.

301. H.R. 4, 107th Cong. (2001).

2. Coal, Public Lands, and the Colorado Plateau

While most public lands are already open to energy development, many of the resources that have been identified are located within or near public lands that have been given some protective status such as wilderness, wilderness study areas, national parks, national forests, and wildlife refuges. A 1999 National Petroleum Council report found that about ten percent of the nation's total natural gas resources are located in the Rocky Mountains, and that forty percent of those reserves are off-limits to drilling (only nine percent of lands with gas resources are completely closed to leasing; an additional thirty-two percent are closed seasonally, typically to protect breeding wildlife).[302] The National Energy Plan relied on that data to argue that new lands should be opened to drilling.[303] The Rocky Mountain region contains some 137 trillion cubic feet of natural gas, enough to supply the nation's needs for at least six years at current rates of use.[304] Of these, twenty-nine trillion cubic feet are located in protected areas, and another ten trillion could not be developed if the Clinton plan to protect Forest Service roadless areas from development is pursued by the Bush administration.[305] Threats to public lands include not only drilling, but also pipelines, transmission lines, power plants, and roads.

Many coal reserves on public lands are located near parks, wilderness areas, national forests, and other lands with great ecological and recreational value. The USGS's February 2001 assessment of the nation's coal resources on the Colorado Plateau (Arizona, Colorado, New Mexico, and Utah) estimated that there were more than one-half trillion short tons of unmined coal in beds greater than one foot in thickness.[306] As of 1995, the Plateau had produced a total of eighty-five million

302. Michelle Nijhuis, *Energy Plan Eyes the Rockies*, HIGH COUNTRY NEWS (Paonia, Colo.), June 4, 2001, at 3; John Heilprin, *Norton Interested in Oil, Gas in Rockies*, GREAT FALLS TRIB. (Great Falls, Mont.), Feb. 13, 2001, at 1M.

303. NAT'L ENERGY POL'Y DEV. GROUP, *supra* note 2, ch. 5, at 10.

304. Douglas Jehl, *Drilling Studied in Off-Limits Areas of Rockies*, N.Y. TIMES, Apr. 6, 2001, at A12.

305. *Id.*

306. MARK A. KIRSCHBAUM, EXECUTIVE SUMMARY—GEOLOGIC ASSESSMENT OF COAL IN THE COLORADO PLATEAU: ARIZONA, COLORADO, NEW MEXICO, AND UTAH 4 (U.S. Geological Survey, Prof'l Paper No. 1625-B, 2001).

short tons of coal.[307] Most of the coal is used in those states and Nevada; 2.5 million tons in 1995 were exported to other nations.[308]

The study then estimated how much coal was located in areas where mining is restricted for environmental, social, technical, and other reasons, and found that from forty to eighty-six percent of the half-trillion tons of that resource is currently available for mining.[309] Coal zones in the Colorado Plateau vary in concentration from less than ten million to nearly seventy million short tons per square mile, and are generally of lower sulfur content and ash yields in comparison with other sources of United States coal.[310] The survey also estimated that the Plateau contains as much as 173 trillion cubic feet of in-place coal-bed gas resources in three producing areas: the Piceance Basin in Colorado, the San Juan Basin in Colorado and New Mexico, and the Uinta Basin in Utah.[311] The USGS study identified twelve areas in detail, and identified possible impacts on protected lands if coal resources were developed. This list of development-preservation conflicts includes the following:

Assessment Unit	Resource
Kaiparowitz Plateau	Included in the Grand Staircase Escalante National Monument
Henry Mountain Basin	Three main deposits; may be limited due to lack of infrastructure and proximity to Capitol Reef and Canyonlands National Parks and Glen Canyon National Recreation Area
Southern Wasatch Plateau	Federal governments own ninety-six percent of the land and manages ninety-four percent of the land; most is in the Manti-LaSal National Forest
Northern Wasatch Plateau	Eighty-five million tons of coal has been mined; may still contain 1.1 billion short tons
Deseardo Unit of the Lower	Ninety-nine percent is federally owned; good development potential in White River Coal Field
Danforth Hills	Federal government owns eighty-nine percent of coal, manages twenty-five percent of surface lands

307. *Id.* at 1.
308. *Id.*
309. *Id.* at 4.
310. *Id.* at 5.
311. *Id.* at 1.

Assessment Unit	Resource
Yampa	The most significant coal-producing area in Colorado; federal government owns sixty-nine percent of the coal, manages seven percent of surface; coal-bed methane potential
Southern Piceance	Thirty-four billion tons are in beds of mineable thickness (greater than three feet) and depth (less than 6,000 feet). Federal government owns seventy-four percent of coal and manages sixty-four percent of surface lands; much of the coal lies under the Grand Mesa and Gunnison National Forests
Somerset	Several existing large underground mines. Federal agencies manage sixty-four percent of lands; potential problems posed by steep topography, landslides, and restrictions of rail service.
San Juan Basin	Two hundred thirty billion short tons; 150 billion are federally owned. Strip mines have produced 350 million short tons; they produced fifteen million tons in 1998, most of which feed two mine-mouth power plants. The basin is the world's largest producer of coal-bed methane, producing one trillion cubic feet of gas a year, with reserves of at least fifty trillion cubic feet.
Bisti	One percent of the resource has been mined; forty-seven percent is recoverable, but none of the coal is Clean Air Act-compliant and there is no rail infrastructure and trucking the coal would be expensive.
Black Mesa Basin	Within the Hopi and Navajo Reservations; future development potential.[312]

3. Energy and Proposed Wilderness Areas, Parks, and Forests

There are numerous conflicts between developing energy resources and preserving protected public lands. A draft report from the Interior Department circulated in April 2001 recommended that millions of acres of lands currently being managed

312. *Id.* at 6–7.

as protected areas be opened for energy development.[313] The report urges Congress to decide which of the seventeen million acres in eleven western states that have been protected as wilderness study areas (WSA) should be designated as wilderness and which should be opened to development.[314] It also recommends that the Forest Service modify forest plans to allow for more energy development.[315] Nowhere is the conflict between wilderness designation and energy development more pronounced than in Utah. Wilderness advocates have identified more than nine million acres in the state that qualify for wilderness designation.[316] The White River, Lower Bitter Creek, and Desolation Canyon in the Book Cliffs, Duma Point northwest of Moab, Lockhart Basin/Hatch Point east of Canyonlands National Park, and ten other areas have been identified by the Southern Utah Wilderness Alliance as particularly threatened by energy development.[317]

Areas surrounding Canyonlands National Park in Utah are particularly attractive to energy companies. Veritas DGC Land, Inc. has applied for permits from the BLM to search for oil and gas deposits in a twenty-six square mile area east of the park.[318] There are currently four small production wells in the area, and Veritas has proposed laying seismic receiver cable to measure the reflection of vibrating waves sent into the earth by machines.[319] The area is a popular recreation site for backpackers, mountain bikers, and off-road vehicle (ORV) users, and is near popular scenic routes such as State Road 313, proposed for "scenic byway" status, and Dead Horse Point State Park.[320] Energy exploration threatens wildlife, pinyon and juniper trees, and fragile cryptobiotic desert soils.[321] BLM officials have acknowledged that the 150 miles of new roads to be created for the seismic exploration would likely attract ORV

313. Tom Kenworthy, *Open Land to Drilling, Report Urges*, USA TODAY, Apr. 5, 2001, at 1A; *see* Jehl, *supra* note 304.

314. Kenworthy, *supra* note 313, at 1A; *see* Jehl, *supra* note 304.

315. Kenworthy, *supra* note 313, at 1A; *see* Jehl, *supra* note 304.

316. Letter from Larry Young, Executive Director, Southern Utah Wilderness Alliance, REDROCK WILDERNESS (S. Utah Wilderness Alliance, Salt Lake City, Utah), Summer 2001, at 9–10 (copy on file with author).

317. *Id.*

318. Brent Israelson, *Canyonlands Oil Boom?*, SALT LAKE TRIB., Mar. 4, 2001, at B1.

319. *Id.*

320. *Id.*

321. *Id.*

enthusiasts, and the BLM has been struggling to contain ORV traffic.[322]

In 1997, in order to protect its jagged peaks and diverse wildlife, the United States Forest Service banned oil and gas drilling for ten to fifteen years in that portion of the Lewis and Clark National Forest that is part of the Overthrust Belt, a resource-rich mineral formation that primarily traverses Montana, Idaho, and Wyoming.[323] Interior Secretary Gale Norton said in early 2001 that the Overthrust Belt was one of the areas "that would be studied as part of an across-the-board look at energy resources."[324] During the Clinton administration, however, the supervisor of the Lewis and Clark National Forest had suspended the granting of leases for oil and gas in Montana's Rocky Mountain division of the forest, concluding that drilling would destroy the "special feeling" of the region, and that the need for new energy resources "does not outweigh the intrinsic value of the lands in and along the Rocky Mountain front."[325] The supervisor had also suspended forty-five current oil and gas leases covering 116,000 acres.[326]

The Rocky Mountain division is one of seven units of the Lewis and Clark National Forest: the western half is a section of the Bob Marshall Wilderness Area, and the eastern half is a mountain front that slopes to the prairie and is the place where drilling has been proposed. Petroleum companies challenged the decision in the Ninth Circuit Court of Appeals, arguing that the forest supervisor had violated federal law by making the decision on the basis of religious values because of her invocation of "spirituality" and by introducing subjective and emotional concerns into the decision.[327] The companies also claimed she ignored eighty years of precedent allowing resource development in national forests.[328] Plaintiffs argued that "[w]e respect the issue of preserving the value of place, but oil and gas drilling will have no impact whatsoever on that

322. *Id.*

323. Michelle Nijhuis, *Energy Plan Eyes the Rockies*, HIGH COUNTRY NEWS (Paonia, Colo.), June 4, 2001, at 3.

324. Heilprin, *supra* note 302, at 1M.

325. Liz Halloran, *Fuel: The Great Divide; The Nation's Debate Over Gas and Oil Drilling Simmers in an Unspoiled Montana Forest,* THE HARTFORD COURANT, Apr. 22, 2001, at A1.

326. *Id.*

327. *Id.*

328. *Id.*

value . . . ."[329] An environmental lawyer suggested there is a stark choice between development and preservation in the area: "It's almost like the original temptation. We have this incredibly beautiful place that we can either leave alone or go in and grab the apple."[330]

Other areas in the West illustrate the conflict between preservation and energy development. In Wyoming, seventeen million of the state's eighteen million acres of public lands—ninety-four percent—are open to development. The 600,000-acre Jack Morrow Hills is part of the Red Desert; former Interior Secretary Babbitt toured the area and would have suggested it for designation as a national monument, but the Wyoming congressional delegation in 1950 had pressed Congress to pass an amendment to the Antiquities Act prohibiting presidents from declaring national monuments in the state without congressional approval.[331] The BLM developed a plan to reopen some lands to oil and gas development, but in December 2000, Secretary Babbitt ordered the agency to come up with a new plan that gave top priority to conservation.[332] The BLM had argued that it was possible to balance oil and gas development with preservation of the desert elk herd in the area, and other proponents of drilling argued that the benefits of energy development far outweighed the environmental costs.[333] But an official of Questar, a natural gas company operating in the area, focused the debate more precisely, saying "[y]ou can't have Wyoming be a pristine, untouched area and still be a major natural gas producer."[334]

Similar disputes have arisen elsewhere in the state, such as in the Bridger-Teton National Forest in northwest Wyoming. In a December 2000 draft environmental impact statement, the forest supervisor announced that oil and gas drilling would not be allowed on some 370,000 acres near the Gros Ven-

329. *Id.*

330. Harvey Locke, a former environmental lawyer, as quoted in *id.*

331. Mac Blewer, *Energy Policy Should Avoid Endangered Wildlands*, Wyoming Outdoor Council, *at* http://www.wyomingoutdoorcouncil.org/news/wotr033001.html (Mar. 2001).

332. Douglas Jehl, *Gas-Rich Desert Will Test Bush Resolve*, N.Y. TIMES, Feb. 4, 2001, at A1.

333. *Id.*

334. *Id.*

tre wilderness area southwest of Jackson Hole.[335] Industry groups first proposed drilling in 1996, and the forest plan provided for drilling in the area. More than seven thousand people submitted comments on the proposal; eighty-five percent of the respondents opposed development, according to preservationists.[336] Environmentalists have successfully blocked development to protect wetlands and forage for elk, bear, coyotes, wolves, and other wildlife, several blue ribbon trout streams, and four rivers eligible for National Wild and Scenic River designation. In addition, migratory patterns of wildlife from Yellowstone National Park would be threatened by the development.[337] The EPA's position is that the area "is an important buffer between wilderness areas and developed private lands,"[338] and represents essential protection for endangered species habitat. Development groups charge the Forest Service with trying to create a de facto wilderness area.[339] Others say the choice is simple: "It gets down to, do you want cheap oil and gas, or do you want Yellowstone?"[340]

Other wild lands that have been identified as vulnerable to energy development include the Little Missouri National Grassland in North Dakota and the Vermillion Basin in northwest Colorado. The grasslands are home to bighorn sheep, a possible venue for reintroduction of the black-footed ferret (the rarest mammal in North America), and two-hundred-year-old Ponderosa pines that are threatened by oil development. The Vermillion Basin includes desert, mountains, rugged badlands, and numerous historic and scientific resources that are surrounded by oil and gas facilities that threaten to spread into the basin.[341]

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335. E-mail from The Wilderness Society, to Gary C. Bryner (Feb. 9, 2001) (*WildAlert* newsletter, an e-mail action alert system operated by The Wilderness Society) (on file with author).

336. Dustin Bleizeffer, *Plumbing the Greater Yellowstone Ecosystem*, CASPER STAR-TRIBUNE (Casper, Wyo.), July 17, 2001, at B1.

337. *Id.*

338. Rachel Odell, *Forest Supervisor Faces Down Oil Drilling*, HIGH COUNTRY NEWS (Paonia, Colo.), Mar. 26, 2001, at 5.

339. Todd Wilkinson, *Drilling in Rockies Sharpens Split Over Wilderness vs. Oil*, CHRISTIAN SCI. MONITOR, Apr. 13, 2001, at 2.

340. Meredith Taylor, Wyoming Outdoor Council, *quoted in* Kim Murphy, *Gas Bounty Amid Natural Treasures: A Volatile Mix*, L.A. TIMES, Apr. 30, 2001, at A1.

341. NAT'L RES. DEF. COUNCIL, *Slower, Costlier, and Dirtier: A Critique of the Bush Energy Plan*, at 23 (May 2001), *available at* http://www.caglobalwarming.org/energy/pdf/nrdc_response.pdf.

4. Energy, Water, and Coal Bed Methane

The energy-environmental tradeoffs in Wyoming and elsewhere are not limited to preserving wild lands. The vast coal deposits of Wyoming also contain massive quantities of methane gas, characterized by the industry as the "hottest natural gas play" in North America.[342] While natural gas is a cleaner fossil fuel than coal or oil, it still poses significant challenges for energy policy making. In Wyoming's Powder River Basin, some ten thousand wells have been drilled to tap the estimated twenty-five trillion cubic feet of methane-gas, enough to meet the nation's entire natural gas demand for one year.[343] Industry representatives estimate that the eight million acre basin will eventually have fifty thousand to one hundred thousand producing wells.[344] In order to develop the resource, companies must first pump large quantities of water from the ground, about twelve thousand gallons a day for each well, to release the methane.[345] The development transforms the landscape with pipes, roads, compressor stations, power lines, and discharged water that is often too salty to use for irrigation.[346]

The growing development of methane gas in the 1990s, favored by some because it is easier to extract than coal and burns more cleanly, has pitted energy developers against ranchers, farmers, homeowners, and others who depend on the water. The gas naturally exists mixed with water; when the gas is extracted, the water must be separated, the gas is sent to pipes, and the water is dumped into ponds or injected back into the ground. In Wyoming and elsewhere, local residents believe domestic and stock water wells are drying up or becoming contaminated.[347] Discharge of the water is causing erosion and soil damage.[348] Conversely, company officials insist the water is safe and clean enough for animals to drink.[349]

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342. Powder River Basin Res. Council, *Coalbed Methane Development in Wyoming's Powder River Basin is Transforming the Landscape; PRBRC and Landowners Respond to Prevent Damage*, *at* http://www.powderriverbasin.org (last visited Nov. 18, 2001).

343. Terry McCarthy, *Plumbing the Pasture*, TIME, July 16, 2001, at 22.

344. *Id.*

345. *Id.*

346. *Id.*

347. Todd Wilkinson, *Wyoming Weighs the Price of Prosperity*, CHRISTIAN SCI. MONITOR, Nov. 13, 2000, at 2.

348. *Id.*

349. *Id.*

Many landowners have no control over drilling on their lands since they only own the surface rights. The mineral rights, defined in the homestead acts that were aimed at encouraging the development of the West, are owned by federal, state, and energy companies. Landowners have been forced to allow drilling on lands intended for grazing or hunting.[350] Montana has placed a moratorium on new drilling in the region, and the BLM is preparing an environmental review of the area.[351] Residents of the small southern Colorado town of Cokedale, in Las Animas County, have protested coal bed methane drilling of one hundred wells that produce twenty-four million gallons of waste water a month, because they fear the water will contaminate the shallow wells that residents depend on for domestic water.[352] Conflicts have been difficult to resolve. When residents sued Evergreen Resources, Inc. under the Clean Water Act for violating water pollution laws, the company countersued for slander and trespass, and announced plans to drill a well within a few hundred feet of the home of one of the plaintiffs.[353] These conflicts are likely to grow as energy companies have proposed drilling thousands of new wells in these basins, and new areas may be opened for development.

5. Energy Resources on Tribal Lands

Many energy resources are located on tribal lands, and the conflicts therefore include issues of tribal sovereignty. In some cases, tribes welcome the opportunity for harvesting resources on lands that have seen little economic development. In other cases, development clashes with preservation values and subsistence fishing and farming. The Badger-Two Medicine area within the Lewis and Clark National Forest has been proposed for recognition as a historic site with the National Register of Historic Places because it is a renowned Indian cultural retreat.[354] It is also, however, a potential site for oil and gas ex-

350. McCarthy, *supra* note 343, at 22.

351. Wilkinson, *supra* note 347, at 2.

352. Stuart Steers, *Look Out Below! When a Denver Gas Company Started Drilling Wells in Las Animas County, it Brought Bad Feelings to the Surface*, WESTWORD (Denver, Colo.), Nov. 12, 1998, *available at* http://www.westword.com/issues/1998-1112/feature.html/1/index.html.

353. *Id.*

354. Carol Bradley, *Historic Designation Looms Over Land Struggle*, GREAT FALLS TRIB. (Great Falls, Mont.), May 31, 2001, at 5A.

ploration. It is the only remaining area where the Blackfeet Tribe members are able to hunt, fish, and log timber.[355] The Forest Service estimates that the odds of finding oil and gas is less than one-half of one percent, but Ocean Energy, a Houston-based company, has acquired leases in the area from the Chevron Corporation.[356] Some tribal members argue that the land was never sold by the tribe, but only leased to the federal government for fifty years in 1895.[357]

In Weatherman Draw/Valley of the Chiefs, a 4,200-acre parcel south of Billings, Montana, ten native tribes claim the area as a sacred land and home to ancient art. The tribes, along with the Sierra Club and the National Trust for Historic Preservation, have opposed development, and successfully worked with the BLM to designate it as one of the agency's Areas of Critical Environmental Concern in 1999.[358] For the past seven years, Anschutz Exploration, a Denver energy company, has sought permission from the BLM to explore for oil, arguing that there may be as many as ten million barrels to be harvested.[359] In February 2001, the BLM office in Billings approved one exploratory well.[360] Blackfeet tribal members have proposed allowing Anschutz to drill on the tribe's reservation in northwest Montana, which they believe contains about two billion barrels of oil reserves, in exchange for the company giving up its permit to drill in the Valley of the Chiefs.[361] Not only does energy policy need to provide for environmental preservation and resource development, but it must also ensure that tribal sovereignty and authority over tribal lands and resources is secured.

6. Energy and National Monuments

Much of the Bush administration's interest in developing energy resources on public lands focuses on national monuments. The Clinton administration designated twenty-two new

355. *Id.*
356. *Id.*
357. *Id.*
358. Michael Janofsky, *Art and Oil Are at Center of Montana Fight*, N.Y. TIMES, June 22, 2001, at A16; Associated Press, *Oil Firm Ponders Indian Lease Trade*, BILLINGS GAZETTE (Billings, Mont.), July 17, 2001, at 1A.
359. *See* sources cited *supra* note 358.
360. *See* sources cited *supra* note 358.
361. *See* sources cited *supra* note 358.

national monuments between 1996 and 2001, affecting 6,080,343 acres.[362] The Bush administration, although reputedly considering reversing those actions, has apparently decided not to challenge the creation of the monuments.[363] Instead, it has decided to adjust monument boundaries in response to the wishes of state and local officials, and open the monuments for energy exploration (other proposals are aimed at opening them to hardrock mining).[364] Several monuments have been targeted for development.

The Bush administration and Montana Republican members of Congress are exploring how to open the Upper Missouri River Breaks National Monument in central Montana to coalbed methane development and oil and gas drilling.[365] The Carrizo Plain National Monument in California is likewise under consideration for drilling.[366]

In Utah, Republican members of Congress have argued that the Grand Staircase Escalante National Monument, designated in 1996 by President Clinton, includes coal resources that should be developed.[367] They propose that the boundaries of the monument be reduced and the management plan be altered to provide for coal development.[368] Opponents of development in the region have long argued that much of the coal is highly sulfuric in content and the resources so far removed from railroad lines that the cost of extracting the coal is simply prohibitive.[369] Companies have considered and then rejected, for economic reasons, developing the area's coal resources, and conditions have not materially changed. Coal from other mines in Utah and from other states, such as the Powder River mines in Wyoming, continue to be much cheaper to mine than would be the case in the Grand Staircase area.[370]

Colorado's Canyons of the Ancients National Monument is one of five newly created national monuments that scientists

362. Mark Hertsgaard, *The New Wild Order*, OUTSIDE, Apr. 2001, at 33.
363. Margaret Kriz, *Power Struggle*, NAT'L J., Mar. 31, 2001, at 942.
364. *Id.*
365. WILDERNESS SOCIETY'S QUARTERLY NEWSLETTER, *supra* note 298.
366. *Id.*
367. *Id.*
368. *Id.*
369. *See generally* Gary C. Bryner, *What Does the Grand Staircase-Escalante Mean for Land Protection in the West? Resource Development and Ecological Protection*, 21 J. LAND RESOURCES & ENVTL. L. 567 (2001).
370. *Id.*

from the USGS believe may include moderate to high volumes of oil and gas.[371] The Clinton administration specifically provided that oil production on these monuments lands could continue.[372] The USGS report also indicated that California's Coastal National Monument and Washington's Hanford Reach National Monument may also contain significant energy resources.[373] In July 2001, both the House and Senate voted for an amendment to the Interior Department's appropriations bill that barred new drilling in national monuments.[374] Development of resources within monuments is still a priority for the Bush administration, however.

The discussion above is only a sampling of the issues that must be addressed in a national energy policy that is ecologically sustainable and responsive to the broad range of environmental and economic concerns in the western United States. There is a great need for a creative, visionary energy policy that maintains domestic energy production, increases dramatically conservation and efficiency in energy use, produces much more power from cleaner fuels, and preserves the West's unique and priceless wilderness lands, roadless areas, old-growth forests, desert ecosystems, fragile riparian zones, clean air, and rural communities. An energy policy that simply seeks to develop the cheapest fossil fuels, without paying the true costs of developing and burning them, comes at too high a price for the people of the West and those throughout the world who revel in its spectacular scenery and varied ecosystems.

7. Improving Energy and Natural Resource Policy Making

Some energy development on public lands is part of a balanced, ecologically sustainable energy policy. Which areas should the BLM, Forest Service, Fish and Wildlife Service, and other agencies open to coal mining and oil and gas exploration? How should those decisions be made? What methods and ana-

371. WILDERNESS SOCIETY'S QUARTERLY NEWSLETTER, *supra* note 298.

372. *Id.*

373. Bill McAllister, *Monument Oil Reserve Eyed*, DENV. POST, Mar. 27, 2001, at B1.

374. Cat Lazaroff, *Congress Embroiled in Battles Over Energy Plans*, Environment News Serv. (July 13, 2001), *at* http://ens.lycos.com/ens/jul2001/2001L-07-13-06.html.

lytic tools can they use? What models of public participation and decision-making should they use? President Bush observed in an interview in March 2001 that at least some national monuments should be opened to drilling, stating, "there are parts of the monument lands where we can explore without affecting the overall environment .... It depends on the cost-benefit ratio .... There's a mentality that says you can't explore and protect land .... We're going to change that attitude. You can explore and protect land."[375]

Determining the environmental and other costs of resource development is a complex task, however. Variables include damage to biodiversity, damage to ecosystem services, adverse impacts on air quality, adverse impacts on tourism, costs of infrastructure and community resources, threats to public safety, increased traffic and noise and other impacts on quality of life, and other concerns. Current methodologies used in cost benefit analysis are insufficient to incorporate the wide range of values required in making policies that are ecologically sustainable.[376]

Administration officials have consistently argued that developing new energy supplies and constructing new power plants are the primary solutions to the energy crisis, and that modern technologies allow expanded oil and gas production "with minimal impact on our environment and wildlife."[377] Yet energy production and preservation of wild lands can be pursued together by simply keeping them separate. Development can focus in lands where energy infrastructure already exists, and investments can be made to expand output even if extraction costs increase. Regulatory decisions can ensure that energy costs include the real costs of production, transportation, and management of waste.

The Arctic National Wildlife Refuge, the Forest Service's roadless areas, the BLM's Wilderness Study Areas, and the recently established national monuments are examples of areas where energy development and preservation are mutually exclusive. Richard Fineberg, an environmental consultant in Alaska, argues that the concept of wilderness "is immutable. It

375. President George W. Bush, *quoted in* Mike Soraghan, *Bush: National Monuments Have Oil-Drilling Potential*, DENV. POST, Mar. 15, 2001, at A1.

376. GEOFFREY HEAL, NATURE AND MARKETPLACE: CAPTURING THE VALUE OF ECOSYSTEM SERVICES (2000).

377. Bill McAllister, *Norton Praises Oil-Drilling Efforts*, DENV. POST, Apr. 5, 2001, at 2C.

is like perfection—there are no degrees to it. Oil development in a wilderness, no matter how sensitive, changes the very nature of it. It means it's no longer wilderness."[378] Former Forest Service supervisor Gloria Flora, who suspended the granting of leases for oil and gas in Montana's Rocky Mountain division of the Lewis and Clark Forest in 1997, has become an advocate for acknowledging the emotional, spiritual, and aesthetic connections people have with land: "This land belongs to 280 million Americans, and people have all sorts of attachments to landscapes—cultural, historical, spiritual, emotional. I don't think there's any need for apology for taking that into consideration."[379] Energy policy decisions have such enormous impacts that they must incorporate a much wider range of values than simply seeking to secure supplies at the lowest cost. The shift to greater reliance on renewable energy sources, efficiency, and conservation, rather than expanded development of fossil fuels, makes more possible the balancing of energy needs with other important environmental and cultural values.

CONCLUSION

Energy production and use are fundamentally important to humans. Energy enables us to engage in a wide range of activities that are central to our lives. Unfortunately, however, energy production and use also produce major environmental consequences. Those consequences, not the maintenance of misleadingly low energy prices, or the protection of traditional power industries, or maintenance of unsustainable levels of consumption of natural resources, as politically popular as these goals are, should be at the heart of the formation of energy policy. An ecologically sustainable energy policy promises to reduce American dependence on imported energy resources and promote national security, as well as secure a more hopeful future for generations to come.

The Bush energy plan gives inadequate attention to the need for stronger incentives to promote conservation and renewable sources and the tremendous economic and environmental potential that can come from investments in these ar-

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378. Thomas Friedman, *Drilling in the Cathedral*, N.Y. TIMES, Mar. 2, 2001, at A23.

379. Halloran, *supra* note 325.

eas. The plan also falls short in integrating energy production with the need to continue to improve air quality and the opportunities to preserve biodiversity and wild lands in the face of sprawl and rapid growth in the West. Just as serious as these shortcomings is the failure of the plan to address the threat that current—let alone expanded—use of fossil fuels poses for global warming and climate change. The need to shift away from fossil fuels and towards cleaner fuels is the fundamental energy challenge facing the United States and other nations. The sooner we begin that transition the more likely it is that we will be able to reduce the most disruptive consequences. Unfortunately, the president's plan and the legislation passed by the House of Representatives in August 2001 seek to reinforce and even expand the role of fossil fuels in meeting our energy needs.

This transition can largely be market-driven and need not be managed by government regulators. There is a major disconnect between our reliance on markets for the efficient allocation of resources, and the failure of markets to include the true costs of producing energy from fossil fuels. Many of the environmental costs of fossil fuels are simply not included in the prices we pay for them, and until prices capture the true costs, our market decisions will be flawed. The problem of inadequate pricing of fossil fuels is ultimately a political challenge. Like so many other aspects of our market economy, full cost prices require government intervention to ensure markets function well. Intervention is required to ensure that costs cannot be externalized to third parties, including future generations. The goal of intervention is not to replace market allocations with bureaucratic mandates, but to ensure that the efficient allocation of resources promised by markets is achieved. The result of such policies will certainly increase energy prices at least in the short run, an obviously difficult political challenge, but an unavoidable part of a rational, future-oriented energy policy.