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Mary Anne Sullivan

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VOLUNTARY PLANS WILL NOT CUT GREENHOUSE GAS EMISSIONS IN THE ELECTRICITY SECTOR

by Mary Anne Sullivan*

INTRODUCTION

At the United Nations climate change meetings in Montreal in December 2005, the U.S. Government reaffirmed its commitment to a voluntary, technology-based approach to reducing greenhouse gas (“GHG”) emissions.¹ The United States stood behind this approach even as 157 parties to the Kyoto Protocol voted to take steps to extend the Protocol’s mandatory emissions reductions beyond 2012.² The United States’ faith in a noncompulsory approach comes at a time when voluntary programs have been struggling. The power sector is the largest single U.S. contributor to GHG emissions; this article considers the progress that sector has made with voluntary programs, the structural difficulties it has encountered, and the prospects of voluntary programs going forward. The picture is not promising.

Announced in 2002, President Bush’s “Climate VISION Program” seeks to achieve an eighteen percent reduction in carbon intensity across the U.S. economy by 2012 through voluntary actions.³ In December 2004, after almost two years of negotiations, the Administration and the electric power industry announced “Power Partners.” This agreement commits U.S. power industry trade associations to work with their members and the Department of Energy (“DOE”) to reduce the carbon intensity of the power sector—but only by *three to five percent over ten years*.⁴

If this modest level of emissions reductions is the most to which the largest contributors to GHG emissions can commit, the prospects for voluntary emissions reduction programs are dismal. This is particularly so given that, in a significant and rapidly growing number of states, utilities face mandates to provide up to twenty percent of their electricity from renewable resources by 2020. Twenty states and the District of Columbia now impose a variety of renewable portfolio requirements. Two other states, Illinois and New Hampshire, have established renewable energy goals. The renewable resource requirement in Maine is 30 percent, reflecting that state’s abundant supply of hydropower.⁵

Because electricity generation is such a large source of GHGs, no program to reduce GHG emissions can succeed without a substantial contribution from the power sector. Yet, as discussed below, there are important reasons why the power industry has not more aggressively responded to the issue of global climate change through voluntary actions. While some of those reasons may be unique to the power sector, others can be generalized to other industrial sectors that are major emitters of GHGs. At the same time, large emitters also increasingly recognize the need to respond meaningfully to the risks of global climate change. Thus, some of the nation’s largest utilities have

begun to publicly recognize the need for a mandatory GHG emissions reduction program. FPL Group, Cinergy, and Exelon have been among the clearest in their acknowledgement that it is time for a national program to limit GHG emissions.⁶

THE HISTORY OF VOLUNTARY UTILITY GHG REDUCTION EFFORTS

The federal government has been exhorting U.S. utilities to reduce carbon emissions through voluntary programs for more than a decade. The predecessor to Power Partners was called “Climate Challenge.” Begun in 1994, Climate Challenge committed electric power trade associations and DOE to work together on policies to help reduce GHG emissions. Individual utilities committed to take particular actions to reduce their emissions.⁷ The agreement came after the United Nation’s Framework Convention on Climate Change (“UNFCCC”) but before the Kyoto Protocol. At the time, voluntary measures were the prevailing approach to addressing climate change internationally. While the U.S. government had no legal leverage in negotiating those agreements, many were optimistic that industry would “step up to the plate and do the right thing.” At that time, the electric power sector accounted for roughly 35 percent of carbon dioxide (“CO₂”) emissions from energy use in the United States.⁸

In fact, dozens of utilities undertook projects to reduce GHG emissions under Climate Challenge agreements. Then, as now, industry members knew that because they account for such a large share of total GHG emissions, they would be on the “bleeding edge” of any regulatory initiative. Industry members thus sought to make the voluntary program a success, and, by some measures, it has been. Each year since then, Climate Challenge utilities have undertaken projects that have reduced GHG emissions by hundreds of tons. For several of the last ten years, the majority of all reporters to DOE’s 1605(b) voluntary registry of GHG emissions and emissions reductions have been utilities.⁹

Nevertheless, since 1990, total GHG emissions from the power sector are *up 27.5 percent* compared with a 17.6 percent increase for the economy as a whole.¹⁰ Total power generation is also substantially greater, therefore, the industry’s CO₂ intensity is down, but not by much. Moreover, the decline in carbon intensity is largely a function of the increase over the last decade in the use of natural gas for power generation, a trend that is now starting to reverse as a result of increases in natural gas prices.

Notwithstanding the emerging consensus about the need to reduce GHG emissions, coal – the most CO₂ intensive fuel source – is once again the fuel of choice for the new power gen-

* Mary Anne Sullivan is a Partner at the law firm of Hogan & Hartson in Washington, DC. The views in this article are those of the author and do not necessarily represent those of Hogan & Hartson.

eration. A recent survey by the National Energy Technology Laboratory (“NETL”) reported that 129 new coal plants, representing a capacity of 87 gigawatts, may be built over the next twenty years.¹¹ Allowing that many of these plants probably will not be built, the emissions from those that do go from the drawing board to operations will swallow up the small progress of the last decade. With many executives in the power industry certain that the sector’s future will be a carbon-constrained one, this reliance on coal seems paradoxical. What accounts for this interest in coal? What does it mean for the future of voluntary emissions reduction programs?

Four factors provide the answer: (1) the economic regulatory structure of the power industry; (2) the financial struggles of the competitive sector of the industry; (3) the relatively modest resources available to the government for incentive programs; and finally (4) uncertainty about the direction of future public policy, with respect to both the outcome of the Clean Air Act “wars” that have stymied the development of policy for tradi-

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tional “criteria pollutants” and to the regulation of GHGs. Taken together, these four factors will likely mean that Climate VISION and other voluntary efforts to reduce GHG emissions in the power sector achieve very little. They also help to explain the recent bipartisan movement in Congress to mandate a reduction in CO₂ emissions. On June 22, 2005, the Senate supported mandatory limits on greenhouse gases by a vote of 53-44.¹²

ECONOMIC REGULATION OF THE POWER INDUSTRY

More than 65 percent of electricity today is generated by traditional utilities.¹³ These companies need approval from state economic regulators both to add to their capacity and to undertake significant improvements in existing physical plants. State economic regulators are primarily concerned with energy costs and the utility’s “duty to serve.” Their principal statutory mission is to ensure that the companies they regulate reliably meet the need for power for all customers in the utility’s service area at the lowest price to the consumer.

It is no coincidence that 75 percent of the coal burned to generate electricity today is used by traditional, cost-of-service utilities.¹⁴ Under most scenarios, coal is the cheapest option. The coal supply is domestic, plentiful, and highly reliable. It can be burned in large, baseload plants using proven technology.

To be sure, most utility statutes give their state commissions authority to address environmental considerations, but those authorities tend to be quite specific, focusing on demand-side management, efficiency measures, and, increasingly, renewable energy mandates. While all of those measures tend to reduce the GHG emissions of utilities indirectly, utility commissions have no specific mandate to regulate emissions from power generation or promote innovative and environmentally promising technologies. Their focus on cost-saving and reliability tends to run counter to support for reduced carbon emissions technologies (as with wind, solar, and nuclear technologies). Utilities seeking to build new facilities have always had to propose plans that comply with all applicable requirements of law, but because environmental protection has typically been accomplished through mandatory programs, the utility commissions’ emphasis on cost and reliability over environmental considerations has never been a matter of much debate. Similarly, when a power plant needs to upgrade its environmental controls to meet new mandatory standards, there is little room for debate that the expenditure is necessary and that the utility should be able to cover the cost of the new equipment with a rate hike. When a program is voluntary, however, it is less clear that associated expenditures are “prudent” and serve the “public convenience and necessity,” the traditional watchwords for assuring cost recovery in rates.

Wisconsin Energy Corporation (“WEC”) offers an interesting case study of the difficulty voluntary efforts face. In need of significant new baseload capacity, WEC concluded that coal was the most cost-effective resource. Perhaps because it correctly anticipated that there would be a public outcry at the prospect of major new coal plants, WEC devoted considerable effort to evaluating integrated gasification combined cycle (“IGCC”) technology, and it decided to propose that one of the two new plants it was seeking regulatory approval for should be an IGCC plant.¹⁵ IGCC has extremely low emissions of criteria pollutants, along with lower carbon emissions than other coal burning technologies by virtue of its increased efficiency. Most importantly, however, for purposes of the climate change debate, IGCC lends itself readily to the addition of carbon capture technology once it becomes economically and technically feasible.¹⁶

There are no baseload IGCC plants operating in the United States today – just a pair of demonstration projects built during the 1990s in part with DOE Clean Coal Program funds. Part of the reason for this is that capital costs are a bit higher for IGCC,¹⁷ and reliability is a bit lower than that of pulverized coal plants.¹⁸ Those two considerations led the Wisconsin Public Service Commission (“PSC”) to deny the WEC proposal out of hand, treating the question in a single paragraph of a 72-page decision, with no mention at all of the potential environmental benefits IGCC offered.¹⁹ Any power generator subject to traditional cost-of-service regulation considering voluntary invest-

ments in GHG-reducing technologies would be wise to consider the implications of the WEC decision.²⁰

COMPETITIVE POWER CONSIDERATIONS

In those industries that have been resistant to voluntary GHG-reduction efforts, individual companies have blamed their failure to assume the additional costs of reducing emissions on competitive pressures; they have no assurance that their direct competitors in the marketplace will take equivalent steps. That same argument applies to those electric power companies that participate in restructured markets, *i.e.* they sell their power at market rates in competition with other suppliers. Indeed, the competitive market for electricity (to the extent it exists today) was created on the premise that it could provide lower cost power than the regulated sector. Independent generators may be able to provide an environmentally superior product, *i.e.*, power with lower emissions, but at a higher cost. They may then find it difficult, however, to market their greener (but more expensive) product to their regulated customers in what are often highly competitive markets. The public utility commissions may also wonder whether the local utility has made a “prudent,” *i.e.* low-cost purchase.

A portion of the independent power sector has very successfully devoted itself to producing renewable energy, which is increasingly being purchased by utilities to meet their renewable portfolio requirements. For example, FPL Energy, the deregulated affiliate of the regulated Florida Power & Light, has become one of the world’s largest producers of wind power. However, the independent power producers holding themselves out as providing baseload supply that is dispatchable on demand most often compete on price alone.²¹

Competitive power producers also face other barriers to investing in GHG-reducing technologies. Following the California electricity crisis, the downfall of Enron, and the sharp rise in the price of natural gas – the fuel source for most of the plants the independents have built – independent producers have faced considerable risk premiums in capital markets. Indeed, several of the largest competitive power suppliers have undergone bankruptcies or other major reorganizations. Many industry executives have concluded that, in the current business environment, new generating capacity should be built in the economically safer cost-of-service, rate-recovery era.²² Plainly, those who cannot raise the capital for expansion of their basic business are unlikely to have funds to invest in significant new voluntary projects for reductions.

MODEST GOVERNMENT INCENTIVES

As part of its climate change program, DOE has proposed FutureGen, a coal-fired power plant that would have near zero emissions, sequester carbon, and produce hydrogen. It is an ambitious vision, and DOE has projected spending one billion dollars a year over ten years for the development effort.²³ That sounds generous, until it is compared to the cost of building a *single* baseload plant, which itself could cost in excess of one billion dollars. Moreover, even the promised federal funding is highly uncertain.²⁴

Although some repudiate new nuclear power plants as an

inappropriate response to climate change, nuclear power is the only emissions-free source of baseload generation reasonably available in the short-term. Regulatory risk and high capital costs have been the largest perceived stumbling blocks to new nuclear generation. The Energy Policy Act of 2005 (“EPAAct 2005”)²⁵ includes new incentive programs to address those concerns with the expectation that they will ultimately promote the development of more climate-friendly power generation. Unfortunately, the incentives are limited and funding is uncertain.

For example, EPAAct 2005 authorizes a form of regulatory risk insurance for up to six new nuclear power plants, covering certain kinds of delay costs up to \$500 million for the first two plants and up to \$250 million for the next four.²⁶ EPAAct 2005 also authorizes federal loan guarantees for innovative power plant technologies that avoid, reduce, or sequester air pollutants or GHG emissions.²⁷ Both nuclear power plants based on advanced reactor designs and IGCC plants are eligible for these loan guarantees. However, absent generous federal appropriations to support the loan guarantees, which seem unlikely, the value of those guarantees is unclear.²⁸ These new federal incentives are likely

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not sufficient to eliminate the concerns about cost and technology that prompted the Wisconsin PSC to reject IGCC technology.²⁹

The federal government’s principal economic challenge in this decade is quite likely to be reining in the deficit. Major discretionary spending programs will have to be starved to do that, and it is unlikely that the government will ever fund incentives to the utility industry to address climate change at levels sufficient to make a real difference in this sector’s GHG emissions. The government’s technology research and development investments and incentive programs will hopefully help to *point the way* to lower GHG emissions from power generation, but they will not *pay the way*.

UNCERTAINTY ABOUT FUTURE POLICY DIRECTION

Delays in resolving the debates under the Clean Air Act and doubts about the future direction of GHG regulation further undermine voluntary programs. Whether framed in terms of “New Source Review” enforcement actions, “Clear Skies” legislation, or the “Clean Air Interstate Rule,” there can be little debate

that the Nation's policy, with respect to traditional pollutant emissions standards for power plants, has been at a stalemate for far too long. As a result, industry is uncertain what standards it will be required to meet in the future, new construction is delayed, and, in the meantime, old, dirty plants are allowed to limp along. Simply by virtue of improved efficiency, new coal burning plants should be able to reduce emissions by ten percent or more. While new plants are being built to meet new demand, those result in incremental emissions. GHG emissions reductions can only be achieved when old and inefficient plants are retired.³⁰

In the 1994 Climate Challenge negotiations, utility participants wanted DOE to promise that, whatever voluntary reduction or mitigation actions they took would be credited in the event of a future mandatory program. Mindful of its lack of authority to bind any Congress that might, at some distant date, impose a mandatory GHG emissions reduction program, DOE demurred. DOE pointed hopefully to the UNFCCC. Its 1990 baseline minimum standard for GHG emissions levels suggested that there was a good chance that participating companies would get credit for meeting or exceeding these standards through voluntary actions. Those in the industry who were willing to make real reductions were concerned that they would not be rewarded for their efforts when it came time to meet subsequent additional mandatory standards.

The same debate was repeated in 2003 and 2004. Indeed, reaching an agreement on the Power Partners framework was slowed over that contentious issue. This time around, the concern seems particularly well-founded. There is a growing international consensus that the Kyoto Protocol will have to be modified to bring the United States and large developing countries into the fold. What shape any new regime for GHG emissions reduction might take is highly speculative, but it is unlikely to be based on a 1990 baseline.

As noted above, utility emissions of GHGs have grown by 27.5 percent since 1990. A 1990 baseline is unlikely to be attainable for decades to come, and therefore it is an unlikely choice as the baseline for any mandatory U.S. program. Indeed, when DOE proposed enhanced 1605(b) guidelines for GHG emissions reporting, it limited reportable reductions to those occurring in 2002 or later.³¹ When the National Commission on Energy Policy ("NCEP") recently proposed its framework for GHG reduction mandates, it called for stabilizing emissions between 2010 and 2019.³² Those who step forward and take bold action now may well find themselves at a significant disadvantage in meeting any mandatory standard that is set in the future. In an industry that has rarely been rewarded for taking risks, this is not an auspicious environment in which to encourage individual companies to volunteer to "step up to the plate, and do the right thing."

CONCLUSION

Given all the barriers and the arguments against voluntary action, it is nevertheless true that there are sound economic reasons for U.S. utilities to begin down the road of significant emissions reductions. Most obviously, there is a growing consensus that a mandatory program is not far away. Those who

have found cost-effective ways to reduce emissions will be at an advantage when that day comes. In addition, when a utility decides to build a power plant that is expected to serve for 40 or 50 years, prudence would suggest that the utility weigh the likely direction of future policy with respect to climate change, the opinion of the Wisconsin PSC notwithstanding. Even without a dictate such as that imposed by the California PUC to assign a GHG adder to the projected cost of new fossil fuel plants, many utilities are already doing just that – to ensure that their investments in new generation will stand the test of time.³³

There are more immediate pressures as well. Shareholder resolutions on climate issues have become commonplace at utility company annual meetings, and insurance companies have spoken out clearly about the risk global warming represents.³⁴ Can shareholder lawsuits and risk premiums in capital markets be far behind?

A recent court of appeals decision held only that the U.S. Environmental Protection Agency ("EPA") had discretion not to regulate GHGs under the Clean Air Act, not that it lacked the authority.³⁵ Thus, under a new EPA Administrator, the current view could be reversed without new legislation. Several utilities have been forced to defend lawsuits initiated by states and citizens groups premised on the theory that coal-fired generation represents a public nuisance because of its contribution to global climate change.³⁶ The plaintiffs in those suits had their claims dismissed, but they have already filed an appeal.³⁷

Two recent articles in *Nature* suggest that the science and economics of the impacts of climate change are evolving to the point where attributing legal blame for extreme climate events may become feasible.³⁸ One need not agree with these authors or the plaintiffs in the recent litigation to begin to worry about the day when a damages lawsuit arising out of global warming could survive a motion to dismiss. More likely than a judgment, at least in the near-term, is the potential burden of responding to multiple class actions. The tobacco litigation is over. The California electricity crisis lawsuits are beginning to wind down. Global warming may look like a ripe target to the plaintiffs' bar, which filed many unsuccessful tobacco lawsuits before their theories took hold.



ENDNOTES: GHGs IN THE ELECTRICITY SECTOR

¹ Pamela Najor, *U.N. Conference Sets Process for Further Emissions Cut*, GREENWIRE, (Dec. 12, 2005), available at http://www.eenews.net/Greenwire/searcharchive/test_search-display.cgi?q=Conference+Sets+Process+for+Further+Emissions+Cuts&file=%2FGreenwire%2Fsearcharchive%2FNewsline%2F2005%2FDecember12%2F12120501.htm (subscription required) (last visited Jan. 12, 2006).

² Najor, *id.*

³ Climate VISION, Program Mission, <http://www.climatevision.gov/mission.html> (last visited Jan. 24, 2006).

⁴ Press Release, U.S. Dep't of Energy, U.S. Power Sector Sign MOU on Voluntary Efforts to Reduce Greenhouse Gas Emissions, (Dec. 13, 2004) available at <http://www.energy.gov/print/1553.htm> (last visited Jan. 24, 2006).

⁵ Database of State Incentives for Renewable Energy (DSIRE), www.dsireusa.org (last visited Jan. 24, 2006).

⁶ See, e.g., Press Release, FPL Group, FPL Group Scores Highest In U.S., Second Globally In Report On Clean, Efficient Energy (Dec. 16, 2004) available at <http://www.fplgroup.com/news/contents/04231.shtml> (last visited Jan. 24, 2006); CENERGY CORP., AIR ISSUES REPORT TO STAKEHOLDERS: AN ANALYSIS OF THE POTENTIAL IMPACT OF GREENHOUSE GAS AND OTHER AIR EMISSION REGULATIONS ON CENERGY CORP. (Dec. 1, 2004) available at http://www.cinergy.com/pdfs/AIRS_12012004_final.pdf (last visited Jan. 24, 2006); EXELON, REALIZING THE PROMISE: 2004 EXELON CORPORATION PROGRESS REPORT: ENVIRONMENT, SAFETY, COMMUNITY (2005), at 8 available at http://www.exeloncorp.com/NR/rdonlyres/DDDBE22B-94E3-4EE1-9F3C-ED4266DB0093/977/environ_rpt_2004.pdf (last visited Jan. 24, 2006); American Electric Power, Climate Change Position Paper, (outlining the need for a “committed policy response” in contrast to voluntary programs) available at http://www.aep.com/environmental/climate/docs/Climate_Change_Position_Paper.pdf (last visited Jan. 24, 2006).

⁷ The author of this article was a negotiator for the U.S. Department of Energy’s Climate Challenge agreements with utilities.

⁸ ENERGY INFORMATION ADMINISTRATION (“EIA”), EMISSIONS OF GREENHOUSE GASES IN THE UNITED STATES 2003 (Dec. 2004), at Table 6, 28 (noting that of the 5.265 million metric tons of CO₂ produced as a byproduct of energy consumption in 1995, the electric power sector 1.925 million of it produced while generating electric power), available at <http://www.eia.doe.gov/oiaf/1605/gg04rpt/pdf/057303.pdf> (last visited Jan. 24, 2006).

⁹ Energy Policy Act of 1992 § 1605(b), 42 U.S.C. § 13385 (2005).

¹⁰ EIA, *supra* note 8, at 19, 22.

¹¹ NATIONAL ENERGY TECHNOLOGY LABORATORY (“NETL”), TRACKING NEW COAL-FIRED POWER PLANTS, COAL’S RESURGENCE IN ELECTRIC POWER GENERATION (Nov. 7, 2005) (noting that “proposals to build new power plants are often speculative and typically operate on ‘boom or bust’ cycles,” that “many of the proposed power plants will not likely be built,” and that the numbers are indicative of “the large potential that exists for new coal-fired power plants”) available at <http://www.netl.doe.gov/coal/refshelf/ncp.pdf> (last visited Jan. 12, 2006).

¹² See e.g., Press Release, U.S. Senate Committee on Energy & Natural Resources, Senators Press President on Climate Change (Dec. 6, 2005), available at <http://energy.senate.gov/public/index.cfm> (last visited Jan. 24, 2006) (declaring that “It is the sense of the Senate that Congress should enact a comprehensive and effective national program of mandatory, market-based limits and incentives on emissions of greenhouse gases that slow, stop, and reverse the growth of such emissions at a rate and in a manner that: (1) will not significantly harm the United States economy; and (2) will encourage comparable action by other nations that are major trading partners and key contributors to global emissions”). See also Senator Jeff Bingaman, A Possible Path Forward, remarks at a conference sponsored by Resources for the Future (Nov. 30, 2005) (expressing the view that some form of GHG mandates would likely be adopted by the Congress within two years) available at http://energy.senate.gov/public/index.cfm?FuseAction=OpEds.Detail&OpEd_id=4&Month=12&Year=2005&IsChairman=0 (last visited Jan. 24, 2006).

¹³ EIA, ELECTRIC POWER ANNUAL 2003, at Figure 2.3 (Dec. 2004) available at <http://tonto.eia.doe.gov/FTP/ROOT/electricity/034803.pdf> (last visited Jan. 24, 2006).

¹⁴ EIA, ELECTRIC POWER 2003, *id.* at Table 4.1, 24 (noting that of 1,014,058 thousand tons of coal consumed in 2003 757,384 of it was used by electric utilities).

¹⁵ Darren Samuelsohn and Brian Stempeck, *IGCC Leads Clean Technologies, But Will It Pass Utility Muster?* GREENWIRE, (Aug. 11, 2004), available at http://www.eenews.net/Greenwire/searcharchive/test_search-display.cgi?q=IGCC+Leads+Clean+Technologies%2C+But+Will+It+Pass+Utility+Muster%3F+&file=%2FGreenwire%2Fsearcharchive%2FNewsline%2F2004%2FAug11%2F08110401.htm (subscription required) (last visited Jan. 12, 2006).

¹⁶ William G. Rosenberg, Dwight C. Alpern and Michael R. Walker,

Deploying IGCC Technology in this Decade with 3 Party Covenant Financing: Volume I, ENRP Discussion Paper, July 2004 at 32-34 available at http://www.gasification.org/Docs/2004_Papers/12ROSE.pdf (last visited Jan. 24, 2006).

¹⁷ See e.g. Application of Wisconsin Electric Power Company, Case No. 05-CE-130, slip op. at 26 (Wis. PSC 2003) [hereinafter WEPCO PSC decision] (comparing the costs for the IGCC plant, \$1579/kW, with that of a modern pulverized coal plant, approximately \$1440/kW,—a modest difference for a 40 to 50 year investment).

¹⁸ See generally, Rosenberg, *supra* note 16.

¹⁹ WEPCO PSC decision, *supra* note 17 at 26. The decision was reversed by a local court, *Clean Wisconsin, Inc. v. PSC*, Case No. 03CV3478 (Dane Co. Ct. Nov. 29, 2004) (unpublished opinion), *Clean Wis. v. Public Serv. Comm.*, 2005 WI 21, 278 Wis. 2d 539, 693 N.W.2d 78, 2005 Wisc. LEXIS 133 (2005) but then upheld in all respects by the Wisconsin Supreme Court. *Clean Wis., Inc. v. PSC of Wis.*, 2005 WI 93 (Wis. 2005) 282 Wis. 2d 250, 700 N.W.2d 768 See GREENWIRE, *Wis. Supreme Court Approves Oak Creek Power Plant* (June 28, 2005).

²⁰ However, in a December 16, 2004 order, the California Public Utility Commission (“PUC”) took quite a different approach from the Wisconsin PSC. It required its utilities to use a “GHG adder” of \$8 to \$25 for long-term contracts for fossil fuel-powered electricity after 2007, reflecting the California PUC’s view of the financial risk associated with GHG emissions. Notably, the California decision now represents a state mandate, not an enticement to voluntary action.

²¹ See [Fplgroup.com, Sustainability](http://www.fplgroup.com/sustainability.shtml), <http://www.fplgroup.com/sustainability.shtml> (last visited Jan. 24, 2006).

²² GF ENERGY, 2005 ENERGY OUTLOOK, (Jan. 2005) at 10, 31, 48, available at <http://gfenergy.com/downloads/2005Outlook.pdf> (last visited Jan. 24, 2006).

²³ Department of Energy, Office of Fossil Energy, FutureGen Fact Sheet (Feb. 2003), available at http://fossil.energy.gov/programs/powersystems/futuregen/futuregen_factsheet.pdf (last visited Jan 24, 2006).

²⁴ See Darren Samuelsohn, E&E Daily, *Lure of \$1B FutureGen Project Energizes Mining States* (Nov. 8, 2005) http://www.eenews.net/Greenwire/searcharchive/test_search-display.cgi?q=FutureGen+Project+Energizes+Mining+States+&file=%2FGreenwire%2Fsearcharchive%2FNewsline%2F2005%2FNovember8%2F11080501.htm (subscription required) (last visited Jan. 12, 2006).

²⁵ Energy Policy Act of 2005, Pub. L. No. 109-58, Stat. (2005), available at http://energycommerce.house.gov/108/0205_Energy/05policy_act/Title%209%20-%20Studies%20and%20Program%20Support.PDF (last visited Jan. 24, 2006).

²⁶ Energy Policy Act, *id.* EPAAct 2005 also authorizes an eight-year production tax credit for up to 6,000 megawatts of nuclear power.

²⁷ Energy Policy Act, *id.* Title XVII.

²⁸ The cost of the loan guarantees can be funded by the project developer, *id.*, § 1702(b)(2), but they are subject to the requirements of the Federal Credit Reform Act of 1990, 2 U.S.C. § 661a(5)(C), which requires that the cost be determined on the basis of the risk. For projects deemed to have high technology or regulatory risk, the cost of the guarantee could be prohibitive for the project developer.

²⁹ NETL, *supra* at 11. Out of the 129 proposed coal plants, only seventeen will be IGCC plants. Without the pressure of GHG reduction mandates, their success is doubtful.

³⁰ See Rosenberg, *supra* note 16 at 31, 32.

³¹ 70 Fed. Reg. 15169 (2005)

³² NATIONAL COMMISSION ON ENERGY POLICY, ENDING THE ENERGY STALEMATE at Figure 2-2, 22 (Dec. 2004). Available at http://bcsia.ksg.harvard.edu/BCSIA_content/documents/commission_report.pdf (last visited Jan. 24, 2006).

³³ EIA, *supra* note 14.

³⁴ See CERES, INSTITUTIONAL INVESTOR SUMMIT ON CLIMATE RISK FINAL REPORT at 1 (May 10, 2005) available at http://www.ceres.org/pub/docs/Ceres_2005IISummit_finalreport_1005.pdf (last visited Jan. 24, 2006).

³⁵ *Massachusetts v. EPA*, No. 03-1361 (D.C. Circuit July 15, 2005), pet. for reh'g en banc denied.

³⁶ *Connecticut v. AEP*, No. 04CV05669-LAP (SDNY) available at <http://www.eenews.net/features/eenewspm/Backissues/images/100305pm6.pdf> (subscription required) (last visited Jan. 12, 2006); *Open Space Institute v. AEP*, No. 04CV05670-LAP (SDNY), available at <http://www.eenews.net/features/eenewspm/Backissues/images/100305pm5.pdf> (subscription required) (last visited Jan. 12, 2006).

³⁷ Pamela Najor, *States, Enviros Appeal "Public Nuisance" Case Against Utilities*, GREENWIRE, (Oct. 3, 2005) available at http://www.eenews.net/eenewspm/searcharchive/test_search-display.cgi?q=States%2C+Enviros+Appeal+%93%91Public+Nuisance%94%92+Case+Against+Utilities&file=%2Feenewspm%2Fsearcharchive%2FEENewspm%2F2005%2FOctober3%2F10030502.htm (subscription required) (last visited Jan. 12, 2006).

³⁸ See Allen and Lord, *The Blame Game: Who will pay for the damaging consequences of climate change?*, NATURE, at 551 (Dec. 2, 2004).
