

**The Failure  
of the  
U.S. Environmental Decision-making Process:  
Will a Better Way Emerge?**

Roger W. Gale  
Washington International Energy Group, Ltd.  
Three Lafayette Centre, Suite 202  
1155 21st Street, N.W.  
Washington, D.C. 20036

Over the past two decades, the United States, along with Japan and the other Organization for Economic Cooperation and Development countries, has made dramatic strides in improving and protecting the environment. It can be argued that these changes mark an historic paradigmatic change from an era of virtually uncontrolled exploitation and production to a new era whose contours are still being defined but, which is characterized largely by constraint.

For the most part, these improvements have come about through standard-setting processes and through the emergence of a regulatory bureaucracy whose main function is to design and enforce rules. In the United States, in particular, the judicial system has played a major role in the decision-making process. In terms of decision-making, the emergence of this environmental paradigm in the U.S. also led to an historic shift of power away from industry to government and public interest groups.

If one dates the emergence of environmentalism in the U.S. with the creation of the Environmental Protection Agency in 1970, the environmental era is still quite young, in comparison, for example, to the "nuclear era," which has its

roots in the 1940s.<sup>1</sup> The environmental era is old enough, however, for its performance to be judged. And, it is this author's judgment that while the environmental paradigm will remain firm and enduring, the means by which environmental decisions are made in the United States is in need of fundamental reform.

Paradoxically, and regrettably, this judgment must be made despite the fact that it is to the credit of the U.S., Japan and other nations that the environmental ethic is growing elsewhere in the world as a response to the inherent problems created by rapid economic development. Just as there are promising ways in which developing economies may be able to "leapfrog" some of the less desirable stages of economic growth, they may also be able to avoid some of the negative aspects of the environmental decision-making process by learning from our experience.

The primary theme of this paper is, that while concern for the environment continues to grow—legitimately so—the current approach to achieving environmental goals in the U.S. has proven too contentious, costly and cumbersome, especially in light of the sub-optimal results that frequently result. The problem in the U.S. is not that standards are set too high—in some cases they are not tough enough—but that the hurdles over which industry must jump to reach its goals are too high and are continually being shifted.

Other nations, including Japan, have been able to accomplish as much or more than the U.S. in the environmental sphere through more steady, direct means. In many or most cases these strategies have actually enhanced the rate of economic growth. It is often noted that the Japanese decision-making process is

---

<sup>1</sup> Clearly, despite its initial promise and its continued potential, the "nuclear era" is losing its battle with the "environmental era".

best characterized by its collusion. Yet in some cases what might appear as "collusion" could also be described as "collaboration" toward achieving widely shared societal goals. A classic example of how this works is the speed with which Honda and other Japanese automakers were able to design automobile engines that were both more efficient and less polluting despite the assurances from Detroit automakers that it was an impossibility.

Without a change in the current mode of environmental decision-making, the U.S. will fail to achieve critical environmental goals, continue to lose its economic competitiveness, and fall deeper into what has recently been described as "demosclerosis"—the paralysis of the decision-making process.<sup>2</sup>

The problems witnessed in the environmental decision-making process are reflected in other areas, among them the failure of the financial system, overspending on defense, underspending on education, and a simple lack of shared goals. Based on the author's own experiences and background, one other problem that gets much less attention is the emergence of a powerful, but not necessarily effective, bureaucracy that exercises considerable control over a complex, time-consuming confrontational decision-making process. Not only does this bureaucracy at the federal and state level have relatively little accountability, in recent years, especially at the federal level, it has tended to be dominated by political appointees who exemplify little of the character of the strong, elite career bureaucracies in Japan and elsewhere.

Missing in the debate on decision-making during the past decade or so is fresh thinking about what Michel Crozier called "the bureaucratic phenomenon".<sup>3</sup>

---

<sup>2</sup> Jonathan Rauch, "Demosclerosis," *National Journal*, September 5, 1992.

<sup>3</sup> *The Bureaucratic Phenomenon* (Chicago: University of Chicago Press, 1964).

Despite the rich history of literature about bureaucracy from Europe—from Max Weber, through Crozier and, for example, Ralf Dahrendorf—the U.S., which prides itself on its egalitarianism and its distrust of strong government, has customarily ignored bureaucratic theory and, therefore, virtually ignored the extent to which the environmental era has ushered in a rampant bureaucratism in its wake. For the first time in recent U.S. history, government employment exceeds the total number of people employed in the manufacturing sector. When Ronald Reagan became president in 1981, there were 25 percent more Americans working in manufacturing than in civilian government jobs.<sup>4</sup>

From the point of view of U.S. industry, many of the demands made by the environmental bureaucracy are seen as excessively expensive in comparison to the benefits they offer.<sup>5</sup> An increasingly large component of that cost is believed to be related to administration, rather than technology or hardware investments. It is frequently mentioned, for example, that more than 75 percent of the spending to clean up the worst hazardous waste, or Superfund sites, has been spent on studies and other "paper" products. A similar problem affects the Department of Energy's \$40 billion nuclear weapons' cleanup regime, which has made virtually no progress.

---

<sup>4</sup> *The New York Times*, September 6, 1992. Another disheartening sign, from this author's point of view, is the large number of Fortune 500 companies that depend on government contracts for a large share of their business. This is typically in the defense sector but is also common in other sectors including energy, environment and human services. When the number of employees of these companies and numerous consulting firms—the so-called "Beltway bandits"—are added to the government sector roster, the total number of Americans employed by the government or the government "sector" has grown enormously since the Second World War.

<sup>5</sup> For a good summary of recent economic thinking on the costs and benefits of environmental regulation, see William K. Stevens, "Economists Strive to Find Environment's Bottom Line," *The New York Times*, September 8, 1992.

To the extent that the public's attention has been focused on the Washington decision-making scene, it has been on recent congressional scandals, not on the executive branch, to as great an extent as appropriate, on the role of congressional staff in the decision-making process.

It is often argued that the divided government in Washington—the long-time Democratic-controlled Congress and the Republican White House—the federal system with its strong state-level power, the emergence of powerful interest groups, and the excessive reliance on lawyers, are the primary sources of much of what is wrong with the U.S. today.<sup>6</sup>

More importantly (and quite true), there is still a more fundamental, deep-seated and dangerous system failure that is the product of divided government. This failure is clearly seen in the environmental decision-making arena where an enormous, unwieldy regulatory bureaucracy has assumed powers far beyond those envisioned by either Congress or the White House. Even relatively straight-forward, non-controversial power plant projects must be reviewed by as many as eight to ten different state and federal agencies, which only sometimes fail to coordinate their actions even when they are enforcing the same laws.<sup>7</sup>

---

<sup>6</sup> See, for example, Robert L. Paarlberg, "U.S. Environmental Policy Making: Institutions and Processes Which Prevent Consensus," August 1, 1992.

<sup>7</sup> Typically, the implementation and enforcement of federal environmental and safety laws is delegated to state governments. States may be more stringent than the federal law requires, but may not adopt less stringent practices. In reality, the quality of implementation and enforcement varies considerably among the states. EPA's nine regional offices oversee state performance and where authority has not been delegated (for example, Clean Air Act authority has not been delegated to the state of Florida), directly control permitting, compliance and enforcement.

One might argue that a competent bureaucratic elite is just what the U.S. needs in this technological age where it cannot be expected that the "average" citizen or legislator will be fully equipped to participate in the making of complex decisions. The appalling performance of Congress in recent years, the declining prestige of the office of the president and the declining performance of industry all argue in favor of at least one strong, capable and stable decision-making force.

Alas, the bureaucracy is not moving toward perfection but, like many other institutions, toward decline. While there are many bright, competent, dedicated hard working career officials, their influence has declined commensurate with the increased presence of short-term political appointees. Decision-making in many agencies like the Environment Protection Agency, the Department of Energy and other cabinet-level agencies is dominated by political appointees.<sup>8</sup> The Department of Energy, for example, currently has more than 200 non-career political appointees on its payroll.

Political patronage is not new in the U.S., but, whereas in the past, many of the appointees served as postmasters in small towns, today nearly all political appointees serve in Washington. Since the 1970s, senior career bureaucrats have been gradually replaced in nearly all positions down to the deputy assistant secretary level.

---

<sup>8</sup> Political appointees are non-career staff of the executive branch. They are selected by the White House to fill positions within the White House and various agencies. These positions are in three categories: presidential appointees (including cabinet secretaries, deputy and assistant secretaries) who must be confirmed by the Senate; non-career members of the Senior Executive Service (about one-third of the SES is non-career); and "Schedule Cs," who are non-career members of the civil service and fill a wide range of positions from entry-level through office director.

Coupled with this is the imminent retirement of up to one-third of the career members of the Senior Executive Service who are as close as it comes to being the American bureaucracy's "technocrats." In the next year, many will reach their optimum pension level.<sup>9</sup>

The U.S. debate about how to improve the decision-making process has become increasingly sterile and uninformative. The brief but intense appeal of Ross Perot earlier this year confirmed the nation's need for new thinking. While Perot succeeded in injecting the word "change" into the campaign rhetoric, little new has emerged.

Much of the decision-making debate has focused in recent years on industrial policy. For example, the debate about whether the U.S. government does or does not need an industrial policy is symptomatic of the failure of the U.S. system to seriously address real issues. There can be either a harmonious or antagonistic relationship between government and industry. Decisions can be made together by industry and government in "smoke-filled rooms," hearing rooms or court rooms, but there is little need to argue about whether the government has an industrial policy. Government provides huge subsidies and incentives to some industries like the energy industry, while providing comparatively small subsidies to other sectors, such as biotechnology and certain electronic sectors.

---

<sup>9</sup> In most cabinet agencies, nearly the entire top three to four levels of management are filled with political appointees. There are other appointees at the office director and lower levels as well. Consequently, when a new president takes office, nearly the entire senior echelon of an agency will resign and be replaced at the same time.

It is curious that the frequent criticisms of the regulatory bureaucracy by vice president Dan Quayle and the Competitiveness Council have not highlighted the fact that they appointed most of the senior staff of these agencies.

In short, the issue is not whether the U.S. has an industrial policy. The fact is that the U.S. has many industrial policies, administered by the bureaucracy and funded each year by Congress. Many of the policies have profound impacts on the environment. What is missing in the U.S. environmental decision-making process is political will and a sound, stable way of reviewing the value of various programs, terminating those that don't make sense, and even more important, a means of launching new initiatives. The U.S. is not the only advanced democracy that can't always say "no." Japan too sustains commitments to programs which have outlived their usefulness but, unlike the U.S., the bureaucracy is more frequently successful in identifying, launching, funding, and developing new initiatives through government-industry consortia.

In the last few years, following the deregulation of the airlines, communications, banking, oil and natural gas industries, there has been a renewal of interest in "market-based" solutions to environmental problems.<sup>10</sup> This has been the only fresh thinking in many years, although no reasonable observer can expect a return to a truly laissez-faire approach, particularly in view of the failure of the financial system.<sup>11</sup>

---

<sup>10</sup> Two members of the US. Congress spearheaded the effort to rethink environmental decision-making through the development of two reports, the most recent of which is entitled, "Project '88 Round II: Incentives for Action—Designing Market Based Environmental Strategies." Pennsylvania Senator John Heinz was killed in an airplane crash and Colorado Senator Tim Wirth is retiring from the U.S. Senate because of his loss of faith in the decision-making process.

<sup>11</sup> This author does not agree with Robert Rycroft paper, "Priority Areas and Opportunities for Cooperation," or Robert Kuttner's book (*The End of Laissez-Faire: National Purpose and the Global Economy After the Cold War*, New York: Knopf, 1991) that the laissez-faire approach has been an "utter failure". It is this author's view that the laissez-faire approach was a dramatic success but has become a victim of that success and is no longer a relevant philosophy for post-industrial societies.

The sulfur dioxide emission allowance trading system in the Clean Air Act Amendments of 1990 is a prime example of reliance on this new market-based approach, as is recent thinking on global carbon dioxide allowance trading schemes.<sup>12</sup>

In fact, this interest in market-based solutions, as if they were a new invention, starkly highlights the extent to which government, for better or worse, is not only engaged in industrial policy-making, but far more than that, is actively engaged in industrial decision-making through the regulatory process as well through subsidizing selected industries.

### **The Global Warming Issue**

This author has argued elsewhere that, perhaps, the best example of the failure of the U.S. to successfully deal with environmental issues is the U.S. reaction to the emergence of the global warming issue.<sup>13</sup> While nearly every other OECD country has made a commitment to stabilizing or reducing carbon dioxide emissions by around the year 2000, the U.S. resists. There are many reasons for this resistance but, perhaps, the most cogent is the fear of industry that once the U.S. committed to stabilization, Congress and the bureaucracy

---

<sup>12</sup> See, Roger W. Gale, "Environmental Initiatives Based on the U.S. Clean Air Act Amendments," a paper presented at Pacific Basin Energy Conference, Sydney, Australia, June 1991; and "Internationalization of Environmental Regulation," a paper prepared for the Crystal Ball Conference, Auckland, New Zealand, April 1992.

Two good studies on international emissions trading are Memorandum from Assistant Attorney General Richard B. Stewart to C. Boyden Gray, Counsel to the President, December 14, 1989 on "International Approaches to Global Climate Change;" and the United Nations Conference on Trade and Development. "Combating Global Warming: Study on a Global System of Tradeable Carbon Emission Entitlements, 1992."

<sup>13</sup> "The Economic Impact of Global Warming: Competitiveness Is At Stake," *The Energy Daily* 17th Annual Electric Utility Conference, October 1991.

would move to pass laws and establish regulations mandating specific actions that industry would have to take in order to comply.

Senior U.S. global climate decision-makers often note that other countries, including Japan, do not rush into complex rulemakings. Indeed, so far, except in Germany, none of the OECD nations has adopted stabilization laws or regulations.<sup>14</sup> Instead, policy tends to turn into hard decisions through more subtle means such as Japan's *gyoseishido*, or "administrative guidance".<sup>15</sup>

While legitimate uncertainty remains about both the existence of a severe warming trend and the ensuing impacts, the efforts of U.S. industry and government to avoid action through adamant resistance exposes U.S. industry to the distinct possibility of an even more rapid decline in international competitiveness. Why? Because carbon dioxide emissions are a crude but useful indicator of the overall efficiency and, hence, competitiveness of national economies among the industrialized countries. With few exceptions, installation of new technologies—whether they be natural gas fired combined cycle gas turbines, electric arc steel mills, paper mills, or assembly lines—emit less CO<sub>2</sub>.<sup>16</sup>

---

<sup>14</sup> A number of countries, however, have adopted small carbon tax laws, but these are not explicitly linked in a quantitative way to achieving stabilization by a set time.

<sup>15</sup> This author has been engaged in a personal discussion with a senior Japanese government official for many years on this specific point, which was initiated by a comment he made at a conference to the effect that "I don't know why you Americans complain so much about regulations, we have them too." My response has been that he does not appreciate just how expensive, time-consuming, confrontational and rigid the U.S. process has become.

<sup>16</sup> This generalization applies only to the industrialized economies, not to the developing countries like China where CO<sub>2</sub> emissions will inevitably increase even with Herculean efforts to leapfrog to cleaner technologies. And, it is important to recognize that for the resource-rich, resource-exporting nations like the U.S., CO<sub>2</sub> emissions will probably be much more difficult to stabilize and reduce than for the resource poor countries like Japan and the European Community.

Industry generally supports the idea that decisions taken for other reasons—the "no regrets" or "insurance" policy—also lead to reductions in the growth of CO<sub>2</sub> or eventual stabilization. Not until the investment climate in the U.S. improves, government and industry learn to work more closely together and industry realizes its competitive interests are at stake, will meaningful action to achieve stabilization or other limits occur. It is beyond the scope of this paper to examine all of the reasons for this reticence but one factor is a fear that "voluntary" efforts would quickly be turned into laws and regulations, particularly if vice presidential candidate Al Gore is able to pursue the objectives described in his recent book.<sup>17</sup> Intense interest in voluntary programs such as EPA's "Green Lights" initiative may be due to a fear on industry's part that such programs will be forced upon them if they fail to participate.

#### **The Clean Air Act Amendments of 1990**

For much of U.S. industry and for many of the nation's urban areas, the timing of the emergence of the global warming issue could not have been worse. After nearly a decade of debate, in 1990, Congress finally passed amendments to the Clean Air Act which mandate sharp reductions in sulfur dioxide, nitrogen oxide, carbon monoxide, and ground level ozone emissions. In addition, EPA is required to study and, quite possibly, require electric utilities and others—including, for example, small cleaning shops—to severely limit emissions of toxic air pollutants such as benzene and mercury.

---

<sup>17</sup> *Earth on the Balance: Ecology and the Human Spirit* (Boston: Houghton Mifflin, 1992).

Even without the imposition of air toxic requirements, it is estimated that the annual compliance cost under the rules now being promulgated by EPA will easily exceed \$40 billion a year. That is, if the law is properly implemented.

Unfortunately, the law is already in serious trouble. EPA is late in issuing regulations, the innovative emission allowance trading system is not working, and many utilities are delaying decisions because of continuing uncertainties about how the law will be implemented.

As already mentioned, it took nearly a decade to reach agreement on the acid rain provisions of the 1990 Clean Air Act Amendments. By 2000, utilities must reduce sulfur dioxide emissions to 8.95 million tons, compared to 1980 emissions of 17.4 million tons. Individual power plants will have emission allowances based on historic performance and will be penalized if they exceed their allowances. Excessive allowances can be used at other plants, sold, traded or held for future use. A Phase 1 target to be achieved by January 1, 1995, will limit all plants to emitting no more than 2.5 pounds of sulfur dioxide per million Btu. Phase 2, which will go into effect in January 1, 2000 limits emissions to 1.2 pounds of sulfur dioxide per million Btu. Utilities can build scrubbers, switch fuels, buy allowances or shutdown plants to reach these compliance levels.<sup>18</sup>

Under the law, EPA is required to promulgate more than 120 regulations by 1995, an average of 24 rules a year. This compares to an average of five to eight rules per year issued by the Office of Air and Radiation in recent years. In addition, the law requires that more than 90 studies be completed on a

---

<sup>18</sup> Fuel switching options include shifting to lower sulfur coal, co-firing with gas, repowering units to burn gas and replacing boilers with gas turbines. Converting coal-fired boilers to burn gas is not an economical option.

schedule included in the law. So far in 1992, the busiest year envisioned by the legislation, less than 20 percent of the required actions have occurred. Between September and December 1992, EPA's goal is to complete more than 45 mandatory requirements including finalizing rules, issuing initial proposals for new rules, and issuing draft or final studies.<sup>19</sup>

By now, it was assumed that the allowance trading system—the market-based element in the acid rain provisions—would be working with numerous transactions having been completed among utilities. Unfortunately, even for those utilities like American Electric Power which have been eager to enter the allowance market and which plan to "overscrub"—or over-comply with the law—in order to accumulate allowances which it could then use to offset emissions at other units or sell to other companies, the allowance trading system itself is not performing up to expectations. So far, there has been only one successful sale and one law suit to prevent a trade. Many utility executives are pessimistic about the allowance system working except, perhaps, within large integrated holding companies like AEP, Southern Company and Entergy.<sup>20</sup>

Even if implementation of the new law goes relatively smoothly, the U.S. will be nearly 20 years behind Japan and western Germany technologically in terms of commercial scrubber installations on most coal-fired and other high emitting fossil-fired plants. And, despite the new law, the scrubber option is not faring well in the U.S.—even when utilities have made commitments to build them. In AEP's case, some environmentalists now argue that building scrubbers means

---

<sup>19</sup> Environmental Protection Agency, Office of Air and Radiation, "Implementation Strategy for Clean Air Act Amendments, 1992 Update," released August 28, 1992.

<sup>20</sup> The first trade between the Tennessee Valley Authority and Wisconsin Electric Power Co. was arranged by the White House.

the company would lock itself into a 30-year commitment to a 1980s technology."<sup>21</sup>

Let's look briefly at two current examples of how difficult it is for industry to move ahead with certainty in the current regulatory climate:

**American Electric Power Company's Gavin Station:** No U.S. utility fought harder than American Electric Power to delay passage of the Clean Air Act Amendments because of the company's heavy reliance on high-sulfur Midwest coal. But having lost the battle, AEP decided to install scrubbers on its 2,600 megawatt Gavin coal-fired station in Ohio so that it could continue to burn local coal and avoid the negative local political impact of costing hundreds of coal miners their jobs.

Unexpectedly, both the Sierra Club and the Center for Clean Air Policy—which championed passage of the new law and have criticized utilities for not installing scrubbers—now oppose the construction of scrubbers at Gavin, arguing that this is not the "least cost" option and that the volumes of scrubber sludge produced are not environmentally acceptable. In addition, the Ohio Industrial Energy Consumers organization, also argues that scrubbers are too expensive and that fuel-switching is preferable, despite the local economic impact.

For now, AEP plans to go ahead with scrubbers, but the battle is not over. At least five federal and state government agencies are involved and litigation is

---

<sup>21</sup> Letter by Ned Helme, executive director, Center for Clean Air Policy to *The Energy Daily*, July 22, 1992.

possible.<sup>22</sup> Most important, as Helme argues, by the time this issue is settled "global warming controls could easily be enacted...or regulation of air toxics could force the use of technology...."<sup>23</sup>

**Illinois Power Company's Baldwin Station:** In the case of another U.S. utility, Illinois Power Co., which is already in serious financial trouble because state regulators recently refused to allow the company to pass on much of the cost of its new nuclear unit to customers, construction work on a scrubber has just been abandoned. Citing "substantial legal and regulatory uncertainties," Illinois Power has stopped work at its 1,600 megawatt Baldwin station near St. Louis rather than risk not being able to recoup the \$250-350 million investment required.<sup>24</sup>

### **No-Tech Consequences**

Technology is **not**, of course, the panacea we may have once thought it was. It is best seen as a **tool** for achieving shared goals, not as an end in itself. But technology remains an essential element in human progress and in providing comparative economic advantage relative to other countries.

One product of the bureaucratization and ensuing paralysis in U.S. decision-making is a built-in deterrent to deployment of technology, particularly those technologies that require long lead times to build, require a large up-front

---

<sup>22</sup> Of interest to Japanese industry as the government contemplates adopting an environmental assessment law is that the scrubber opponents are demanding that a complete environmental impact statement (EIS) under the National Environmental Policy Act of 1969 be completed before AEP can go ahead.

<sup>23</sup> Helme, *The Energy Daily*, July 22, 1992. See also letter to the editor in *The New York Times*, August 23, 1992

<sup>24</sup> *The Wall Street Journal*, September 1, 1992.

investment, and are controversial or untested. The opposition to scrubbers described above is one of the latest manifestations of this problem.

Much more could be asserted about modern America's "aversion" to technology, particularly the failure of the nuclear industry, but the practical problem that often faces U.S. industry is not public opposition; it is the excessively high financial risks associated with the regulatory lag and uncertainty that characterizes too many decision-making processes.

In 1991, the average size of new electricity generating units coming into commercial service in the U.S. was only 137 megawatts, roughly 10 percent of the size of the large 1300 megawatt nuclear stations being built in Japan and France.<sup>25</sup> And much of this new investment was by non-utility generators, which are exempt from much of the cost-based regulatory burden and, in the case of small units, from some environmental regulation as well. Natural gas-fired plants, in particular, typically face only a modest regulatory burden with little or no involvement by the federal government.<sup>26</sup> Many U.S. utilities have no intention of building new plants, preferring to rely instead on purchased power and on repowering of old generating units.<sup>27</sup> Nuclear and hydro units, in

---

<sup>25</sup> North American Electric Reliability Council, *Electricity Supply & Demand 1991-2000*. In the future, the average size of new units is likely to be larger than this but still relatively small compared to the units built in the 1960s and 1970s.

<sup>26</sup> Although there is typically little or no federal government involvement in approving the construction of gas-fired turbines, it is the Public Utility Regulatory Policies Act of 1978 (PURPA) and regulations adopted by the Federal Energy Regulatory Commission, creating a category of power plant called a Qualifying Facility, from which utilities have been essentially required to purchase power, that created the huge non-utility market.

<sup>27</sup> A recent EPA decision forced upon the agency by the White House, which is known as the WEPCO decision, allows utilities that repower old plants to continue to meet existing clean air requirements rather than the more stringent New Source Performance Standards.

particular, which are licensed at the federal level as well as subject to state regulation, are troublesome to build.

There are distinct environmental and economic advantages to smaller units, particularly relatively clean modular, factory-built natural gas-fired turbines, but much of this focus on small units is the result of a short-term, low-risk planning horizon that requires technologies that can be built within two to three years. Technologies that take longer to build, require complex regulatory approvals and licenses and which do not "perfectly" match the growth in electricity demand are simply too risky.<sup>28</sup> As many utility executives privately relate, "you have to build plants that will be finished while the same public utility commissioners and bureaucrats are still in office, otherwise the bureaucracy forgets its previous commitments."

In such an environment, new nuclear power plants—even 600 megawatt variants—simply do not stand a chance. Even with the new "one-step" licensing process adopted by the Nuclear Regulatory Commission and the streamlined process included in the National Energy Strategy legislation now pending final congressional passage, nuclear power has little chance of making a comeback in the United States. Even if off-site construction of major components permitted a four-year construction period, licensing requirements would add at least two to three more years, even in the absence of further problems.

---

<sup>28</sup> Many state utility regulatory commissions have not permitted utilities to pass on the costs of large nuclear power plants because there was no immediate need for the available capacity. In the case of the four-unit Palo Verde nuclear station located in Arizona, utilities in that state, and New Mexico, have skirted bankruptcy because of the cost of the project as well as other investment decisions. A Texas utility, El Paso Electric, has declared bankruptcy because it cannot absorb the costs associated with its share of the Palo Verde project.

794

But even more problematic than no new nuclear plant orders being placed is the dramatically increasing likelihood that many of the operating plants in the U.S. will be shutdown by state regulators or, in anticipation of that, voluntarily closed down by utilities. In the last two years, four operating nuclear plants (Rancho Seco, Yankee Rowe, San Onofre 1 and Trojan ) have either been shutdown, or soon will be, even though they have many years of additional time to operate under terms of their 40-year licenses.<sup>29</sup>

The nuclear industry now fears that many other plants will be shutdown in the next few years in anticipation of regulators determining that the cost of buying power, building gas turbines and/or relying on demand-side management programs is in the best interests of customers.

Demand-side management programs, which are in use in more than 30 of the 50 states, require utilities to provide customers with incentives to reduce demand through rebate programs, free light bulbs, etc. Construction of new generating capacity is a last resort both for regulators who favor DSM and utilities that fear the risks associated with construction. Since, in most states utilities are permitted a higher return on equity to compensate for lower sales, DSM has become increasingly popular. DSM is in a sense, a technology-promoting approach since it encourages the commercialization of appropriate, dispersed technologies, but so far the primary impact has been to encourage the use of existing technologies, particularly compact fluorescent bulbs (many of which are made in Japan). DSM has definite advantages and will play a larger role in the future but one of the "downsides" of DSM is that it encourages

---

<sup>29</sup> "Risk of Premature Shutdown Grows; Kewaunee, Ft. Calhoun on Guard," *Nucleonics Week*, September 3, 1992; see also, Washington International Energy Group, "Analysis of Public Controversy Regarding Life Extension in the U.S.—Economics of Aging Nuclear Power Plants, March 1992.

utilities to continue to operate their older fossil-fired plants—coal provides about 60 percent of U.S. electricity—rather than replace these units with new ones.

As Massachusetts Institute of Technology professor Richard Lester noted in recent testimony, DSM and related environmental externality programs make it almost impossible in some states for utilities to build new plants while, inadvertently, mandating the continued operation of old, typically more polluting plants.<sup>30</sup> More than 16 states now have environmental externality requirements that in various ways require utilities to internalize the dollar costs that would be incurred by society if the utility built a new unit. These costs are typically assumed to be the result of sulfur dioxide, nitrogen oxide, carbon dioxide and other emissions.<sup>31</sup>

As a result of these various disincentives to building new generating units, the average age of fossil-fired electric generating units in the U.S. is now approaching 30 years.<sup>32</sup>

Even fuel cells, photovoltaics and other new technologies pioneered in the U.S. and approved by environmentalists are now likely to be commercialized first in Japan or in Europe and sold back to their U.S. inventors.<sup>33</sup>

---

<sup>30</sup> Lester, Richard, Testimony before the Massachusetts Department of Public Utilities, October 4, 1991.

<sup>31</sup> For background on the environmental externality concept, see, for example, articles from *The Electricity Journal*, "The High Stakes Externality Debate" Issue, Volume 4, Number 2, March 1991.

<sup>32</sup> The North American Electric Reliability Council, *Electricity Supply & Demand 1991-2000*.

<sup>33</sup> On this point, see, for example, Curtis Moore and Alan S. Miller, "Environmental Technologies and Policies of Japan," *The Technology Clearinghouse*, February 1992.

As Japanese decision-makers know from first-hand experience, in the frontier technology arena, the U.S. has been an unreliable partner. The collapse of the Solvent Refined Coal-II (SRC-II) project is still referred to, as is the demise of the U.S. fast breeder reactor program in the early 1980s. Currently, both the Super Conducting-Super Collider (SSC) and the space station projects, both joint projects with Japan, are threatened with cancellation.

### **Industry Failures**

Industry has not been merely a victim of a government bureaucracy run "wild." U.S. industry has failed to effectively challenge the bureaucracy, especially utilities and other heavily-regulated sectors of the economy. Coupled with this failure is the victory of a corporate decision-making philosophy that only rewards short-term thinking, often described as flexible, pragmatic and "just in time" (*kanban*) decision-making.

Much of U.S. industry continues to view environmental regulation and investment as "add-ons" rather than as integral elements in a overall cost-effective competitive strategy which aims at maintaining a lean, young and state-of-the-art production system. It is beyond the scope of this paper to argue the extent to which this orientation is a response to bureaucratic uncertainty, an effort to emulate certain perceived strengths of Japanese industry, or merely a healthy fad taken to extremes. But it is clear that industry, like government, is often committed more to good process than good performance.

### **Conclusions**

Two conclusions stand out from the discussion in this paper. First, the American environmental and energy decision-making process has become increasingly complex, legalistic, time-consuming, short-sighted, inefficient and

expensive. Developing and achieving shared goals has become increasingly irrelevant—an unacceptable luxury—in a period of time when bureaucratic process has become all-important and encompassing.

Second, although many projects do get built, this "masks" the number of large and/or innovative projects that do not get built or technologies like fuel cells, that remain perennially on the verge of commercialization. Commercialization of new technologies requires a clear, strategic, goal-oriented approach, and a supportive government that cultivates market mechanisms as well as other incentives that encourage consistent direction and innovation.

This paper raises more questions than it answers and fails to bring to closure remedies for the American disease called "demosclerosis". The paper also paints with a very broad brush, ignoring the many innovative corporations in the U.S. that continue to grow and prosper. It is also too hard on the bureaucracy which, based on my own experience, is composed of many competent, responsible professionals.

Nor does the paper end, as it should, on a positive note since there is no reason why many of the problems plaguing the U.S. decision-making process cannot be fixed. Reducing the number of political appointees, drastically cutting regulation (without necessarily relaxing standards), restraining litigation, making tough decisions on which technologies to subsidize and which to cast off, and deregulating the electricity sector are all ways in which, over this decade, the decision-making process can be improved. It may even be possible to enhance the environment through these reforms.