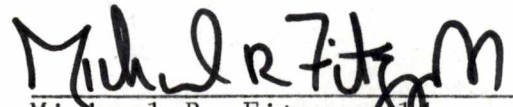
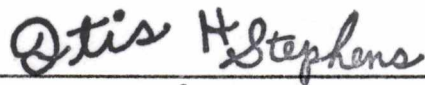


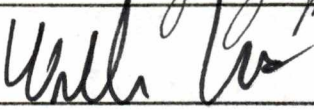
To the Graduate Council:

I am submitting herewith a dissertation written by Amy Snyder McCabe entitled "Open Systems of Environmental Decision Making: The MRS Nuclear Waste Siting Case in Tennessee." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Political Science.


Michael R. Fitzgerald,
Major Professor

We have read this dissertation
and recommend its acceptance:






Accepted for the Council:


Vice Provost
and Dean of The Graduate
School

OPEN SYSTEMS OF ENVIRONMENTAL DECISION MAKING:
THE MRS NUCLEAR WASTE SITING CASE IN TENNESSEE

A Dissertation
Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

Amy Snyder McCabe

December 1987

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ABSTRACT

Decision making in the science and technology policy domain has traditionally been an exclusive enterprise, with scientific and technical elites working within the confines of the administrative state to create public policy. Policies generated from this type of decision making process have been perceived by the public as unsuccessful, so much so that this sort of **closed** system is gradually being replaced by a more **open** one in which citizens and subnational governments play a significantly larger role in the formation of technical policy.

This study is concerned with, within the context of the emerging open system of administrative decision making, how America's public sector is handling the challenge of implementing an environmental policy which commands technical expertise--managing the nation's highly-radioactive nuclear waste. How can a modern democratic system adapt to greater participation in a complex policy area once monopolized by a small cadre of technical specialists, and what are the implications for public managers of a more open system?

These questions lead to the application of a model of science and technology policy to a case study tracing the attempted siting by the U.S. Department of Energy in 1985 of a monitored retrievable storage facility in Tennessee. Extensive personal interviews with key actors at the local,

state, and national levels, as well as a review of agency files and relevant documents comprise the data base.

A systematic examination of the Tennessee case finds that a more open system of decision making does not alone guarantee successful implementation of science and technology policy, but can be useful provided that the process is truly open. The analysis suggests that more open decision making is likely to affect the performance of public managers charged with implementing technical policies. The responsibility of defining the parameters of open systems remains with the Congress.

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CHAPTER I

THE CONTEXT OF NUCLEAR WASTE SITING POLICY IN THE DEMOCRATIC ADMINISTRATIVE STATE

1. INTRODUCTION

Science, Technology, and Public Policy

The impact of scientific discovery on culture is reflected in every aspect of human existence. This acquired knowledge has, in turn, been conducive to improving the quality of people's lives. Advances, in areas ranging from nuclear medicine and power to the use of synthetic compounds to produce higher yields in agricultural production, have contributed to the physical well-being of Americans. These and other discoveries, as well as their subsequent technological applications, have increased at such a rapid pace that the average American citizen enjoys a living standard among the highest in the world.

Social and economic benefits accrued to American citizens, nevertheless, have been accompanied by a variety of economic, social, and political costs. Processes by which surplus-producing fertilizers and other chemicals are manufactured have caused such a serious degradation of the environment that the abatement of existing pollutants, even by the most conservative estimates, will cost billions of dollars. Likewise, scientists who perform laboratory research in genetic engineering must take into consideration

the ethical and social impacts of its application. But the outgrowths most noticeably associated with scientific and technological development are the concomitant increase in governmental intervention through policy making and the rise of the administrative state. Emmette Redford characterizes the administrative state as:

A political-administrative system which focuses its controls and renders its services through administrative structures but includes also the interaction of political structures through which these are sustained, directed, and limited.¹

In effect, Redford speaks of the specialized departments, agencies, bureaus, and independent commissions in the public sector that comprise the national bureaucracy. Ferkiss sees the evolution of science and technology as inseparable from the ascent of the modern nation-state; "technology means planning, rationalization and centralization, and, it is assumed, as a natural consequence, the loss of individual freedom to a faceless bureaucracy."² A proliferation of regulatory policy, in and of itself, is not necessarily bad. When, however, policies designed to ameliorate a problem are poorly designed, implemented, or evaluated by the administrative state and the political system of which it is a part, the problem is likely to be seriously exacerbated.

¹ Emmette S. Redford, **Democracy in the Administrative State** (New York: Oxford University Press, 1969): 5.

² Victor C. Ferkiss, **Technological Man: The Myth and the Reality** (New York: The New American Library, Inc., 1970): 134.

Science and technology policy formation, not unlike other types of public policy, is a complicated process involving a number of actors and the institutions within which decisions are made. Choices produced reflect the weighed costs and benefits of a variety of possible courses of action, each based on the economic, political, and social circumstances at a given time.³ Thus, it is necessary to distinguish between the **product** of the policy process, the science and technology policy itself, and the **process** from which the policy emerges. This process can be viewed as a series of stages that include problem identification and agenda setting, policy formulation, policy adoption, implementation, and evaluation. A systems approach, which emphasizes the connection and interdependence of parts as related to a whole, can be used to stress the dynamic qualities intrinsic to the policy process. The science and technology process is represented in Figure 1.1.

Justification for the Study

Americans, unfortunately, are now burdened with the effects of inadequate policies, for society has not managed its technologies well. Generally speaking, government institutions--the Congress, the courts, and the

³ Dean E. Mann, **Environmental Policy Formation** (Lexington, MA: D.C. Heath and Co., 1981): 5.

Problem Identification &
Demands

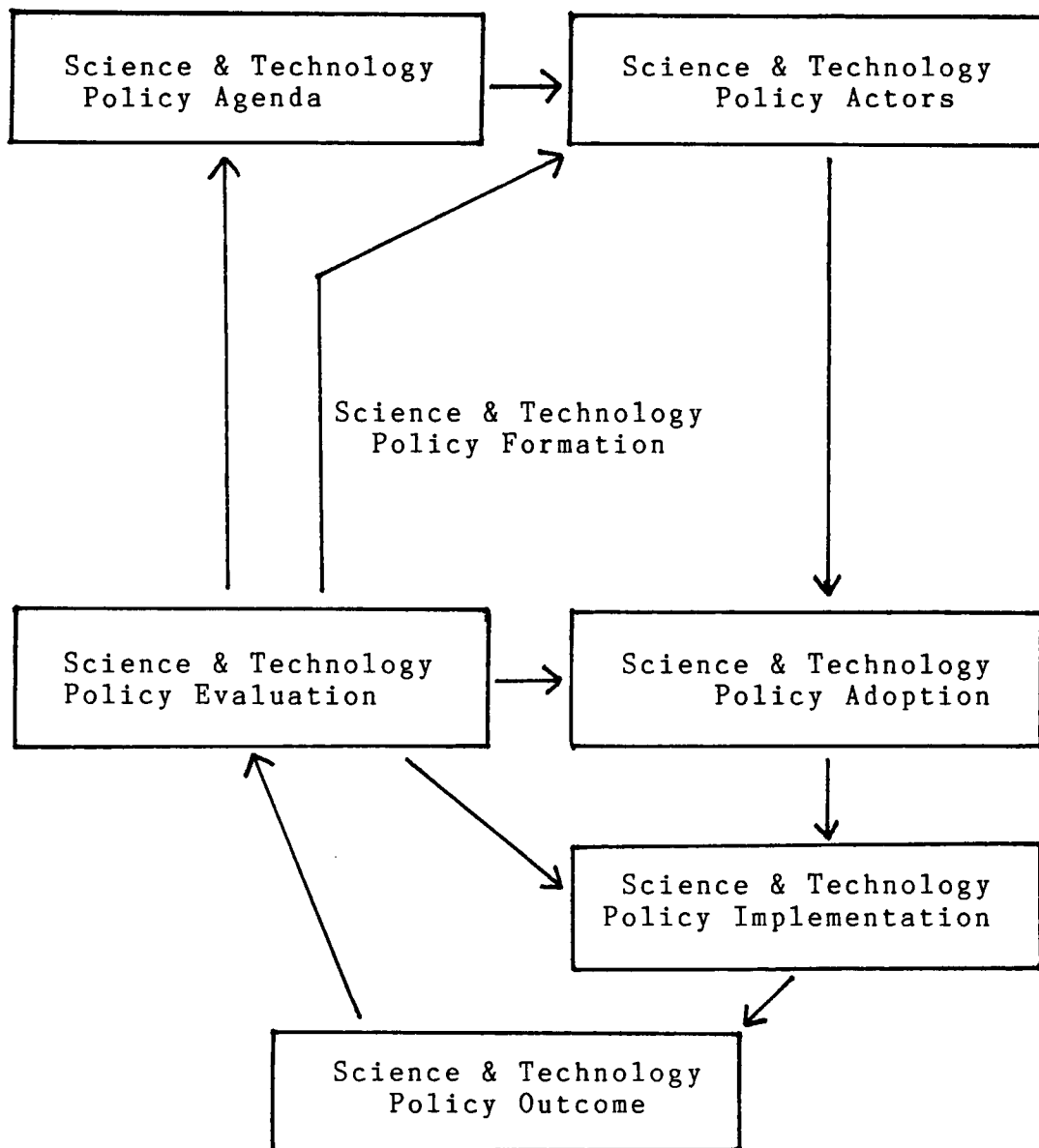


Figure 1.1

A Model of the Science and Technology Policy Process

executive branch--have failed to effectively integrate scientific progress and technological innovation with public policy. In other words, those responsible for taking action to solve public problems associated with new technologies have enacted policies, many of which are unworkable or unsuccessful at reconciling the uses of science and technology for the purposes of peace as well as war.⁴

This failure has roots both in history and in the nature of the political system itself. Historically, it was the mobilization of scientific and technical communities by the federal government during World War II that precipitated the recent technological revolution. Research at the national laboratories focused on the realization of technology-based goals such as national security, cheap electricity, and space exploration.⁵ Hence, scientific research superseded inquiries into any potential detrimental social effects of new technologies. Politically, since the dominant national mood was supportive of funneling public monies into high technology research, elected representatives acquiesced to constituency preferences. American citizens wanted the fastest cars, color television sets, a man on the moon, and the designation of the United

⁴ Thomas J. Kuehn and Alan L. Porter, eds., **Science, Technology, and National Policy** (Ithaca: Cornell University Press, 1981): 11.

⁵ Alvin M. Weinberg, "Can Technology Replace Social Engineering?" in Albert H. Teich, ed. **Technology and the Future** (New York: St. Martin's Press, 1986): 21.

States as a superpower in the arms race. This politicization of science and technology resulted in a public policy process that was dominated, at the federal level, by compromise, pork barrel politics, and by scientific and industry experts who helped make important policy decisions.

The bureaucratic network that was responsible for policy implementation depended on the support of scientists and technicians to justify agency performance as well as appropriations requests. In an examination of Tennessee Valley Authority decision making, Rivkin claims that challenges against the agency were difficult to mount because of a plethora of technical experts who made recommendations to top officials:

When deciding whether a particular generating plant should be constructed at a certain location, TVA could marshal an impressive array of opinions from engineers, scientists, and lawyers justifying the agency's choice. These experts inevitably couched their opinions in neutral, technical language, which often masked the serious political, distributional, and ethical choices that were involved. Expert opinion was equated with democratic results.⁶

Essentially, the administrative state legitimized its actions concerning science and technology policy on the basis of technical competence.⁷

⁶ Dean Hill Rivkin, "The TVA Air Pollution Conflict: The Dynamics of Public Law Advocacy," **Tennessee Law Review** 49 (Summer 1982): 853.

⁷ Dorothy Nelkin, "Science and Technology Policy and the Democratic Process," in James C. Petersen, ed. **Citizen Participation in Science Policy** (Amherst: The University of

One might argue, however, that legitimizing government action depends on the consent of the public. Democratic ideology presupposes that citizens have a basic right of access to the decision making process, and recognizes that consent is preceded by opportunities for the public to be heard. But creating avenues for effective public participation in a technocratic society is difficult. Petersen claims that "specialized scientific knowledge and impenetrable technical jargon are barriers to meaningful participation"⁸ and as a result "mechanisms must be developed to facilitate meaningful participation by citizens and citizen groups."⁹ So that their actions may be perceived as legitimate, policy makers should strive to develop more open institutional arrangements, ones that allow greater citizen participation.

State and local governments, in addition to the public, can be viewed as having a legitimate claim for inclusion in the science and technology policy process. A federated republic is founded on a system of checks and balances, thus subnational governments have the obligation to protect their interests when national policies fail to do so. Roessner

Massachusetts Press, 1984): 34.

⁸ James C. Petersen, "Citizen Participation in Science Policy," in James C. Petersen, ed. **Citizen Participation in Science Policy** (Amherst: The University of Massachusetts Press, 1984: 7.

⁹ Ibid.: 7.

sees the need for state and local involvement in policy making:

Problems and priorities vary widely across cities and states that on the surface appear similar: the social and political demography of citizens differs, laws and regulations differ, and traditions concerning the appropriate role of government and citizen-government interaction differ.¹⁰

Technical policy formation has typically been concentrated at the federal level, as subnational governments were largely excluded from the policy process. Most had neither the expertise nor the resources to effectively compete with their federal counterpart. State and local governments assumed that national officials, who were familiar with the histories of specific technologies, knew best how to handle any potential maleffects. Even though state and local actors were initially isolated from policy decisions, in recent years they have had to deal with technologically-based problems, originating partially from federal mismanagement of science and technology policy. As in the case of citizen participation, federal decision makers need to provide state and local institutions with an opportunity to be actively involved in the science and technology policy process, if decisions are to be recognized as legitimate as well as effectively implemented.

¹⁰ J. David Roessner, "Federal Technology Policy: Innovation and Problem Solving in State and Local Governments," in Thomas J. Kuehn and Alan L. Porter, eds., **Science, Technology, and National Policy** (Ithaca: Cornell University Press, 1981): 409.

No matter from where legitimacy for scientific and technical policy making is derived, the capability of a modern democratic system of government to entertain notions of both citizen and subnational government participation in decision making is one of the fundamental questions facing American politics today. Current budget deficits that are forcing state and local governments to deal with cuts in federal programs, in conjunction with increasing demands that the government redress ill effects of technology, require that those making policy choose solutions that are truly best for the commonweal. More than ever this requirement is essential, for the bond between science, technology, and the political process that was essentially formed during the Second World War has continued to remain strong.

Purpose of the Study

This study is concerned with how America's public sector has dealt, and can more effectively deal with the challenges of implementing a technical, environmental policy, that of managing the nation's high-level nuclear waste. In a nation that is best known for both its industry and democracy, the challenge posed is one that should be of great concern to public administrators and political scientists alike.

Public administration, its principles based on the effective and efficient management of public policy, has traditionally advocated a reliance upon specialists to make

decisions in scientific and technical fields, such as environmental policy. This development of expertise in the national administrative state has placed an enormous amount of decision making power in the hands on non-elected public officials. But changing public attitudes concerning the ability of the federal government and business experts to make complicated decisions on the public's behalf, have caused those responsible for making policy to incorporate provisions for greater public, and state and local participation in the policy process. So that implementation might occur, the science and technology policy process has, of necessity, moved from what O'Brien, Clarke, and Kamieniecki describe as a "closed system to a more open one."¹¹ This increased participation is of no small consequence to the public administration field; the higher the demand for public and subnational government involvement in the science and technology policy process becomes, the greater are the implications for public managers who implement the decisions. The administrative state, by adjusting to a new, more open brand of policy making that addresses questions of accountability, may be better equipped to carry out the mandates with which it is charged.

¹¹ Robert M. O'Brien, Michael Clarke, and Sheldon Kamieniecki, "Open and Closed Systems of Decision Making: The Case of Toxic Waste Management," **Public Administration Review** 44 (July/August 1984): 334.

Similarly, the question of **how much public participation is sufficient** in order to be appropriately responsive to citizen demands is one that has dominated political science for decades. In the United States, where a republican form of government has existed for over two centuries, the incorporation of additional actors in the policy process can affect how the representative democracy will function. While there is an extensive literature detailing various forms of citizen participation, as Kraft asserts "in no case has there been a comprehensive and systematic assessment of the consequences of citizen participation for . . . policy issues."¹² A lack of substantive research into the impact of state and local participation in science and technology decision making is evident as well. For these reasons, and because scientific and technological progress is often accompanied by unforeseen consequences that are national in scope, a crucial need exists for systematically studying public and subgovernment participation in the policy process.

Thus, the purpose of this study is twofold: first, to systematically investigate how a modern democratic system can adapt to an influx of participation in a policy area normally subject to the involvement of a few, specialized

¹² Michael E. Kraft, "Managing Technological Risks in a Democratic Polity: Citizen Participation and Nuclear Waste Disposal," paper presented at the annual meeting of the American Society for Public Administration, Boston, March 28-April 1, 1987: 6.

actors; second, to see how a more open system based on increased citizen and subnational government participation will affect the public administration of scientific and technical policy. A model of the science, technology, and public policy process is used to provide a framework upon which the investigation is based. The application of the model to a case study involving the attempted siting of a temporary nuclear waste facility can benefit policy makers and public administrators in several ways. Applying the model will help practitioners better understand the results of government decisions in technical areas by analyzing what is known (or what remains unknown) about a complex policy area. In addition, the employment of the model for the purposes of this case study will aid public officials in the analysis of, and to improve upon decisions made in the science and technology policy process. The stage for the inquiry is set in the remainder of this chapter.

Environmental Policy and Closed Systems of Decision Making

The intricacies of science and technology decision making can hardly be better observed than by studying the environmental policy process. Environmental policy making is used here to represent the course by which environmental issues are converted to public policy and implemented by the

government.¹³ Rosenbaum acknowledges that policy making in this area is a continual process, that "environmental policy is always in some respects fluid and impermanent, always in metamorphosis."¹⁴

Collectively, hazardous waste legislation designates environmental policies that are designed to regulate non-radioactive and radioactive wastes. **Non-radioactive** wastes generally refer to hazardous substances that "are toxic, corrosive, ignitable, or chemically reactive materials posing a threat to humans or the ecosystem."¹⁵ DDT, detergents, and chemicals used to produce plastics are several types of non-radioactive, hazardous waste. Radioactive wastes are classified according to the amount of radioactivity present and the length of their half-lives, that is, the time necessary for their levels of radioactivity to decay by one-half. Thus, **low-level** radioactive waste is "material contaminated with radionuclides whose half-lives are relatively short--from a few hours to a few decades."¹⁶ Examples of low-level waste products are gloves and apparatus used in hospitals and

¹³ Walter A. Rosenbaum, **Environmental Politics and Policy** (Washington, D.C.: Congressional Quarterly, Inc., 1985): 31.

¹⁴ Ibid.: 30-31.

¹⁵ Ibid.: 181.

¹⁶ E. William Colglazier and Mary R. English, "Low-Level Radioactive Waste: Can New Disposal Sites Be Found?," **Tennessee Law Review** 53 (Spring 1986): 625.

nuclear research facilities as well as clothing and equipment originating from use at nuclear reactors.

Transuranic wastes can have extremely long half-lives and are the byproducts of nuclear weapons production and waste reprocessing by the military. Finally, **high-level** radioactive waste is spent fuel from civilian and military nuclear reactors and the liquid waste that is generated through the reprocessing of this fuel. The quantity of radioactivity found in, and the half-life of high-level waste requires that it be isolated for thousands of years.¹⁷

Prior to the enactment of a series of environmental laws in the late 1960's and early 1970's, decisions concerning non-radioactive (chemical and toxic) wastes were made, in the federal government, by a select group of scientific and technical experts. These decision makers--biologists, chemists, geologists, and engineers--worked with and within the executive and legislative branches, and were subject to some procedural regulation. The Administrative Procedure Act of 1946 (APA)¹⁸ established guidelines for rulemaking in the bureaucracy. All civilian federal agencies were bound by law to provide ample opportunity for interested parties to comment on a potential rule by requiring publication of proposed rulemaking in the **Federal Register**. The APA set procedures for addressing grievances

¹⁷ Ibid.: 626.

¹⁸ 5 U.S.C. 551 (1946).

of affected parties of a particular rule, allowing court review of the rulemaking process.

Agencies were also required to observe the guidelines created during the 1970's by the Freedom of Information Act¹⁹ and the Federal Government Sunshine Act²⁰; the former gave the public the right to view most government documents, while the latter required that formal government meetings be open to the public.²¹ The laws were designed to increase agency accountability, but equally as important, they served as mechanisms to provide easier public access to governmental decision making. In spite of the new legislation most citizens and subgovernment officials assumed, as in the case of chemical and toxic waste management, that the producers and regulators knew best how to safely manage the wastes. Certainly, they were assured that this was the case.²²

The management of nuclear wastes shares a similar history in that a limited number of federal agency and industry representatives decided where and how the wastes were to be stored. But in the case of nuclear waste management, the process by which policies were made was even

¹⁹ 5 U.S.C. 522 (1964).

²⁰ 5 U.S.C. 552(b) (1976).

²¹ Congressional Quarterly, **Energy & Environment: The Unfinished Business** (Washington, D.C.: Congressional Quarterly, Inc., 1985): 99.

²² O'Brien, Clarke, and Kamieniecki: 334.

more restrictive. A great deal of this restriction can be attributed to the uniqueness of the nuclear issue. In the case of non-radioactive wastes, chemical and toxic byproducts are generated by methods that were largely instigated by the private sector. The nuclear industry, however, did not originate nor develop in an open market setting; the federal government virtually created it by harnessing the atom, and sustained it through subsidies.²³ Another unique feature of the issue was the controversial and secretive nature of nuclear research, both before and after the successful detonation of the hydrogen bomb. The government placed a great deal of confidence in the opinions of scientific experts, many of whom had been involved in the Manhattan project. As in the case of chemical and toxic waste management, a confident public felt that the Atomic Energy Commission (AEC) was working with experts toward safe and peaceful uses of atomic energy, and participation in technical decision making was minimal.

The Atomic Energy Commission created by, and its authority derived from the Atomic Energy Act of 1946²⁴, consisted of a five-member civilian panel named, by

²³ James R. Temples, "The Politics of Nuclear Power: A Subgovernment in Transition," **Political Science Quarterly** 95 (Summer 1980): 241.

²⁴ 42 U.S.C. 1801-1819 (1946) and as amended by the Atomic Energy Act of 1954, 42 U.S.C. 2011-2296 (1982 & Supp. III 1985).

presidential appointment, to five year terms. Among its duties, the AEC monitored nuclear facilities and also assumed responsibility for regulating high-level nuclear waste. Because the members lacked specialized training, the AEC, at its inception, relied heavily on a General Advisory Committee (GAC) of scientists to make policy, including waste management.²⁵ But experts in business and science were convinced of the many possible uses the newly acquired atomic technology, and few were concerned that the technology had not been perfected, let alone that no real policy emerged for handling large volumes of nuclear waste.²⁶ Citizens, as well as state and local governments were reassured that there was a permanent solution to the storage of high-level nuclear waste, particularly when such testimony was heard, as that given to Congress' Joint Committee on Atomic Energy in 1957 by an industry waste specialist: "we feel it is important for all to know that this [waste] disposal problem has been taken care of by new technology recently tested."²⁷

Thus, it is readily apparent that before the seventies environmental policy, especially that relating to the regulation of high-level nuclear waste, was characterized by

²⁵ Temples: 241.

²⁶ Donald L. Bartlett and James B. Steele, **Forevermore: Nuclear Waste in America** (New York: W.W. Norton & Company, 1985): 25.

²⁷ Ibid.: 27.

a closed system of administrative decision making. A **closed system** is one which offers little meaningful public or subgovernment participation (Figure 1.2). In this policy domain decision making in federal government agencies was dominated by specialists whose expertise emanated from the scientific and technical training they had received. Some of these experts worked in national departments, some for private businesses, and others for universities. In the case of nuclear waste management policy, the chosen course of action was essentially to do little, if anything, about the residual effects of an expanding technology.

Open Systems of Environmental Decision Making

By the late 1960's, however, this closed system of administrative decision making became increasingly unacceptable to the public, cities, and states alike. As a result, environmental policy formation evolved from a system characterized by public and subnational government exclusion, to one that more readily incorporated these groups. An **open system** of environmental decision making designates a type that allows both citizens and subgovernments opportunities to make significant contributions to the policy process (Figure 1.3). An open concept of decision making, then, is two-dimensional. On

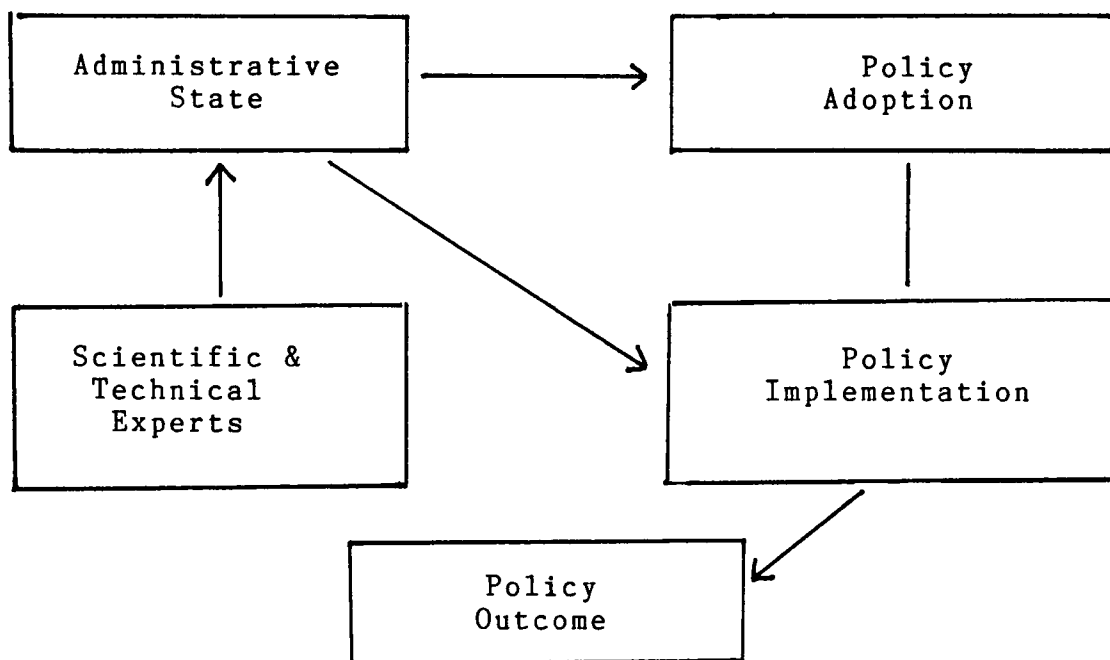


Figure 1.2

Closed System of Administrative Decision Making

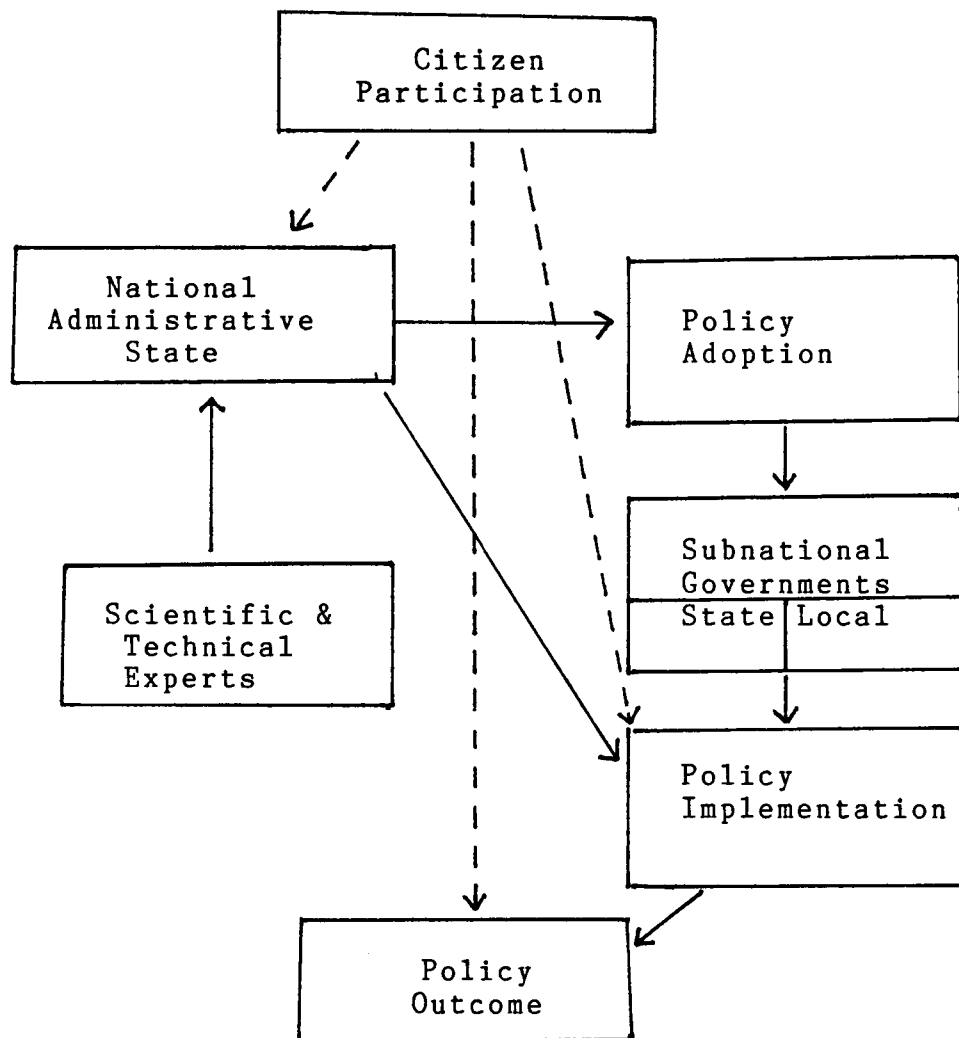


Figure 1.3

Open System of Administrative Decision Making
In a Federal System

the one hand, mechanisms are provided to augment citizen participation into policy decisions; on the other hand, participation expands to include a wider range of state and local actors in whose jurisdictions the policies are likely to be implemented. Since an open system is a relatively new phenomenon in technical decision making, its effects are not readily understood. In order to understand possible unintended effects of open participation in a democratic administrative state, it is important to observe how the need for such a system arose.

Toward the beginning of the Nixon administration, an environmental movement, almost revolutionary in proportion, "catapulted environmental policy onto the national political agenda."²⁸ Public awareness of dangers associated with an increase in the manufacture and unsafe storage of hazardous wastes, and threats posed by chemical releases into the atmosphere, caused federal lawmakers to pass a succession of acts, thus ushering in the environmental era. Among the most important of these laws are: the National Environmental Policy Act of 1969 (NEPA)²⁹, which requires all federal agencies to submit environmental impact statements; the Clean Air Act of 1970 and its 1977 Amendments (CAA)³⁰ and

²⁸ Norman J. Vig and Michael E. Kraft, **Environmental Policy in the 1980's: Reagan's New Agenda** (Washington, D.C.: Congressional Quarterly, Inc., 1984): 9.

²⁹ 42 U.S.C. 4321-4370 (1982).

³⁰ 42 U.S.C. 7401-7646 (Supp. IV 1980).

the Federal Water Pollution Control Act Amendments of 1972 (FWPCA)³¹, which establish the regulatory frameworks for air and water quality; and a triad of legislative mandates that are designed to manage the growing problem of non-radioactive waste. The Toxic Substances Control Act (TSCA)³², passed in 1976, delegates authority to the Environmental Protection Agency to screen new chemicals, and to test and control those chemical suspected of risk to the environment. Also enacted in 1976, the Resource Conservation and Recovery Act (RCRA)³³ purports to manage solid waste including its recycling, while the 1980 Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)³⁴ was created to provide federal assistance in the clean up of existing hazardous waste dumps. Finally, the Low-Level Radioactive Waste Policy Act of 1980 (LLWPA)³⁵ gave states the responsibility for disposal of low-level radioactive wastes, urging the formation of interstate compacts, while the Nuclear Waste Policy Act of 1982 (NWPA)³⁶ provided a timetable for the construction of permanent high-level nuclear waste

³¹ 33 U.S.C. 1251-1376 (1972).

³² 15 U.S.C. 2601-2629 (1976).

³³ 42 U.S.C. 6901-6991 (1982 & Supp. 1985).

³⁴ 42 U.S.C. 9601-9657 (1982 & Supp. 1985).

³⁵ 42 U.S.C. 2021b-2021d (1982 & Supp. 1985).

³⁶ 42 U.S.C. 10101-10226 (1982).

repositories, with the understanding that the federal government would take title to the waste.

Although preserving the environment was the main thrust behind each of these mandates, these pieces of legislation held something else in common: they provided for greater external public participation in the decision making process.³⁷ In addition to the adjudicatory regulations imposed by the Administrative Procedure Act, the public comment periods provided by NEPA were expected to improve the availability of information concerning the impact on the environment of a proposed project.³⁸ The Clean Air Act also expanded public involvement in the policy process; new enforcement procedures threatened violators with citizen-initiated lawsuits if states did not seek compliance.³⁹ The NWPA of 1982 mandated that states be consulted and that the Department of Energy cooperate with the affected parties prior to the siting of a nuclear waste facility. In each

³⁷ External participation is referred to in this study as forms of public access such as adjudication, comment periods during rulemaking, the review of environmental impact statements, and public hearings that are designed to help the government make better decisions, not to transfer decision authority. See Susan Wiltshire, "Public Participation in Department of Energy High-Level Waste Management Programs," **Tennessee Law Review** 53 (Spring 1986): 543.

³⁸ Michael O'Hare, Lawrence Bacow, and Debra Sanderson, **Facility Siting and Public Opposition** (New York: Van Nostrand Reinhold Company, 1983): 47.

³⁹ Walter A. Rosenbaum, **The Politics of Environmental Concern** (New York: Praeger Publishers, 1974): 158.

case, the new requirements were designed to improve the quality of outcomes by incorporating social and environmental variables in the decision making process⁴⁰ and to "expedite rather than delay program implementation."⁴¹ Rivkin's analysis of the citizen-initiated lawsuit in the TVA-EPA dispute over provisions of the Clean Air Act confirms this point:

Citizens' suits play an extremely important role in the policymaking and implementation process . . . In one fell swoop the suits compelled TVA to incorporate diverse points of view into the agency's decisionmaking on air pollution controls.⁴²

No longer was administrative action the sole determinant of policy formation and implementation.

This **opening** of the policy process may be attributed to a variety of factors, but certainly one of the more important is that greater demands have been placed on the government by segments of the population. Yet what explains the surge of demands that generated the recent environmental policies?

There are several reasons for the rise of citizen involvement in the environmental policy process. The first has to do with public response to dramatic events, many of which are disseminated to a wider audience through the mass media. The impact of the media is of no small significance

⁴⁰ O'Hare, Bacow, and Sanderson: 47.

⁴¹ Wiltshire: 541.

⁴² Rivkin: 881.

because of its role in shaping public fears as Nimmo and Combs emphasize: "A key function of the news media in reporting crises, potential disasters, and physical disasters is precisely that of affirming, reaffirming, or subverting people's peace of mind."⁴³ The media is capable of asserting a great deal of influence on the public's image of government performance. For instance, some media accounts involve the release or discovery of hazardous chemicals at sites such as Love Canal, Times Beach, Bhopal, and the Union Carbide site in West Virginia, while others suggest confirmed or suspected leaks of radioactivity from facilities at Three Mile Island, Browns Ferry and Chernobyl. These, and other incidents such as the Challenger disaster and Iran-Contragate, cause the public to point to one reoccurring theme demonstrated by each event---the ineptitude of the public workforce. Perceptions that public officials have failed to deal effectively with these problems, reinforced by media exposes, have caused perhaps the highest levels of public distrust of government in the nation's history. Credibility among public officials and government contractors has plummeted, and consequently citizens are seeking stricter regulations and greater involvement in the decisions influencing their lives.

⁴³ Dan Nimmo and James E. Combs, **Nightly Horrors: Crisis Coverage in Television Network News** (Knoxville: The University of Tennessee Press, 1985): 12.

Second, and not unrelated to the first, is that the stakes themselves are higher, and the public demands a larger role in the decision making process. The stakes have different dimensions--political, economic, technological, and environmental--and the risks associated with each varies according to the issue.⁴⁴ Many times, tradeoffs are made between economic gains such as a cheaper power supply, and environmental losses like polluted air and streams. Others risks are inherent to technology. Consider the paradox: while a sizeable proportion of technological solutions such as those relating to the safe storage of hazardous wastes remain untested, other technological advances allow scientists to detect small traces of hazardous substances in the environment and even smaller measurements are made of the materials' effect on the ecosystem.⁴⁵ In any event, in order that risks be made acceptable to the public, the latter must view the policy process as one that is legitimate. Policy decisions always have an impact on certain segments of the population, some more immediately than others. Citizens therefore, as stakeholders, will demand that the government act to provide easier and more meaningful access to policy making.

⁴⁴ Wiltshire: 542.

⁴⁵ Stanley Rothman and S. Robert Lichter, "Elite Ideology and Risk Perceptions in Nuclear Energy Policy" *American Political Science Review* 81 (June 1987): 384.

Finally, and a suggestion that is frequently cited in the literature, is that the value system of a small, but efficacious minority has changed from one founded on materialism to one that is based on non-material needs.

These **postmaterialists** can be defined as:

People who put the two values of participation and freedom of speech above other two values--defense and economic security--when asked by survey researchers to rank a range of values that can form the objects of public policy.⁴⁶

Henderson, citing the work of psychologist Abraham Maslow, uses the term **post-industrial** values to describe essentially the same "ascending hierarchical needs beyond mere survival and security: knowledge, an esthetic environment, social justice, leisure, and greater participation in decisions affecting one's life."⁴⁷ Others associate the move from material (industrial) values to postmaterial as a shift in the dominant social paradigm. A social paradigm suggests a dominating belief structure around which a society organizes.⁴⁸ The industrial paradigm, which gave high priority to technological growth and economic power, has

⁴⁶ Nicholas Watts and Geoffrey Wandesforde-Smith, "Postmaterial Values and Environmental Policy Change," in Dean E. Mann, ed. **Environmental Policy Formation** (Lexington, MA: D.C. Heath and Co., 1981): 29.

⁴⁷ Hazel Henderson, "Information and the New Movements for Citizen Participation," in Thomas J. Kuehn and Alan L. Porter, eds. **Science, Technology, and National Policy** (Ithaca: Cornell University Press, 1981): 446.

⁴⁸ Lester W. Milbrath, **Environmentalists: Vanguard for a New Society** (Albany: State University of New York Press, 1984): 7.

given way to a new social paradigm, one that accentuates the postindustrial values outlined above.⁴⁹ The general consensus is that the group representing this new paradigm is comprised of a younger, better educated, and politically active, upper-middle class public.⁵⁰ The degree of postmaterialism in any society is a function of the health and growth rate of its economy.⁵¹

So in the United States, an increase in the demand for action by the government coupled with a desire for participation in decision processes, can be understood in terms of public response to dramatic events, larger stakes in policy outcomes, or a shift in the predominant value systems of an influential segment of the population. The environmental movement that was a major force behind the legislative mandates of the 1970's and 1980's may have been initiated by a selective public whose preferences were driven by some combination of these factors-- postmaterialist values and higher stakes, sparked by a score of events that were perceived as life-threatening.

An investigation into open systems of environmental decision making, in addition to the citizen participation dimension, necessitates a discussion of the role that

⁴⁹ Ian G. Barbour, **Technology, Environment, and Human Values** (New York: Praeger Publishers, 1980): 62.

⁵⁰ Watts and Wandesforde-Smith: 30.

⁵¹ Ibid.: 30.

federalism plays in the policy process. Just as demands for public participation have altered the course of environmental policy formation, so have desires of subnational governments to share in decision making modified the definition of federalism. The relationships between federal, state, and local governments have changed dramatically during recent years, emphatically so in the area of environmental regulation.

Federalism in the United States has undergone a series of transformations, evolving from a form of government based on divided authority and autonomous activity (dual federalism)⁵², to one that emphasizes cooperation among government units in dealing with service demands that were brought on by the New Deal (intergovernmental relations).⁵³ Although variations along the theme of intergovernmental relations have been introduced, e.g. the New Federalism of the early seventies, most literature describing federalism still adheres to this model of cooperative relations between governmental units.⁵⁴

⁵² J. Edwin Benton and David R. Morgan, eds., **Intergovernmental Relations and Public Policy** (New York: Greenwood Press, 1986): 7.

⁵³ See Daniel J. Elazar, **American Federalism: A View From the States** 2nd ed. (New York: Crowell, 1972).

⁵⁴ Richard C. Kearney and Robert B. Garey, "American Federalism and the Management of Radioactive Wastes," **Public Administration Review** 42 (January/February 1982): 15.

Some scholars argue, though, that relations between national, state and local governments, in response to particular issues, have become increasingly strained, causing states to invoke:

The doctrine of interposition by placing themselves between their citizens and what they perceive to be an unjust action by the national government. Such state actions were targeted at national civil rights and desegregation policies during the early 1960's and, more recently, in the general policy area of energy, natural resources, and the environment.⁵⁵

Dissonance, evident in certain aspects of federal-state relations, has provided the impetus for a reconceptualization, from the term intergovernmental relations, to **contentious federalism**.⁵⁶

In the environmental domain, one, if not the major source of contentious federalism, stems from the inability of the national government to effectively manage the problem of hazardous waste. Referring to hazardous waste policy in general, Bowman urges the study of national-state partnerships formed because of "national government policy failures in the area";⁵⁷ and in reference to an explosion of state legislative action on nuclear waste issues during the seventies, Kearney and Garey conclude that "the stumbling indecisiveness of the federal government had served as a cue

⁵⁵ Ibid.: 15.

⁵⁶ Ibid.: 15.

⁵⁷ Ann O'M. Bowman, "Hazardous Waste Management: An Emerging Policy Area Within an Emerging Federalism," *Publius* 15 (Winter 1985): 131.

for state and local government intervention."⁵⁸ Subnational governments are becoming more unwilling to accept environmental policy choices handed down by federal officials, especially those pertaining to the management of hazardous wastes. As a result, cooperative arrangements upon which intergovernmental relations are founded have become "overloaded and dysfunctional."⁵⁹

If a greater scope of conflict in waste management can be attributed to contentious federalism, the conflict has certainly been amplified by President Reagan's New Federalism. The Reagan administration has advocated more reliance upon subnational governments, especially states, to address social problems that have been traditionally under the purveyance of the federal system. The main objectives of Reagan's New Federalism, decentralization and defunding,⁶⁰ have tacitly raised the questions as to whether state administrators can, or are willing, to quickly assume a more active role in program implementation.⁶¹ As Lester

⁵⁸ Kearney and Garey: 18.

⁵⁹ Michael R. Fitzgerald, William Lyons, and Patricia K. Freeman, "Hazardous Waste Disposal in a Federal System: Public Attitudes and Intergovernmental Responsibility," paper presented at the annual meeting of the Southern Political Science Association, Atlanta, Georgia, November 6-8, 1986: 1.

⁶⁰ James P. Lester, "New Federalism and Environmental Policy," *Publius* 16 (Winter 1986): 150.

⁶¹ *Ibid.*: 151.

concedes, in the case of environmental policy, many states have decided "not to replace federal aid reductions with own-source funds."⁶² In addition, it is unclear as to whom citizens prefer making decisions in the environmental policy domain. On hazardous waste issues, the public appears to be somewhat inconsistent when asked if national, state, or local governments should take program responsibility. A recent survey indicates that citizens prefer federal involvement in hazardous waste regulation on the one hand, yet want state and local governments to make decisions on siting disposal facilities.⁶³

With the rise of contentious federalism in areas such as hazardous waste management, one must ask if the era of cooperative intergovernmental relations is over, and, if so, has it been replaced with the autonomous governments of Jefferson's day. But the larger question remains as to whether implementing environmental policy can be successful in a system pressured to realize potentially conflicting goals of administrative efficiency and governmental accountability, based upon greatly increased direct citizen and subnational government participation.

⁶² Ibid.: 161.

⁶³ Fitzgerald, Lyons, and Freeman: 12.

2. THEORETICAL FRAMEWORK

A Model of Science and Technology Policy Outcomes

In the social sciences, theories are sets of generalizations, deductively related,⁶⁴ that are useful in understanding and predicting "some segment of the observable world."⁶⁵ Dubin acknowledges that understanding and prediction are many times not achieved simultaneously; the former focuses on **interaction** among variables in a particular system, while being able to anticipate the condition of a system, or **outcome**, is the focus of the latter.⁶⁶

Models are useful in social science research because they can be used to test theories and can aid in the clarification of assumptions upon which a study is based. A model is an "abstraction of reality that is developed for presenting systematically the most important relationships in the situation which is being described."⁶⁷ The value of a model increases in proportion to its ability to incorporate as much of a designated system as possible. Theorists use models to represent relationships among

⁶⁴ George J. Graham, **Methodological Foundations for Political Analysis** (Waltham, MA: Xerox College Publishing, 1971): 122.

⁶⁵ Robert Dubin, **Theory Building** (New York: The Free Press, 1969): 223.

⁶⁶ Ibid.: 10.

⁶⁷ Graham: 112.

components of a system, thus providing a framework for analysis, and by applying the model to a real world situation, can test the validity of a theory.

In order to better understand the science, technology, and public policy process, and help predict the conditions under which policy is successfully implemented, a model of science and technology policy outcomes is shown in Figure 1.4. A single study of limited scope cannot analyze the amalgam of variables that lead to policy determination, so this model examines just one facet of the science and technology policy process.

The model's key feature is to show how forces interplay in the shaping of policy outcomes. Three independent variables represent factors that may influence the successful implementation of science and technology policy. The model postulates that the type of decision making system, open or closed, will significantly affect the policy's result. Also, the technical feasibility and characteristics of the policy itself will play some role in whether or not the policy is implemented. Finally, the manner in which the implementing agency itself carries out its duties will enhance or impede the realization of policy goals. Agency performance can affect the successful implementation of science and technology policy.

Each of the several components of the model are vital to the comprehension of policy outcomes and, thus, are the focus of this study. It is expected that policy outcomes

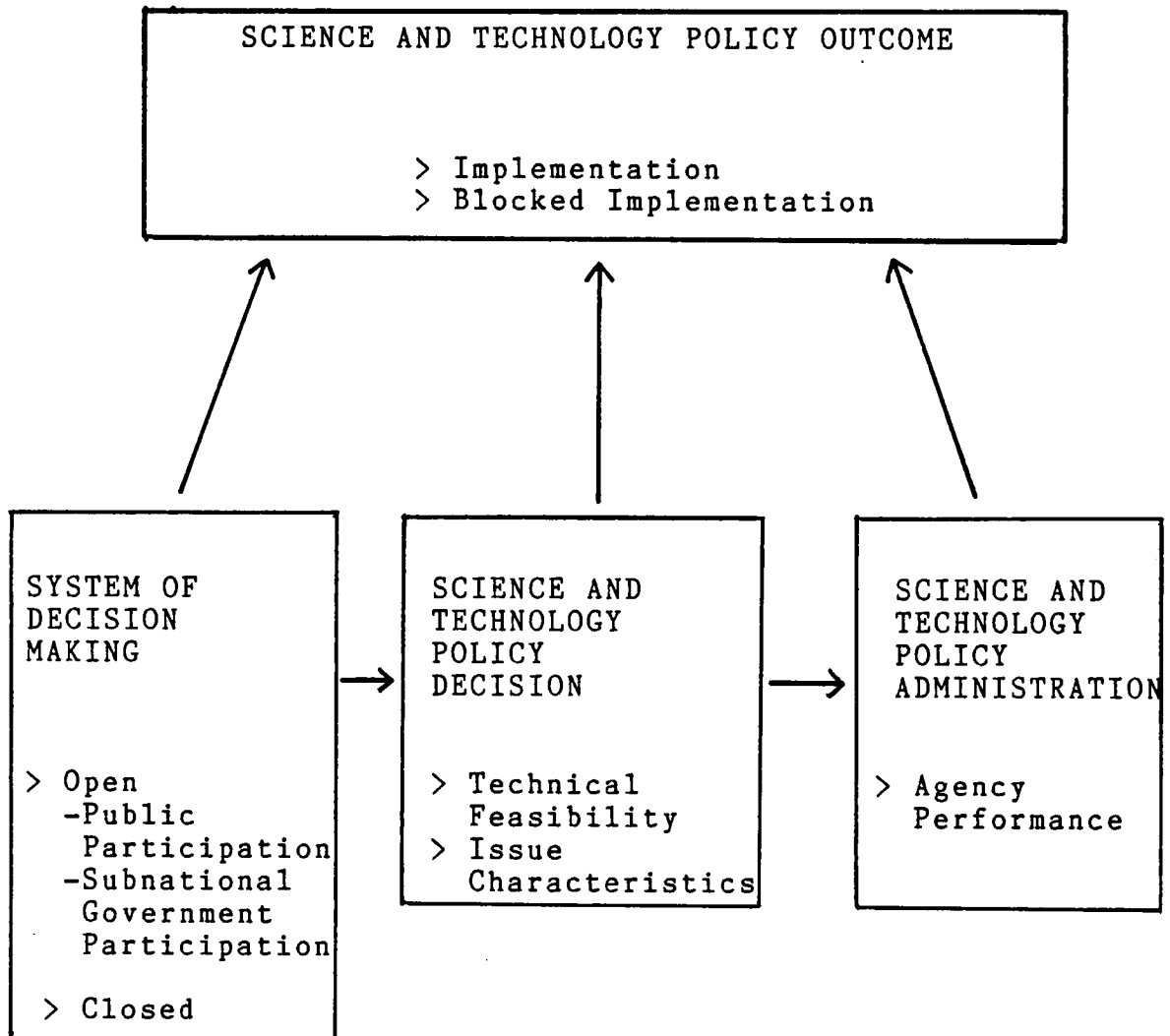


Figure 1.4

Model of Science and Technology Policy Outcomes

are conditioned by the method by which decisions are made, as well as whether a policy is setting precedent or not. Likewise, the performance of the agency that is charged with carrying out a mandate is crucial to the policy's success.

3. CASE DESIGN AND METHOD

Operationalizing the Model: The MRS as a Case Study

A case study can be useful to the social scientist because of its amenability to model testing. This paper applies the model of science and technology policy outcomes to a case study involving the attempted siting of a temporary high-level nuclear waste storage facility. An examination of how a policy decision is made, the specifics of the decision, and how the decision is administered, helps to determine whether or not results are congruent with the policy's intent. If the policy outcome is not consistent with the framers' intent, the model may help determine probable causes for policy failure.

For the purpose of studying nuclear waste facility siting as an example of science and technology policy, the model's components must be operationalized. In the model, **closed** systems of decision making designate those in which a very limited number of scientific and technical experts, having narrowly focused goals, act as policy makers. **Closed** systems allow neither meaningful citizen, nor subnational participation. **Open** systems allow the opportunity for relevant citizens and subnational governments, who are not

usually equipped with the same technical expertise or resources, to contribute significantly to the policy process. Open systems provide relatively easy access for active public, state and local participation, not merely the chance to provide comments after the decisions are essentially made. Policy administration, a major indicator of policy outcomes, can be measured according to how well an agency performs in accordance to its legislated mandate. Policy outcome, the model's dependent variable, constitutes the successful or unsuccessful siting of a temporary nuclear waste storage facility.

The siting of nuclear waste facilities is a problem that has not been solved in a closed decision making setting; a once technical problem has turned into a political one as well. The largest problem associated with nuclear waste storage is the (NIMBY) syndrome, an acronym tagged to represent the phrase used when a possible storage site is announced: Not-In-My-Backyard. Because of public and subnational refusal to host nuclear waste storage facilities in local communities, commercial spent fuel and other highly radioactive wastes are still being stored at the sites at which they were generated.

A major step in the nation's management of nuclear waste was taken in 1982 with the passage of the Nuclear Waste Policy Act. Signed by President Reagan on January 7, 1983, the Act established a national policy for the safe storage, transportation, and disposal of high-level nuclear

waste. Under the NWPA, the U.S. Department of Energy (DOE) is charged with two major responsibilities: "(1) to develop, site, construct, and operate deep-mined geological waste repositories; and (2) to perform research, development, and demonstration of the disposal of spent fuel and high-level waste."⁶⁸ As a part of the DOE's waste management plan, the agency was to submit a proposal to Congress for the development of one or more monitored retrievable storage facilities (MRS). An MRS would repackage spent fuel in uniform casks, and temporarily store the high-level nuclear waste until its transport to a permanent underground repository.

The Department of Energy, in April of 1985, selected three candidate sites in Tennessee where such a facility could be constructed. Almost immediately the governor of the state instructed an interagency cabinet council to embark upon a study that would look at the need for, and feasibility of, such a facility. The study was also to look at the impact upon the state of constructing an MRS within its borders. A grant was provided to the state by DOE for the study; a portion of the money was distributed to the cabinet-level task force for its investigation, and part was given to the local communities where the candidate sites were located. The affected localities established task

⁶⁸ United States Department of Energy, Office of Civilian Radioactive Waste Management, **Overview of the Nuclear Waste Policy Act** (Washington, D.C.: United States Department of Energy): 1.

forces that were formed to weigh the costs and benefits of the proposed MRS, and to set forth the conditions under which the facility might be acceptable to the community. In January of 1986, the governor of Tennessee announced in a Washington, D.C. press conference, that the state would not accept the construction of the MRS at the site of DOE's cancelled Clinch River Breeder Reactor project in Oak Ridge, the agency's preferred choice. The governor, while conceding that temporary storage facilities could be safely operated, insisted that the MRS is not needed as an integral part of the repository program.

Data Base

To test the policy model, this study traces the MRS case, from the time the DOE announced its final candidate sites, to the time Tennessee's governor rejected the facility being built in the State. The case study is based on personal interviews with key actors who were involved in the process at the local, state, and national levels. The analysis of a national public opinion survey, designed to elicit views pertaining to the siting of nuclear waste facilities, is used to establish the parameters upon which siting decisions are based. A review of agency files and documents completes the data base.

Propositions

Propositions are statements that predict relationships between a model's components. Since the purpose of a model

is to generate predictions about the model in operation,⁶⁹ propositions can be used to test the model of science and technology policy outcomes. Numerous propositions may be derived from the model, however, six are identified in this study.

The majority of civilian nuclear reactors currently in operation are located in the eastern section of the United States. While the NWPA does not designate any particular region for the construction of waste storage facilities, it was understood that the first geological repository would be built in the western half of the nation, and the second would be constructed east of the Mississippi River. Citizens in whose state a facility is proposed, will be asked to accept a disproportionate amount of risk as compared to people residing in non-affected states. Since the stakes for some citizens will increase in the attempt to site a nuclear waste storage facility, it is expected that:

Proposition 1: People residing in different geographical areas hold dissimilar views as to how hazardous waste siting policy should be made.

A prior discussion suggests that the value systems of a small segment of the population are based on post-industrial needs, including living in an esthetic environment and participating in decision making processes. Individuals who comprise this segment tend to be younger, higher-income,

⁶⁹ Dubin: 170.

better educated, and active politically.⁷⁰ If this select public is more concerned with environmental issues, then it follows that:

Proposition 2: Citizens who are willing to participate in nuclear waste siting decisions hold views different from those held by non-participants.

The degree to which the public trusts those making waste management decisions is a major factor affecting policy implementation.⁷¹ Congress, in forming the NWSA, recognized the need to promote public confidence in siting decisions as well as trust in decision makers, when it expanded the participation of the public and subnational governments in repository planning and development.⁷² When asked about the trust people had in various groups to solve environmental problems, Milbrath found that trust in government was quite low, and that low trust in government was correlated with post-industrial indices measuring environmental concern.⁷³ If a segment of the population, whose belief systems are based on post-industrial values, is willing to participate in decision making, then it is expected that:

Proposition 3: Those most willing to participate in nuclear waste siting decisions are less trusting of government institutions.

⁷⁰ Watts and Wandesforde-Smith: 30.

⁷¹ Fitzgerald, Lyons, and Freeman: 7.

⁷² 42 U.S.C. 10131, Sec. 111. (a).

⁷³ Milbrath: 93.

With the inclusion of the public, and state and local officials in technical decision making processes, a number of actors are in closer contact with public managers who work in the federal bureaucracy. O'Brien, Clarke, and Kamieniecki suggest that characteristics such as the long-term health and environmental effects of waste sites will probably "continue to encourage issue expansion and increase the number of participants in decision making."⁷⁴

Not only do the issues surrounding waste disposal encourage participation, but the Nuclear Waste Policy Act mandates that the Department of Energy, when determining the suitability of an area for the development of a storage facility, should cooperate with states and affected communities. Section 117(b) of the NWPA directs that:

The Secretary shall consult and cooperate with the Governor and legislature of such State and the governing body of any affected Indian tribe in an effort to resolve the concerns of such State and any affected Indian tribe regarding the public health and safety, environmental, and economic impacts of any such repository.⁷⁵

With a substantial increase in interaction between federal agencies, the public, and subnational governments, it is expected that:

Proposition 4: Open systems of environmental decision making in nuclear waste siting decisions will affect the performance of public managers working in the federal government.

⁷⁴ O'Brien, Clarke, and Kamieniecki: 339.

⁷⁵ 42 U.S.C. 10137 (1982).

The NWPA recognizes that, during the past thirty years, attempts by the federal government to "devise a permanent solution to the problems of civilian radioactive waste disposal have not been adequate."⁷⁶ Subnational governments have also recognized that responsible federal agencies have been slow and indecisive in providing a program for the safe disposal of high-level nuclear wastes. Since past performance of relevant federal agencies has been less than acceptable, the way in which state and locals perceive subsequent agency action is important in soliciting subnational government cooperation. Thus, it is expected that:

Proposition 5: Subnational government perceptions of agency performance will affect the siting of nuclear waste facilities.

The problem of where to dispose of high-level nuclear waste has persisted for several decades. Attempts to site storage facilities have been rare, and those that have been proposed were chosen by a select group of federal officials, in a closed system of decision making. The decision in the early seventies to construct the nation's first high-level storage facility at Lyons, Kansas was made by the AEC. Plans for the facility were later abandoned as the agency met substantial state and local opposition.⁷⁷ More recently, when the Department of Energy announced that it had selected three candidate sites for a permanent

⁷⁶ 42 U.S.C. 10131, Sec. 111. (a).

⁷⁷ Barlett and Steele: 285.

repository, affected citizens and subnational governments mounted legal campaigns to halt the siting within their states.

Since evidence suggests that decisions made in the absence of public and subgovernment participation results in the unsuccessful implementation of siting policy, it is expected that:

Proposition 6: Open systems of environmental decision making will enhance the implementation of nuclear waste siting policy.

Preview of the Remaining Chapters

Chapter Two concentrates on the notion that traditional methods of public policy making in the institutional setting are no longer feasible in democratic administrative states. The chapter traces the origins of classic bureaucracy to demonstrate how technical expertise has played such a large role in science and technology policy formation in the past. A discussion of expertise as a bureaucratic resource points to the ease with which technical policy made in a closed system was justifiable. Yet, the increasing politicization of the policy process, and competing expertise of other policy actors shows why technical policy making in a closed setting is less effective as in other eras, and why successful implementation is not as likely.

The third chapter discusses complex problems associated with the siting of hazardous waste facilities, and stresses that successful resolution of the siting dilemma depends upon a whole host of factors. A review of the political,

socioeconomic, and technical questions that must be addressed highlights the unique and interdisciplinary nature of siting decisions. Chapter Three evaluates the results of a national public opinion survey designed to elicit levels of public trust in governmental institutions, and the extent to which the public is willing to participate in the siting of hazardous waste storage facilities. In this chapter, then, Propositions One, Two, and Three are tested.

Chapter Four considers how the U.S. Department of Energy has handled its responsibilities pertaining to the MRS facility as mandated by the Nuclear Waste Policy Act of 1982. This piece of legislation presents a challenge to DOE, because the specialized agency is accustomed to making technical decisions inside the organization. The chapter discusses the DOE from an historical perspective, then analyzes the agency's performance in complying with the NWPA. Since the administration of the NWPA by DOE is expected to ultimately affect the policy's success, the impact of a more open decision making process, in terms of agency adaptability, is evaluated. Chapter Four tests the fourth proposition derived from the science and technology policy model.

The fifth chapter is devoted to Tennessee's reaction to the DOE's MRS proposal, from the time the 1985 siting announcement was made, until the governor announced his disapproval of the project in January, 1986. Chapter Five looks at why subnational governments should, then how they

can deal with complicated technical issues by viewing Tennessee's open decision making process. The major components of Tennessee's evaluation efforts are discussed as are the reasons for the governor's veto of the MRS proposal. Proposition Five is tested in this chapter; the state's perception of its relationship with the DOE is assessed, and serves as an indicator of successful facility siting.

Chapter Six focuses on the citizen participation aspect of the MRS evaluation, as a component of the more open system of environmental decision making. An examination of the need for citizen participation in a democracy precedes a summary of typical forms of public involvement. A study of the task forces organized by affected local governments in the MRS case demonstrates the use of non-traditional types of citizen participation in the science and technical policy process. By analyzing the impact of public participation in the MRS siting process, the study's sixth proposition is tested.

The final chapter reiterates the importance of our research question to the study of public administration: how will a more open system of environmental decision making, based on increased citizen and subnational government participation, affect the administration of science and technology public policy? Chapter Seven assesses the usefulness of the open model as a theoretical framework for making technical policy decisions, and evaluates the

propositions testing each model component. Suggestions for future research on decision making in technical areas such as nuclear waste policy are offered.

CHAPTER II

SCIENTIFIC AND TECHNICAL EXPERTISE IN THE CHANGING ADMINISTRATIVE STATE

1. INTRODUCTION

We have seen how a more open decision making process developed in the science and technology policy domain. Declining trust in the administrative state to create and manage technical policy has resulted in a system in which citizens and subnational governments play a larger role in policy formation and implementation. The public, in reaction to well-publicized technological and environmental disasters, refuses to accept without question the decisions handed down by government experts. The stakes are too high.

It is difficult to dispute the need, however, to have expert advice in science and technology policy formation, or that expertise is a political resource in debates relating to science and technology; "access to knowledge and the resulting ability to question the data used to legitimize decisions is an essential basis of power and influence."¹ Thus, one could see how strong a force specialized federal agencies were in a policy making process that excluded outside participants. In complex policy areas, such as

¹ Dorothy Nelkin, "Science, Technology, and Political Conflict: Analyzing the Issues," in Dorothy Nelkin, ed. **Controversy** 2nd ed. (Beverly Hills: Sage Publications, Inc., 1984): 16.

nuclear waste management, public managers could once claim an monopoly on technical expertise. As expertise has been acquired by other actors, it may be used in a competitive way to fashion a particular argument. Investigating the role of expertise in a democracy is important so that the implications of a more open policy process can be better understood. Competing expertise among a greater number of participants may inhibit effective policy formation and implementation. Conceding that the need for effective technical policy is greater than ever, it is useful to examine how expertise has, and is being used in the science and technology policy process.

Expertise and the Public Management of Science and Technology Policy

Classical writings in Public Administration depict bureaucrats solely as **managers**, not the **creators**, of public policy. According to early theorists, public administrators gained the expertise, both through specialized training and on-the-job experience, to efficiently implement decisions made in the political arena. Expertness in organizations was seen as a means to realize the goals of public administration--the effective and efficient management of public policy. No longer readily accepted, however, is the notion that bureaucrats simply administer policies made by politicians; public managers **make** as well as **implement**

policy.² Subsequently, expertise turned out to be a qualification, not only for implementing, but also for forming public policy. Students of public administration eventually inquired about the nature of the connection between bureaucrats and public decision making. As a result, while earlier topics stressed organizational theory and scientific management, more recent studies center around what Bozeman and Straussman refer to as the "core issues" in Public Administration--political accountability, the role of the public interest, and the assessment of efficiency and effectiveness.³ These core issues essentially focus on problems associated with policy formation and implementation in the administrative state in a democratic system.

As the science and technology policy process has moved from a closed system to a more open one, the role played by experts in decision making has visibly changed. Bureaucratic specialization, once the justification for excluding a number of actors from policy making, has not disappeared. Yet the suboptimal performance of the national government in areas such as environmental management has weakened the argument that decisions ought to be based on expertise alone. Poor performance, simultaneously, has led

² Joel D. Aberbach, Robert D. Putnam, and Bert A. Rockman, **Bureaucrats & Politicians in Western Democracies** (Cambridge, MA: Harvard University Press, 1981): 85.

³ Barry Bozeman and Jeffrey Straussman, **New Directions in Public Administration** (Monterey, CA: Brooks/Cole Publishing Co., 1984): 1.

to the inclusion of public and subnational governments in policy processes, many of which are challenging the experts employed in and by federal agencies. Although still important, values other than effectiveness and efficiency are providing a basis for policy choice. Because increased participation may affect the public management of science and technology policy, and because the study of effective and efficient policy implementation remains crucial to contemporary Public Administration, it is important to look at how expertise influences public policy as well as how the **opening** of the policy process has affected the decision making capabilities of technical experts.

Organization of the Chapter

To understand how agency expertise contributes to the technical policy process, it is necessary to discuss the origin of expertise as a component of organizational theory and scientific management. The second part of this chapter examines the traditional assessment of expertise by reviewing Weber's prototypical bureaucracy, and by focusing on expertise as a bureaucratic resource. In doing so, it is easily understood how the mechanisms built into earlier models of bureaucracy facilitated a closed system of administrative decision making, with technical competence serving as a powerful tool to legitimate policy formation by experts. The chapter's third section seeks to explain why bureaucratic expertise can no longer be the single

determinant of decision making. Politics in administration have raised questions of legitimacy in the bureaucracy. These legitimacy questions, along with the rapid gaining of expertise by other policy actors illustrate that policies cannot be made in as closed a system as in earlier eras. A discussion of the evolving relationship between agency experts and policy making as well as the implications of the open system of decision making in technical areas for public managers are drawn to conclude the chapter.

2. TRADITIONAL ROLE OF BUREAUCRATIC EXPERTISE

Bureaucracy: The Early View

Nearly every study of public administration credits the German sociologist Max Weber with the development of the earliest, and perhaps most influential writings on bureaucratic organization. As a prominent founder of the Structuralist school, Weber was particularly concerned with the problem of organizational control, and related questions of legitimacy and distribution of power.⁴ Weber's main thesis is that large organizations must have established norms and the power to enforce them, if they are to operate effectively. As Etzioni confirms, implicit in this argument

⁴ Amitai Etzioni, **Modern Organizations** (Englewood Cliffs, NJ: Prentice-Hall, Inc., 1964): 50.

is that the exercise of power must be "seen as legitimate by those subject to it."⁵ Etzioni adds that:

[Weber] used **power** to refer to the ability to induce acceptance of orders; **legitimation** to refer to the acceptance of the exercise of power because it is in line with values held by the subjects; and **authority** to refer to the combination of the two---i.e., to power that is viewed as legitimate [emphasis added].⁶

Weber constructed a typology of authority to distinguish among several sources of legitimacy, and thus provided the foundation for the systematic study of contemporary bureaucracy.

Weber identified three kinds of authority--charismatic, traditional, and rational-legal--and linked them to specific types of organizational frameworks. Charismatic authority is derived from an individual's ability to appeal to a person or group such that his or her orders are followed. Structures formed under charismatic authority usually lack any clear task specificity, but can eventually lead to the creation of a stable organization. As Rourke observes: "social movements that began under the leadership of a charismatic leader became bureaucracies as their functions were rationalized and routinized in formal organizations---the sect in the end became a church."⁷ Weber's definition

⁵ Ibid.: 51.

⁶ Ibid.: 51.

⁷ Francis E. Rourke, **Bureaucracy, Politics, and Public Policy** 3rd ed. (Boston, MA: Little, Brown and Co., 1976): 91-2.

of traditional authority is based on the observation that decisions are always made in a certain manner, grounded in past history. Organizations created under traditional authority, such as an aristocracy, "do not allow the rationality of the productive or administrative process to exert itself."⁸ The family unit is generally classified as a form of traditional authority.

Of the classifications developed by Weber, **legal-rational** authority is most important to the examination of organizations in democratic societies because Public Administration centers on the study of a bureaucratic model based on this authority type. Legal-rational authority is "legitimated by being in accordance with formally correct rules of those in authority--under such rules--to issue commands."⁹ In other words, orders are carried out in a legal-rational organization because they are derived from a legal mandate that is perceived to be legitimate. The lines of authority are clearly drawn in a hierarchical fashion, with lower positions under the control of those higher up the organizational chart. That is, those holding positions in the upper echelons of the organization are authorized to make decisions as to how the agency's mandate is to be carried out. In a legal-rational bureaucracy rules are

⁸ Etzioni: 52.

⁹ Eva Etzioni-Halevy, **Bureaucracy and Democracy** 2nd ed. (London: Routledge & Kegan Paul, 1985): 27.

uniformly applied, and officials are appointed on the basis of technical competence, not partisan loyalty.¹⁰ The employees' neutrality is important to the realization of goals, as Weber asserts:

Bureaucratic forms of organization were more efficient than other systems to the degree that they are able to depersonalize their rules and procedures and, therefore, to achieve high levels of calculability in the decision-making process.¹¹

Despite the objective quality of rational decision making, in this type of ideal structure power is proportionate to the position held by an official. The higher the position is, the greater impact an official's decision has on the rest of the organization.

Weber attributed the rise of modern bureaucracy to multiple causes, including the creation of money and capitalist economies, the emergence of Western democracies and complicated administrative problems resulting from their creation, and the development of advanced forms of communication.¹² In comparing Western and European societies, Weber saw the legal-rational bureaucracy as best equipped to **efficiently** and **effectively** deal with the myriad of complex problems confronting industrializing nations.¹³

¹⁰ Felix A. Nigro and Lloyd G. Nigro, **Modern Public Administration** 6th ed. (New York: Harper & Row, Publishers, Inc., 1984): 142.

¹¹ Ibid.: 143.

¹² Etzioni-Halevy: 30-31.

¹³ Nigro and Nigro: 142.

Yet one of the keys to understanding Weber's claim that policy execution is performed optimally in a bureaucratic setting, lies in his treatment of expertise.

Expertise As a Bureaucratic Resource

Expertise, according to Victor Thompson, can be defined as either the specialization of tasks or the specialization of people; the former is an organizational process, while the latter is a social process.¹⁴ In Weber's ideal bureaucracy, however, expertise encompasses both aspects: " . . . for this bureaucracy rests upon expert training, a functional specialization of work, and an attitude set for habitual and virtuoso-like mastery of single yet methodically integrated functions."¹⁵ Similarly, Rourke states that bureaucratic expertise arises from "both the proficiency of the people they employ and the skills that an organizational setting itself engenders."¹⁶ Graham Allison's classic study of the Cuban Missile Crisis is illustrative of Rourke's latter point. Allison shows how learning standard operating procedures complements

¹⁴ Victor A. Thompson, **Modern Organization** (New York: Alfred A. Knopf, Inc., 1963): 28.

¹⁵ H.H. Gerth and C. Wright Mills, **From Max Weber: Essays in Sociology** (New York: Oxford University Press, 1946) in Dean L. Yarwood, ed. **Public Administration, Politics, and the People** (New York: Longman, Inc., 1987): 15.

¹⁶ Francis E. Rourke, **Bureaucratic Power in National Policy Making** 4th ed. (Boston, MA: Little, Brown and Co., 1986): 57.

individuals' training, thus promoting a greater degree of in-house expertise.¹⁷

The legal-rational model supports the notion that career bureaucrats hold positions for life. Agency expertise, then, is assured because officials require a "firmly prescribed course of training,"¹⁸ "who by constant practice learn more and more."¹⁹ The longevity, furthermore, of civil servants in their positions connotes that expertise gained through initial training is developed throughout the careerists' tenure. The organization benefits from this reinforced specialized training because of the potential for greater efficiency in policy implementation. Thus, expertise can be seen as a bureaucratic resource.

Much has been written about bureaucratic resources enhancing decision making capabilities in the policy process.²⁰ One resource, the specialized knowledge of an agency expert, could make challenges to the organization's decisions difficult to mount. The agency's ability to legitimize its decision gives it a certain amount of

¹⁷ See Graham T. Allison, "Conceptual Models and the Cuban Missile Crisis," **The American Political Science Review** 63 (September 1969): 689-718.

¹⁸ Gerth and Mills: 10.

¹⁹ Ibid.: 13.

²⁰ For a concise summary, see John W. Kingdon, **Agendas, Alternatives, and Public Policies** (Boston, MA: Little, Brown and Co., 1984): 35-47.

influence and power. One could argue, then, that of the available resources, information control and expertise are most valuable to an organization, particularly to a technical agency. Widely cited is Weber's acknowledgment that "the power position of a fully developed bureaucracy is always overtowering," primarily because "the 'political master' finds himself in the position of the 'dilettante' who stands opposite the 'expert.'"²¹ The expert in an ideal bureaucracy, because of the power associated with technical knowledge, can be viewed as a resource to the organization. The power, in conformity with the legal-rational model, is also legitimate; trained civil servants ought to be qualified to make policy judgments in their specialized areas. The model assumes that elected officials lack the expertise needed to make complex decisions demanded by an industrial society.

In recent practice, this has been the norm, rather than the exception. Politicians tended to defer to experts in the respective agencies when technical questions arose in policy formation. But, in early American history this was not the case, mainly because the government provided few services that were, for the most part, nontechnical in nature. The functions that were performed by the government at its inception--providing national defense, collecting revenues, establishing postal services, and maintaining a

²¹ Gerth and Mills: 16.

judicial system--could be maintained by a relatively nonprofessional workforce. With few exceptions, there was little cause to have expert testimony and advice to make decisions because there weren't that many technical policies to be made. Still, with industrialization that led to the growth and professionalism of American bureaucracy since the Pendleton Act, most officeholders have had little recourse other than to solicit expert opinions from federal agencies. This is not to say that policy choices are made solely on the basis of recommendations by experts. Although, when implementing policy, many times the bureaucrat must clarify vague statutes and is, in essence, making policy. Table 2.1 illustrates the domination by certain professional groups who are employed in federal agencies, and serves to demonstrate why politicians might feel that bureaucratic expertise in technical policy formation is warranted.

The point to be made here is that expertise has played, and continues to play an important role, both in the implementation and formation of technical policy. Professionals consult with officeholders and provide expert testimony, but also create policy within their organizations as circumstances dictate. Consequently, the science and technology policy process has been, for all practical purposes, closed to the participation of the public, and state and local governments. The expertise of the professional civil service was a reason for excluding other

Table 2.1

Professional Specialties in Selected Federal Agencies^a

Federal Agency	Professional Specialty
All military agencies	military officers
Department of State	foreign s. officers
Public Health Service	health physicians
Forest Service	foresters
Bureau of Reclamation	civil engineers
Geological Survey	geologists
Department of Justice	lawyers
Department of Education	educators
Bureau of Standards	natural scientists

^aAdapted from Frederick C. Mosher, **Democracy and the Public Service** 2nd ed. (New York: Oxford University Press, 1982):115.

potential participants. Decisions made by experts tended to be favorable toward the agency in which they were employed, suggesting that expertise has long served as a resource to bureaucratic organizations. Specialists, indeed, exerted a great deal of influence in the policy making and implementation processes. Yet, as is taken up in the following section, the once strong argument that experts ought to make policy choices solely on account of their technical competence, is weakening.

3. THE CHANGING ROLE OF BUREAUCRATIC EXPERTISE

Challenging the Experts

As discussed in the first chapter, changing societal values and declining trust in government led to a demand for greater participation in decision making, and ultimately to a diminished reliance upon agency experts in environmental policy formation. Yet, a decline in public subservience to experts can also be attributed to other sources. Of these, legitimacy questions concerning the ability of non-elected officials to maintain an objective stance in public policy formation, and the increased capability of other, non-technical groups to attain a measure of expertise, are of the greatest import. Together, these two factors have called into question the utility of allowing decisions to be made by a small group of technical experts. As a result, policy actors are less dependent on the specialized

knowledge of civil servants and more reliant on other sources of expertise, encouraging further the opening of the science and technology policy process.

Politics and Administration: The Legitimacy Question

As reformers sought "good government" after the demise of the spoils system, scholars such as Wilson, Goodnow, and Taylor wrote about the emerging science of administration. The underlying principle stressed in these studies is that politics is, and should remain, an enterprise that is largely distinct from administration. Wilson felt that there is a need "to discover, first, what government can properly and successfully do, and secondly, how it can do these proper things with the utmost possible efficiency and at the least possible cost either of money or of energy."²² Analytically, to distinguish between decision making and implementation seemed important to progressive government; during an era in which the separation of powers question "was plaguing public service, the dichotomy in its less rigid form appeared as an innovative and promising development."²³ Wilson's generation of scholars lashed out

²² Woodrow Wilson, "The Study of Administration," **Political Science Quarterly** 2 (June, 1887) in Jay M. Shafritz and Albert C. Hyde, eds. **Classics of Public Administration** 2nd ed. (Chicago, IL: The Dorsey Press, 1987): 10.

²³ Lawrence J. O'Toole, Jr., "Doctrines and Developments: Separation of Powers, the Politics-Administration Dichotomy, and the Rise of the Administrative State," **Public Administration Review** 47 (January/February

at corruption in government. Political favoritism had grown exceedingly worse since the inauguration of the spoils system by Jackson years earlier. Primarily, these writers were concerned with defining the appropriate role of bureaucracy in a democratic state.²⁴

Even though volumes have been written about the separation of administration from politics, and its significance as a normative ideal, most social scientists have declared the dichotomy to be "hopelessly naive."²⁵ The fact that officials in the highest administrative positions are political appointees, and that their numbers have increased in recent decades, is of no small significance. Pfiffner describes the proliferation of presidential and department head appointments, and the increasing ability of politicians to place partisans in strategic decision making positions:

Each administration can appoint up to 10 percent of the Senior Executive Service (SES) at the top management level (GS-16 to Executive Level IV). This amounts to about 700 of 7,000 total SES positions. The SES regulations also increased political control of the bureaucracy by allowing agency heads to transfer executives throughout the agency and to place political

1987): 17.

²⁴ Barry D. Karl, "The American Bureaucrat: A History of a Sheep in Wolves' Clothing," **Public Administration Review** 47 (January/February 1987): 27.

²⁵ James P. Pfiffner, "Political Appointees and Career Executives: The Democracy-Bureaucracy Nexus in the Third Century," **Public Administration Review** 47 (January/February 1987): 60.

appointees in any position which is not 'career reserved.'²⁶

If, as Weber theorized, power is greatest at the top of the organization, it follows that political appointees are capable of exerting an enormous amount of influence on agency directives. The greater political control over organizational action suggests that power has been transferred from the neutral, technical specialist to the noncareer, usually technically untrained appointee.²⁷ This argument supports the claim that careerists cannot as easily form policy exclusively because of their expertise in a particular area. They are, to some extent, held accountable to their politically appointed superiors.

The notions that technical experts possess some, and political appointees possess even more, decision making power in public organizations can present a problem for democratic systems. As mentioned at the outset, this quandry posed by having nonelected public managers making policy in a bureaucracy has turned out to be one of the core issues in Public Administration. The reccurrent theme centers on the problem of achieving both responsiveness and efficiency in an expanding bureaucracy. The idea that public policies are made outside the legislative setting by

²⁶ Ibid.: 58.

²⁷ This is an interesting point, since one of the reformers' endorsements was the creation of a short-ballot, designed to curb political corruption by limiting the number of elective administrative positions. See Karl: 28.

nonelected officials raises questions of political accountability and effective government. Gawthrop asks, "how rational are public policy decisions reached by top-level executive officials?"²⁸ And just as important, to whom should specialized civil servants be loyal, agency executives, the public, or themselves?

The fundamental question of accountability versus effectiveness has been analyzed by many scholars in the field. Redford recognizes the problems associated with public policy formation in a democracy:

Policy is made for and applied to us by minorities composed of men occupying strategic positions in specialized organizations, operating only in part under directives from organizations directly representative of the people . . . the men who can participate in the decisions because they occupy strategic positions reflect in their behavior official roles and societal consensus but also personal stakes and special allegiances.²⁹

Redford implies that experts may be self-serving in their policy choices. Especially in the formation of technology policy, scientists and other technical specialists may be primarily concerned with the continuation of funding for special projects, despite the possibility that a project's completion does not significantly serve a larger public interest. Past failures of major science and technology policies to achieve their intended results cause those

²⁸ Louis C. Gawthrop, *Administrative Politics and Social Change* (New York: St. Martin's Press, Inc., 1971): 13.

²⁹ Emmette S. Redford, *Democracy in the Administrative State* (New York: Oxford University Press, 1969): 196.

outside the bureaucracy to wonder if interests, other than the public's, are being promoted.

Taking a more general approach, Etzioni-Halevy acknowledges that "bureaucracy generates a dilemma for democracy" because, on the one hand its independence and the lack of rules governing the exercise of power are threatening, while on the other, a powerful and independent bureaucracy is vital to guard against political corruption.³⁰ In a similar vein, democracy is seen to create a dilemma for bureaucracy because public organizations are expected to be both "independent and subservient," to be both political and non-political at the same time.³¹ It is often, therefore, difficult for agencies to conceptualize the public interest as distinct from the organization's interest. Because of this confusion it is even harder for the electorate to perceive, as legitimate, an agency's actions.

It is Benveniste who gets to the core of the problem of having experts making public policy in a democratic system:

Experts are involved in politics, and politics are never devoid of ideological content. Therefore, our pundits are, wittingly or unwittingly, involved in ideological issues. They cannot escape making commitments to normative definitions of the good life.³²

³⁰ Etzioni-Halevy: 86.

³¹ Ibid.: 87.

³² Guy Benveniste, **The Politics of Expertise** 2nd ed. (San Francisco: Boyd & Fraser Publishing Co., 1977): 28-29.

Beveniste argues that the roles played by experts in the policy making process are inevitably political ones, such that in the past "with laissez-faire, the tendency has been toward the use of experts to strengthen bureaucratic powers."³³ If bureaucratic expertise does have a political dimension, then the implications for democratic systems could be serious. Public disputes among technical experts, particularly scientists, draw attention to the limits of science in risk predictability.³⁴ As Nelkin adds, "controversy thus demystifies expertise, exposing the . . . political assumptions that influence technical advice and encouraging the transfer of problems from the technical to the political arena."³⁵ President Reagan's Strategic Defense Initiative is an example of a policy area where technical feasibility is questionable, yet the ongoing debate between highly respected scientific experts suggests that the decision regarding the future of the program will likely be a political one.

Contributing to the erosion of expertise as a basis for making policy choices, then, is that expert decisions are, to a much less degree, perceived as legitimate by actors

³³ Ibid.: 249.

³⁴ Dorothy Nelkin, "Science and Technology Policy and the Democratic Process," in James C. Petersen, ed. **Citizen Participation in Science Policy** (Amherst: The University of Massachusetts Press, 1984): 25.

³⁵ Ibid.: 25.

outside the bureaucratic structure. This perception is due largely to the obvious untenability of the politics/administration dichotomy. There is an apparent distrust in the objectivity and capability of technical experts because of the politicization of the policy process, and because the experts themselves have become political actors.³⁶ It is somewhat unclear to the public as to where the loyalties of the careerists lie--with their appointed superiors, the public, their clientele, or themselves. If the public remains unconvinced that policy should be decided solely on the basis of recommendations by government experts, it and other actors in the policy process may attempt to break up the monopoly of expertise found in the bureaucracy. As is described in the last section, the effort mounted by others to gain access to expertise outside the bureaucratic realm may significantly deter the formation and implementation of science and technology policy. All the actors have the potential to back their policy choice with claims of technical expertise.

Expertise Outside the Executive Branch

One approach to reducing one's dependence on technical specialists is to acquire the expertise necessary to assess policy alternatives. This is precisely the strategy

³⁶ See Mark Henkels, "Agency Expertise and the Early History of Nuclear Waste Policy," paper presented at the annual meeting of the American Political Science Association, Chicago, IL, September 3-6, 1987.

employed by policy actors outside the bureaucracy. The legislative and judicial branches, as well as the citizenry itself, have made enormous advances in acquiring, or gaining access to, specialized knowledge. As a result, the power of the policy making expert has somewhat subsided, and the science and technology policy process has further expanded to include those who previously could not challenge tenured public officials.

Perhaps the largest gain of technical expertise can be found in the legislative branch of government. Increasing numbers of candidates are being elected to Congress who have been trained in technical areas, and Congressional staffs have expanded to such an extent that members of Congress can either hire scientific experts in staff positions, or have their aides confer with specialists on specific legislation. Several scientific associations also offer fellowships to scientists and engineers; the expert selects a member of Congress for whom to work, and to offer advice to, for one year.³⁷ Congress has also created for itself several supporting agencies whose responsibilities are to provide the Congress with objective assessments of certain policies at a members' or a committees' request. The General Accounting Office (GAO), the Science Policy and Research Division (SPRD), and the Office of Technology Assessment

³⁷ Richard Barke, **Science, Technology, and Public Policy** (Washington, DC: Congressional Quarterly Inc., 1986): 29.

(OTA) supply members of Congress with expert evaluation of science and technology policies.³⁸

The judicial branch is unique in that its role is not really to dispute the scientific facts, but to evaluate the preponderance of evidence in court cases. In other words, judicial review involves deciding what the facts are, based on the evidence presented.³⁹ Many times courts must make judgments in technical areas where there is a great deal of uncertainty involved; judges rely on the testimony of experts, from the government, the private sector, and university communities. Certain jurisdictions, such as the D.C. Circuit Court of Appeals, handle a case load, the preponderance of which involves challenges to federal agencies. Individual judges, because litigation in their courts frequently involves technical questions, acquire a certain amount of specialized knowledge. While the judiciary has long been involved in administrative lawsuits, courts, until relatively recently, have tended to rule in favor of federal agencies. This tradition is no longer intact, as standing to sue has expanded, and as judges are more apt to protect the constitutional rights of individuals.⁴⁰ The power of expertise in public

³⁸ Ibid.: 30-31.

³⁹ Ibid.: 103.

⁴⁰ David H. Rosenbloom, "Public Administrators and the Judiciary: The 'New Partnership,'" **Public Administration Review** 47 (January/February 1987): 75.

organizations has, in a sense, declined as judicial deference to bureaucratic experts is no longer automatic.

Private citizens, groups, and subnational governments are also gaining the expertise to challenge federal agencies. Higher education has contributed to the ability of a larger percentage of the public to better understand complex policy issues. The educated public is in a better position to obtain the information necessary to make informed judgments. State and local governments, especially in an era of fiscal austerity, are responsible for managing a greater number of technical programs such as hazardous waste management. Subnational government officials are also hiring their own experts to provide independent reviews, aimed at challenging policy decisions handed down by their federal counterpart. The result is that actors, other than those employed in federal agencies, are increasingly gaining the specialized knowledge needed to make rational science and technology policy choices.

4. CONCLUSION

The material presented in this chapter suggests that the administrative state is changing. The federal bureaucracy has undergone a series of alterations: it has evolved from the kind of organization that Weber's legal-rational model depicts, where technical specialization was seen as an asset, to a structure in which claims of

technical expertise cannot alone guarantee an agency's policy preference in the decision making implementation processes. Likewise, Public Administration has changed from a field where the politics/administration dichotomy was largely accepted, to one that realistically acknowledges the veritable inseparability of politics from management in a democratic administrative state. Consequently, the science and technology policy process has been altered to a significant degree. Once dominated by a limited number of experts, the process has increasingly succumbed to political and public manipulation because of the new actors' skilled use of competing expertise. A closed system was once acceptable because it was assumed that the technological problems government faced were too complex to include public participation in their solution, but this line of thought is not applicable to the contemporary policy process.⁴¹

Specialization has eroded as a source of agency power for a couple of reasons; first, as the blending of politics with management continues, policy formation by a few, specialized actors is no longer recognized as legitimate by the public. Second, other actors in the policy process have developed the expertise necessary to question agency experts. Federal agencies no longer enjoy their original monopoly on technical expertise. In light of the decline in

⁴¹ William E. Stewart, Jr., **Citizen Participation in Public Administration** (Birmingham: Birmingham Publishing Co., 1976): 4.

the power associated with expertise, most politicians and public servants, however hesitantly, are beginning to concede that outside participation in the science and technology policy process is necessary if the desired policy objective has any chance of being accomplished.

As the model of science and technology policy outcomes represents, the type of decision system, open or closed, may influence the policy's outcome. In other words, implementation may be hampered or facilitated depending upon the number and type of actors involved in the policy making process. On the one hand, opening the decision making process by placing less emphasis on bureaucratic expertise and more on other sources reduces the civil servant's ability to justify policy decisions by claiming technical competence alone; yet on the other, allowing more actors to participate results in competition among experts. The threat to democratic systems being that protest groups can exploit technical expertise as a strategy to challenge decisions.⁴²

In any event, public managers could expect implementation to be considerably more difficult. As the Mazmanian and Sabatier model of the implementation process illustrates, "participation by actors outside the implementing agencies" is an important factor affecting

⁴² Nelkin, *Controversy*: 16.

public policy implementation.⁴³ This is especially likely in complicated policy areas such as environmental regulation where broad, ambiguous legislation directives such as regulation "in the public interest" forces implementing officials to create a policy "if there is to be one," and often results in legal challenges by nongovernmental actors who have the backing of their own experts.⁴⁴ The greater access, then, to the policy process by citizens and interest groups, the better equipped the public managers must be to accomodate the influx of participants.

To a large degree, of course, successful policy outcomes also depend on the ability of an organization to carry out its legislated mandate. In large organizations, lack of coordination among specialized divisions may affect agency performance, and in turn, successful policy implementation. Chapter Four explores this possibility. Equally significant, there are certainly some issues, no matter what type of decision system is employed, that create enormous challenges for the implementing agency in terms of public acceptability and technical feasibility. In the next chapter, one such issue is investigated, the public sector siting of hazardous waste facilities.

⁴³ Daniel A. Mazmanian and Paul A. Sabatier, **Implementation and Public Policy** (Glenview, IL: Scott, Foresman and Co., 1983): 28.

⁴⁴ Ibid.: 8.

Whereas public officials could once afford to be impervious to public questioning of their decisions because of their monopoly on technical expertise, civil servants must now adapt to an environment where policy decisions are challenged by actors who have developed expertise themselves, or have access to expertise. Due to the problems that competing expertise brings to the policy process, it is too early to tell whether the open system of decision making will be more efficient, effective, and whether a democratic government can indeed be responsive to the demands placed on it by an ever-changing society.

CHAPTER III

CHALLENGING THE ADMINISTRATIVE STATE: THE HAZARDOUS WASTE SITING DILEMMA

1. INTRODUCTION

Dimensions of The Nuclear Waste Siting Dilemma

"The outcome of every conflict," according to Schattschneider, "is determined by the extent to which the audience becomes involved in it."¹ It follows, then, that the scope of conflict will widen as additional actors develop the expertise to more actively participate in the science and technology policy process. The inclusion of these actors is likely to create a challenge for technical policy makers in the administrative state, as those employed in the public sector confront the conflicts that greater participation trigger.

The enormity of this challenge rises in direct proportion to the complexity of the policy at hand. Few policy areas are more complex or controversial than the siting of hazardous waste facilities. These are facilities designed to treat, store, and/or dispose of toxic, ignitable, and corrosive chemical byproducts of industrial processes. The term also refers to facilities where radioactive wastes are stored or repackaged for shipment

¹ E.E. Schattschneider, *The Semi-Sovereign People* (New York: Holt, Rinehart and Winston, 1960): 2.

elsewhere. Attempts to site treatment and storage centers have been largely unsuccessful because citizens are fearful of, and unwilling to accept the construction of noxious facilities in their communities. The hazardous waste management literature quite commonly refers to, and accurately describes the siting dilemma as the Not-In-My-Backyard (NIMBY) syndrome.²

Policy formation in the hazardous waste siting domain is extremely difficult because decision makers must be familiar with the issue's many dimensions. Aside from the obvious technical problems relating to methods of safe storage, treatment, and transportation of chemical and radioactive wastes, policy makers must overcome intense local opposition that typically mounts whenever a decision to construct a facility is announced. The distinctly intergovernmental character of hazardous waste regulation exacerbates the NIMBY problem. Concerned citizens and interest groups when confronted with the prospect of having a hazardous waste facility located in their community will usually question the legitimacy of the siting authority. Frequently this involves efforts to involve officials at other levels of authority and can result in the pitting of federal, state, and local governments against one another.

² See Elizabeth Peelle and Richard Ellis, "Beyond the 'Not-In-My-Backyard' Impasse," **Forum for Applied Research and Public Policy** 2 (Fall 1987): 68-77; Walter A. Rosenbaum, **Environmental Politics and Policy** (Washington, D.C.: Congressional Quarterly, Inc., 1985): 212-215.

The result can be rancorous intergovernmental conflict that explodes beyond the bounds of "cooperative federalism."³ Yet another dimension of the siting dilemma is the importance of the socioeconomic impacts of facility construction and operation. It is readily apparent that social equity, as well as potential risks, require that the real social, political, economic, and environmental costs of hazardous waste facilities need to be identified and, to the extent possible, mitigated. In the absence of the raw assertion of public authority to site hazardous waste facilities over local community and affected public opposition--a course of action few politicians are likely to follow anymore, public officials, of necessity, have to be more innovative in their approach to siting hazardous waste facilities. The "DAD" approach (decide, announce, and defend) that once typified the siting process in the old era of expertise-driven closed decision making systems, is simply no longer feasible in an era when politically sophisticated facility opponents can effectively stymie,

³ Steve H. Murdock, F. Larry Leistritz, and Rita R. Hamm, "An Overview of the Dimensions of Nuclear Waste Management and Repository Siting," in Steve H. Murdock, F. Larry Leistritz, and Rita R. Hamm, eds. **Nuclear Waste: Socioeconomic Dimensions of Long-Term Storage** (Boulder, CO: Westview Press, 1983): 6; Richard C. Kearney and Robert B. Garey, "American Federalism and the Management of Radioactive Wastes," **Public Administration Review** 42 (January/February 1982): 15; and Ann O'M. Bowman, "Hazardous Waste Management: An Emerging Policy Area Within An Emerging Federalism," **Publius** 15 (Winter 1985): 131.

frequently with the overt assistance of political figures and governmental actors, implementation efforts.

With the opening of the policy process, the scope of conflict has widened to such an extent that public acceptability of waste facilities is the primary concern to decision makers in this area. If implementation of siting policy is to occur, public managers and elected officials need to discover what kind of incentives, if any, can induce a community to accept facilities it perceives as dangerous and is determined to avoid. An examination of public opinions and attitudes regarding hazardous waste siting issues, especially those relating to incentives for facility acceptance, is required if we are to evaluate the prospects for effective implementation of policies such as the Nuclear Waste Policy Act of 1982. In the open decision making system inherent in the Act, proponents and opponents of DOE efforts to site nuclear waste storage facilities will inevitably seek, as the conflict widens in scope, to involve increasingly larger segments of the American public in the dispute. Their likelihood of successfully enlisting the general public as allies in the burgeoning battle over the NWPA and its implementation, will be conditioned, to a very large if not determinative degree, by the fundamental attitudes, and preferences of citizens toward hazardous waste facilities in general and nuclear waste facilities in particular.

Organization of Chapter

This chapter investigates major aspects of the hazardous waste siting dilemma, with a focus on public acceptability of hazardous waste facilities, both nuclear and non-nuclear, in local communities. The basis for successful resolution of the siting dilemma is popular trust in government institutions and actors at different levels, as well as designing an incentive structure that helps to mitigate costs associated with the construction of noxious facilities. The second section examines these factors, of which consideration is essential if the siting of hazardous waste facilities is to occur, by viewing the results of a survey of national public opinion regarding hazardous waste management issues. Conclusions are drawn about the uniqueness of the siting issue, warranting special attention by public managers who must implement scientific and technical policy dealing with locally unwanted land uses.

2. PUBLIC OPINION AND HAZARDOUS WASTE SITING

The term **public opinion** can be defined in a variety of ways. For our purposes, public opinion is "the aggregate of views [individuals] hold regarding matters that affect or interest the community."⁴ Public opinion is widely accepted as a key feature of the American political system for two

⁴ James Bryce, **Modern Democracies** Vol. I (New York: Macmillan & Co., 1924): 153.

reasons. First, surveying public opinion provides a mechanism whereby government officials can observe support for a particular issue at any point in time. Because policy agendas are often set based on citizen concerns, it is important that policy makers know where citizens priorities lie.⁵ Second, these concerns are frequently expressed at the local level through grassroots campaigns. Since politicians seeking reelection can ill-afford to neglect the interests and concerns of their constituencies, public opinion polling has traditionally been a method used by officials to measure electoral preferences. Though usually not the case, there are some issues that invoke strongly negative public response. Hazardous waste management is one such issue.

Public Opinion and Hazardous Waste

In June 1987 a representative sample of national households was surveyed to try to determine public views on hazardous waste siting issues. The survey was administered between June 18, and June 25, 1987. Calls were placed during the week between the hours of 6:30 and 9:30 p.m. (local time), and on the weekends between 1:00 and 7:30 p.m.. Households were randomly selected using random digit dialing to generate the telephone numbers to be called. Only those members of the selected household who were

⁵ W. Lance Bennett, **Public Opinion in American Politics** (New York: Harcourt Brace Jovanovich, Inc., 1980): 2.

eighteen years old or over were interviewed. Three attempts were made to contact those selected, and the response rate was 49 percent. The sample size was 766 yielding an error margin of four percent.

As has been noted earlier, the most difficult problem in the hazardous waste management area is the siting of facilities for treatment and disposal. Thus, the survey included a series of items designed to elicit how the public rated various types of incentives that are commonly suggested as making an otherwise undesired facility more acceptable to the community.⁶ Recent research suggests that, insofar as citizens can be induced to become more favorable toward acceptance of a "locally undesired land use" (LULU)⁷, the creation of a local citizen's committee to monitor its operation shows some potency as an incentive.⁸ Responses to this series of questions allows us to answer the question: What incentives, if any, can make hazardous waste facilities more acceptable to the public?

⁶ The respondents were told that no nuclear waste would be included.

⁷ Frank J. Popper, "The Environmentalist and the LULU," in Robert W. Lake, ed. **Resolving Locational Conflict** (Rutgers, NJ: Center for Urban Policy Research, 1987): 1-3.

⁸ See for example Kent E. Portney, "Allaying the NIMBY Syndrome: The Potential for Compensation in Hazardous Waste Treatment Facility Siting," **Hazardous Waste** 1 (1984): 411-421; and William Lyons, Michael R. Fitzgerald, and Amy McCabe, "Public Opinion and Hazardous Waste," **Forum for Applied Research and Public Policy** 2 (Fall 1987): 89-97.

The notion of a more open decision making system and its inevitable emphasis upon citizen participation, in conjunction with the apparent desire of the public to have some control over LULUs in their community through local committees, raises the question of feasibility. Are citizens willing to serve, without compensation, on such monitoring committees? The survey included an item designed to answer this question.

Since the focus of this study is on the prospects of DOE's successfully implementing the NWPA of 1984 within the more open decision making model, the survey elicited citizen ratings of incentives for accepting a permanent nuclear waste facility near their community. Moreover, it has been argued that a critical factor in successful nuclear waste facility siting will be the degree of public trust in those institutions involved, or at least potentially involved in the process.⁹ Items asking citizens to rate their degree of trust in different groups, institutions, and levels of government were included in the poll. Public responses to this series allows an answer to the question: Whom does the public trust to make decisions regarding the siting of a nuclear waste facility near their community?

⁹ Michael R. Fitzgerald, William Lyons, and Patricia K. Freeman, "Hazardous Waste Disposal in a Federal System: Public Attitudes and Intergovernmental Responsibility," paper presented at the annual meeting of the Southern Political Science Association, Atlanta, Georgia, November 6-8, 1986.

In the section that follows the public's responses to the survey are reported with measures of central tendency and dispersion. The application of analysis of variance to determine the statistical significance of differences among salient responses allows at least a tentative testing and evaluation of several of the propositions associated with the open decision making model developed in chapter one.

Findings and Discussion

The American public does not want to live in the vicinity of a hazardous waste facility; this much is abundantly clear from our survey. When asked how close to their home in miles a hazardous waste storage facility, built to strict governmental safety standards, could be located **before** they would oppose construction, 52% of the public reported they would oppose at **any distance!** Only 16% responded that they would accept, without protest, such a facility within 50 miles of their home. Public opposition to a permanent nuclear waste storage facility is even more apparent: 57% of Americans would oppose the facility at any distance, while only 12% would accept the facility within 50 miles before rising in opposition.

Table 3.1 provides the mean ratings of the public regarding various incentives designed to make citizens more favorable toward placing a hazardous waste facility in their community. On a 3-point scale, with 1=less favorable and 3=more favorable, the type incentive that had the highest

Table 3.1
Means and Standard Deviations For Incentives
To Site or Accept A Waste Treatment
and Disposal Facility (N=766)

Type of Incentive	Mean	SD
Local Committee	2.52	.67
New Jobs	2.23	.60
Fire Protection	2.22	.58
Low Property Tax	2.10	.61
Local Government	1.91	.74
State Government	1.90	.71
Private Firm	1.77	.72

incentive score (2.52) was the provision of a local committee that included citizens that could shut down the facility if they decided it was unsafe. While economic incentives (the facility would provide 100 new jobs for the community; it would pay for fire protection; it would lower the property tax) tended to move the public in a more favorable direction, operation by local or state governments as well as by private firms, did not enhance prospects for acceptance.

Proposition One presented in Chapter One stated that people in different regions would have different views of hazardous waste issues. The political compromise that resulted in passage of the NWPA of 1982 divided the United States into two grand divisions with respect to nuclear waste, East and West. Table 3.2 provides a breakdown of the public's ratings of siting acceptance incentives by region. An analysis of variance to test for differences between means revealed that for none of the incentives involved were regional ratings sufficiently distinctive to attain statistical significance at the .05 level of probability.

To what extent is the public willing to serve on a local committee to monitor the operation of a hazardous waste facility? This acid test of citizen participation was passed by nearly two-thirds (64%) of Americans; nonetheless a third of those surveyed reported they were not willing to serve on such a committee. Table 3.3 reports the cross

Table 3.2
Incentives To Site Or Accept A Waste Treatment
And Disposal Facility By Region

Type of Incentive	East (n=499)		West (n=266)	
	Mean	SD	Mean	SD
Local Committee	2.48	.69	2.59	.63
New Jobs	2.23	.61	2.22	.59
Fire Protection	2.23	.59	2.19	.57
Low Property Tax	2.10	.61	2.08	.59
Local Government	1.90	.74	1.92	.73
State Government	1.76	.71	1.85	.69
Private Firm	1.76	.73	1.78	.71

Table 3.3

Willingness to Serve On A Local Committee By Region

	East	West
Unwilling to Serve	166 36.7%	84 35.0%
Willing to Serve	286 63.3%	156 65.0%
	452 100%	240 100%

tabulation of citizen willingness to serve on a monitoring committee by region. Based on the chi square test for statistical significance, citizens from different regions were not distinctive. Again, we fail to find confirmation for Proposition One.

With respect to the acceptance of a permanent nuclear waste facility within 50 miles of their home, 57% of Americans reported they would oppose such a facility (41% would **strongly** oppose), while only 16% would support it. In Table 3.4 the public's mean ratings for various incentives, designed to enhance acceptance of a permanent nuclear waste facility within 50 miles of their home, is provided. On a three point scale (with 1=less favorable and 3=more favorable) the mean responses for each type of incentive indicate movement toward acceptance--all are greater than 2. Of course, these data do not tell us whether such incentives would actually result in public acceptance of a nuclear repository. But, at least citizens on average tended to respond favorably to them. The incentive with the highest mean incentive rating was extending to a citizen's committee the power to shut down the facility if they felt it was operating unsafely. The provision of on-site federal and state inspectors helps move people in a more favorable direction, as does the variety of economic incentives (provision of a high technology facility to employ people from the community; provision of large federal grants to

Table 3.4
Incentives For Accepting A Permanent
Nuclear Waste Facility By Region

Type of Incentive	Nat'l Respond. (n=766)		East (n=499)		West (n=266)	
	Mean	SD	Mean	SD	Mean	SD
Local Comm. to Shut Down	2.59	.67	2.59	.67	2.59	.66
Federal Inspector	2.41	.66	2.41	.66	2.41	.65
High Tech Facility	2.38	.66	2.40	.67	2.35	.65
Large Grants	2.38	.66	2.40	.67	2.34	.65
State Inspection	2.36	.67	2.36	.68	2.37	.66
Rebates	2.25	.67	2.30	.68	2.15	.66

local government; and rebates on federal income taxes for citizens in affected communities. No statistically significant differences in mean ratings were found between citizens from different regions.

In Table 3.5 the mean levels of public confidence in various groups, institutions, and levels of government are reported. On the 3-point confidence scale (1=no trust; 2=some trust; 3=a great deal of trust), scientific experts received the highest mean score, 2.4. When it comes to decisions regarding the siting of a nuclear waste facility, the American public most trusts, in order: scientific experts, the EPA, local citizens, and the DOE. They manifest the lowest average trust ratings for state officials, the Congress, and local officials. This suggests that, insofar as bureaucratic expertise is a factor in nuclear waste siting, it is cutting in favor of the experts and the bureaucracy--but citizens, consistent with the open decision making model, trust themselves as well. Whatever citizen anxieties may exist regarding the experts and the bureaucrats, apparently these are not being transformed into trust in, or reliance upon, subnational officials or elected representatives in the Congress.

Taking as our measure of citizen participation the willingness of the public to serve on a local committee to monitor the operation of a hazardous waste facility, we can then test Proposition Two offered in Chapter One.

Table 3.5
Degree of Public Trust Regarding A
Nuclear Waste Facility By Region

Instit. or Level	Nat'l Respon.(n=766) East (n=499) West (n=266)					
	Mean	SD	Mean	SD	Mean	SD
Scientific Experts	2.40	.66	2.39	.65	2.41	.68
U.S. EPA	2.18	.68	2.20	.70	2.15	.65
Local Citizens	2.13	.72	2.12	.73	2.16	.69
U.S. DOE	1.89	.59	1.91	.59	1.85	.58
Governor	1.76	.64	1.77	.64	1.75	.63
State Legislature	1.74	.61	1.71	.59	1.78	.63
Congress	1.71	.67	1.70	.66	1.74	.68
Local Officials	1.69	.65	1.67	.66	1.72	.62

Proposition Two states that citizens who are willing to participate hold different views from non-participants. This proposition is tested in Table 3.6 in which the mean ratings for each incentive are compared by the willingness to serve on a local citizens' committee. Analysis of variance results indicate that only one relationship, those who were willing to serve rated the creation of jobs at a high technology facility significantly higher, on average, than their unwilling counterparts ($p < .04$). No other statistically significant differences were found between these groups.

Table 3.7 reports the mean levels of public trust for those who could make nuclear waste facility siting decisions by their willingness to serve on a monitoring committee. Based on the analysis of variance calculation, there were no statistically significant differences between these groups. This result, as was the case for the incentive ratings reported in Table 3.6 earlier, fails to support Proposition Two. It also fails to confirm Proposition Three which posited that those most willing to participate would be less trusting of government institutions; no statistically significant differences between the group means were found.

3. CONCLUSIONS

This chapter has examined public opinion and the hazardous waste dilemma. A brief review of the salient

Table 3.6

Incentives For Accepting A Permanent Nuclear Waste Facility
By Willingness to Serve on Local Committee

Type of Incentive	Unwilling To Serve		Willing To Serve	
	Mean	SD	Mean	SD
Local Comm to Shut Down	2.48	.72	2.64	.64
Federal Inspector	2.31	.69	2.44	.65
High Tech Facility	2.27*	.71	2.43*	.63
Large Grants	2.27	.70	2.42	.64
State Inspection	2.24	.71	2.40	.65
Rebates	2.19	.68	2.29	.67

*Statistically significant F-value of 1.26;
probability = .042

Table 3.7

Degree of Public Trust Regarding a Nuclear Waste Facility
By Willingness To Serve On Local Committee

Institution or Level	Unwilling To Serve		Willing To Serve	
	Mean	SD	Mean	SD
Scientific Experts	2.34	.68	2.42	.65
U.S. EPA	2.12	.70	2.20	.67
Local Citizens	2.03	.73	2.20	.72
U.S. DOE	1.90	.58	1.88	.59
Governor	1.65	.62	1.80	.65
State Legislature	1.68	.60	1.76	.61
Congress	1.71	.70	1.72	.66
Local Officials	1.60	.63	1.73	.65

dimensions--including the NIMBY syndrome, contentious federalism, and the need for impact mitigation--highlighted the potentially decisive role of public opinion in the effort to implement the Nuclear Waste Policy Act of 1982.

The results of the 1987 survey of public opinion regarding hazardous waste issues reported in this chapter allowed for a limited test of three propositions associated with the open decision making model that has framed this study. Based upon a comparison of public views on various aspects of hazardous waste management, especially focusing on the facility siting, analysis of variance results failed to confirm the propositions; in only one instance (willingness to participate on a local committee and mean incentive ratings) were groups significantly different. That is, contrary to the proposed regional and participation differences that were expected to separate Americans on these issues, these groups on average did not vary in a statistically significant level.

This survey of American public opinion disclosed that, while most Americans do not want hazardous waste, or radioactive waste disposal facilities within 50 miles of their homes, they are somewhat responsive to certain incentives designed to make acceptance of LULUs more palatable. In particular, the citizen monitoring committee armed with the power to close down a facility deemed to be operating unsafely is rated as attractive. The relative

popularity of the citizen monitoring committee, in conjunction with levels of trust citizens manifest for themselves, scientific experts, and EPA and DOE, suggests that citizen participation in decision making might well prove a significant resource for those charged with siting nuclear waste facilities under the NWPA. In the chapters that follow, the DOE's attempt to site the MRS in Tennessee is chronicled and evaluated; the critical role of the citizen participation dimension of this effort--especially the emerging importance of citizens groups and a proposed local monitoring committee, will serve to reinforce this conclusion.

CHAPTER IV

AGENCY PERFORMANCE AND THE NUCLEAR WASTE POLICY ACT

1. INTRODUCTION

The model of science and technology policy outcomes posits that technical feasibility and the unique characteristics of an issue are factors that affect policy implementation. The last chapter described the problems associated with the siting of hazardous waste facilities, stressing the arduousness of policy implementation. Yet, the model indicates that the manner in which a policy is administered is likely to significantly affect outcomes as well. That is, the performance of the implementing agency, or at least the image that the agency projects, can facilitate or prevent the carrying out of a particular mandate. Mazmanian and Sabatier claim that the "commitment of implementing officials to the realization of statutory objectives" is the factor that most directly affects policy outcomes,¹ while Edwards argues that "organizational fragmentation may hinder the coordination necessary to implement successfully a complex policy requiring the cooperation of many people."² Political conflict, either

¹ Daniel A. Mazmanian and Paul A. Sabatier, **Implementation and Public Policy** (Glenview, IL: Scott, Foresman and Company, 1983): 34.

² George C. Edwards, **Implementing Public Policy** (Washington, D.C.: Congressional Quarterly, Inc., 1980): 11.

intraorganizational or between elected officials, may also impair an agency's ability to perform optimally. An examination of these forces as they played out in the DOE/Tennessee MRS controversy will contribute to our understanding of the evolving science and technology policy process.

Bureaucratic Performance and Science and Technology Policy

At this point in our study it should be obvious that the science and technology policy process is immensely complicated, involving many actors who have limited time, resources, and information.³ This is certainly true of the federal bureaucracy responsible for technical policy formation and administration. In addition to the above limitations, Barke argues that public institutions which manage science and technology policy are constrained by four factors--law, knowledge, coordination, and politics; these constraints restrict the choices available to an organization at any given time.⁴ The forces that affect agencies are both internal and external. Poor coordination, for example, is largely a problem that is internal to the bureau, while an external factor such as the national political mood is one not readily controlled by the implementing agency. The four factors can be discussed in

³ Richard Barke, *Science, Technology, and Public Policy* (Washington, D.C.: Congressional Quarterly, Inc., 1986): 13.

⁴ Ibid.: 75-93.

terms of how each affects agency performance and policy implementation.

The law is the first and foremost constraint imposed on the technical bureaucracy. Public organizations must obey the substantive requirements of the statutes responsible for their creation, as well as the procedural requirements created by Congress and the judiciary.⁵ Legal mandates can be viewed two ways: too broad and ambiguous, or too narrow and specific. Either can create problems for policy implementors, but science and technology policy is often characterized by programs having broad mandates, as in the case of air and water regulation. On the one hand, broad goals can be seen as an asset to skillful public managers in that they can use their discretionary power to maximize resources.⁶ Disagreement over goal definition, however, inevitably leads to conflict among policy makers, the result being a "compromised" policy that is fragmented and difficult to implement. Ripley and Frankin point to the contradictions that were built into the Model Cities legislation of the 1960's. The program sought: (1)"To strengthen the authority of mayors over social program decision making in their cities;" and (2)"To strengthen

⁵ Ibid.: 75.

⁶ Barbara Ferman, "Slouching Towards Anarchy: Some Thoughts on Maintaining the Disjunction Between Policymaking and Implementation," paper presented at the annual meeting of the American Political Science Association, Chicago, IL, September 3-6, 1987: 3.

local neighborhood leaders by encouraging self-sufficiency, including providing training that would lead them to challenge mayors and other city officials efficiently."⁷ The implication is that Congress, in its attempt to pass legislation, frequently claims that a policy will achieve many goals, thus raising expectations of what the program will accomplish; at the point of implementation, public managers must inevitably choose which goals the agency will pursue.⁸ If performance is then measured against legislated goal statements, the agency may be perceived by the public as ineffective and lackadaisical.⁹

To the extent that knowledge is a constraint on public agencies, it is a factor that is "beyond the immediate and direct control" of bureaucratic decision makers.¹⁰ The lack of complete knowledge about science and technology is unequivocally a problem for the bureaucracy. Regulating chemicals in accordance with the Toxic Substances Control Act, for example, focuses on the difficult task of calculating the risks of exposure to suspected carcinogens. Agencies could be accused of shoddy performance in the regulation of dangerous chemicals or hazardous waste, when

⁷ Randall B. Ripley and Grace A. Franklin, **Implementation and Bureaucracy** 2nd ed. (Chicago: The Dorsey Press, 1986): 23.

⁸ Ibid.: 23-24.

⁹ Ibid.: 24.

¹⁰ Barke: 15.

in fact, many times the results of tests are inconclusive or the technology has not been proven.

A lack of coordination is perhaps the most common and, at the same time, the most formidable constraint with which technical agencies must contend. Victor Thompson says of hierarchical organizations that:

The system of specialization requires the interaction of persons whose specialties must be harmonized in order to achieve the organizational goal. This interaction is restricted both by the distribution of authority, hierarchical and delegated, and by the groupings formed by the official communication system.¹¹

Although coordination among the levels of an organization is important to achievement of prescribed goals, it is difficult to effectively manage the diversity of tasks performed by large, geographically dispersed technical organizations. The Department of Defense (DOD), for instance, has installations nationwide providing various services, and regulatory agencies such as the Environmental Protection Agency must coordinate the activities of several regional offices and their divisions. Agencies implementing science and technology policy on occasion work jointly to achieve program goals, as do NASA and the DOD. In fact, all federal agencies work at some level with at least one other executive branch organization, the Office of Management and Budget. Agencies must also be in a position to work with

¹¹ Victor A. Thompson, **Modern Organization** (New York: Alfred A. Knopf, Inc., 1961): 107.

the myriad of Congressional committees and subcommittees who oversee technical policy, and must have the capacity to respond to judicial review of their actions. Consequently, coordination can affect the agency's performance in the realization of organizational goals.

That a dichotomy exists between politics and administration is a notion disputed in Chapter Two. Political appointees, as public administrators, make decisions that "reflect personal judgments based on individually held values and assessments that arise from unique configurations of factors in particular situations."¹² Those making decisions in the science and technical policy domain rarely do so without poring over possible political ramifications of their actions. Legislative mandates must be interpreted by public managers to reflect the prevailing moods of Congress and the president.¹³ A substantial body of literature points to the increasing politicization of funding for research and development, suggesting that bureaucrats are often "buffeted by politics" in support of a particular project.¹⁴ Politics can impede the successful implementation of policy in many ways, whether the source of the political conflict is an

¹² Michael M. Harmon and Richard T. Mayer, **Organization Theory for Public Administration** (Boston: Little, Brown and Co., 1986): 6.

¹³ Barke: 90.

¹⁴ Ibid.: 91.

angry constituency or a group of elected officials with the power to veto a program. Agency performance, therefore, is contingent upon on the political acumen of those in upper management, but also on the personal commitment of top officials who have the authority to define the method of program implementation. It is these leaders whose decisions guide the actions of the rest of the organization.

Each public policy decision, according to Barke, is "analagous in some ways to a scientific experiment."¹⁵ No one knows what the results will be. In the science and technology policy process, the constraints mentioned above can affect how a public agency performs, and ultimately whether or not organizational goals are met. Using this framework, it is possible to examine how these constraints might bear upon the Department of Energy as it attempts to site a temporary waste storage facility (the MRS) under the provisions of the Nuclear Waste Policy Act (NWPA) of 1982.

Organization of Chapter

This chapter examines how an agency's performance can be affected by constraints inherent in large technical organizations as well as those imposed by a complex political system. In so doing it explores those aspects of policy formulation and implementation that potentially affected the DOE in its effort to site the MRS facility.

¹⁵ Ibid: 18.

In the next section, a brief history of nuclear waste management prior to 1982 sets up a discussion of the NWPA. An examination of the procedures that the agency is obliged to follow in siting the MRS points to the legal constraints around which the department must operate. The third section describes the MRS proposal and the agency's infrastructure so as to demonstrate how politics and coordination potentially generated significant implementation problems for the DOE. In the final section observations are made relating to agency performance and the implementation of science and technology policy.

2. DOE AND THE NUCLEAR WASTE POLICY ACT OF 1982

Early Attempts at Managing Nuclear Waste

As described in Chapter One, the Atomic Energy Commission (AEC) was formed in 1946 to manage all matters pertaining to nuclear power, both civilian and military.¹⁶ The Commission worked closely with the Joint Committee on Atomic Energy (JCAE), which was created by Congress to oversee the management of nuclear technologies. Together the two bodies were able to maintain exclusive jurisdiction over nuclear policies since few legislators were familiar enough with the nuclear issues to do much more than

¹⁶ David J. Rose, *Learning About Energy* (New York: Plenum Press, 1986): 361.

"rubberstamp" AEC/JCAE proposals.¹⁷ Claims of expertise, however, do not always make a successful policy. While it is true that the AEC was able to monopolize nuclear waste policy in its early years, this translates into the fact that a comprehensive waste management policy was never fashioned.¹⁸ Research funds were spent on reactor development and little concern was expressed about the management of the radioactive byproducts.

Zinberg contends that in order to understand the "seeming negligence" of radioactive waste management, one needs to observe the nuclear situation in context; she claims that:

It is necessary to view the problem of nuclear waste and spent-fuel management as having originated with the production of bomb-grade material in 1945. Military wastes caused little concern at first because the producers naturally recognized the overriding urgency of developing weapons for the war. The volume of waste was small, and its disposal appeared to be a minor problem relative to the enormous task of bringing a major war to an end. Furthermore, the rapid success in building nuclear weapons contributed to a psychological state of technological euphoria. Those responsible for . . . nuclear energy were quite certain

¹⁷ Ibid.: 361.

¹⁸ Mark Henkels, "Agency Expertise and the Early History of Nuclear Waste Management," paper presented at the annual meeting of the American Political Science Association, Chicago, September 3-6, 1987: 27. Henkels examines expertise as a component of agency power theory by studying the AEC during the periods 1957-59 and 1970-72. He argues that expertise succeeded in the first time frame and failed in the latter to help the agency achieve its goals.

that appropriate waste disposal technologies would be developed when needed.¹⁹

Other groups of scientists were duly concerned about the foreseeable problems of accumulating wastes. The National Academy of Sciences (NAS) in 1957 issued a report which proposed placing wastes in geologically stable rock formations deep underground.²⁰ Based on this report research was performed at the Oak Ridge National Laboratory determining the suitability of storage in thick salt beds, suggesting that the AEC was studying the technical and economic feasibility of constructing a repository.²¹ This research culminated in 1971 with the selection of a salt mine near Lyons, Kansas as the site for burying the nation's high-level radioactive waste. The project was never completed because the AEC initially did not recognize that a private firm had conducted solution-mining in the salt bed several miles from the proposed site, thus compromising site integrity.²² A Kansas state legislator complained that the public had not been included in the siting process, while

¹⁹ Dorothy S. Zinberg, "Public Participation: U.S. and European Perspectives," in E. William Colglazier, ed. **The Politics of Nuclear Waste** (New York: Pergamon Press, 1982): 162.

²⁰ U.S. Department of Energy, Office of Environmental Assessments, **Energy Technologies and the Environment**, DOE/EP-0026 (Washington, D.C.: U.S. Department of Energy, June 1981): 245.

²¹ Rose: 338.

²² Ibid.: 338.

U.S. Senator Robert Dole argued that Kansas was receiving little in exchange for becoming the nation's nuclear dumping ground.²³

What followed was a series of attempts by the AEC and its successors, the Energy Research and Development Administration (ERDA) and the DOE to deal with the worsening problem of finding a solution for the permanent storage of high-level radioactive waste. A small spent fuel reprocessing plant was constructed at West Valley, New York, but was closed in 1972 for modification; President Carter banned reprocessing in 1979, sealing the plant's fate.²⁴ For a brief period research was directed toward retrievable surface storage, but was abandoned because of opposition by the Environmental Protection Agency and environmental groups. The ERDA later pushed for the construction of an experimental facility in Carlsbad, New Mexico.²⁵ This Waste Isolation Pilot Plant (WIPP) was initially built to serve as a disposal facility for radioactive wastes from a fire at a Rocky Flats, Colorado installation, but plans changed such that the WIPP will eventually dispose of military transuranic waste. The WIPP is expected to open in 1988

²³ Zinberg: 163.

²⁴ Rose: 338-339.

²⁵ U.S. Department of Energy, **Energy Technologies and the Environment**: 245.

despite ongoing battles between the Federal government and environmentalists, local residents, and Native Americans.²⁶

Efforts to formulate a comprehensive waste management policy were stepped up in 1977 as President Carter directed his Interagency Review Group (IRG), comprised of representatives from 13 federal agencies and bureaus, to "help define DOE's approach to nuclear waste management, and to begin what was to be a long process of improving DOE's credibility with the public."²⁷ The proposal drawn up by the IRG addressed state and local participation in the waste management program, yet drew little support in Congress because those members of Congress most influential on nuclear waste issues were excluded from the IRG's proceedings.²⁸ Carter delivered a message to Congress on nuclear waste in February 1980, but by then the already fragile consensus built by the IRG was undermined. In large part this was because the incident at Three Mile Island the previous year instilled a deep and abiding fear of nuclear power in the minds of many Americans.²⁹ So at the end of Carter's presidency in 1980, a policy for the permanent

²⁶ Zinberg: 165.

²⁷ Michael E. Kraft, "Managing Technological Risks in a Democratic Polity: Citizen Participation and Nuclear Waste Disposal," paper presented at the annual meeting of the American Society for Public Administration, Boston, March 28-April 1, 1987: 14.

²⁸ Ibid.: 15.

²⁹ Ibid.: 16.

disposal of high-level radioactive wastes was yet to be formed.

The 'Miracle of 1982': The Nuclear Waste Policy Act

The attempt to pass major nuclear waste legislation in the 96th Congress failed, primarily for reasons dealing with the role of state and public participation, the nature of the consultation process, the method of disposal, and the number of sites that ought to be characterized.³⁰ In particular, several key senators serving on military committees refused to accept a state role in the storage and disposal of defense waste. The divisiveness of the nuclear waste issue is illustrated by the disparity between two bills introduced by the House and Senate.³¹ The House bill, sponsored by Representative Morris Udall, advocated storage in deep repositories, a provision for state veto, and full participation in the siting process, while the Senate version added the construction of multiple temporary storage facilities.³² The struggle to reach a compromise was complicated by pressures placed on the Congress by a medley of interest groups, the majority of which were composed of environmental activists and nuclear industry representatives.

³⁰ Ibid.: 18.

³¹ Ibid.: 19.

³² Ibid.: 19.

Environmentalists favored the House bill and industry lobbyists supported the Senate's, for reasons pertaining to each group's position on nuclear power. National environmental groups such as the Sierra Club and the Environmental Policy Institute favored permanent disposal in order to protect future generations, yet some "grass-roots" environmentalists, optimistic that the construction of deep geological repositories would not be well-received by the states, were more amenable to the House bill in the hopes that a stronger state veto would delay the program indefinitely. By opposing the construction of temporary facilities, and simultaneously using their own experts to argue that safe and permanent waste disposal is technologically infeasible, this latter group of actors hoped to discredit nuclear power as a means of meeting the nation's energy needs. With a completely different agenda, the nuclear industry had pushed for the creation of nuclear waste legislation for years. It felt, understandably so, that without a plan to quickly and safely dispose of accumulating waste, the future of nuclear power appeared bleak.³³ The industry, which had produced one of the first studies on the monitored retrievable concept, wanted a permanent repository program, but also lobbied in support

³³ Michael E. Kraft, Bruce B. Clary, and Jame Schaefer, "Politics, Planning and Technological Risks: State and Citizen Participation in Nuclear Waste Management," paper presented at the annual meeting of the American Political Science Association, Chicago, September 3-6, 1987: 11.

of the Senate's temporary storage facility and decision making at the federal level. As the director of a utility nuclear waste management group comments "while [there is] the conflict between federalism and states' rights, . . . the pro-nuclear stance requires a strong preemptive hand by the federal government."³⁴ Those working in the industry recognized the enormous task of establishing a repository system, and felt that the state participation should be limited. If the Senate's bill were passed, the future of the nuclear industry would be more secure. It could claim that a solution to the waste disposal problem was at hand. A compromise, nevertheless, could not be reached as the session ended with action on the nuclear waste issue deferred until the 97th Congress convened.³⁵

Many of the same concerns that stalled legislative action in 1980 were raised again in 1982, as the 97th Congress rehashed the methods of high-level waste disposal. In the waning hours of the lame-duck session, however, the Senate was able to work through twenty amendments and reach a viable compromise. Under the threat of a filibuster, an amendment proposed by William Proxmire allowing for a stronger state veto of repository siting decisions was

³⁴ Personal interview with Mr. Stephen Kraft, Director, Utility Nuclear Waste Management Group, Edison Electric Institute, Washington, D.C., February 1987.

³⁵ M. Kraft: 19-20.

accepted.³⁶ Another compromise was made regarding the schedule set for the development of plans for one or more monitored retrievable storage facilities, a major point of contention between the House and Senate versions.³⁷ Bennett Johnston, the second-ranking Democrat on the Senate Energy Committee in whose home state of Louisiana a permanent repository was being considered, pushed for a provision that would require the Department of Energy to complete its MRS study within one year.³⁸ Representative Udall, who was "unenthusiastic about the possibilities of MRS," had previously amended the House bill to require completion of the DOE study in five years.³⁹ A two-and-a-half year timetable was agreed upon by Johnston and Udall.⁴⁰

Certainly one of the major compromises leading a final vote relates to the pact made between members of Congress from states East of the Mississippi River, and those from western states. The first repository, despite the fact that 90% of the nuclear waste is stored in the eastern portion of the United States, was slated for construction west of the Mississippi. Members from the western states agreed to

³⁶ "Congress Clears Nuclear Waste Legislation," **Congressional Quarterly** 40 (December 25, 1982): 3103.

³⁷ Ibid.: 3103.

³⁸ Ibid.: 3103.

³⁹ Ibid.: 3103.

⁴⁰ Ibid.: 3103.

accept this geographical stipulation provided that the second repository would be sited in the East, although the NWPA does not explicitly state the agreement as such. As a close observer of the compromise notes:

The other parameter of passing a law is that you can't dump too hard on your fellow member or another district or another state. . . . Well, this was a law that was literally dumping on a part of the country in the form of a repository. . . . You can't dump on a part of a country without those politicians being able to say to their constituents back home 'I got something for you.' So the law eventually said there will be two places to dump, one in the East, and one in the West. Why would they do that? It wasn't a need immediately for a second repository. There was a need immediately to show balance, to allow the members of the House and Senate that come from the West to go back to their state and say 'we're not the only people that are going to get dumped on.'⁴¹

Ultimately the House, at the urging of Udall, accepted the Senate amendments and passed the bill with a vote of 256-32.⁴² The last minute passage of such a comprehensive, strategic, and controversial piece of legislation was a truly remarkable feat. So much so that the director of the DOE's newly-created Office of Civilian Radioactive Waste Management (OCRWM) later dubbed the passage of the Nuclear Waste Policy Act "the Miracle of 1982."⁴³

⁴¹ Personal interview with Mr. Tom Price, Vice-President and Associate Counsel, American Nuclear Energy Corporation, Washington, D.C., February 1987.

⁴² "Congress Clears Nuclear Waste Legislation": 3103.

⁴³ Personal interview with Mr. Ben Rusche, former director, Office of Civilian Radioactive Waste Management, Tuscon, March 1987.

President Reagan signed the bill into law in January, 1983, and for the first time in history a comprehensive policy for the permanent storage of high-level civilian radioactive waste was enacted. The preamble to the Act states its intent:

To provide for the development of repositories for the disposal of high-level radioactive waste and spent nuclear fuel, to establish a program of research, development, and demonstration regarding the disposal of high-level radioactive waste and spent nuclear fuel, and for other purposes.⁴⁴

The Act created OCRWM to implement the legislation which mandated: (1) a study of five potential sites for the first and second geological repositories, and a recommendation to characterize three of each by January 1, 1985, and July 1, 1989 respectively; (2) payment for the program by the owners of operating nuclear power plants charging user fees; and (3) that a consultation and concurrence approach whereby states and tribes participate in the siting process be followed by the DOE.

Congressional intent regarding the MRS concept is somewhat unclear since the NWPA does not actually authorize the construction of such a facility. Whether or not the MRS provision was added to expedite the waste storage program, Section 141 (b) of the NWPA directs the DOE that:

On or before June 1, 1985, the Secretary shall complete a detailed study of the need for and feasibility of, and shall submit to the Congress a proposal for, the construction of one or more monitored

⁴⁴ 42 USC 10101.

retrievable storage facilities for high-level radioactive waste and spent nuclear fuel. Each such facility shall be designed---

(A) to accommodate spent nuclear fuel and high-level radioactive waste resulting from civilian nuclear activities;

(B) to permit continuous monitoring, management, and maintenance of such spent fuel and waste for the foreseeable future;

(C) to provide for the ready retrieval of such spent fuel and waste for further processing or disposal; and

(D) to safely store such spent fuel and waste as long as may be necessary by maintaining such facility through appropriate means, including any required replacement of such facility.

With specific MRS and repository schedules in place, it would appear that the NWPA is largely a self-executing policy. The following section details the DOE MRS plan, and sets the stage for an assessment of the constraints that could alter DOE's plans for implementation of the Act.

3. DOE AND MONITORED RETRIEVABLE STORAGE

The Department of Energy MRS Proposal

As described above, the NWPA directs the Department of Energy to undertake, and submit for the consideration of the Congress, a study of the need for and feasibility of one or more MRS facilities for the spent fuel from civilian nuclear reactors. In June 1983, the DOE submitted a report to Congress that concluded that an MRS proposal could be prepared based on "currently mature engineering and design

practices without additional research and development."⁴⁵ The detailed MRS proposal required by the NWPA is to be "site specific and include at least three alternative sites with at least five designs based on alternative site/concept combinations."⁴⁶ Before such a facility can be constructed DOE must first obtain specific congressional authorization.

As reflected in its initial draft Mission Plan, the DOE originally conceived that the Monitored Retrievable Storage facility would serve as a backup in the event of significant delays in the geological repository program. The Department planned to build and operate an MRS facility to store spent nuclear fuel until the deep repository was ready to receive this waste material.⁴⁷ Over the next year, however, the DOE developed a plan for what it called and "integrated waste-management system" consisting of **both** storage and disposal components. As part of the "integrated system" an MRS facility would now perform "most, if not all, of the waste-preparation functions before emplacement in a [deep geologic

⁴⁵ U.S. Department of Energy, Office of Civilian Radioactive Waste Management, **Implementation of the Nuclear Waste Policy Act of 1982** (Washington, D.C.: U.S. Department of Energy, May 1985): 5.

⁴⁶ Ibid.: 5.

⁴⁷ U.S. Department of Energy, **Mission Plan for the Civilian Radioactive Waste Management Program**, DOE/RW-0005, draft, April 1984.

repository]."48 Thus, the MRS would have as a primary role in the system the preparation of nuclear waste before emplacement in the permanent repository; its role in providing storage, unlike that originally envisioned, was now secondary---although the DOE still planned on using the MRS for storage in the event that the deep repository was delayed. In this way the "schedule for accepting waste from the utilities is separated from the capability to emplace the waste in a repository."49 The MRS could begin operation, according to the new DOE plan, by 1996---a year in advance of the waste-acceptance date specified in the department's contracts with the utilities, leading to the point that by 1998 "the system could be accepting waste at a rate close to the rate of spent-fuel generation, thus curbing the growing inventory of spent fuel at reactors while making major progress in the implementation of permanent disposal."50

By April 1985 the DOE Office of Civilian Radioactive Waste Management had developed three options in its efforts to develop a national nuclear waste management system: (1) a system without an MRS facility in which spent fuel was

48 U.S. Department of Energy, Office of Civilian Radioactive Waste Management, **The Need for and Feasibility of Monitored Retrievable Storage: A Preliminary Analysis**, DOE/RW-0022 (Washington, D.C.: U.S. Department of Energy): 2-3.

49 Ibid.: 2-3.

50 Ibid.: 2-3.

directly sent to the deep geologic repository for processing and storage; (2) a system with an MRS facility as a backup storage site in the event of delays in putting the permanent repository into operation; and (3) a system with an "integrated" MRS facility performing both processing and storage operations.⁵¹ The DOE, in promoting its plan for an integral MRS as the preferred configuration, emphasized enhanced system performance:

The integral MRS facility enhances overall system performance by adding flexibility in the functions necessary for disposal. This added flexibility, in comparison with a system without an MRS facility, results from the separation of waste acceptance, transportation, and packaging from the waste-emplacement function. Also, the MRS facility provides the capability for a storage function that can be used to serve a variety of system needs. . . . By separating the pre-waste-emplacement functions from the repository, the integral MRS facility would provide an early focus for the DOE to develop and integrate these key functions. This focus would enable the total system to be operational on or before 1998, as mandated by the Act, and will ensure early productivity for the resources of the Nuclear Waste Fund.⁵²

As described, the NWPA directed that, in addition to an MRS need and feasibility study, the DOE include in its MRS proposal to Congress at least three alternative sites and a recommendation as to the preferred site.⁵³ Thus, having decided to pursue the integral MRS option, the DOE proceeded with the site screening and evaluation process so that a

⁵¹ Ibid.: Chapter 3.

⁵² Ibid.: 4-4.

⁵³ 42 U.S.C. 10101 et seq.

candidate site could be designated for congressional approval. Toward that end, the DOE between 1983 and early 1985 quietly and secretly evaluated sites as candidates for the MRS facility. The evaluated sites included those "previously planned and those which 'qualified' for nuclear activities---such as, sites owned by the DOE or previously docketed by NRC."⁵⁴ The evaluations were based on **existing** environmental documentation and data for the sites which was, in the DOE's view, "of high quality and relevant to construction of a nuclear facility."⁵⁵ According to the DOE, the primary considerations in identifying a preferred and two alternative sites for an MRS facility were to identify sites where the facility could be constructed (1) with "minimal adverse impacts on the local community or environment," (2) at a location that would enhance its role as an "integral part of the federal nuclear waste disposal system," and (3) allowed "timely, cost effective selection."⁵⁶ These considerations led DOE to focus on sites in the East-Central region (where the preponderance of civilian reactors are located), having at least 1100 acres

⁵⁴ U.S. DOE, **The Need for and Feasibility of Monitored Retrievable Storage: A Preliminary Analysis**: 6.

⁵⁵ Ibid.: 6.

⁵⁶ U.S. Department of Energy, Office of Civilian Radioactive Waste Management, **Screening and Identification of Sites for a Proposed Monitored Retrievable Storage Facility**, DOE/RW-0023 (Washington, D.C.: U.S. Department of Energy, April 1985): 4-5.

(to accomodate estimated processing and storage requirements of 70,000 MTU), and which were owned by DOE or had already been docketed by the NRC for licensing as nuclear facilities (thus allowing the use of existing data for site approval).⁵⁷ Eleven such sites were identified and these were then "thoroughly analyzed by a task force of specialists in eight areas important to evaluating site suitability."⁵⁸ The evaluations were undertaken from mid-December 1984 through March 1985 using "only materials available in the open literature."⁵⁹ The process used by the DOE for site selection constituted the database for the required "Environmental Assessment" (EA) to accompany the proposal to Congress. In presenting its report on site screening and identification, the DOE noted that if Congress authorized the MRS, "some new or confirmatory field data will be required for each site prior to completing an Environmental Impact Statement (EIS) and prior to submittal

⁵⁷ Ibid.: 5.

⁵⁸ Ibid.: 8-9. The areas deemed important were: ease of regulatory compliance; existing environmental setting; geotechnical site characteristics; socioeconomic setting and changes which might be induced by MRS development; institutional and administrative structure of the state; local transportation characteristics; access to physical infrastructure; and capital cost of construction. The membership of the MRS Site Screening Task Force included specialists from six DOE contractor organizations: Pacific Northwest Laboratory; Goldner Associates; Ralph Parsons Company; Engineering Sciences; Battelle Project Management Division; and Battelle Human Affairs Research Centers.

⁵⁹ Ibid.: 27.

of a license application to the [NRC] for construction and operation of [an] MRS."⁶⁰

The Director of OCRWM at the end of the process identified the Clinch River Breeder Reactor site near Oak Ridge, the DOE Oak Ridge Reservation, and the Tennessee Valley Authority Hartsville Nuclear Plant site (all located in Tennessee) as the preferred and alternative sites for the MRS facility to be proposed to Congress in January 1986. In doing so it was noted that the Director's judgment "could change based on information to be developed between now [April 1985] and January 1986."⁶¹ Moreover, now that the site identification had been completed, the DOE observed that:

It is expected that the State of Tennessee will reach independent judgments about the Department's program and rationale for an MRS facility. The Department will help facilitate independent state review by a program of grants and extensive information transfer. The scope and schedule of this program will be developed cooperatively with Tennessee. Through this interaction, the Department will work to resolve any questions or concerns by Tennessee regarding MRS authorization or deployment. A formal consultation and cooperation agreement will be negotiated with Tennessee should Congress authorize construction of the MRS at Clinch River or one of the alternative candidate MRS sites.⁶²

Thus, on April 25, 1985, the Secretary of Energy announced the three candidate sites the agency expected to include in

⁶⁰ Ibid.: 28.

⁶¹ Ibid.: 1

⁶² Ibid.: 3.

its MRS proposal to Congress. In identifying the three finalist sites, the DOE also disclosed its intention to submit its full MRS proposal to the Congress within nine months, in January of 1986. In making this announcement the DOE asserted that, during the interim period before its submission to Congress, it would:

Keep all segments of the public informed of decisions and supporting analyses leading up to the proposal to Congress in January 1986. This includes working closely with potentially affected States and localities . . . and assuring that they have ample opportunity to express their views to Congress.⁶³

The Department of Energy, then, completed its MRS selection process, choosing three candidate sites in Tennessee. The agency planned to move forward with a proposal to Congress within nine months. Unfortunately, this optimistic schedule was subject to a variety of factors that tend to constrain mission accomplishment in large technical agencies like the DOE. In the following section several of these forces, both internal and external to the agency, are examined with an eye toward highlighting their potential impact on DOE's MRS siting schedule.

Bureaucratic Constraints in the MRS Siting Process

The Department of Energy faced a monumental implementation challenge in the ensuing months. The agency confronted a variety of potential hurdles during the MRS siting process. How the department sought to overcome these

⁶³ Ibid.: 6.

obstacles created opportunities for other actors, as they were brought into the more open decision making system, to fault the DOE's performance. The remainder of this section reviews the major areas in which the DOE is likely to be impaired in its efforts to site an MRS facility.

Conceivably, these forces make the implementation of technical policies cumbersome for specialized organizations such as the DOE.

Insofar as knowledge is a constraint the the DOE, it could be argued that some of the technologies relating to the MRS remain unproven, especially those relating to rod consolidation and cask development and testing. With an increase in the use of expertise by other actors in the open system, the facts and figures used by the DOE are more readily disputable. Agency performance could be viewed as poor if experts employed outside the DOE can refute the findings of a particular study. The use of experts to dispute technical reports is a powerful tool often used by opponents of a controversial policy such as the MRS.

DOE is, of course, constrained by its obligation to work within the parameters of the NWPA. Although the legislation is less ambiguous than most, there is still a great deal of room for differing interpretations. As the director of the DOE's waste management program acknowledges:

I put on my manager's hat and it was clear that nobody who'd had any management experience in complex systems would conceive of an operating system that had such polarized modal operational features. They [Congress]

placed a start, they placed an end, and really nothing in between about how to get there . . . but from a pure practical standpoint one needs to have options and ways to deal with contingencies in an operating system.⁶⁴

The director's statement accurately describes the magnitude of the task assigned to the DOE. For practical purposes, the Act had to be loosely worded in terms of exact procedures, yet the NWPA is very specific with regard to the repository timetable. The officials in charge of the repository program and the MRS know that they are to be held accountable for any delay. The tyranny of the schedule is likely to place severe pressure on the DOE to meet its deadlines. Exacerbated by the contractual obligations of the DOE to take title to the waste from utilities in 1997, the time frame places an enormous burden on the agency. No penalty exists for non-compliance by the DOE, however meeting the original schedule is crucial to promoting OCRWM credibility.

The possibility of legal action against the DOE must also be viewed as a legal constraint. The language found in the NWPA is such that it could be construed to back a variety of positions, particularly relating to state, tribal, and citizen participation. A specialist in environmental law argues: "out of the NWPA is a clear message from Congress that they wanted as much citizen participation as possible, as much as has ever been, citing

⁶⁴ Rusche interview.

statutes like this at the federal level."⁶⁵ Consequently, the likelihood of a lawsuit against the DOE increases. As a professional staff member to the U.S. Senate Energy & Natural Resources Committee phrases the possibility of a policy debacle:

While Congress made the repository program self-executing, it established procedural constraints on the implementation of the program that are quite severe and that offer substantial opportunity for delay---perhaps indefinite delay---in siting a repository.⁶⁶

This statement is equally representative of the MRS program. It is unclear as to exactly which provisions of the Act apply to the MRS. Section 141(h) of Subtitle C orders that "[a]ny [MRS] facility authorized pursuant to this section shall be subject to the provisions of sections 115, 116(a), 116(b), 117, and 118," but is confusing because the NWPA neither **authorizes** the construction of an MRS, nor does it establish the facility's need. A nuclear industry representative concedes:

Of course [the MRS] adds a complication in that you're dealing with another state in addition to the three [repository states] plus the second round states. Then you're dealing with a whole other set of opportunities for litigation.⁶⁷

⁶⁵ Personal interview with Mr. Dan Reicher, Staff Attorney, Natural Resources Defense Council, Washington, D.C., February 1987.

⁶⁶ Benjamin S. Cooper, "Monitored Retrievable Storage: A Congressional Perspective," **The Radioactive Exchange** 4 (April 17, 1985): 17.

⁶⁷ Kraft interview.

The DOE, of course, can fashion a supportive argument as easily as citizens and state officials can craft one in opposition. The problem for DOE is that by using the courts to rule on a procedural dispute, opponents can delay the waste program, placing additional pressures on the agency. Having to look to the courts to interpret the NWPA, then, can be viewed as a force working against program implementation.

The DOE is a large, extremely complex organization performing many functions, requiring the coordination of multiple activities. OCRWM is merely one division within the organization that falls within the rubric of nuclear waste management (Figures 4.1 and 4.2). In addition to managing the civilian radioactive waste management program, the DOE is the principal sponsoring agency of twenty federally funded research and development centers, some of which are administered by industrial firms (Oak Ridge National Laboratory is managed by Martin Marietta Energy Systems), some by universities and colleges (Oak Ridge Associated Universities), while a couple are managed by nonprofit institutions (Pacific Northwest Laboratory and the Solar Energy Research Institute).⁶⁸ As the manager of the

⁶⁸ Barke: 70.

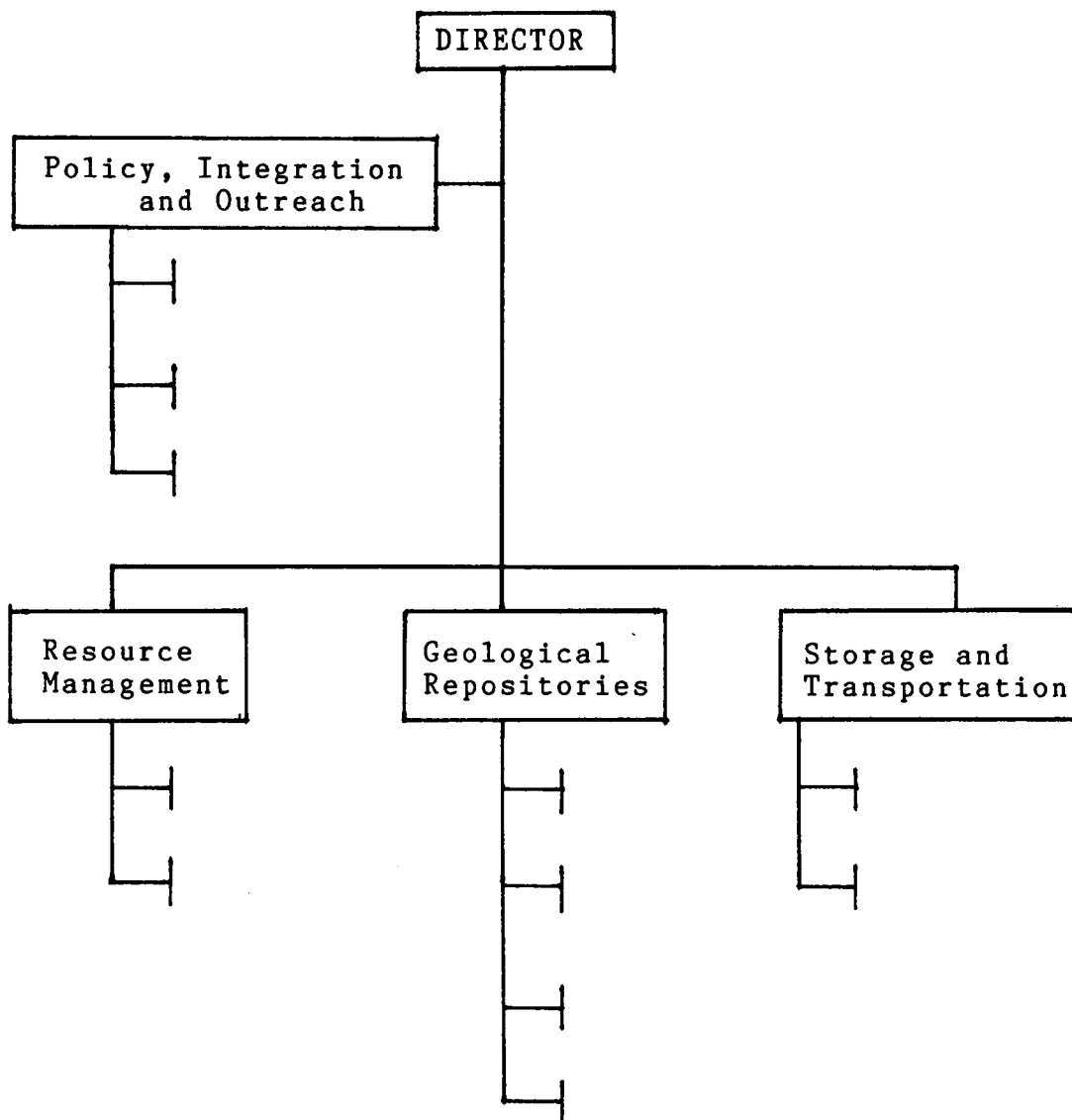


Figure 4.2

Organization of Office of Civilian Radioactive Waste Management^a

^aSource: United States Department of Energy

DOE's Oak Ridge MRS office says of the agency's configuration:

DOE spends about ten billion dollars a year doing lots of things, from growing mice for medical experiments here in Oak Ridge, to testing nuclear bombs in Nevada. We do a wide variety of things, we having thousands of contractors employing hundreds of thousands of people . . . I don't know what all these folks are doing. I've got some conceptual idea, but I don't know all the details, nor do I know all the contractors that work here in Oak Ridge. There are probably thirty-five contractors here in Oak Ridge alone. I know a few of them . . . we employ [in Oak Ridge] over 15,000 people in a massive industrial complex. You don't have massive industrial complexes and 15,000 employees and not have some problems.⁶⁹

With so many divisions and offices, it is easily seen how the agency could suffer from both a lack of coordination and multiple goals. The DOE is the primary federal agency responsible for high-level radioactive waste management, however, other departments, agencies, and Congressional committees have major and minor supporting roles because of their technical capabilities and regulatory capacities.⁷⁰ The Nuclear Regulatory Commission and the Environmental Protection Agency perform oversight and regulatory functions, while the General Accounting Office, the Office of Science and Technology Policy, the Council on Environmental Quality, the Army Corps of Engineers, the U.S. Geological Survey, and the Department of Transportation each

⁶⁹ Personal interview with Mr. Peter Gross, Manager, Oak Ridge Monitored Retrievable Storage Operations Office, Oak Ridge, September 1987.

⁷⁰ U.S. Department of Energy, **Energy Technologies and the Environment**: 247.

contribute their expertise to the management of nuclear waste.⁷¹ In addition to the hearings generated by the Senate Energy Committee, numerous other committees and subcommittees make requests to which the DOE must respond.

The relationships the DOE has with these agencies and legislative groups must be coordinated, and one can sympathize with the tremendous task of radioactive waste policy management in such an environment. The director of OCRWM had some public sector experience because he worked as a special assistant for technical policy in a previous administration, but the assistant director, although experienced in nuclear issues, admits that he was a "neophyte" to public sector management.⁷² Those in top decision making positions have to familiarize themselves with the intricacies of program implementation in large public organizations. In contrast to these political appointments, the Oak Ridge MRS manager worked in reactor development for twenty-one years. Like hundreds of DOE employees, this official was well-versed in governmental operations. The point being, that in an agency with many responsibilities associated with nuclear power, to say that it is difficult to coordinate waste management is an understatement.

⁷¹ Ibid.: 247.

⁷² Personal interview with Mr. Roger Hilley, former Assistant Director, Office of Civilian Radioactive Waste Management, Washington, D.C., February 1987.

The political constraints faced by the DOE are many and varied, but only the major ones pertaining to the MRS are described here. The first political force deals with the nature of legislative deliberations of the Act itself. Several compromises led to the passage of the NWPA during the waning hours of Congress' 97th session, yet as Kraft points out, there was not universal support for the "final package;" he observes that "[i]n particular, [some grass-roots] environmentalists and anti-nuclear groups were not part of the fragile and limited consensus behind the NWPA."⁷³ Consequently, the implementation of the NWPA by DOE was likely to be made more difficult, especially in the candidate states because Congress did not reach an agreement that suited a totality of interests.⁷⁴

Another political force potentially constraining agency performance relates to organizational leadership and the negative perceptions associated with past failures in the waste management program. The DOE and its predecessors have suffered from a poor image because of an absence of clear goals and the leadership necessary to achieve them. Waste management was not a priority of the AEC and postponing the creation of a policy only led to a loss of credibility. This distrust still haunts the agency as one DOE manager, in

⁷³ Kraft: 19.

⁷⁴ This is what Kraft subsequently concluded in his study of participation in the NWPA. See Kraft: 19.

describing his frustration remarks, "why punish the son for the mistakes of the father?"⁷⁵ Successful implementation, then, depends a great deal upon the DOE's ability to promote a sense of leadership and commitment. Agency managers, furthermore, must be able to project an image of cooperation with other actors in the more open system.

Finally, one cannot discount the inevitable political forces found in a system where decisions concerning the siting of undesirable facilities are made by a partisan Congress. In the case of nuclear waste management, the controversies that began in the policy formation stage are likely to be fueled as the DOE attempts to carry out its responsibilities as delegated by the NWPA. As with any piece of legislation, numerous interests must be balanced and many constituencies served. The environmentalists and states are pushing for increased participation while the industry, whose ratepayers are funding the waste disposal program, is pushing for a rapid solution to the storage problem. The goals seem quite incompatible. The goals and priorities of the president can affect agency performance as well. Although the Reagan administration is supportive of the NWPA and of the MRS facility, any political maneuvering could offset the delicate balance that was responsible for the Act's passage. The DOE, as an agency not accustomed to sharing a great deal of decision making power with other

⁷⁵ Gross interview.

actors, has to accomodate the politics of administering the NWPA, as well as other constraining factors if implementation is to succeed.

4. CONCLUSIONS

In the modern era, large public organizations such as the Department of Energy often are confronted with well-organized interest groups that are highly critical of agency performance. Whenever this criticism permeates the perceptions of the general public, it is bound ultimately to negatively impact agency image and constrain operations. Since its creation, the DOE in particular has encountered such problems. In the case of the hazardous waste program, the negative image may well be colored by the controversial nature of DOE's congressionally mandated responsibilities. The DOE has one of the most difficult jobs in federal government. Under the NWPA it is the agency's responsibility to site undesired waste facilities using a process whereby the states have the power, subject to congressional override, to veto agency actions. Siting decisions are unpopular and tend to mobilize strong public opposition; frequently the scope of conflict becomes so wide that political pressures make policy implementation practically impossible. The point is that observers of federal agencies may mistakenly label as bureaucratic inertia, performance that is influenced by factors not

easily controllable by the organization.⁷⁶ These constraining factors include the difficulties embodied in the legislation itself, limited knowledge about technology, coordination within the agency, and politics. Any one of the factors, if brought into play is potentially debilitating to the agency. In combination, they might well eliminate any practical hope for implementation of this technical policy.

This chapter has examined how these constraints might influence the siting of the MRS facility in Tennessee. In doing so, we have described the unique features of the agency responsible for policy implementation. The Department of Energy is an agency unaccustomed to making technical decisions in an open process in which actors outside the agency participate. The Atomic Energy Commission and the Joint Committee on Atomic Energy monopolized decision making in the nuclear waste area by promoting the use of in-house experts and a scientific advisory council. It was only with the passage of the Nuclear Waste Policy Act that, in recognition that expertise was no longer enough to ensure implementation, the Congress

⁷⁶ J. David Roessner, "Federal Technology Policy: Innovation and Problem Solving in State and Local Governments," in Thomas J. Kuehn and Alan L. Porter, eds., **Science, Technology, and National Policy** (Ithaca: Cornell University Press, 1981): 405. Roessner examines innovative decision making in the federal technology policy process and concludes that decisions are influenced by factors "other than expected performance improvements," such as institutional features of public organizations.

sought to open the process by formalizing state and tribal participation.

Once the final three candidate sites had been designated, the MRS siting venture became one of the DOE's first major attempts at engaging in more open decision making. As such, it is an enormous challenge. How, and to what effect the agency meets this challenge will prove to be a litmus test of the DOE's ability to operate within the more open decision making environment as well as its capacity to engage an effective management of its personnel, resources, and responsibilities. Proposition four of our science and technology model states that open systems of environmental decision making will affect the performance of public officials working in federal agencies. The MRS case, as a test of this proposition, suggests that increased state and public participation in the siting process will affect the performance of DOE officials.

Agency performance is just one component of the policy outcome model, yet it plays a critical role in successful implementation. Because the open decision making concept is relatively new to the technical policy domain, it is important to study the participation efforts of previously excluded actors. The next chapter will examine Tennessee's MRS evaluation in order to observe how one state is coping with its newly assigned role as an actor in the science and technology policy process. The chapter will also discuss

the views of participants in their assessment of the Department of Energy's performance during the review. By doing so, the outcome of the MRS controversy can be better understood.

CHAPTER V

THE STATE ROLE IN THE MRS EVALUATION

1. INTRODUCTION

This study is concerned with exploring the implications of the development of more open administrative decision making in environmental policy. A major component of the model of this process presented in Chapter One was the inclusion of subnational governments as important actors in science and technology policy implementation. The present chapter focuses upon the evolving role of the states within the radioactive waste management (RWM) domain of environmental regulation. To foster an understanding of how, and to what result, the more open decision making system operates, a systematic review and evaluation of the role of the state of Tennessee in the Department of Energy's proposed construction of a Monitored Retrievable Storage (MRS) facility. within that state is presented.

The Resurgent States

The states are no longer the "poor cousins" of the American federal family. After a quarter century of institution building, fiscal federalism, and political evolution, the sovereign states are once again full-fledged and full-bodied partners in the American system of governance:

Constitutional and statutory reforms have strengthened the powers of the governors, streamlined the executive branches, made state legislatures from effective, efficient, accountable, and responsive, and modernized judicial systems. The education, experience, and professionalism of elected, appointed, and civil service employees in state government have improved considerably in recent years. The states' capacity to act has been enhanced, accompanied and followed by increased innovative behavior in various policy fields.¹

As the Reagan reformation in federalism has proceeded apace with its devolution of authority and responsibility, the importance of the states has commensurately grown, and many are now recognizing that their performance in many areas has been "impressive--far more so than that of the federal government."² But, the transition has not been entirely welcome or successful. During the change period intergovernmental relations have been strained and tensions have risen. Nowhere is this more readily apparent than in the area of radioactive waste management (RWM) when the late 1970s brought a virtual revolt by some states against the Washington nuclear establishment.³ The Low-Level Waste Policy Act of 1980 and the Nuclear Waste Policy Act of 1982

¹ Richard C. Kearney and John J. Stucker, "Interstate Compacts and the Management of Low Level Radioactive Wastes," **Public Administration Review** 45 (January/February 1985): 210.

² Carl W. Stenberg, "States Under the Spotlight: An Intergovernmental Review," **Public Administration Review** 45 (March/April 1985): 319.

³ See Richard W. Riley, "Forward: Nuclear Waste and Governance," in E. William Colglazier, ed. **The Politics of Nuclear Waste** (New York: Pergamon Press, 1982): vii-xi.

were direct products of the states' determination to exercise greater influence, if not control, of RWM policy--especially when it came to disposal and the critical question of facility siting within their borders. It is in the RWM area especially that citizens and groups within states confronted with unwanted nuclear waste facilities expect their state governments, and their state congressional delegations, to protect them, and the land upon which they dwell, from outside--especially federal threats. This resurrection of the "territorial dimension" of American politics⁴, in conjunction with the resurgence of the states as polities, required that the states be systematically incorporated into the national RWM system envisioned by the NWPA.

At the same time, the assertion of state sovereignty as a significant of feature of nuclear federalism, was the product of a more general subnational concern for, and enhanced institutional capacity to deal with science and technology policy as a whole. As Malcolm Goggin notes:

Although many issues with scientific and technological content are, in fact, national policy questions, for sometime now, states have been building a capacity to make informed decisions about directing and regulating science and technology within their borders. The Reagan Administration's New Federalism

⁴ See Michael R. Fitzgerald, William Lyons, and Patricia Freeman, "Hazardous Waste Disposal in a Federal System: Public Attitudes and Intergovernmental Responsibility," paper presented at the annual meeting of the Southern Political Science Association, Atlanta, Georgia, November 6-8, 1986.

policies and the recent emphasis on greater self-sufficiency for state and local governments have also motivated state legislatures and governor's offices to seek autonomy through local technical competence.⁵

That is, as citizen's and groups within the states and localities of the nation became ever more concerned about the effects of science and technology, especially from an environmental viewpoint, they looked to their state and local governments for support. This required the development of subnational infrastructure and expertise to compete with the traditional federal science policy monopoly. In this sense then, the strong and assertive role of the state of Tennessee in dealing with the Department of Energy's MRS proposal was a product of long-terms trends in the development of contemporary state government, and the resurgence of states as federal partners. It was, as well, the specific product of evolving state roles in RWM management. Thus, when Tennessee received the DOE's notification that it had won the MRS "sweepstakes" it was not as a "poor cousin" that the news was received. Tennessee, like its 49 sister states, expected to be treated with consideration and respect, and most of all, was determined to make its own mind up about the idea.

⁵ "Introduction. Governing Science and Technology Democratically: A Conceptual Framework," in Malcolm L. Goggin, ed. **Governing Science and Technology in a Democracy** (Knoxville: The University of Tennessee Press, 1986): 23.

The Evolving State Role in RWM

For most of their history the states have left the management of hazardous wastes to local governments.⁶ In the traditional approach the states entirely left hazardous waste facility siting up to their localities in a "local veto approach."⁷ Increasingly in recent decades, however, the states have developed a "pre-emption" or local "override" approach the major justification for which is that:

[H]azardous waste facilities serve a statewide need that should take precedence over parochial opposition. In siting, statewide benefits exceed local costs. Indeed, those benefits are dispersed across the state while the costs are concentrated in a particular locality.⁸

The premise of state preemption is that local opposition to a hazardous waste facility, typically strong enough to inspire local officials to veto the facility in the traditional approach, is based on "irrational fear and ignorance, particularly about the safety measures included in the siting proposal. Thus, pre-emption will enable the state to use rational, technical criteria to approve an

⁶ See A. Dan Tarlock, "State Versus Local Control of Hazardous Waste Facility Siting: Who Decides in Whose Backyard," in Robert W. Lake, ed. **Resolving Locational Conflict** (New Brunswick, NJ: Center of Urban Policy Research, 1987): 137-158.

⁷ John Hodges-Copple, "State Roles in Siting Hazardous Waste Facilities," **Forum for Applied Research and Public Policy** 2 (Fall 1987): 78.

⁸ Ibid.: 79.

acceptable site."⁹ But, pre-emption as a siting approach has not proven effective. For all hazardous waste facilities pose risks and "are likely to leave local residents with more costs than benefits."¹⁰ That is, as the state role in hazardous waste siting has become more assertive, pre-emption has not served as a vehicle for effective siting because "it fails to address the reasons behind opposition--citizen convictions that costs will exceed benefits and that the community's health and safety will be at risk."¹¹ Thus, states have tended to move in the direction of providing incentives to local communities to voluntarily accept state-approved facilities. The incentive approach involves a package of adverse impacts prevention, mitigation, and compensation measures, as well as benefit-sharing fees paid to the local community, and community participation in site management and monitoring.¹² Ironically, when it comes to radioactive waste, the state role shifts dramatically. The traditional federal pre-emptive approach has brought state revolt and assertion of veto rights, and now it is the federal government that must figure out a way to effectively induce subnational cooperation for unwanted facility siting for the larger

⁹ Ibid.: 80.

¹⁰ Ibid.

¹¹ Ibid.

¹² Ibid.

national benefit at the imposition of localized risks and costs. How has the state role evolved within this situation, especially as it pertains to high level radioactive waste management?

Before the passage of the NWPA of 1982 each state had to develop its own approach to dealing with high level nuclear waste, and this was primarily a matter of reacting to federal initiatives. Thus, in 1969 Idaho was able to extract from the AEC a promise for the removal of high level nuclear waste from a fire at Rocky Flats, Colorado, which was being stored in the state. This led the AEC to attempt to place the radioactive material first in Lyons, Kansas, then in New Mexico. The state of Kansas, with the help of its congressional delegation, successfully challenged the suitability of the Lyons site, and the plan was abandoned. New Mexico challenged the DOE's initial Waste Isolation Pilot Project (WIPP) site investigation and was eventually able to get the federal agency to move the proposed repository location. In these dramatic instances, the state's role was essentially one of reacting to emergency situations or established federal decisions. Over time state legislation attempting to regulate or prohibit the disposal or transportation of high-level nuclear waste, became increasingly common. And state task forces and advisory panels on radioactive waste proliferated. Primarily, the pre-NWPA role of the states in high level RWM

was in attempting to obtain information from the AEC and its successor DOE as to federal plans, schedules, and projects--with state licensing requirements the common means to this end.

The NWPA of 1982 reduced in very large part the reactive thrust to the state RWM role and enhanced state participation in the process. As Pierce, Hill, and Haefele, put it: "The Nuclear Waste Policy Act of 1982 provides for an unprecedented degree of state participation in a project of the federal government."¹³ In establishing the procedure for the nomination and eventual selection of permanent, and monitored retrievable storage, repositories for civilian high level radioactive waste, the NWPA grants to the states rights of participation, consultation and approval regarding sites within their borders. The state role involves, in addition to consultation with the federal government, a limited state veto over a DOE designated site for a high level nuclear waste facility, subject to an override by a majority vote in Congress. The procedures by which repository host states and DOE will "consult and cooperate" are to be written, and the DOE is required to provide a state with timely, and complete information regarding all

¹³ B. Pierce, D. Hill and E.T. Haefele, "High-Level Radioactive Waste Management: A Means to a Social Consensus," in **Radioactive Waste Management**, Vol. 5, proceedings of the International Conference on Radioactive Waste Management, Seattle, May 16-20, 1983: 42.

aspects of the planning, design, licensing, construction and operation of such facilities.¹⁴

Unlike virtually all other major federal legislation since the New Deal which has become increasingly specific about **exactly** what states must do in order to meet federal standards, the NWSA provides no guidelines as to how the states will perform their role under the Act. This makes the NWSA, already considered by many a "miracle," the more remarkable. As Pierce, Hill, and Haefele note:

It is a reflection of the difference between this decision to accept a nuclear waste site and all other federal/state decisions that structure and process [for the state role] were not defined. The Congress has appropriately recognized that in this decision sovereignty is involved: first state sovereignty, ultimately national sovereignty. Knowing that, Congress has deferred to the states' own definition of how each wishes to exercise its sovereign choice.¹⁵

This chapter examines how the state of Tennessee proceeded to organize for, and ultimately exercised, its "sovereign choice" in the MRS case. It thereby allows us to evaluate the state part of the subnational feature of the open decision model set out in Chapter One. It also allows an evaluation of Tennessee decision making, in and of itself, as an exercise in open administrative decisions. The citizen participation and local government aspects of the open model are considered in detail in the chapter that follows.

¹⁴ 42 USC 10136, Sec. 116; Sec. 117; and Sec. 141.

¹⁵ Pierce, Hill, and Haefele: 52.

Organization of the Chapter

In exploring the role of Tennessee government in DOE's attempt to site the MRS radioactive waste facility within its borders, this chapter proposes to make a preliminary assessment of state government as an actor in more open scientific and technical decision making. In the next section the state's reaction to the Secretary of Energy's MRS announcement is described, and its evaluation process is examined. In the third section the results of the state evaluation and the governor's MRS decision are presented. Section four places the performance of the state and the DOE in perspective based on interviews with key actors involved in the intergovernmental relations process, and conclusions are drawn in the fifth and final section.

2. TENNESSEE, DOE AND THE MRS

The Secretary of Energy's announcement immediately confronted the state of Tennessee, and several of its localities, with the problem of how to respond to the proposed siting of a high-level radioactive waste facility within its borders. Because the NWPA extended to a state the right to "disapprove" of the siting of an MRS facility, subject to later congressional override of the state "veto," Tennessee was faced with a critical decision: would it accept or reject the MRS proposal for any or all of the proposed sites and upon what basis? Recognizing this, and

as part of its attempt to assure that the state and localities affected by the MRS proposal would have the opportunity to express their views to Congress, the DOE initiated a series of briefings by its staff for state and local officials, as well as the general public, in Nashville, Oak Ridge, and Hartsville. Moreover, the DOE offered financial support to Tennessee to fund a state review of the proposal.

What followed was an intensive period of intergovernmental efforts and negotiations that clearly fell within the more open decision making model. What began as an ostensibly open and cooperative undertaking between national and subnational authorities eventually became contentious, until finally the governor announced the state's opposition to the proposal.

The Secretary of Energy's MRS announcement was accompanied by a briefing for local officials and press conference in Oak Ridge. During the briefing for thirty-five city and county officials from the Oak Ridge area, DOE representatives first explained nature of the facility and its role in the nuclear waste management system. The meeting was then opened for questions from the officials. From DOE's standpoint the major issue was "an equitable financial arrangement between the city of Oak Ridge (and

neighboring communities) and the Federal Government."¹⁶ In the ensuing question period most of the questions from local officials dealt with financial issues, with some questions regarding environmental, transportation, and safety concerns also being raised.¹⁷ The two hour press conference, held later, proved much different. Unlike the briefing session where the primary focus was upon financial compensation and impact concerns, the questions posed by the media focused primarily on the impact of transportation of nuclear waste materials in the state, environmental effects, the need and feasibility of the proposed facility, and siting process that had produced all three sites in Tennessee.¹⁸ The following day in Nashville, DOE representatives briefed the Commissioner of the Tennessee Department of Health and Environment and his staff on the MRS project. Shortly thereafter additional DOE briefings were provided for officials in the Hartsville area, as well as members of the state legislature and key state executive officials and staff.

The initial reaction of the state, according to two high level executive branch officials, was "surprise and

¹⁶ Letter From Peter J. Gross, Manager, Monitored Retrievable Storage Office, Oak Ridge Operations, U.S. Department of Energy, to Wayne K. Scharber, Director of Environment, Tennessee Department of Health and Environment, September 17, 1985.

¹⁷ Ibid.

¹⁸ Ibid.

consternation."¹⁹ Shortly after the DOE announcement Governor Alexander directed that the executive branch undertake a comprehensive review of the MRS proposal. This review was to provide the basis upon which, by the end of the year and before the DOE submitted its plan to Congress, the governor would make an informed decision about whether to support or oppose the MRS. Governor Alexander made clear that he did not want the state to simply engage in the "Not In My Back Yard" (NIMBY) attitude that increasingly defined local reaction to proposed nuclear facilities. Recognizing that Tennessee had an obligation to the larger national interest in contributing to the development of an effective nuclear waste disposal system, Alexander indicated that if the MRS facility could be independently established as necessary and feasible, he would support its construction within the state. As one high-level administrator remarked, "he [Alexander] is a very unique guy, so his first impression was, if this thing is needed and we need to do this for the nation, then we need to stand up and do it."²⁰

¹⁹ James E. Word and Ruth H. Neff, "Tennessee's Response to the MRS Proposal," in Roy G. Post, ed. **Waste Management '86: Waste Isolation in the U.S. Technical Programs and Public Education**, Vol 2, proceedings of the Symposium on Waste Management, Tucson, March 2-6, 1986: 577.

²⁰ Personal interview with Mr. James Word, Commissioner, Department of Health and Environment, State of Tennessee, Nashville, November, 1986.

The Safe Growth Cabinet Council

The key to Governor Alexander's attitude, and decision process strategy, was the state's capacity to engage in an effective independent assessment of the federal proposal. Despite the extremely constrained time frame imposed by the DOE schedule, such an assessment was possible because of the availability of federal funds for such an activity, and because the state had in place a multiagency administrative apparatus suitable for coordinating such a comprehensive effort. It is difficult to conceive how the state, left to its own fiscal resources, suddenly could have produced the funds necessary for such a comprehensive evaluation. Moreover, had Tennessee been required hastily to build from the ground up a management structure to plan and execute such an effort, it is difficult to believe any independent, comprehensive review could have been completed within the deadline imposed by DOE.

In his review of gubernatorial policy making through science advice, Flentje observed that "the pluralistic nature of state political systems creates a turbulent and unpredictable policy environment."²¹ This environment is hardly made more manageable in instances when national forces, in this case the U.S. Department of Energy,

²¹ H. Edward Flentje, "Knowledge and Gubernatorial Policy Making: Policy and Management Context," in **Gubernatorial Policy Making Through Science Advice** (Washington, D.C.: National Governors' Association, 1982): 20.

confronts a governor with an extremely complex science, engineering, and technology proposal--such as the construction of a high level nuclear waste storage facility. Increasingly, state governors are confronted with such issues, however, and in the ordinary situation:

The governor receives scientific, engineering, and technical advice from a variety of competing sources including personal staff, line departments, task forces, and university professors among others. Hundreds of issues, large and small, political and technical, compete for gubernatorial attention on a daily basis, which results in an information overload, both for the governor and for those working closely with the governor.²²

The danger in this situation is that a governor ultimately is unable to effectively sort through the advice and will then fall back upon a politics-as-usual approach. This turns gubernatorial decision making into:

[T]he contest among competing interests--client groups, professional associations, agency advocates, political interests, and others. State action results from the tactics of compromise and bargaining rather than from thought, understanding or analysis. Instead of making policy, elected officials ratify agreements and adjustments among competing groups."²³

Early in his second term of office, Tennessee Governor Lamar Alexander recognized this danger and formed a multiagency task force, the Safe Growth Cabinet Council (SGCC), to compensate for the tendency toward disjointed information overload in the area of economic development and environmental protection. The Cabinet Council was an

²² Ibid.: 20.

²³ Ibid.: 20-21.

advisory group to the governor on matters concerning economic development and environmental protection. It included cabinet officers from six state departments and agencies and a small professional staff.²⁴ The coordination of hazardous waste management was one of the major responsibilities of the SGCC. Thus, it was only natural that Governor Alexander turned to his Safe Growth Cabinet Council (SGCC) to organize the state's multiagency review of the MRS proposal, and to perform an independent technical assessment of the assumptions upon which the DOE program was based.

Work on the project began almost immediately, and smoothly, because as Commissioner James Word, Chairman of the SGCC, expressed it: "There was already a relationship between the agencies [in the SGCC] so when the MRS came along we did not have to do anything special. We simply put the MRS into the same group dynamic that everything else was in."²⁵ It is important to emphasize that in his charge to the SGCC the governor made clear that he did not want recommendations, only analysis and information. The Assistant Director of the SGCC staff later recalled that:

²⁴ It included the state commissioners of Health and Environment, Transportation, Economic and Community Development, Conservation, and Agriculture, as well as the Executive Director of the Tennessee Wildlife Resources Agency. The Executive Director was expert in environmental planning and transportation and the Associate Director was a expert in environmental affairs and activism.

²⁵ Personal interview, Nashville, November 1986.

Neither the Safe Growth staff or the Safe Growth Cabinet Council were ever asked to make a recommendation directly to the governor. Our role was one of information collection and synthesis. We did not even prepare a single final report in which the findings of our contractors or the findings or of our executive departments could be "filtered" through the staff. Commissioner Word and the governor agreed that Alexander needed to receive the information in as pure a form as possible. So we did not interject the additional step of synthesizing and boiling down [the material] to avoid the possibility of building staff bias into the recommendations.²⁶

The Tennessee General Assembly responded to the DOE announcement by creating a Special Joint Committee "to study the issues involved in the selection of nuclear waste storage facility sites," and to report its findings by January 10, 1986.²⁷ The Joint MRS Study Committee took a "parallel approach" to that of the Cabinet Council and essentially "bird dogged" the executive's comprehensive review as it unfolded.²⁸ Accordingly the committee conducted a series of public hearings, participated in the workshops and briefings on the MRS sponsored by the DOE and the Cabinet Council, and reviewed the relevant documents.²⁹ The General Assembly, of course, reserved for itself the

²⁶ Personal interview with Dr. Ruth Neff, Assistant Director, Safe Growth Team, Nashville, November 1986.

²⁷ Tennessee General Assembly, Senate Joint Resolution 183, June 28, 1985.

²⁸ Personal interview with Mr. Nathan Ridley, Counsel to the Joint MRS Study Committee, Nashville, May 1987.

²⁹ Tennessee General Assembly, Special Joint Committee, **Report of the Special Joint Committee to Study the Monitored Retrievable Storage (MRS) Facility Proposal**, Nashville, April 1986.

final decision as to whether or not to approve the MRS. The NWPA provided that both the state governor and the legislature had disapproval rights--subject to later congressional override.

The political reaction to the DOE proposal was, to say the least, one of deep concern. Environmental groups such as the Tennessee Environmental Council (TEC) and the Tennessee Valley Energy Coalition (TVEC) almost immediately began to mobilize in opposition. The TEC in particular urged that the state undertake a comprehensive and rigorous evaluation of the MRS project. The Executive Director of the TEC shortly after the DOE announcement recommended to the Cabinet Council that its review include "a comprehensive assessment of the health, safety and environmental impacts of the MRS, if it is constructed," as well as a "detailed evaluation of DOE's justification for the project and of the assumptions made by the agency in suggesting the site and design which is now proposed."³⁰ By mid-summer, all three of the announced Democratic candidates in the forthcoming 1986 gubernatorial election had declared their opposition to the MRS.³¹ During the ensuing primary campaign two of the

³⁰ Letter from Ms. Mayo Taylor, Executive Director, Tennessee Environmental Council to Charles A. Howell, III, Commissioner of the Department of Health and Environment, May 17, 1985.

³¹ Two of the three candidates were members of the state Public Service Commission and throughout the review frequently attended and spoke at public hearings around the state. One of these, Commissioner Frank Cochran, made his

Democratic aspirants, Jane Eskind and Frank Cochran, made protecting Tennessee from a federal nuclear "dump" a major issue. Their staff closely tracked the unfolding state evaluation, and the candidates themselves often appeared at public meetings to express their steadfast opposition to the MRS project.

The State Evaluation Program

The state with alacrity accepted the DOE offer to provide financial aid to fund a review of the MRS proposal. In early June, 1985 the staff of the Safe Growth Cabinet Council (SGCC) submitted a proposal for an independent evaluation of the need, siting, logistic, and design assumptions forming the basis for the MRS.³² Shortly thereafter the DOE approved a \$1.4 million grant which was shared with the two affected communities; Oak Ridge and Hartsville were each allocated \$100,000 to fund local impact studies. A detailed review of the Oak Ridge and Hartsville programs is provided in chapter six. The structure of the SGCC-MRS evaluation study is provided in Figure 5.1 The review consisted of four major components: (1) a technical

MRS opposition the cornerstone of his campaign and coined the slogan "don't dump on Tennessee."

³² Tennessee Department of Health and Environment, Safe Growth Cabinet Council, **A Proposal to the U.S. Department of Energy for Independent Evaluation of Need, Siting, Logistic, and Design Assumptions Forming the Basis for the Proposal for a Monitored Retrievable Storage Facility** (Nashville, Tenn., 1985).

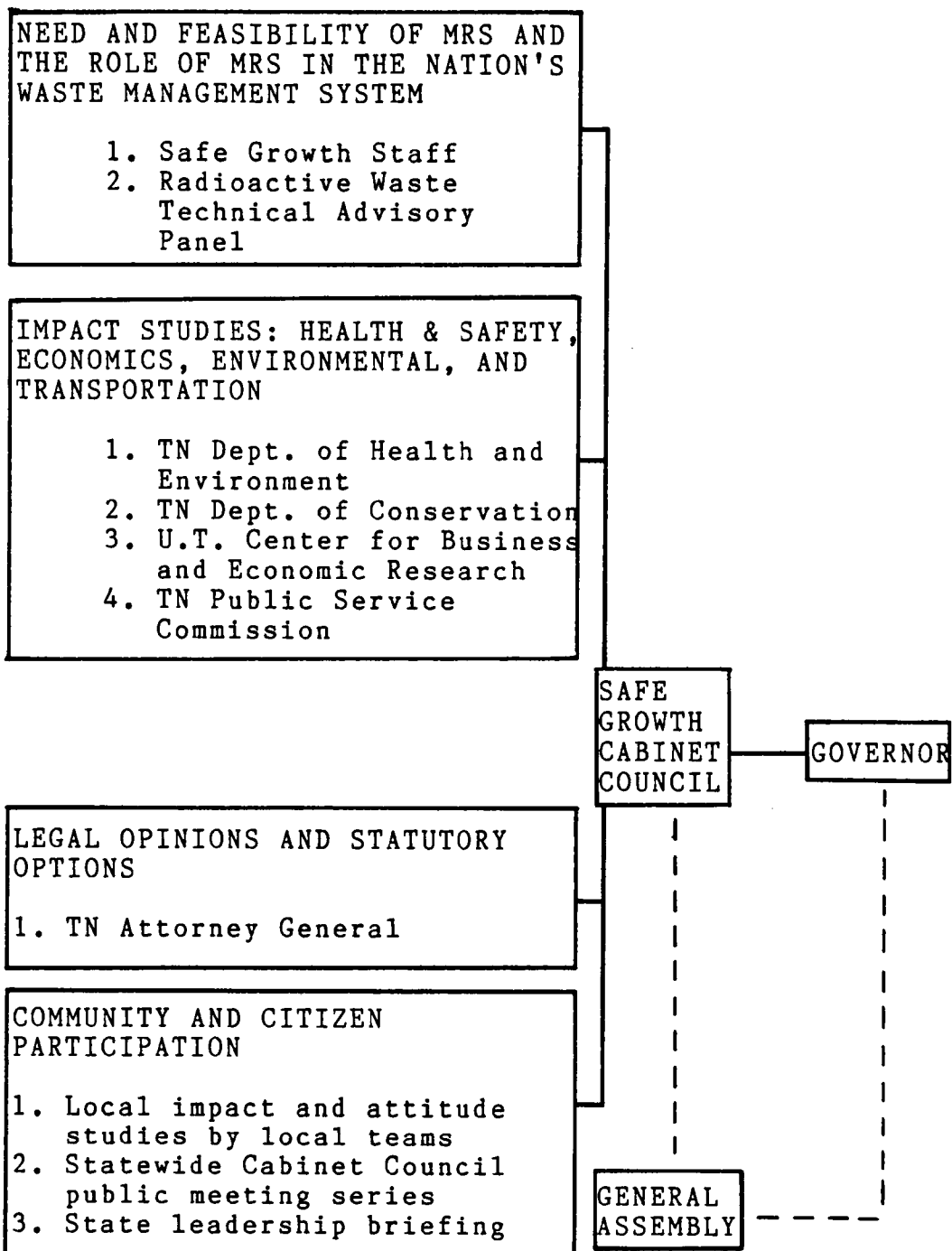


Figure 5.1

Structure of the Safe Growth Cabinet Council MRS Evaluation^a

^aSource: Department of Health and Environment, State of TN

evaluation of the need and feasibility of an MRS; (2) a study of the probable effects of an MRS on the health, safety, and economy of the state and its citizens; (3) a citizen outreach and participation program to provide people with information regarding the MRS as well as to determine their views of it; (4) a review of the legal and constitutional issues involved with the MRS project. General supervision of the evaluation was provided by SGCC which met monthly to exchange information and coordinate staff efforts.³³

The technical evaluation was conducted by the SGCC staff and a Technical Advisory Panel of twenty-one "experts recruited from the academic world, from government and the private sector, from the nuclear industry and its critics," appointed by the SGCC chairman.³⁴ In addition, at the behest of its Technical Advisory Panel, the SGCC contracted with research centers at the University of Tennessee and Vanderbilt University to perform specialized analyses. Thus,

Before the state evaluation was complete, it involved experts from two major universities, four university based research institutes or centers, an academic consortium, TVA's technical staff and the data management branch of a major nuclear industry. Including the Technical Advisory Panel members

³³ Word and Neff: 577.

³⁴ Ibid.: 578.

themselves, more than 50 senior scientists, engineers and systems analysts participated in the study.³⁵

The impact analysis was undertaken by twelve state agencies within five executive departments and two independent commissions. The agencies sought, in addition to establishing probable health, safety, and economic effects, to establish additional capital and operating costs to be incurred by the state due to the MRS facility and additional legislative or regulatory authority that would be required to protect the health and welfare of the state.

The legal analysis was handled by the office of the state attorney general. The state AG's office endeavored to "track DOE's compliance with the provisions of the Nuclear Waste Policy Act and to research legal questions which emerged in the course of the state review."³⁶ In addition to engaging in legal research, the AG's office attended the series of DOE and SGCC meetings and seminars about the MRS, and attended a variety of national legal conferences regarding hazardous waste issues.³⁷ The attorney general concluded soon after opening the legal review that DOE had not, as required by the NWPA, consulted with the state during the MRS site screening and selection process. When

³⁵ Ibid.

³⁶ Ibid.

³⁷ State of Tennessee, Office of the Attorney General, **Report of the Attorney General to the Safe Growth Cabinet Council** (Nashville, Tenn., 1985): 1-4.

discussions with DOE attorneys failed to resolve the consultation dispute, the attorney general filed suit on behalf of Tennessee challenging the legality of the site selection process.³⁸

The public involvement component of the review involved the establishment of public reading rooms in Nashville, Oak Ridge, and Hartsville, where copies of all relevant DOE documents and state reports were available. The SGCC sponsored four public information meetings in August and September across the state at which DOE officials described the MRS proposal and state representatives described the state's independent review process. In early December the state evaluation reports were added to the reading rooms and the findings were presented at additional public information hearings held around the state. Citizen opinions regarding the MRS were gathered from correspondence received by the executive branch, comments and testimony presented at public meetings and hearings, petitions, and calls made to the toll-free MRS Hotline. A systematic evaluation of this component of the state review is undertaken in Chapter Six.

The community impact reviews were conducted by task forces organized by the local governments. Oak Ridge/Roane County created the Clinch River MRS Task Force consisting of thirty-five members including local government officials and private citizens; staff support was provided by the city.

³⁸ Word and Neff: 579.

The Hartsville community organized an evaluation team called the Review, Evaluation, Analysis and Liaison (R.E.A.L.) Committee. The R.E.A.L. Committee was composed of local government officials from the five counties included in the primary impact area of the MRS. As noted earlier, the local task force contribution to the MRS review is detailed in Chapter Six.

3. THE SGCC REPORT AND THE GUBERNATORIAL DECISION

The comprehensive state review of the MRS proposal resulted in nearly 2,000 pages of reports and appendices. This material was presented to the governor, the legislative study committee, the Department of Energy, and the general public on January 2, 1986. The major findings of the SGCC report were that:

1. The DOE had not established the need for an MRS: A comparison of the integral MRS with the NO-MRS alternative, based on the original DOE criteria, showed that "an improved NO-MRS alternative could be designed to have many of the advantages and functions as DOE's MRS," and would be \$2 billion less in cost.³⁹
2. The DOE process by which DOE had selected its sites was flawed and improper: The SGCC concluded that the Tennessee sites "were selected for political and programmatic reasons, not for technical ones."⁴⁰ The state objected that the

³⁹ E. William Colglazier, **Evaluation of the Need, Feasibility, and Siting of the MRS in Tennessee: Summary Report**, December 1985: Executive Summary.

⁴⁰ Word and Neff: 580.

criteria used to evaluate sites were not given weights of importance and were based on environmental and ecological data that was "out of date, not available, or not site specific."⁴¹ Moreover, in the opinion of the Tennessee Attorney General, DOE had not fulfilled its NWPA obligation to consult with the state during the siting process.⁴²

3. The engineering and economic feasibility of a key MRS technology had not been demonstrated by DOE: Fuel rod consolidation on the scale planned at the MRS was untested and DOE would have to refine its development, demonstration, and testing to establish appropriate methods and cost-benefits of alternatives.⁴³
4. The direct economic benefits of the MRS were positive, but indirect costs would be excessive given public and elite perceptions about the danger of nuclear waste facilities: The Tennessee economy would benefit from jobs associated with MRS construction and operation, although most of the benefits would not be realized for ten years, as well as from tax revenues (DOE in-lieu of tax payments). These benefits would be offset in some degree by increases in state capital and operating costs associated with the construction and operation of the MRS. Because of negative perceptions of nuclear waste and nuclear waste facilities, it was expected that an MRS would adversely affect state efforts to attract business and industry.⁴⁴

⁴¹ Tennessee Department of Conservation, MRS Evaluation Team, Report to the Safe Growth Council on MRS, December 1985: Executive Summary.

⁴² Office of the Tennessee Attorney General, Report of the Attorney General to the Safe Growth Cabinet Council, December 1985: A-17.

⁴³ Colglazier, Evaluation of the Need, Feasibility, and Siting of the MRS in Tennessee: Executive Summary.

⁴⁴ Center for Business and Economic Research, College of Business Administration, University of Tennessee, An Economic Analysis of a Monitored Storage Site for Tennessee, December 1985.

5. The public did not want the MRS located in Tennessee: Staff analysis of the public testimony, petitions, Hot-Line calls, and other expressions of opinion revealed that 93% of those with a view were opposed to the MRS.⁴⁵
6. The MRS would be a safe facility and the transportation risks were low and acceptable: The conceptual design for the MRS was deemed sufficiently safe and the radiological risk due to the transportation of spent nuclear fuel was estimated to be acceptably low for either the MRS or NO-MRS alternatives.⁴⁶ The SGCC, nevertheless, had "reservations" about DOE's ability to operate the facility as designed "based on past performance and . . . DOE's lack of experience as an NRC licensee."⁴⁷

Thus, the governor of Tennessee was provided with an independent state analysis of the MRS proposal, largely financed by the DOE, that was extremely critical of the need, costs and benefits of the facility--but which conceded it did not incur unacceptable danger to the health and safety of Tennesseans.

The SGCC staff in late December briefed the Cabinet Council on its findings. This long briefing included direct and detailed presentations by the contractors and departments who had undertaken independent studies. The appearance of the contractors was to assure that the SGCC receive its information directly without any danger of staff

⁴⁵ Word and Neff: 581.

⁴⁶ Colglazier, **Evaluation of the Need, Feasibility, and Siting of the MRS in Tennessee: Executive Summary.**

⁴⁷ Word and Neff: 580.

bias through an executive report preparation process and presentation.⁴⁸

As the governor had originally requested, the SGCC made no recommendation regarding approval or disapproval of the MRS, but only offered its findings in a series of departmental, SGCC staff, and contractor reports presented at a lengthy briefing in early January. Presentations were again made directly by several of the contractors with the governor taking special interest in the reports of the economic impact study.⁴⁹

While the SGCC evaluation raised many questions about the adequacy of DOE's preliminary analysis of the need for and feasibility of an MRS--and was extremely critical of the site selection process that placed all candidate sites in Tennessee--it nonetheless had to concede that DOE's "key criterion" in justifying the MRS was a matter of judgment. For DOE the primary justification of the MRS was that it increased the likelihood that its prospective nuclear waste management system would be successfully implemented, and as the state's Evaluation of the Need, Feasibility, and Siting of the MRS noted:

This is a matter of judgment. Reasonable people can agree with DOE and conclude that the MRS is desirable because of the programmatic benefits perceived by DOE.

⁴⁸ Neff interview.

⁴⁹ Personal interview with Dr. E. William Colglazier, Member of the MRS Technical Advisory Panel, Knoxville, September 1987.

Other reasonable people can conclude that a properly designed NO-MRS alternative is preferable. It is highly likely that either alternative, particularly with additional testing and development, is technically feasible.⁵⁰

On January 21, 1986, Governor Alexander travelled to Washington, D.C. to present his MRS decision to the Secretary of Energy and to the Tennessee congressional delegation. In his public statement the governor announced his conclusion, based on the state's independent evaluation of the project, the MRS "could be operated safely, but the U.S. doesn't really need it and Oak Ridge is exactly the wrong place for it."⁵¹ The governor went on to promise that, if and when the DOE went to the Congress with its proposal, he would "veto the federal plans and . . . urge Congress not to override my veto."⁵²

Governor Alexander emphasized the importance of the SGCC report as the basis for his decision and, in justification for his negative decision on the MRS, provided his conclusions regarding the project based on the SGCC findings. The Governor concluded that the MRS was simply "a repackaging plant" and chided the DOE for giving it "a ridiculous name . . . that confuses almost everyone."

⁵⁰ Colglazier, **Evaluation of the Need, Feasibility, and Siting of the MRS in Tennessee:** 20.

⁵¹ Office of the Governor, Governor's Information Office, "Statement of Lamar Alexander," January 21, 1986.

⁵² Ibid.

Alexander also admonished the nuclear power opponents who, in his view, had "given it [MRS] an undeserved reputation that scares almost everyone." Governor Alexander acknowledged that radioactive waste management was Tennessee's problem too, especially in that 10% of the spent fuel from civilian reactors would be generated by TVA nuclear power plants. Thus, he recognized that since Tennessee enjoyed the benefits of the electricity generated by nuclear power, the state had to be concerned with the safe disposal of its wastes; especially since such waste was bound to "pile up at four TVA plants . . . and because we are so centrally located, there is no way to escape having the spent fuel shipped through Tennessee." Depending on the "U.S. Government's competence as a manager and regulator," the governor concluded, citing both the Clinch River Task Force and the REAL Committee reports as well as the SGCC evaluation, that the MRS plant could be operated safely; Alexander further found that the spent fuel could be safely transported, could not explode or be made into a bomb.

To this extent, then, the governor essentially agreed with the position of the DOE. His final conclusions, however, rejected the DOE case for MRS. Alexander determined that the MRS was "unnecessary and therefore a waste of money." Based on the SGCC evaluation he found that the facility was "desirable, not essential," and that DOE had overestimated the need and the benefits. That is, the

governor of Tennessee rejected DOE's enhanced system performance argument. Finally, Alexander rejected DOE's preferred site in Oak Ridge as being "exactly the wrong place for it." He concluded that placing the MRS there would jeopardize the state's investment in the Knoxville metropolitan region (of which Oak Ridge was a part) as a high technology magnet area for "good, new jobs." By extending the economic cost/benefit effects to a state-wide calculation, the governor in essence rejected the mitigation package envisioned by DOE, and the conditions of the Clinch River Task Force, which focused almost exclusively on the Oak Ridge community.⁵³

In the end, then, the DOE had established much of its case with the governor, but not enough to win his support for its MRS proposal. Alexander did not challenge the siting process or feasibility of the MRS; he agreed with DOE that the plant could be operated safely and conceded the state's obligation to contribute to solving the radioactive waste problem. Ultimately, the governor's negative decision turned on the question of need for the MRS balanced against the economic costs to the state--rather than health and safety risks. Alexander's position dramatically raised the ante for MRS siting: from satisfying the local community with a compensation package, to the much more difficult, not to say **expensive**, problem of compensating an entire

⁵³ Ibid.

metropolitan region and probably the state as well. Thus, as one representative of the nuclear industry observes:

Assessing these [MRS] costs and impacts is relatively straightforward on a local level. But the decision on the facility will be primarily influenced at the state level. . . . At Oak Ridge, there is a local balance . . . where direct employment benefits will be substantial for the existing population, and service and economic impacts can, without making great leaps of faith, be assumed mitigable. On the state level, however, the 600 jobs at the MRS pale in comparison.⁵⁴

The DOE was not swayed by the governor's decision. After Alexander's announcement the DOE announced that it would submit its proposal, along with formal review comments by the NRC, the EPA, and the state of Tennessee, to Congress on February 9, 1985. On that date Tennessee secured in Federal District Court an injunction preventing the Secretary of Energy from presenting the MRS proposal to Congress. Although the District Court's injunction was ultimately not upheld on appeal, it was not until nearly fourteen months later that the DOE was able make its submission. During the interim the state refined its MRS evaluation, the newly elected governor declared his intention (with the support of the legislature) to veto the MRS, and the Tennessee congressional delegation prepared to battle the proposal in the Congress.

⁵⁴ Edward M. Davis, "The Role of Economic Incentives in Nuclear Waste Facility Siting," in Roy G. Post, ed. **Waste Management '86: Waste Isolation in the U.S. Technical Programs and Public Education**, Vol 2, proceedings of the Symposium on Waste Management, Tucson, March 2-6, 1986: 37.

4. INTERGOVERNMENTAL PERFORMANCE EVALUATIONS

State Perspectives on the DOE's Performance

In the effort to systematically assess the MRS proposal Tennessee officials inevitably developed a state perspective on DOE's performance. Interviews with key actors in the evaluation revealed strong views on several aspects of the federal agency's performance during their interaction on the MRS. First, the SGCC staff, members of the Department of Conservation MRS Task Force, the Technical Advisory Panel, and the outside consultants, quickly concluded that the DOE had not done a first-rate professional job in preparing its initial justification documentation for the proposed facility. This undermined respect for DOE and inspired state staffers to subsequently scrutinize all documentation received from the federal agency with a somewhat jaundiced eye. As one top level state official viewed the material:

My perception is that the DOE's MRS proposal was really sloppy and poorly prepared, and not very well thought through. It shouldn't have been as easy for a bunch of amateurs to take it apart as it turned out to be. . . . It gave you the feeling of fragmentation, and lacked the synthesis, and integration you'd expect from a proposal that is as major a matter of national policy.

In the words of another high-level state official,

I remember taking several days to review the MRS documents and the more I read . . . the more I became concerned that the idea had not been fully developed; there was not as much substance to the need justification as there ought to have been, and there were conflicting statements in the DOE documents. It was sort of shocking that a project of that magnitude was so poorly justified.

While some in the state attributed the report's flaws to DOE's use of numerous, poorly coordinated consultants, "who didn't know what one another was doing," others thought that it simply the latest example of an all-too-familiar pattern. Thus, as expressed by one of the state's consultants with extensive experience in dealing with DOE:

My personal belief is that DOE often commissions technical studies [such as the MRS material] to try to justify their [already established] position. Their positions are determined ahead of time, the technical studies are used to back up the position, and often what happens is that the outcome is totally determined by the boundary conditions. A lot of federal agencies operate that way, but DOE is notorious.

Still others were considerably more charitable toward OCRWM's initial documentation, attributing what the state considered poor quality to DOE's being the victim of the "tyranny of a congressional timetable for the MRS and problems with progress in the deep repository program that necessarily limited what could be accomplished by way of justification." The bottom line, however, was that DOE's initial documentation was held in contempt by many of those involved in the state evaluation, and this created an atmosphere that later OCRWM efforts could not dissipate.

The DOE's initial briefing to state officials and their professional staff only served to exacerbate the problem. As one state staff person relates the DOE's first presentation:

The material DOE presented at the first meeting was little more than cartoons. Literally. They were line drawings and the feds told us "this is an MRS." Here

we'd brought people with sophisticated science and technology backgrounds--geologists, masters-level people, ecologists, biologists, people with engineering backgrounds and economists, and a good group of applied university academic-types. The presentation was just demeaning.⁵⁵

As the head of the State Department of Conservation, and SGCC member, recalled: "It took the DOE quite a long time to stop talking down to us."⁵⁶ Although in later workshops DOE personnel were perceived to take a more "collegial and respectful" stance toward their state counterparts, the unfortunate initial impression for federal arrogance was never quite forgotten.⁵⁷

Another aspect of the initial DOE presentations regarding their MRS plans that did not sit well with state staffers was the impression that, at that stage, OCRWM was "not very far along" with the project--creating a sense that the state's experts were getting into the project early enough to have a significant effect on MRS plans. DOE's credibility and good faith was damaged, in the eyes of certain state professionals when, about four weeks later,

we [the state staff] received two boxes with about 50 or 60 volumes . . . containing complete architectural drawings and design specifications for the MRS facility

⁵⁵ Personal interview, Nashville, December 1986.

⁵⁶ Personal interview with Mr. Charles Howell, Commissioner, Department of Conservation, State of Tennessee, Nashville, November 1986.

⁵⁷ Ibid.

itself--down to the last nut and bolt on every pump for every air handler in the building.⁵⁸

Some involved in the MRS case from the state end felt that, while the DOE entered Tennessee with declared intentions for complete openness and cooperation, when it began to appear that significant questions were being raised about the enterprise, the feds attitude shifted:

Early on we [the state] got rather prompt answers to our questions and good responses and interchange. As it became increasingly evident that the state had some serious reservations about the MRS proposal, the level of interaction deteriorated; it took longer to get an answer; some questions [sent to DOE] were never answered.⁵⁹

The issue of whether or not the DOE was sufficiently forthcoming with information was a major sticking point for many of those involved in the state review of the MRS. At the highest levels members of the SGCC gave OCRWM very high marks for openness and a sincere desire to cooperate:

I think that DOE gave us everything they could on a timely basis, except for that part of the information that they had not yet developed. I think they did the best they could do. I could get the top officials, Rusche [Director of OCRWM] and Hilley [Assistant Director of OCRWM] whenever I wanted them, and on any subject I could get an answer. Often the answer was "I don't know." The "I don't know" frustrated our staff. But I was not because I appreciated the constraints under which they were working.⁶⁰

⁵⁸ Ibid.

⁵⁹ Personal interview with state official, Nashville, 1986.

⁶⁰ Word interview.

But, at the staff level, the perception was significantly different:

One of the strategies I think the DOE had was to try to overwhelm us with data that they provided late. The timing of it was always late so that instead of our being able to really be on top of it, and question, and get the right answers we were on the defensive. . . . we were always a few steps behind DOE. We would ask questions in July and get answers in December.

Eventually the state resorted to formal correspondence between the chairman of the SGCC, Commissioner Word, and the Director of OCRWM, Mr. Rusche. For example, in July Word wrote to Rusche urging that DOE include a full assessment of the other two nuclear waste management options (the repository only, and the repository with MRS backup), and reiterated a variety of state concerns originally expressed in earlier meetings in Nashville. Special emphasis was placed in the letter on the state's need to receive all MRS reports, documents, and other material as soon as possible--most especially the required Environmental Assessment (EA).⁶¹ The Department of Conservation had been given the task of evaluating the EA, and was especially concerned because they expected that DOE was going to rely on "out of date and unreliable data" in their report to Congress.⁶² In the third week of August, Mr. Rusche responded in a very lengthy letter to the Commissioner. The Rusche letter did

⁶¹ Letter from Commissioner James Word to OCRWM Director Ben Rusche, July 2, 1985.

⁶² DOC staff member, Nashville, 1986.

not provide the requested EA information but promised that when the EA was ready it would meet the state's concerns.⁶³ The long delay in receiving a response, and the general nature of the response, was taken by the staff members who badly wanted the EA information as evidence of DOE "bad faith." They were convinced that DOE planned all along to hold back on key information until it was too late for the state to incorporate it into its report to Congress, when and if DOE sent its proposal to the Hill in January 1986.

What the staff members may not have known, however, was that DOE's cautious, limited, and rather long in coming responses to this and other letters from Tennessee, were perhaps reasonable, and not necessarily evidence of any bad faith on DOE's part--given the correspondence's second purpose. As one high level state official later reported on Tennessee-DOE relations:

I felt that we had a pretty good program of personal communication with the DOE people. I think the difficulty came about in the formal correspondence. We tried to establish a series of letters between Jim Word and Ben Rusche. In these we brought up key policy considerations, and sought to establish when we would be allowed to review key documents. Throughout the series of correspondence we were trying to establish an administrative record in case there needed to be litigation further down the line; we definitely wanted to establish our view that the way the MRS was being handled under the National Environmental Policy Act was not proper and that alternatives to the MRS were not being considered.

⁶³ Letter from Mr. Ben Rusche to Commissioner Word, August 26, 1985.

That is, the state was using the correspondence for more than simply information gathering. Thus, the state official admitted that "DOE was probably pretty perceptive of what we were doing [in building an administrative record], and it took a pretty long time to get back responses to those letters."

Concerned that the state would not have sufficient time to review and respond to the MRS proposal to Congress, which DOE continued to insist would be delivered in January, the state tried to get OCRWM to guarantee that no package would be sent to the Hill until 90 days after the state had received its copy.⁶⁴ The DOE demurred, formally responding that the final MRS proposal would be sent to Congress in mid-January, but that the state would be provided a copy of the draft proposal when it was ready. When the DOE failed to deliver to the state its promised MRS proposal to Congress until Christmas Eve, many in the state felt their suspicions of DOE's bad faith were finally and fully confirmed:

We actually got the proposal on Christmas Eve. We were told that we had until January 15 to evaluate that so that gave us six weeks during the holiday season to evaluate a massive stack of documents. There was no opportunity to involve the public and there were some bits of information that were brand new to us. We were

⁶⁴ Letter from Commissioner James Word to Mr. Ben Rusche, August 9, 1985.

effectively denied any kind of meaningful review other than the staff just working intensively on it.⁶⁵

The state resented DOE's "rush to Congress." Once it was clear that the DOE was resolved to proceed with its MRS proposal regardless of what Tennessee did, then deep resentment set in among many who had labored for months on the evaluation. Interviews with state officials involved at all levels of the evaluation make clear that they did not wish simply to file a dissenting report that would accompany the OCRWM proposal to the Congress. The SGCC aspired to full decision making partnership in developing DOE's final MRS choice. Resentment took root when it became apparent that the DOE was not about to reconsider its choice, although it was willing to entertain the state's suggestions for modifications. At the highest levels, OCRWM was successful in winning the personal respect of Tennessee officials. As Commissioner Word noted, "I never questioned the motives or the integrity of Ben Rusche or Roger Hilley." OCRWM's leadership established that it respected Tennessee's right to independent judgment on the MRS; it just was not about to be bound in any way by it.

In the end the state's frustration with the DOE comes down to the fashion in which DOE was perceived to have shared, or to have failed to share, in timely fashion the information needed for effective state review of the MRS

⁶⁵ Personal interview with Mr. Ben Smith, Executive Director, Safe Growth Team, Nashville, January 1987.

project. As the Director of the SGCC staff characterized DOE-state relations:

As far as personal communications with DOE officials went, they were helpful enough in coming down here and meeting with us face-to-face, and answering our questions. But, they were always very reserved when something had not been settled yet. But once something had been produced in a report or document, they'd come down and explain it to us. But they would not tell us much about what was being developed or about what had not been finalized.⁶⁶

From the state's perspective the DOE throughout the MRS evaluation period engaged in classic "Decide, Announce, and Defend" behavior. To the state this was not **consultation**.

DOE Perspectives on the State's Performance

Officials in DOE's Office of Civilian Waste Management inevitably formed their own perspective on the state of Tennessee's performance in the MRS case. Interviews with key OCRWM actors revealed significant views on several aspects of the state's performance during their interaction on the MRS, but the federal officials were considerably more circumspect than their subnational counterparts in characterizing the motives of those with whom they dealt.⁶⁷ First, the federal officials thought that the state expected far too much in the way of **formal** consultation at this stage of the facility siting process. DOE felt that binding

⁶⁶ Ibid.

⁶⁷ To some degree this more diplomatic approach was probably due, in some degree at least, to the fact that the interviews were conducted while the DOE was in the process of presenting the MRS proposal to the Congress.

negotiations and written agreements, as well as environmental assessments based on new data, were required only **after** the Congress authorized the MRS--not before as the state insisted. From DOE's standpoint, its duty was to make the MRS recommendation based on the best available, existing, information. Thus, the federal officials felt that, for this preliminary stage of the process, they were extremely open and forthcoming. As one OCRWM official in Washington put it:

Our view was, and the federal courts subsequently agreed with us, is that formal consultation and cooperation was required by NWPA **after** the MRS proposal was approved by the Congress. But, we went a long way with Tennessee. We gave the \$1.4 million so they could conduct their own evaluation. We acted with them, gave them the opportunity to respond [to our draft proposals], and they actually did respond. So, in that sense there was effective communication with the state of Tennessee all along.⁶⁸

Moreover, DOE officials offer as evidence of their good faith the fact that they provided the state with funds even though, unlike its requirement for those states who were candidates for the permanent repository, the NWPA does not require that a candidate MRS host state be provided federal funds for its evaluation of the project.⁶⁹

⁶⁸ Personal interview, Washington, D.C., February 1987.

⁶⁹ 42 USC 10136, Sec. 116(c)(1A) provides that "The Secretary shall make grants to each State notified under subsection (a) for the purpose of participating in activities required by section 116 and 117 or authorized by written agreement entered into pursuant to subsection 117(c). 42 USC 10161, Sec. 141(h) regarding state participation in the MRS proposal does not apply Sec. 116(c)(1A) to the MRS.

While many in Tennessee complained about not getting the documentation needed to fully assess the MRS proposal, those in DOE point to the mountain of documentation provided, and hundreds of staff hours spent interacting with the state:

In addition to the proposal itself which we provided, Tennessee was given the Environmental Assessment which looked at the environmental implications of putting it [the MRS] in any of the three sites, as well as at the needs and feasibility of having the MRS as part of the system. When these documents were being written we shared them as drafts with the state of Tennessee; so they had the opportunity to comment on these as they were being prepared.⁷⁰

Moreover, despite the complaints of state officials regarding the inadequacy of the DOE justification documentation, federal officials point out that the Environmental Assessment, and other reports regarding the MRS were in fact sufficient to meet all NWPA requirements:

We were required by the Act to submit the proposal to the EPA and NRC and we did that. We provided Tennessee copies with the opportunity to comment on this material and we forwarded their comments to the EPA and NRC, along with the governor's comments. We then shared the NRC and EPA comments with the state. The NRC said it should be licensed, and the EPA said that there would be no environmental harm in putting the in the site. So, all the government agencies involved in the review functioned together very well.⁷¹

Thus, from the standpoint of the DOE, its interaction with the state of Tennessee was exemplary. As the then Director

⁷⁰ Personal interview with Mr. Roger Hilley, Assistant Director, Office of Civilian Radioactive Waste Management, Washington, D.C., February 1987.

⁷¹ Ibid.

of OCRWM views the process: "We at DOE hold up Tennessee as an example of how to work together with the state."⁷² And, as Rusche later saw it, "We made more money available to Tennessee, in a short time, [for their evaluation] than anybody else. And, they used it more effectively and did a better job than I think anybody ever dreamed of."⁷³

A major sticking point among those involved in that segment of the evaluation conducted by the Tennessee Department of Conservation was what, from their standpoint, was a flawed site selection process. But, DOE contended that the state expected too much in the way of site selection. From the federal standpoint, the MRS could be sited within a wide range of locations; all that was required by the Act was that OCRWM designate a "satisfactory," not a "perfect" site:

The NWPA did not prescribe the highly stylized or formalized selection procedure for the MRS that was required for the permanent repository. A lot of state people questioned why all designated sites were in Tennessee. The answer is that all three were **good** sites. If you had five good sites and the choice then was between working with one or two states--and there was no real difference between the sites--why wrestle with two states? From a sociopolitical standpoint, it focuses the attention and presents the opportunity of working out problems [with the state] if you can work them out.⁷⁴

⁷² Personal interview with Mr. Ben Rusche, former Director, Office of Civilian Radioactive Waste Management, Tucson, March 1987.

⁷³ Ibid.

⁷⁴ Ibid.

In much the same way that some of the state people involved in reviewing DOE's work on the MRS felt that the federal agency first decided to have an MRS and **then** developed the technical reports to justify it, staffers in OCRWM considered much of the state's work as preordained:

Many of the people in Tennessee thought they **had** to oppose the MRS. So they had to figure out ways to oppose it. They could not show it was unsafe, so they eventually had to show that it was unnecessary. So, that's the tack they took.

The state's determination to focus so heavily upon the need for the MRS surprised OCRWM to a certain extent; it struck some in the DOE as misguided, if not at least a little self-serving. As one DOE staffer who was heavily involved with the state throughout the enterprise later put it:

I guess that what surprised me the most about what the state did was when they spent a vast majority of their time in the analysis on whether there was a need for the MRS facility. I don't want to question their motives, but it seems to me that need is for the Congress and the DOE to judge. . . . It was not the state's role to determine whether or not the MRS is needed. . . . That decision is for Congress. The MRS is something that is of **national** importance and **national** benefit. It is not something that is just for Tennessee. If we were to let a state make these kind of need judgments, given the controversial nature of these kind of facilities, it would be extremely difficult for them to be objective. It would become almost impossible to site anything then.

The state officials interviewed, virtually to a person, made it clear that going into the MRS project they expected (or at least hoped) to shape DOE's thinking and action on the MRS. To them cooperation and consultation meant direct state influence in whether or not to go to the Congress with

the proposal at all. Failing that--they hoped to significantly affect what the DOE ultimately went to the Congress with in the way of an MRS proposal. This was, of course, not what happened and led to harsh state judgments regarding DOE's performance. But, DOE's perspective on the entire federal-state interaction process on the MRS was very different. DOE officials felt that the appropriate forum for the popular will, as applied to the balance of national and state interests, was the Congress of the United States; it was not really appropriate in this view for the DOE to bargain away its best professional judgment regarding the MRS simply because Tennessee officials claimed, with some acknowledged justification, that they represented the citizens of their state. Therefore, the DOE went into the intergovernmental interaction willing to listen to the state's views, but firm in its determination to proceed with its project. As the DOE manager ultimately responsible for implementing the NWPA, Ben Rusche held to the strong view that:

We in the DOE were supposed to be open, forthcoming, and cooperative with the state of Tennessee. But we were also charged to do a job. The only forum with the wherewithal to address such issues [as need for the MRS] is the Congress. And that is where the matter is now.⁷⁵

Rusche and other high level OCRWM officials understood the delicate, politically volatile position in which the state

⁷⁵ Ibid.

officials, especially the governor, found themselves on the MRS. Thus, he was not surprised that "politics would ultimately settle it." As Commissioner Word of Tennessee remembered DOE's attitude, "They did everything they could to win Alexander over to their view." But for Rusche, OCRWM did what it did on the MRS because of "our charge under the law to do what we thought was right and proper." As Director of OCRWM his only regret was that he was ultimately unable to get Governor Alexander to see it that way.⁷⁶

5. CONCLUSION

To summarize, In April 1985, the Department of Energy announced its selection of Tennessee as the proposed site for a facility to process and store high level nuclear waste in an MRS facility. Almost immediately the governor of the state instructed an interagency cabinet council to embark upon a study that would look at the need for and feasibility, as well the impact upon the state, of such a facility. A grant was provided to the state by the DOE for its study; a portion of the money was given to the local communities where the potential sites were located. Based on the independent state evaluation Governor Alexander announced that the state would not accept the siting of the MRS in Oak Ridge, DOE's preferred site. In addition, the

⁷⁶ Ibid.

governor insisted that the MRS was not needed as an integral part of the repository program.

The DOE and the state of Tennessee had very discrepant perspectives on one another's performance as actors in the intergovernmental evaluation of the MRS proposal. For the most part, those taking part on behalf of the states faulted DOE's performance, even to the point of questioning its motives and good faith. DOE officials, however, tended to see the performance of their state counterparts in a different, more positive overall, light. The key to understanding this discrepancy is in recognizing that the DOE and the state began with fundamentally different conceptions of what the state's evaluation was supposed to accomplish. Taking both at face value led us to conclude that: For DOE the nine month exercise was a federally funded opportunity for the Tennessee to familiarize itself with a proposal that had already been settled as in the national interest. Tennessee was being extended the opportunity to form its own view, and it was expected make its case for mitigation and compensation of impacts, and to express its view to the DOE. The DOE was pleased to take the state's views under advisement. Thus, DOE officials saw as significant evidence of openness, and good faith, their willingness to add provisions to the congressional proposal to alleviate state and local concerns; thus, they point to such modifications in their final proposal as restrictions

on storage capacity and licensing schedules, in lieu of taxes payments specifications, and the creation of a state-local steering committee.⁷⁷ But, the DOE had decided by April of 1985 that it was going to the Congress with an MRS proposal and it was not about to change its mind about that. If Tennessee had reservations or objections, fine--DOE's attitude was, "we'll see you on the Hill."

Tennessee, on the other hand, saw the MRS evaluation as an opportunity to become a full partner in NWPA implementation--to help the federal government to find a better way; to use state generated science and technology expertise to persuade the DOE to rethink, and ultimately modify a course of action the state ultimately judged as not in the national or the state interest. That kind of partnership was not in the cards.

In the end then Tennessee sought to build an administrative record that would facilitate its side of the MRS argument in litigation, as well as to raise equity issues and need questions that would enhance its position later in the Congress. Trust and openness between DOE and Tennessee deteriorated badly over the haul of the evaluation process. By December 1985 they were no longer speaking to one another and things were largely in the hands of the lawyers. Perhaps this was inevitable. For, given their different perspectives on the purpose of the state review,

⁷⁷ Hilley interview.

and given the differences between national and state interests that are bound to shape intergovernmental relations in the RWM area, DOE and Tennessee were on a course in which their initially parallel lines eventually had to intersect for collision. After all, the DOE had decided to go to the national legislature to obtain what many regard as the ultimate LULU--a high level radioactive waste treatment and storage facility.

How are we then, finally, to evaluate the state's role in the MRS as an exercise in its NWPAs responsibilities? In their seminar article on the state role under NWPAs, Pierce, Hill and Haeefe present a set of criteria by which state operations could be judged and we will use them for our purposes. With regard to the performance of the Tennessee General Assembly, the attitude was one of "wait and see." The legislature put the structure for evaluation into place with the creation of the Joint Committee, and the executive branch was left to conduct the state's technical examination, and to organize the public hearings. This is exactly in line with what Pierce, Hill, and Haeefe contend a legislature ought to do:

What legislatures are good for is correctly assessing the will of voters. They are the first, and will be the last, democratic forum. What they are bad at is managing anything. Hence the legislature should reserve the decision of a nuclear waste site to itself. Delegate the management of the decision process, including technical examination and public hearings, to

the governor, and to make sure that due process is respected at every point.⁷⁸

In the MRS case, the Tennessee General Assembly did exactly this and must be considered to have fulfilled its role within the NWPAs framework.

Governor Alexander almost from the moment of the DOE MRS announcement moved into the public spotlight. He made clear that he would make his decision by January of 1986. As Pierce, Hill, and Haefele argue, "state politicians [such as the governor], now forced by public opinion and the NWPAs, must make decisions and be seen making decisions."⁷⁹ These scholars advise that "clever" politicians, when confronted with a federal proposal for siting a high-level radioactive waste facility in their state, "immediately identify three questions: what are the risks?; how does the public perceive the risks?; and what are the offsetting benefits of accepting the risks in my state?"⁸⁰ This, of course, is exactly what Alexander charged that his SGCC undertake in its comprehensive MRS review. Further, in his insistence that the SGCC engage in technical analysis, citizen outreach, and information gathering, **without formulating any recommendations**, the governor was assuring that the locus of decision making responsibility rested squarely on his

⁷⁸ Pierce, Hill, and Haefele: 49-50.

⁷⁹ Ibid.: 48.

⁸⁰ Ibid.: 48.

shoulders--exactly where Pierce, Hill, and Haefele contend it belongs:

Their [a governor's] choice about structure, therefore, is for a structure through which, if they are cynical, someone else makes the decision. If instead they are brave, they want a structure that guarantees that both technical fact and political heat will be generated in sufficient quantity that the brave can judge correctly the "true sense" of their constituencies. In very rare cases, the politician will be compelled to chose what he thinks is "right", but such cases are so rare as to be trivial in real world situations.⁸¹

Obviously Tennessee's governor passed this test, although it appears that what the chief executive thought to be right was also eminently popular with the legislature, and most of the state's citizens. While this disappointed federal officials in the DOE, and angered many in the Oak Ridge area, none subsequently faulted the structure and process of gubernatorial decision. It had proven comprehensive, technically competent, and extremely open. The state of Tennessee well met its NWPA responsibilities. Only the Congress would ultimately judge the extent to which the result of the Tennessee MRS evaluation appropriately served the national interest.

⁸¹ Ibid.: 49.

CHAPTER VI

CITIZEN PARTICIPATION IN THE MRS EVALUATION

1. INTRODUCTION

This study's major premise is that the method by which science and technology policy is made may affect the policy's outcome. An examination of the Nuclear Waste Policy Act established that its creators were cognizant of the need for a more open decision making process if the legislation were to have any chance for successful implementation. Nelkin reinforces this position: "ultimately the implementation of policies involving science and technology depend on public acceptance."¹ The fundamental question for democratic societies becomes then, can effective policy be made and implemented in a more open system of environmental decision making based on increased citizen participation?

As public involvement becomes institutionalized, citizen participation in technical policy formation has become an area of great interest to students of politics and public administration for a couple of reasons. Given the

¹ Dorothy Nelkin, "Science, Technology, and Political Conflict: Analyzing the Issues," in Dorothy Nelkin, ed. **Controversy** 2nd ed. (Beverly Hills: Sage Publications, Inc., 1984): 21.

importance of science and technology decisions in consideration of the large numbers of people they affect, it is logical that citizen participation aimed at addressing public concerns ought to play a central role in the policy process.² Through public involvement in policy making, complex decisions characterized by uncertainty can be legitimated. Equally important, it has yet to be confirmed that the inclusion of citizens in the policy process yields a **better** policy, or **facilitates implementation** by public administrators. As suggested earlier, competing experts in policy discussions might well hinder effective policy making. It follows that the more participants involved in a pluralistic decision making process, the more difficult it may be for a policy to be formed, let alone implemented. If this is the case, the consequences for American democracy could be severe, as the need for effective management of technologies is more acute than ever. In order to better understand the possible consequences for democratic government of more open technical decision making, it is useful to explore the nature of citizen participation in the technical policy domain.

² Robert E. Howell, Marvin E. Olsen, Darryll Olsen, and Georgia Yuan, "Citizen Participation in Nuclear Waste Repository Siting," in Steve H. Murdock, F. Larry Leistritz, and Rita R. Hamm, eds. **Nuclear Waste: Socioeconomic Dimensions of Long-Term Storage** (Boulder, CO: Westview Press, 1983): 267.

In the last chapter, Tennessee's role in the evaluation of the MRS proposal was discussed and analyzed, highlighting the subnational government aspect of the open decision making model. In compliance with the NWPA, the governor was afforded the opportunity to make a preliminary decision as to whether or not to accept the MRS within the state's borders. The Safe Growth Cabinet Council's review targeted four areas, a technical evaluation, a legal analysis, a citizen outreach and participation program, and an impact analysis;³ the first two have already been discussed at length. In order to thoroughly assess the MRS facility siting process as an exercise in open decision making the other two components must be investigated as well.

Citizen Participation in the Science and Technology Policy Process

A pair of statements summarizes the quandry fashioned by technological progress in a democracy: "scientific and technical matters, by their very nature, are the province of a few, while a democratic government is the province of the many. The dilemma is obvious and acute."⁴ A prior discussion centering on the theme of bureaucratic expertise

³ While the state was concerned with the impact of the MRS on the entire state, this chapter focuses on the reviews conducted by the affected communities.

⁴ David A. Mathews, "The Public in Practice and Theory," **Public Administration Review** 44:Special Issue (March 1984): 121.

argued that in the American democratic system, policy choices can no longer be made by a small group of professionals in a closed setting. Experts have been challenged by the public and other policy actors such that a larger number of citizens are participating in the policy process, in a decision making environment unlike that of earlier times.

Making controversial decisions in a political system that is based on popular sovereignty can be seen as a struggle between those who view the process of technological development as rational and objective, as opposed to those who view the process as essentially political.⁵ To state the struggle another way, two competing value systems are pitted against one another: effectiveness and efficiency versus equity. Thus, as the science and technology policy process has become politicized, the positivist notion advocating the "ethical neutrality of science" has been somewhat discredited. Observation confirms that unanticipated effects, and often unequally distributed risks are associated with advancements in technology.⁶

The public may react to science and technology policy decisions in several ways. First, citizens may be tolerant

⁵ Nelkin: 11.

⁶ Robert K. Merton, "Technical and Moral Dimensions of Policy Research," in Norman W. Storer, ed. **The Sociology of Science** (Chicago: The University of Chicago Press, 1973): 70.

of the policy, as has been the norm. Lack of interest in, or knowledge about technical issues inhibits participation. This reaction, then, can be translated into no reaction. Second, the public may view a decision, such as siting an unpopular facility, as politically derived rather than one that was made on a rational basis. A segment of the public, frequently affected communities and public interest groups, may become politically active and protest the decision. In 1978, over five-thousand protesters were involved in an antinuclear demonstration at the site of the Seabrook Nuclear Power Plant in New Hampshire.⁷ Activity of this sort, usually on a much smaller scale, occurs everyday in communities across the United States. Finally, as the public sees ill effects of inadequately regulated industrial products such as asbestos, or chemicals like diethylstilbestrol (DES), it may deem that decision makers are remiss in their oversight of technical policy. Interest groups may demand stricter regulation and advocate a boycott of the product. These last two reactions can be attributed to a loss of trust in the small cadre of experts who have made decisions involving complex technologies on the

⁷ John P. Hunt and Neil H. Katz, "Nonviolent Protest and Third-Party Public Opinion: A Study of the June 1978, Seabrook, New Hampshire, Antinuclear Power Protest," in James C. Petersen, ed. **Citizen Participation in Science Policy** (Amherst: The University of Massachusetts Press, 1984): 219.

public's behalf. The lack of faith has caused a number of citizens to seek participation in the policy process.

The risks and concerns associated with developments vary according to the type of project. The siting of noxious facilities, as we have seen, involves perceived health and economic risks, while concerns of other projects are largely equity related. The proposed construction of the Westway superhighway in New York, for example, was hotly debated on equity grounds. Constituent viewpoints were polarized between the planners who sought the benefits of large scale land development, and the critics who saw the loss of neighborhoods as too great a price to pay for improved transportation.⁸ The point being, the population may have been willing to bear disproportionate amounts of risk and inequity in the past; the public would accept science and technology policy virtually undisputed. This is no longer typically the case.

The MRS case focuses on the aforementioned conflict between rational decision making and democratic politics. A large proportion of Tennessee's public was distrustful of the Department of Energy because of the poor performance within the region on the part of this, and other federal agencies in the past. The lack of trust led to the mobilization of some citizens and interest groups whose

⁸ Helen Wanderstock, "Westway," in Dorothy Nelkin, ed. *Controversy* 2nd. ed. (Beverly Hills: Sage Publications, Inc., 1984): 73.

collective goal was to combat what was felt to be essentially a political, not scientific decision. The MRS study points to yet another critical aspect of the progress/democracy conflict, that those participating in the decision making process at the local level are the ones who are asked to absorb most of the risk; Kraft, Clary and Schaefer suggest that the participation of risk-bearers may affect implementation. They ask, "is it possible to implement a complex and technical policy for managing a highly dangerous and greatly feared risk which also demands significant participation by those likely to bear the risk?"⁹ In Tennessee, all three sites designated by the DOE for the waste facility had been or were currently housing potentially dangerous federal installations, and now the federal government was asking the local communities to accept additional risks. Because some felt that compensation for other federal facilities was not adequate, the local governments, by participating, sought to protect their interests in the event that the MRS was sited. This chapter examines participation in the MRS evaluation, in terms of the significant state and community attempts to incorporate citizen participation within the review process.

⁹ Michael E. Kraft, Bruce B. Clary, and Jame Schaefer, "Politics, Planning and Technological Risks: State and Citizen Participation in Nuclear Waste Management," paper presented at the annual meeting of the American Political Science Association, Chicago, IL, Sept. 3-6, 1987: 2.

Organization of the Chapter

So as to better understand the impacts of expanding citizen involvement in the technical policy domain, it is useful to comment on classical and contemporary views of participation. The next section of this chapter addresses public participation as it relates to differing theories of democratic politics. Traditional forms of citizen participation as well as more recent, non-traditional mechanisms for public involvement are discussed.

The chapter's third section describes what form citizen participation took in the MRS case study, both statewide and at the local level. The two local responses to the Department Of Energy's MRS proposal are systematically compared to show how citizens in the affected communities justified their conclusions regarding the facility's construction. A review of relevant documents and interviews with key actors helps demonstrate how public participation was manifested, and what the benefits were, if any, of citizen involvement in Tennessee's MRS evaluation process.

In the final section, several conclusions are drawn about citizen participation in the science and technology policy process, based on the assessment of participation in the MRS case. A discussion of the implications of participation for other actors in decision making and implementation processes concludes the chapter.

2. CITIZEN PARTICIPATION IN THE DEMOCRATIC PROCESS

What is Citizen Participation?

Participation can be referred to as "actions through which ordinary members of a political system influence or attempt to influence outcomes;"¹⁰ it connotes the involvement of citizens whose actions are not required of them by their occupations, as they seek to alter the course of outcomes.¹¹ For the purpose of this discussion, participation includes not only individual citizen involvement, but also the involvement of groups of citizens banded together in a community effort to exert an influence on policy events.

The key to understanding participation in this context, is that there exists a continuum between professional policy makers and ordinary citizens. Participation constitutes the activity of persons other than those whose livelihood depends upon regular decision making in a given policy domain.¹² Thus, participation is voluntary, not required. This is not to say that professionals cannot be citizen participants; a departmental representative at a public hearing is not an ordinary citizen according to the above definition, whereas the same official protesting

¹⁰ Jack H. Nagel, **Participation** (Englewood Cliffs, NJ: Prentice-Hall, Inc., 1987): 1.

¹¹ Ibid.: 2.

¹² Ibid.: 2.

neighborhood zoning regulations at a city council meeting can be classified as such. The definition, according to Nagel, "points to the intimate tie between participation and democracy, the fact that participation has to do with influence from the bottom up, not from the top down."¹³ This brings us, then, to stress the importance of citizen participation in democratic government.

Why Citizen Participation?

The literal interpretation of democracy suggests that government should be ruled by the people. A true democratic system exists only where the people are involved in self-government. This notion that in democracies people actively govern themselves is central to democratic theory and, so a "government's responsibility to foster and protect the institutions of self-government and to promote meaningful public participation in the development of public policy is a direct corollary of this democratic theory."¹⁴

Opportunities for participation must not be limited by government action, or else the system fails a fundamental test.¹⁵ Inaccessible, unrepresentative, and unresponsive governments inevitably lose much of their legitimacy; this

¹³ Ibid.: 2.

¹⁴ F. Stevens Redburn and Yong Hyo Cho, "Government's Responsibility for Citizenship and the Quality of Community Life," *Public Administration Review* 44:Special Issue (March 1984): 158.

¹⁵ Ibid.: 158.

is a reoccurring theme in citizen participation literature.¹⁶ Decisions that represent the choices of the people, according to democratic theory, are the only legitimate ones. In America, the Declaration of Independence acknowledges that public decisions are valid when the consent of those governed is secured. Legitimizing public policy, therefore, serves as justification for citizen participation in governmental processes.¹⁷

Another reason why participation ought to play a role in the democratic process deals with the attributes ordinary citizens possess that politicians and officials may not. These include an outside perspective and a longer-range view on matters that elected officials can ill afford.¹⁸ Of perhaps greater importance is that citizens can provide the constructive criticism that Gawthrop ascertains is the most elemental requirement of any democratic form of government; he asserts that:

The legislature may make the laws, the judiciary may interpret the laws, and the executive may ensure that the laws are faithfully executed, but only the polity--the citizens, the people--are in the expert position of being able to assess the impact of the public policy process with an astute sense of critical judgment--

¹⁶ William E. Stewart, Jr., **Citizen Participation in Public Administration** (Birmingham, AL: Birmingham Publishing Co., 1976): 13.

¹⁷ Ibid.: 13.

¹⁸ Nancy E. Abrams and Joel R. Primack, "Helping the Public Decide: The Case of Radioactive Waste Management," in Robert W. Lake, ed. **Resolving Locational Conflict** (New Brunswick, NJ: Center for Urban Policy Research, 1987): 75.

unless, of course, this most basic of all inalienable rights is deliberately denied by the complexities of the process.¹⁹

The public can judge a policy's worth differently than can either the politician or the bureaucrat. The former is seldom in a position to be unconcerned about a decision's political consequences, while the latter may wish to sustain funding for a given project. As Abrams and Primack note, the public has "saved us from some technological Vietnams, for example, the anti-ballistic missile system and the SST."²⁰ One could then argue that citizen participation, by providing input and performing policy evaluation, can actually lead to **better** decisions. This argument further justifies the participation of citizens in democratic governments, but says nothing about who ought to participate or what form participation should take.

Forms of Citizen Participation

Democracy can be conceptualized two ways. Direct democracy, the self-government practiced in Greek city-states, requires the public to be well informed, be considerate of the community interests, and to collectively make rational decisions. Observation of western democracies has revealed that none have even come close to meeting these

¹⁹ Louis C. Gawthrop, "Civis, Civitas, and Civilitas: A New Focus for the Year 2000," **Public Administration Review** 44:Special Issue (March 1984): 101.

²⁰ Abrams and Primack: 75.

requisites.²¹ Indirect democracy, on the other hand, recognizes the impracticality of direct decision making in large polities. The framers of the United States Consitution sagaciously created a republic in which citizens participate by electing leaders, who in turn have the authority to create laws. Since the nineteenth century, democracy has been closely identified with this sort of representative government.²² Because most American citizens do not participate in democratic processes the same way as their classical counterparts, the challenge for political scientists has been to "reconcile democratic theory with reality."²³ This task is not an easy one.

In observing the conditions necessary for stable and effective government, certain popular theories have surfaced in political science that relate to how policy decisions are made. Cobb and Elder label the first the elitist theory of democracy.²⁴ This theory, predicated on the notion that widespread citizen participation is not amenable to a republican form of government, cites four underlying principles: "(1) social pluralism, (2) diverse and competing

²¹ Roger W. Cobb and Charles D. Elder, **Participation in American Politics** 2nd ed. (Baltimore: The Johns Hopkins University Press, 1983): 1-2.

²² Nagel: 69.

²³ Cobb and Elder: 2.

²⁴ Cobb and Elder concede that perhaps more appropriate labels would be democratic elitism, or pluralistic democratic elitism. See Cobb and Elder: 3.

elites that are circulating and accessible, (3) a basic consensus at least among the elites on the rules of democratic competition, and (4) elections that provide regular opportunities for citizens to participate in the selection of public officials."²⁵ Floyd Hunter's innovative study of Atlanta demonstrates that community power was held, and policy decisions were made by a small group of community influentials.²⁶ The elite theory of politics suggests that public involvement is accomplished through traditional mechanisms such as voting, formal public hearings, and writing letters to public officials. Universal suffrage is guaranteed by the Fifteenth, Nineteenth, and Twenty-sixth Amendments of the Constitution, hence participatory opportunities are afforded to all citizens.

Group theory, the second, is founded on the idea that political participation can be explained and understood in terms of group activity. The term pluralism, which is widely used to describe the modern American political system, is an ideology associated with group theory. James Madison saw pluralism as the best way to preserve government, through bargaining and by balancing interests among competing factions. In *The Federalist No. 51*, Madison argues that "society itself will be broken into so many

²⁵ Ibid.: 3.

²⁶ See Floyd Hunter, *Community Power Structure* (Chapel Hill: The University of North Carolina Press, 1953).

parts, interests and classes of citizens, that the rights of individuals or of the minority, will be in little danger from interested combination of the majority."²⁷ Pluralists believe, as Lowi suggests, that a system based on pluralism is one in which good government and equilibrium are the products of imperfect competition; he adds that, according to the pluralists, "pluralist equilibrium is really the public interest."²⁸ The idea here being that no single faction can overpower all the others, so theoretically, self-interested groups cannot dominate the political process. Robert Dahl's examination of power structures in New Haven, Connecticut indicates that community power was dispersed, not manipulated by an upper-class elite.²⁹

Concomitant to the rise of positive government, has been an increase in pluralistic activities. With the large-scale government intervention brought on by the New Deal, New Frontier, and Great Society programs, it is easily seen how the numbers of competing interests that must be balanced rises. Social welfare and economic development policies inevitably affect scores of citizens, many with dissimilar stakes in a given policy's outcome. The consequence of

²⁷ James Madison, "The Federalist No. 51," in Jacob E. Cooke, ed. **The Federalist** (Cleveland: The World Publishing Co., 1961): 351.

²⁸ Theodore J. Lowi, **The End of Liberalism** 2nd ed. (New York: W.W. Norton & Co., 1979): 35.

²⁹ See Robert Dahl, **Who Governs?** (New Haven: Yale University Press, 1961).

advanced pluralism is that traditional forms of public participation in the policy process no longer suffice if citizen demands are to be met. Newer mechanisms can enhance the roles that citizens play in decision making; more innovative approaches to public participation include statewide referendums, citizen advisory and planning committees, and citizen panels invented to "provide a way of defining the public interest in a world of moral relativism"³⁰. These newer forms of participation may be useful to help accomplish science and technology policy goals because the public can play a larger, more meaningful part in the formation and implementation of policies that it perceives as risky.³¹ Non-traditional opportunities for citizen participation, fitting within the framework of the open decision making model, may well produce changes in the policy outcome. This possibility merits a discussion of the type of citizen who actually participates in the technical policy process.

³⁰ Ned Crosby, "Citizen Panels: A New Democratic Process for Risk Management," paper presented at the annual meeting of the American Society for Public Administration, Boston, March 28-April 1, 1987: 11.

³¹ Michael E. Kraft, "Managing Technological Risks in a Democratic Polity: Citizen Participation and Nuclear Waste Disposal," paper presented at the annual meeting of the American Society for Public Administration, Boston, March 28-April 1, 1987: 8.

Who Participates?

A study of citizen participation in political processes is lacking if it does not take into account that citizens who participate frequently share common characteristics. Verba and Nie categorize participators according to type and their orientation to politics, claiming that citizens differ not only in the extent to which they participate, but also according to the kind of activity in which they become involved.³² Fairly clear patterns emerge, Verba and Nie found, such that "complete activists" are generally from the upper-classes, involve themselves in conflict, and also "have a sense of contribution to the community at large."³³ Likewise, citizens who limit their political activity to voting or are totally inactive tend to have less education and lower incomes than the active participants.³⁴ Milbrath, from a slightly different perspective, argues that inactivists are satisfied with the status quo:

[T]here is little likelihood that intense political interest and involvement will develop so long as government functions adequately, enabling citizens to keep politics as a peripheral concern in their lives.³⁵

³² Sidney Verba and Norman H. Nie, **Participation in America: Political Democracy and Social Equality** (New York: Harper & Row Publishers, 1972): 93.

³³ Ibid.: 93-99.

³⁴ Ibid.: 97.

³⁵ Lester W. Milbrath, **Political Participation** (Chicago: Rand McNally & Co., 1965): 149.

These studies suggest that attempts to influence government decisions vary in degree and type, depending on the issue.³⁶ Some segments of the population may seek greater involvement in the political process, while others express few concerns about the impact of a particular policy. One such issue is the siting of nuclear waste facilities.

In the MRS case study, both traditional and more innovative approaches to public participation were used in the evaluation process. The state and the local communities collected correspondence, held hearings, provided informational materials, and solicited public opinion regarding the MRS. Oak Ridge and Roane County citizens comprehensively reviewed the MRS plan by forming a citizens task force. Hartsville organized a committee of local officials to evaluate the DOE proposal. Citizens who participated also varied. Some were angry citizens who attended hearings to express their opposition to the MRS facility. Some were environmentalists seeking to represent the public interest; as the former director of one of the state's environmental groups phrased it "there's a lot of weight put on what you say because you're one of the three or four people in the whole state who are employed solely for the purpose of representing the public view on

³⁶ Verba and Nie: 93.

environmental policy."³⁷ Others were the select public who became "complete activists" and participated in every aspect of the decision making process in their community. The overwhelming majority of Tennesseans, however, were inactive. Most citizens expressed little interest in the location of the MRS, as its construction would have minimal effect on them. In the next section, the different types of participation are described and analyzed in terms of the implications of each for the formation, and implementation, of scientific and technical policy.

3. CITIZEN PARTICIPATION IN THE MRS DECISION MAKING PROCESS

Citizen Participation and the State

The Safe Growth Cabinet Council responded to Governor Alexander's request to include citizens in the state's evaluation process by conducting an extensive public outreach and participation program. The SGCC shared the chief executive's belief that Tennesseans could form an educated opinion on the acceptability of a nuclear waste storage facility only if there were open access to information, both of the project and the state's review of it. Alexander and his Safe Growth Cabinet "were firmly committed to a policy that the citizens of the state should

³⁷ Personal interview with Ms. Mayo Taylor, former Executive Director, Tennessee Environmental Council, Nashville, January 1987.

be partners in the state's ultimate decision."³⁸ The state, in effect, opened the decision making process to incorporate the views of its citizens.

The state's plan to involve the public became operational in a three-step process. First, materials were provided in public reading rooms that were established in Oak Ridge, Hartsville, and Nashville. Copies of DOE documents were supplemented by reports subsequently developed by the state, and were available for public review. Second, the SGCC measured public opinion by compiling statistics on the positions of citizens who wrote letters, presented oral testimony at hearings, and completed questionnaires generated by its staff. Finally, the Cabinet Council sponsored a series of public hearings held in each of the grand divisions of the state, as well as near the locations of the potential MRS sites.

In order to consult the public and solicit its views, the Safe Growth Team requested the temporary assignment of an additional professional staff person to coordinate the public outreach program. The coordinator was responsible for organizing public meetings and analyzing statewide citizen responses to the MRS proposal. A toll-free MRS "hotline" was installed to provide a way for the state to

³⁸ James E. Word and Ruth H. Neff, "Tennessee's Response to the MRS Proposal," in Roy G. Post, ed. **Waste Management '86: Waste Isolation in the U.S. Technical Programs and Public Education**, Vol. 2, proceedings of the Symposium on Waste Management, Tucson, March 2-6, 1986: 578.

gauge public opinion. Data were also gathered from correspondence received by the executive branch and petitions. "All comments and opinions received before December 31, 1985 were recorded, tabulated and included in the public response report to the Governor and legislative study committee."³⁹ A total of 756 Tennesseans formally expressed their opinions to the state regarding the MRS. Of these, "677 were opposed to an MRS in Tennessee, 38 individuals supported the DOE proposal, and 41 were either neutral or asked questions."⁴⁰ The reasons for support or opposition of the MRS were disclosed, and classified according to geographic region. Transportation safety and transportation risks were cited most frequently by the public as arguments for or against MRS construction.

The public hearings were an issue of some contention among those interacting in the outreach program. While some voiced that the state should immediately proceed with the hearings, the SGCC staff felt that "we actually need to organize this thing so that Cabinet Council members are there on the podium, they're conducting the meeting, and we have experts if we need to, making presentations to the public. But when the public gets up to give their views on

³⁹ Tennessee Department of Health and Environment, Safe Growth Staff, **The Public Response to MRS: An Interim Report**, October 22, 1985; and Word and Neff: 579.

⁴⁰ Report of Ms. Gay Hashbarger, Safe Growth Team, to the Safe Growth Cabinet Council, Nashville, November 15, 1985.

MRS, they're talking to real members of the Safe Growth Cabinet Council."⁴¹

Pursuant to Governor Alexander's instructions that the state gather data and prepare briefings for him on what the MRS meant to citizens, the Cabinet Council agreed to actively participate in the hearings. Although the planning took a bit longer, commissioners and their staffs travelled across Tennessee to ensure the public of the Council's personal involvement in the evaluation process. The SGCC held two rounds of formal hearings; the first were conducted early on to explain the state's approach in evaluating the MRS proposal and to ask for comments on the review process. The second series of meetings, again held in major metropolitan areas across the state, provided a forum for the dissemination of information gathered by the departments and contractors. In all, some nineteen Cabinet Council meetings were held at which the public could offer comment.⁴²

The Safe Growth MRS team was not alone in the organization of public hearings at the state level. As mentioned previously, Tennessee's legislature held a series of public meetings that were totally independent of the

⁴¹ Personal interview with Mr. Ben Smith, Executive Director, Safe Growth Team, Nashville, January 1987.

⁴² Under the provisions of Tennessee's Sunshine Law, most meetings between state and federal officials are considered "public."

executive branch, although representatives from the Joint MRS committee attended some of the state hearings. The legislative hearing schedule was basically driven by the district locations of the joint committee members. The Tennessee Congressional delegation tracked the MRS issue closely, some attended public hearings, and one U.S. Representative conducted a meeting in Nashville at which citizens had a chance to express their opinions.

Tennessee officials then, elected and non-elected, relied quite heavily on hearings to provide a means of encouraging citizen involvement in the MRS evaluation. Correspondence and the measurement of public opinion rounded out the state efforts to assess public views. Yet, since the proposed MRS facility was to be sited at one of three locations in two communities, it is important to observe how citizen participation was manifested at the local level.

Citizen Participation and the Local Governments

Oak Ridge. To evaluate the impact of the MRS proposal on their local community, Oak Ridge created the Clinch River MRS Task Force (CRTF) consisting of thirty-two members including local government officials and private citizens. The idea was crafted by the assistant city manager of Oak Ridge, who recommended that staff support be provided by the city. An expert in mitigation who worked with Hartsville at the time of the TVA nuclear power plant siting, and scholars from the Oak Ridge Associated Universities served as

consultants. A regional review group was established so that cities and counties along proposed transportation routes could participate in the evaluation process.

The appointment of members in late July 1985 by the mayor of Oak Ridge and the Roane County executive was the result of a structured selection process. Interested persons submitted resumes to the city and county officials. Some were chosen because of their technical backgrounds, while others were lay citizens who expressed a desire to participate; all were **volunteers**. The roster included engineers, physicists, a geologist, housewives, a statistician, an economist, real estate developers, a college administrator, the county's civil defense manager and road supervisor, a state highway engineer, the president of the League of Women Voters, and a nutritionist.⁴³ Membership was divided equally among residents of Oak Ridge and Roane County. As one staff advisor remarked about the representation of the county: "the people in Roane County could trust the final assessment because they were involved and it wasn't just the experts over there in Oak Ridge saying 'yes, this is a good thing that ought to be.'"⁴⁴

⁴³ Elizabeth Peelle, "Innovative Process and Inventive Solution: A Case Study of Local Public Acceptance of a Proposed Nuclear Waste Packaging and Storage Facility," paper presented at the Rene Dubos Institute for Environmental Management, New York, April 3-4, 1986: 4.

⁴⁴ Personal interview with Mr. William Harris, City of Oak Ridge Fire Chief and Staff Member to the Clinch River Task Force Transportation Study Group, Oak Ridge, September

The Task Force was organized into an Executive Committee, whose purpose was to coordinate subcommittee activity, and three Study Groups focusing on environmental, socioeconomic, and transportation issues. The local governments had three citizen representatives apiece on each of the study groups, while two positions on each subcommittee were filled by elected officials, one an Oak Ridge City Councilperson and the other a Roane County Commissioner. The chairs of each subcommittee were elected by their group's members. Figure 6.1 illustrates the Task Force's composition.

The primary objective of the CRTF was to "determine whether the proposed Monitored Retrievable Storage facility should be accepted by the local governments, and if so, under what conditions."⁴⁵ Based on "the belief . . . that these issues are to be resolved by Congress, not by the local communities," the CRTF specifically refused to consider the question of the need for the MRS and was not concerned with the process by which DOE had selected its candidate sites;⁴⁶ Task Force members were adamant in stressing this point. As one executive committee member stated, "we did not then nor have we ever gone on record as

1987.

⁴⁵ Roane County/City of Oak Ridge, Clinch River MRS Task Force, **Recommendations on the Proposed Monitored Retrievable Storage Facility**, October 1985: 2.

⁴⁶ Ibid.: 2.

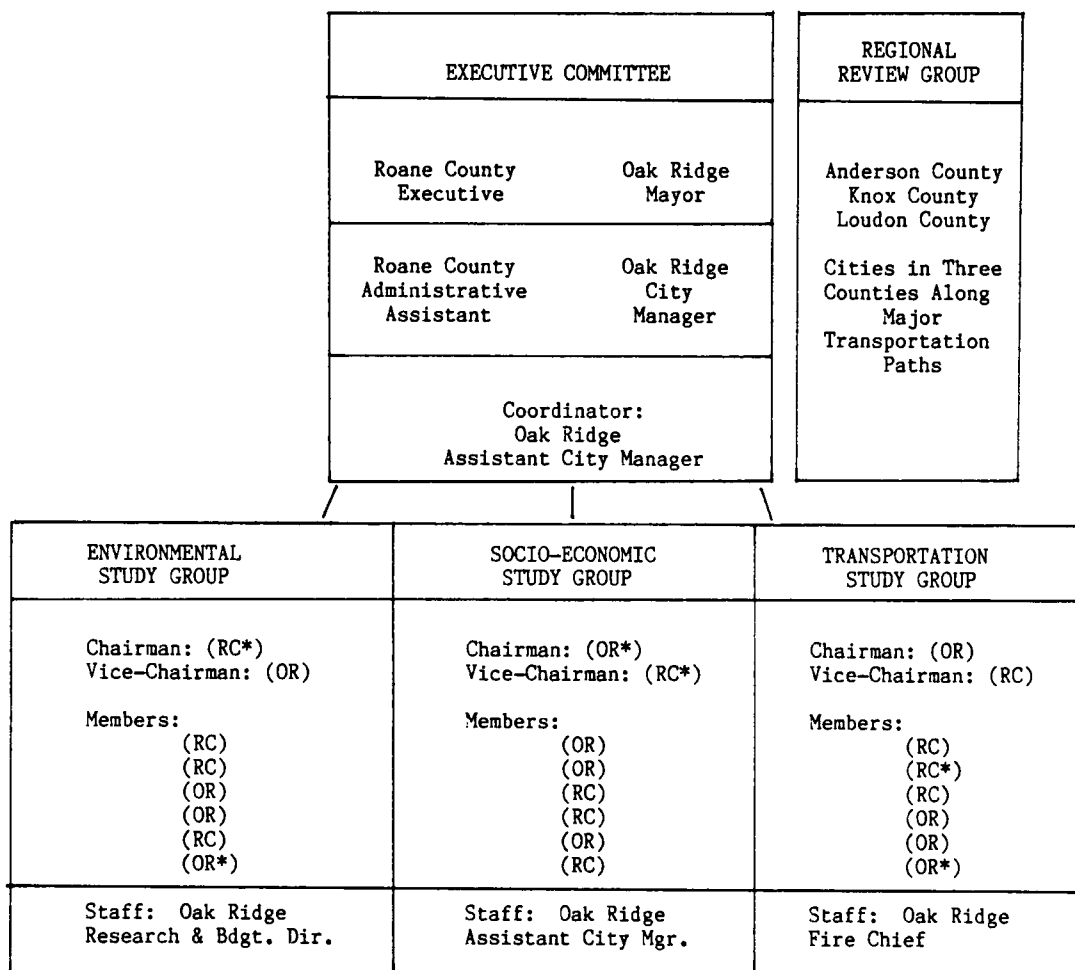


Figure 6.1

Organization of Clinch River MRS Task Force^{ab}

^aAdapted from Roane County/City of Oak Ridge, Clinch River MRS Task Force: Appendix A.

^bRC = Roane County Member; OR = Oak Ridge Member; * = Elected Legislator

saying the MRS was or was not needed. That's really the decision that Congress has to make and we haven't been involved in that."⁴⁷ Another emphasized the national dimension of the nuclear waste problem:

I believe the state of Tennessee has been somewhat distracted by dealing with that [need] question. That is a national policy question that needs to be solved the way national policy should be solved, by the Congress, by the **representative** Congress [emphasis added] . . . you can almost categorize the Nuclear Waste Policy Act as a welfare program . . . people in this country have gotten a benefit from nuclear energy . . . that's not a divisible benefit . . . therefore it is a welfare program to dispose of the waste from that particular program . . . that's a national policy to be decided. It's not appropriate for the city of Oak Ridge to decide that.⁴⁸

Yet another member added that:

We might be listened to on site specific things . . . we are due what we are asking for, that has got credibility. Whereas if we had come out with some high level pronouncements on need it wouldn't have been accepted; we don't know anymore than anybody else.⁴⁹

Since the DOE made it clear that it intended to go to Congress with a proposal early the next year, the CRTF set a deadline of three months to compile its report, and decided to limit its study to local impacts of constructing the MRS facility. The attitude was that if the local governments were going to have any influence on the proposal at all, it

⁴⁷ Personal interview with Mr. Roy Pruett, Mayor of Oak Ridge and Executive Committee Member of the Clinch River Task Force, Oak Ridge, September 1987.

⁴⁸ Harris interview.

⁴⁹ Personal interview with Mr. Robert Peelle, Roane County Commissioner and Chair, Environmental Study Group of the Clinch River Task Force, Oak Ridge, September 1987.

would be more effective to detail their concerns on the front end, rather than to wait until the DOE submitted its plan to Congress the following January. As one CRTF member commented, "let's do whatever we're going to do quick, to try to see if we can have the impact before it goes to Congress."⁵⁰ With the three-month clock running, the Socioeconomic Study Group set out to "identify liabilities, then to quantify them, then attach mitigations to each one."⁵¹ This subcommittee concentrated on examining the probable impacts of the MRS on the Oak Ridge and Roane County economies. The other study groups looked at health and safety concerns, and transportation impacts on the local communities.

In conducting its evaluation, the CRTF held monthly work sessions and the Study Groups met weekly. All meetings and special events were open to the public. CRTF members visited a variety of federal and private facilities dealing in radioactive waste management. The trips included visits to the low-level radioactive waste facility in Barnwell, South Carolina, the DOE's Idaho National Engineering Laboratory, and DOE's Nevada Test Site. Visiting the installations played a significant role in either changing or confirming the opinions of the committee members

⁵⁰ R. Peelle interview.

⁵¹ Personal interview with Mr. Larry Dickens, Former Oak Ridge City Councilman and Chair, Socioeconomic Study Group of the Clinch River Task Force, Oak Ridge, September 1987.

concerning the safe operation of waste facilities; as a member of the environmental group stated, "We asked a lot of questions; in fact, we asked tougher questions than the opposition had ever thought of."⁵² As Word and Neff view its work, "The Task Force approach was to examine the [MRS] proposal to determine if it could be operated safely, and if so, to set forth conditions under which the MRS would be acceptable. The Task Force strategy was to influence the final DOE proposal as it was being drafted."⁵³

One of the most interesting aspects of the CRTF is the relation it had with representatives of environmental groups, as well as the animosity described, by members, between the anti-MRS and pro-MRS contingents. The Task Force felt that its relationship with area environmental groups should be one of "tell us what the problem is, and let's figure out what the solution is so that we can turn that liability into an asset."⁵⁴ Members felt some frustration that MRS opponents raised the same questions, and made the same speeches time and time again, yet did not appear to be interested in hearing any factual-based answers. Others suggested that many citizens who were in opposition to the facility simply had little, or erroneous information concerning nuclear waste storage. At the first

⁵² R. Peelle interview.

⁵³ Word and Neff: 579.

⁵⁴ Dickens interview.

public hearing, a committee member was surprised at the interaction between members of an environmental coalition and citizen proponents of the MRS; he states that "a couple of the Oak Ridgers, respected people who normally are very careful of what they say essentially got up and scolded them, [the environmentalists] which in my view was a most peculiar social interaction."⁵⁵ Another observer expressed regret that "passion a lot of times took the place of reason. I saw some of the greatest minds in this town get mad at those people because they had a different opinion."⁵⁶

Competition among experts, discussed in the second chapter, well describes what transpired at public forums held in the Oak Ridge area. The CRTF held an "opposition forum" and invited gubernatorial hopefuls, three of four of whom had already announced their vehement opposition to the facility, but none of whom attended. One member conceded that the candidates may not have wanted to debate the nuclear experts residing in Oak Ridge. The most often talked about incident was the transportation workshop sponsored by the CRTF. Transportation experts were brought in from different parts of the country, all of whom had their expenses paid by outside groups. A consultant, whose expenses were paid by a utilities association, was expected to debate with his frequent opponent, a "well known nuclear

⁵⁵ R. Peelle interview.

⁵⁶ Dickens interview.

critic" with an environmental policy group based in Washington.⁵⁷ When the latter refused to attend, many speculated it was because a local environmental group refused to pay his expenses; the newspaper account states that "Millar rejected an invitation to today's workshop, saying it was being staged for the benefit of MRS backers."⁵⁸ Supporters and opponents of the MRS, by structuring arguments based on claims of expertise, may well have confused a lay audience concerning the facts of the MRS proposal.

The Clinch River Task Force in its report found that: (1) spent fuel and other high-level radioactive wastes could be safely transported; (2) either of the proposed Oak Ridge sites could environmentally accommodate the proposed facility; (3) the proposed MRS facility could be safely constructed and operated; and (4) the proposed facility could benefit the economies of the local communities, the region, and state.⁵⁹ But, the CRTF concluded that the MRS would **not** be acceptable unless DOE addressed its "critical concerns" and mitigated some anticipated impacts. Toward that end the conditions for local acceptance of the MRS

⁵⁷ "War of Words: Factions Push to Sway Public as Controversy Heats Up Over Nuclear Waste Storage Plan," **The Knoxville News-Sentinel**, September 12, 1985: A2.

⁵⁸ Ibid.: A2.

⁵⁹ Roane County/City of Oak Ridge, Clinch River MRS Task Force: 2.

included: (1) the establishment of a citizen review board to monitor MRS construction and operation so that the "diligent adherence to rules, regulations, and safety procedures" could be assured; (2) the inclusion of specific limits on the amount of spent fuel to be received by the MRS before an NRC construction license is granted for the permanent repository; (3) provision for annual impact assistance payments, equal to taxes paid on a \$1 billion facility, to be provided to the state, Roane County, and the City of Oak Ridge from the date of congressional authorization of the MRS to facility decommissioning; (4) the relocation to DOE's Oak Ridge Operations office of the management of MRS design, construction, and operation, as well as the management of transportation for the entire civilian radioactive waste program; (5) to overcome widespread perception of the MRS as a "nuclear waste dump," DOE should finance a "significant preoperational public education program," and later help support museum exhibits, about the facility and nuclear power; (6) the establishment of a schedule for bringing all DOE Oak Ridge Operations facilities into compliance with state and federal environmental regulations, as well as implementation of clean-up operations for past DOE pollution--prior to commencement of MRS operations.⁶⁰ Thus, while the CRTF

⁶⁰ Roane County/City of Oak Ridge, Clinch River Task Force: 6-12.

clearly indicated to DOE that it **could be induced to accept the MRS**, it nevertheless required additional assurances to accentuate the benefits, and mitigate the costs, of the waste facility. The CRTF Report was unanimously adopted by the Roane County Commission and the Oak Ridge City Council. A telephone survey of Oak Ridge households taken after the City Council's approval of the report found that more than two-thirds of respondents favored the construction and operation of the MRS in the area.⁶¹

Hartsville. Soon after a representative from Tennessee's Department of Health and Environment contacted the county executive in Hartsville to discuss the DOE's MRS proposal, local government officials from the primary impact area decided to charter an organization called the Five-County Review, Evaluation, Analysis and Liaison (R.E.A.L.) Committee. The R.E.A.L. Committee was composed of the county executives of Macon, Smith, Sumner, Trousdale, and Wilson counties in Tennessee, the mayors of the five county seats, and the mayor of the City of Hendersonville, and was chartered for such purposes as: (1) providing a forum for communication between the five county governments; (2) assisting government entities in providing information useful in making siting decisions for projects in the region; and (3) making recommendations to the appropriate

⁶¹ Joseph C. King, "MRS and the Local Community: The Oak Ridge Area Response," **Forum for Applied Research and Public Policy** 1:1 (Spring 1986): 49.

governments and assisting in the mitigation or reduction of adverse effects associated with proposed facilities.⁶²

The R.E.A.L. Committee differed from the Clinch River Task Force in several ways. Unlike the Oak Ridge evaluation team, the Hartsville group consisted entirely of public officials. No lay citizens were given membership status. Second, while the R.E.A.L. group was founded at the time of the state's MRS review, it is clear that the committee met with an agenda that included, not only the MRS, but other items as well. According to one R.E.A.L. Committee member, the most detailed and far-ranging discussion pertaining to the MRS was held at the group's first meeting; at subsequent monthly gatherings, the MRS was just one item out of several on the Committee's agenda.⁶³ The R.E.A.L. Committee "entered into a contractual arrangement" with the Tennessee Department of Health and Environment to perform a site specific study of the proposed MRS.⁶⁴ Oak Ridge, on the other hand, assembled its task force for the sole purpose of evaluating the DOE's storage facility. Finally, the Clinch

⁶² The Five-County Research, Evaluation, Analysis & Liaison Group, **Recommendations on the Proposed Monitored Retrievable Storage Facility at the Hartsville TVA Nuclear Plant Site**, November 1985: 2.1-2.2.

⁶³ Personal interview with Mr. Jack Kittrell, former Smith County Executive and member of the Research, Evaluation, Analysis & Liaison Group, Hartsville, September 1987.

⁶⁴ The Five-County Research, Evaluation, Analysis & Liaison Group: 2.2.

River Task Force, even though some of its members were not proponents of the MRS at the outset, agreed that the group would negotiate a final consensual agreement. The CRTF members were willing to study the DOE's proposal rather than to reject it outright, whereas there was consensus among the R.E.A.L. members from the start that the MRS was undesirable and completely unacceptable. In the introduction to the R.E.A.L. report, this sentiment is revealed:

It was the general opinion of the R.E.A.L. Directors that they did not want the MRS facility located at the Hartsville site and some reluctance was expressed about entering into the contract because it might give an indication of support for such [acceptance of the facility].⁶⁵

The hesitation detected in the tone of the R.E.A.L. report is quite understandable. The cancellation of another major federal installation in mid-construction, TVA's Hartsville Nuclear Power Plant, led to major economic repercussions for the region. With numerous federal facilities stimulating the Oak Ridge economy, the elimination of funding for the Clinch River Breeder Reactor did not as severely affect the local residents. As a consequence, the Hartsville community **did not** want another federal facility constructed in their region. This opinion was expressed by local citizens frequently, consistently, and forcefully. The national media, in a telephone interview, asked the Trousdale County Executive if Hartsville would be the site of the nation's

⁶⁵ Ibid.: 2.2.

temporary waste storage facility; the response was "no way."⁶⁶

Despite the fact that the Hartsville area had yet to fully recover economically from the defunct nuclear plant, the R.E.A.L. Directors conceded that it "would be more appropriate to work with the State in this effort than ignore the 'problem' and assume it would never happen."⁶⁷ Local officials were cautious in their relations with the DOE, yet realistic because they knew Congress could override the State's veto and build the MRS wherever it pleased. The possibility, therefore, that the MRS could be constructed at the abandoned TVA site could not be discounted. In fact, as one R.E.A.L. member remarked, "we still live under the fear it [the MRS] could come anyway."⁶⁸ Among the R.E.A.L. Committee's priorities, then, was estimating the adverse effects and transportation problems that would result from the facility for which federal compensation would be required.⁶⁹

The other major efforts of the Committee were directed at determining community attitudes and opinions regarding

⁶⁶ Personal interview with Mr. G.W. Oldham, Trousdale County Executive and President, Research, Evaluation, Analysis & Liaison Group, Hartsville, September 1987.

⁶⁷ The Five-County Research, Evaluation, Analysis & Liaison Group: 2.2.

⁶⁸ Oldham interview.

⁶⁹ Word and Neff: 579.

the MRS, and providing the public with information about the DOE project. A firm was retained to conduct a survey of residents and elected officials, a WATS line was installed for citizen response, and a document center at the Trousdale County Courthouse was established to disseminate information to the interested public. These activities constituted the opportunities for citizens to participate in the R.E.A.L. Committee's MRS evaluation. Although officials attended meetings of civic clubs and some of the public hearings that were held in and near the five-county region, it does not appear that the R.E.A.L. organization sponsored any public hearings.

The Hartsville community rejected the DOE MRS proposal. A survey of public official and citizen opinion regarding the MRS commissioned by the R.E.A.L. Committee in October 1985, found that 100% of the officials and 90% of the citizens disapproved of locating the facility near Hartsville.⁷⁰ Formal resolutions unanimously rejecting the DOE proposal were adopted by the County Commissions for all five counties in the affected area.⁷¹ In its position statement, the R.E.A.L. Committee argued that the costs of

⁷⁰ Baqar A. Husaini and Jayne B. Zaharias, **Attitudes Toward Monitored Retrievable Storage (MRS) Facility: A Survey of Five Counties in Middle Tennessee**, November 1985: 14.

⁷¹ Word and Neff: 580.

the MRS greatly outweighed any benefits that might be realized, such that:

The negative impacts on the environment, disruption of the community, potential negative economic impacts, negative public opinion, and transportation problems associated with the proposed facility cannot be adequately mitigated by DOE.⁷²

Finally, the members of the R.E.A.L. Group urged the Department of Health and Environment to recommend to the State and Federal governments that an MRS facility not be constructed at the TVA Hartsville site.⁷³

Thus, at the end of the review process both communities--using significantly different participation strategies--had rejected the DOE proposal. Hartsville's followed the more traditional approach to citizen participation and summarily dismissed the facility. Oak Ridge, using a broader conception of participation, in spurning the facility, specified a variety of innovative conditions under which the MRS facility might be made acceptable to the community.

4. CONCLUSION

This chapter examined citizen participation in the implementation of a significant environmental policy area, the attempted siting of a temporary nuclear waste storage

⁷² The Five-County Research, Evaluation, Analysis & Liason Group: 3.3.

⁷³ Ibid.: 1.1.

facility in Tennessee. Our study is concerned with the implications of increased citizen involvement for the formation and implementation of technical policy. It has taken as its basic research question: can effective policy be made and carried out when numerous actors, many from groups traditionally excluded from the science and technology policy domain, are involved in the decision making process?

Citizen involvement was an important component of the state and local MRS evaluation efforts because public officials felt that the state's decision could be **legitimate** only if the public participated. By sharing information with Tennesseans and listening to their concerns, it was thought by the reviewers that a **better decision** could be made. The state established a public education and outreach program, and in accordance with the state's objective to conduct community impact reviews, the affected local governments organized committees to conduct reviews of the DOE's MRS proposal.

It was not easy to predict how Tennesseans would react to the DOE's plan for the waste facility, especially those who resided near the areas designated as possible sites. As Albrecht notes, "one of the most difficult aspects in evaluating the potential community response to nuclear waste repository siting lies in the fact that no repository has ever been constructed and thus there is simply no historical

base from which to judge the potential response to such a facility."⁷⁴ Citizen participation, therefore, took different forms. The surveying of public opinion, analysis of correspondence to public officials, and disseminating information in public hearings served as examples of traditional forms of participation. The creation of a citizen task force by the Oak Ridge community exemplifies a more innovative approach to citizen participation by encouraging direct public involvement in the decision making process. The R.E.A.L. Committee serves as an example of indirect representation; citizen opinions are presumed to have been reflected through the actions of their elected officials.

Were Citizen Participation Efforts Successful?

That depends on how success is defined. If success means giving citizens more opportunities to speak at hearings, respond to surveys, write letters, and make phone calls, then **yes**; but if success is interpreted to mean active participation in all the decisions relating to the evaluation, then **only to an extent**. The former merely widens participation, while the latter makes citizen involvement more meaningful.

⁷⁴ Stan L. Albrecht, "Community Response to Large-Scale Federal Projects: The Case of the MX," in Steve H. Murdock, F. Larry Leistritz, and Rita R. Hamm eds., **Nuclear Waste: Socioeconomic Dimensions of Long-Term Storage** (Boulder, CO: Westview Press, 1983): 233.

The state sponsors of the public hearings had mixed feelings about their effectiveness in mobilizing the public to respond. Poor attendance was often noted as source of frustration. Of the first four public hearings, only the Knoxville/Oak Ridge meeting drew a crowd of over one-hundred. One official noted that although the hearings "gave all Tennesseans a chance to buy into the decision making process . . . and that we did all the things we thought we should do and we were legally required to do . . . they were not attended well at all . . . and we should have been more aggressive in the way we invited people to the meetings."⁷⁵ A leader of a major environmental lobby spoke of the state's efforts, acknowledging that officials provided a vehicle for public involvement, but at the same time, she was not surprised by the modest response from the citizenry of Tennessee:

The state now is much better about letting us in on the decision making process; they've got formal processes by which they invite the public to be involved. But in fact, the public is represented by just a few people and we don't have the strength to stir up a public response on the magnitude of the MRS on more than one or two issues a year. I don't know what the secret is where you get more people involved . . . The state's up against that incredible apathy . . . It's not going to do any good for the state to hold thirty more public hearings in a year on a variety of topics if there

⁷⁵ Personal interview with Mr. Charles Howell, Commissioner, Department of Conservation, State of Tennessee, Nashville, November 1986.

isn't a new reservoir of people to attend those hearings and do the research and speak intelligently.⁷⁶

Considering the severe time constraint most of the actors were reasonably satisfied with the hearing portion of the SGCC's public outreach program. It was felt, furthermore, that the negative responses compiled from correspondence, the MRS hot-line, and the State's questionnaire represented concerns of the citizens of Tennessee that the transportation of casks to the MRS site posed a health threat, and that the facility could not be operated safely.

The Clinch River Task Force was, for the most part, confident in its efforts to solicit participation. The group advertised in the paper requesting comments, and meetings of the entire task force, as well as those of the subcommittees were open to the public. CRTF members were also satisfied with the composition of the evaluating body; at least half of the task force was composed of citizens whose occupations could be described as non-technical, and some members also belonged to environmental groups such as the Sierra Club and Save Our Cumberland Mountains. Thus, the CRTF felt its report was credible and legitimate in that many interests were represented, and the members were able to reach a consensus on the MRS. Members described the conflict associated with competing expertise at some of the hearings, but conceded that the purpose of public forums is

⁷⁶ Taylor interview.

to expose and encourage discussion of contrasting viewpoints.

For the R.E.A.L. Committee, participation meant that citizen opinions were to be measured, and that the group's final decision was to reflect public attitudes. Since citizens did not actually serve on the Committee, the R.E.A.L. Group did not define participation in the same way as did its Oak Ridge counterpart. Elected public officials comprised the entire Hartsville task force membership, whereas the CRTF was composed of citizens with a variety of backgrounds, both technical and non-technical, in addition to city and county administrators. The CRTF better represents the kind of participation described in an earlier discussion of the open decision making model. Considering the initial feelings of the R.E.A.L. directors regarding the MRS, the fact that the facility was not cited suggests that the minimal participation efforts were successful.

If one looks at the final assessments of the DOE proposal by the state and local communities, it is difficult to measure the exact impact of citizen participation. On the one hand, the State made an effort to solicit public opinion, yet the governor said at the time of DOE's initial announcement that he would accept the facility if it were in the nation's best interest.⁷⁷ If public opinion were really

⁷⁷ Personal interview with Mr. James E. Word, Commissioner of Health and Environment, State of Tennessee, Nashville, November 1986.

a key factor in the state's decision, it is interesting to note that a healthy majority of the Oak Ridgers welcomed the facility, provided that the conditions of the Task Force would be met. In fact, the results of a statewide telephone survey conducted one month after Alexander issued his statement indicates that 42% of Tennessee residents surveyed either approved or approved strongly of constructing the MRS in Oak Ridge.⁷⁸ The mainly negative responses compiled by the state did reflect some Tennesseans' attitudes, yet it should be noted that a very small proportion of the population called in, wrote letters, or completed questionnaires. These respondents could hardly be representative of the general public. Regardless, the statement issued by Governor Alexander in January 1986 argued against the MRS, claiming that the facility was not needed and that economic development would be stunted in the region surrounding the DOE's preferred site. In his announcement the governor made no reference to the level and intensity of public opposition to the facility featured so prominently in either the R.E.A.L. Committee report or that of the SGCC.

It is equally burdensome to measure the effects of citizen participation in the different responses of the two cities, Hartsville and Oak Ridge. The anti-MRS and pro-MRS

⁷⁸ William Lyons, Michael R. Fitzgerald, and Amy McCabe, "Public Opinion and Hazardous Waste," **Forum for Applied Research and Public Policy** 2:3 (Fall 1987): 95.

sentiments expressed by the respective areas may be attributed to the unique relationships of each community with the federal government. Because of incredible bitterness regarding the federal government stemming from TVA's cancellation of its planned Hartsville Nuclear Power Plant, the R.E.A.L. Committee from its inception had preconceived notions regarding the facility's acceptability. As a result, the group was essentially engaged in documenting the community's opposition to the MRS facility.⁷⁹ It is unclear whether non-traditional forms of participation in the Hartsville evaluation process would have altered the outcome; but one could speculate that siting would be extremely doubtful, taking into account the TVA experience.

Oak Ridge expressed a more positive attitude, perhaps because it is a community with extensive experience in dealing with the federal government, or because the city's economy has historically been dependent on aid derived from federal facilities. Perhaps it was civic pride; some residents felt that because of its pioneering efforts in nuclear research, "it is Oak Ridge's destiny and responsibility to show the way in safe and exemplary development of new nuclear projects such as the now-defunct Clinch River Breeder Reactor or waste management processes

⁷⁹ Word interview.

and techniques such as the MRS."⁸⁰ Citizen participation was significant in the Oak Ridge case because the Task Force's conditional acceptance, in effect, legitimized the decision to site the MRS in Tennessee. The positive local response certainly helped strengthen the DOE's argument in its proposal to Congress. Intensive participation, moreover, affected the Task Force members by "changing the opinions of a significant fraction of Task Force members, developing a sense of pride about their participation and achievements, and achieving consensus not only about safety but also about the conditions of acceptability of the proposed MRS facility."⁸¹ A better decision may have been the result of citizen participation by encouraging discussion and consensus, and promoting community cooperation; these factors represent ideals of direct democracy.⁸²

While citizen participation in the formation and implementation of technical policy is important in that it may contribute to greater acceptance of science and

⁸⁰ Elizabeth Peelle, "Innovative Process and Inventive Solution: A Case Study of Local Public Acceptance of a Proposed Nuclear Waste Packaging and Storage Facility": 15.

⁸¹ Elizabeth Peelle, "The MRS Task Force: Economic and Noneconomic Incentives for Local Public Acceptance of A Proposed Nuclear Waste Packaging and Storage Facility," in Roy G. Post, ed. **Waste Management '87: Waste Isolation in the U.S. Technical Programs and Public Education, Vol. 2, High-Level Waste**. Proceedings of the Symposium on Waste Management, Tuscon, March 1-5, 1987: 119.

⁸² Nagel: 70.

technology decisions, massive participation in the policy process is also problematic.⁸³ The public needs timely information, the expertise to interpret technical jargon, and avenues for meaningful participation. These are valid concerns, yet the greatest problem associated with participation could easily be determining who should be involved in the decision making process; that is, in a democratic society, who ought to represent the public interest?⁸⁴

Participation will create challenges for implementing agencies as well. Problems for public managers will inevitably arise as the number of citizen participants increases; more agency personnel will be needed to accommodate the new actors, and administrative efficiency may be affected as civil servants divert attention from other matters. Attempts to decentralize the decision making process, especially through the more intense forms of citizen participation such as community control, contradict national policies in which a concentration of authority has been advanced to deal with many public problems relating to technical matters.⁸⁵ This is especially true of the management of high-level nuclear waste.

⁸³ Nelkin: 21.

⁸⁴ Ibid.: 21.

⁸⁵ Stewart: 7.

In a case like the MRS, while many lessons were learned, its limited scope cannot provide answers to all the questions associated with citizen participation in technical policy areas. Implications other than those discussed may surface as research in participation continues. The MRS was not sited in Tennessee, yet it is difficult to conclusively assess the role that participation played in the decision making process. After all, one community did conditionally accept the facility. It is clear, however, that the democratic administrative state will be affected as more innovative approaches to citizen participation are incorporated into the science and technology policy process.

CHAPTER VII

SCIENCE AND TECHNOLOGY POLICY

IN THE 1980'S AND BEYOND

1. RECAPITULATION

This study has systematically examined decision making as the central element of the science and technology policy process. Participation in technical policy formation has customarily been an exclusive enterprise, with scientific and technical elites working within the confines of the administrative state to create public policy. Policies resulting from this type of administrative decision making process have often been perceived by the public as failures, so much so that this sort of **closed** system is gradually being replaced by a more **open** one in which citizens and subnational governments play a significantly larger role in the creation of technical policy.

This study specifically is concerned with, within the context of the emerging open system of administrative decision making, how America's public sector is handling the challenge of implementing an environmental policy which commands technical competency--managing the nation's high-level nuclear waste. It has been observed that "radioactive wastes present some of societies most complex and vexing

choices."¹ There is extensive disagreement about almost every aspect of radioactive waste management. Ought the development of nuclear power as an alternative energy source be halted until the waste problem is solved? What moral obligation does society have to future generations to protect them from the burden of managing stockpiles of radioactive wastes?² How, when, where, and by whom should the waste be disposed? What are the risks inherent in managing the highly radioactive wastes and who should bear them, at what cost and at whose cost? What benefits are accrued and who should receive them? Thus,

For one reason or another, a sustained and definitive radioactive waste management policy has been an elusive goal for our nation since the beginning of the nuclear age. An atmosphere of contentiousness and mistrust among the interested parties, fed by a long history of policy reversals, delays, false starts, legal and jurisdictional wrangles, and scientific overconfidence, and played out against the background of public concern with nuclear power and weapons issues generally, has dogged society's attempts to come to grips with the radioactive waste management problem.³

Decision making in radioactive waste management has, until relatively recently, been "the sole purview of those trained in the mystical sciences that produced new elements

¹ E. William Colglazier, "Ethical and Value Issues in Radioactive Waste Management," paper presented at the annual meeting of the American Association for the Advancement of Science, Philadelphia, May 27, 1986: 1.

² Susan Fallows Tierney, "The Nuclear Waste Disposal Controversy," in Dorothy Nelkin, ed. **Controversy** 2nd ed. (Beverly Hills: Sage Publications, Inc., 1984): 108.

³ Colglazier: 2.

of nature, and our faith in them was absolute."⁴ Policy was formed by the Atomic Energy Commission, an independent commission unconstrained by tight political controls, whose original powers, some felt, exceeded those of any agency ever established by the government.⁵ The AEC was set up "deliberately and legally as a monopoly" to oversee the sensitive military applications of atomic energy and research for civilian purposes, and performed its duties without the participation of, or interference by actors outside the agency.⁶

The closed system of policy making prevailed until the public became aware of the technical uncertainties concerning radioactive waste management during the early 1970s, when scientific experts openly debated the various methods and techniques of waste disposal.⁷ Consequently, legitimating decisions based on expertise alone was no longer attainable. At the same time, conflicts among groups of scientists shifted the locus of decision making in

⁴ Richard W. Riley, "Forward: Nuclear Waste and Governance," in E. William Colglazier, ed. **The Politics of Nuclear Waste** (New York: Pergamon Press, 1982): xi.

⁵ Theodore J. Lowi, **The End of Liberalism** 2nd ed. (New York: W.W. Norton & Co., 1979): 136.

⁶ Ibid.: 136.

⁷ Tierney: 108.

radioactive waste management from technical and scientific circles to the political arena.⁸

With nuclear waste policy the study's focus, two questions directed our research. First we asked how a modern democratic system adapts to greater citizen and subnational government involvement in a complicated policy area once monopolized by a small cadre of technical specialists. Second, we queried the implications for public administrators of a more open policy making system. These inquiries led us to the application of a model of science and technology outcomes to a case study tracing the attempted siting by the Department of Energy (DOE) of a monitored retrievable nuclear waste storage facility (MRS) in Tennessee. Six propositions, derived from the model, were tested and, in terms of their impact on technical policy implementation in a more open system of environmental decision making, are evaluated.

To summarize the case study, the Nuclear Waste Policy Act of 1982 (NWPAA) directs the DOE to examine the need for, and feasibility of, construction of one or more monitored retrievable storage facilities. An MRS is designed to repackage high-level nuclear waste for transportation, and to temporarily house the waste until its transfer to a deep-mined geological repository for permanent disposal. The DOE argued that an MRS would greatly enhance system performance,

⁸ Ibid.: 108.

and proceeded to select three sites in Tennessee, at one of which the agency hoped to construct the waste facility.

Tennessee's governor, without delay, instructed his Safe Growth Cabinet Council to prepare a study detailing the need for, as well as the impact upon the state, of the MRS facility. The DOE provided the Tennessee with a \$1.4 million grant to perform its study; a portion of the money was distributed to the affected local communities where the candidate sites were located. Both localities established task forces to weigh the costs and benefits of the proposed MRS, although the strategies employed by each group were significantly different. The Clinch River Task Force was more innovative in its approach to citizen involvement, while Hartsville's R.E.A.L. committee depended on more traditional forms of participation. The former offered conditional acceptance of the DOE proposal, and the latter rejected the program outright.

Governor Lamar Alexander, in January 1986, announced that the state would not accept the construction of the MRS in Oak Ridge, the DOE's preferred site. Alexander, basing his decision on the state's independent review, emphasized two points: (1) that the MRS is not needed as an integral part of the repository program; and (2) that Oak Ridge is exactly the wrong place for such a facility because of the region's potential for high-technology economic development. Tennessee, in its attempt to become a full partner in NWPA

implementation, obtained the expertise to confront the DOE with credible **technical** and **scientific** arguments, not emotional ones. The federal agency claimed that an MRS, as a component of the waste management program, was in the national interest. The state insisted it was not.

After almost two years of intensive interaction with subnational government officials and citizens, and after Tennessee failed in its attempt to stop the DOE plan in federal court, the Office of Civilian Radioactive Waste Management finally submitted to Congress its proposal for a monitored retrievable storage facility as an "integral" part of its comprehensive radioactive waste management system.⁹ Tennessee's congressional delegation, its governor, and state legislature have announced their intention to continue the fight against the DOE proposal.

2. EVALUATING THE SCIENCE AND TECHNOLOGY POLICY MODEL

The model of science and technology policy outcomes developed in Chapter One provides a framework for investigating the relationship between open systems of decision making and successful policy implementation. The model's dependent variable, the technical policy outcome is viewed in terms of three factors that may well contribute to

⁹ U.S. Department of Energy, Office of Civilian Radioactive Waste Management, **OCRWM Mission Plan Amendment: With Comments on the Draft Amendment and Responses to the Comments**, DOE/RW-0128, (Washington, D.C.: U.S. Department of Energy, June 1987): 12.

either to the policy's implementation or the obstruction thereof. The three factors designated as possibly affecting policy outcomes are: (1) the type of system, open or closed, in which the decision is made; (2) the policy decision itself, taking into consideration the characteristics unique to the issue; and (3) the performance of the relevant agency in the administration of the science and technology policy. The model suggests that there may be a relationship between the three factors as well. That is, the way in which a policy is created may lead to a mandate that, depending on the technical feasibility of, and political support for the science and technology policy, facilitates policy administration, or imposes so many constraints on public managers that the implementation of the policy is highly unlikely. Although numerous propositions could be derived from the model, for reasons outlined in Chapter One six were generated for our study. These propositions are statements which seek to predict how the model actually operates. They are:

Proposition 1: People residing in different geographical areas hold dissimilar views of hazardous waste issues;

Proposition 2: Citizens who are willing to participate in nuclear waste siting decisions hold views different from those held by non-participants;

Proposition 3: Those most willing to participate in nuclear waste siting decisions are less trusting of government institutions;

Proposition 4: Open systems of environmental decision making in nuclear waste siting decisions will affect the performance of public managers working in the federal government;

Proposition 5: Subnational government perceptions of agency performance will affect the siting of nuclear waste facilities; and

Proposition 6: Open systems of environmental decision making will enhance the implementation of nuclear waste siting policy.

Propositions One, Two, and Three were tested in Chapter Three to verify whether or not a policy could confront problems in the implementation stage because of the controversial nature of the issue. Some technical policies, because of the way in which they are perceived by the public, are not readily implemented. It is important to elicit public opinion, therefore, to determine what, if anything, could induce the public to be more amenable to implementation in these technical policy areas. The implementation of hazardous waste siting policy is contingent upon public officials' ability to overcome citizen opposition, referred to as the NIMBY syndrome.

The analysis presented in the third chapter was based on data gathered from the administration of a national public opinion survey. The responses obtained failed to confirm any one of these three propositions. While it was found that over two-thirds of the public is willing to serve, without compensation, on a committee to monitor a waste facility, we did not find that the geographical

location of citizens significantly altered their views relating to how policies should be made. Likewise, statistical tests demonstrated that willing participants hold views not unlike their unwilling counterparts. Distinctions cannot be inferred from an analysis of mean ratings for a variety of siting incentives between those willing to participate and those unwilling.

Despite our failure to confirm Propositions One, Two, or Three, one cannot assume that the unique characteristics of an issue do not help determine policy outcomes. In the case of siting hazardous waste storage and treatment facilities, quite the contrary. Our findings show that 52% of the public would oppose the construction of a hazardous waste facility at any distance from their homes, and 57% would oppose building a nuclear waste storage facility at any distance. Such strong opposition suggests that traits pertaining to waste facility siting can ultimately affect implementation, characteristics that were not tapped by our measurements of geographical location and willingness to participate.

The fourth proposition garners strong support from the evidence presented in the MRS case study. Additional burdens were placed on the DOE because the Nuclear Waste Policy Act directed the agency to solicit state and tribal participation in its siting process. Chapter Two claimed that the marriage of politics and administration, along with

the rise of competing expertise, were reasons why task specialization has eroded as a source of agency power. This claim was substantiated by the MRS case. The DOE was no longer able to justify its decisions on the basis of expertise alone, especially as experts outside the agency challenged agency actions. As a large, complex organization, DOE managers had to establish in-house procedures to comply with the added responsibilities associated with the more open decision making process. DOE management had to deal with pressures from nuclear industry representatives as well as the tight implementation schedule outlined in the NWPA. In terms of the model, then, open systems of decision making appear to affect agency performance.

An examination of the MRS evaluation process as it unfolded in Tennessee provides some evidence that state and local government perceptions of agency performance influence policy outcomes. At least one official in a state cabinet level position expressed a great deal of respect for the OCRWM director, and sympathized with the difficulties associated with siting the undesired facility. It was felt by top state officials that the DOE was doing its best to be open and cooperative.¹⁰ Other state officials who engaged in the review, however, criticized the DOE for withholding

¹⁰ Personal interview with Mr. Jim Word, Commissioner, Department of Health and Environment, State of Tennessee, Nashville, November 1986.

information and observed that the process was not really an open one. Tennessee officials also felt that the proposed sites were selected for political reasons, not because of their technical superiority when compared to other finalist sites. It cannot be claimed that the governor's decision to reject the MRS proposal was founded on perceptions of poor agency performance. Yet, several of the reports furnished the executive highlighted deficiencies in the DOE's proposal, clearly indicating that the agency had not thoroughly developed its MRS program. And since Alexander studied these reports to determine whether or not the facility was needed, the lack of complete information could have caused the governor to view DOE's performance as inferior. If this were indeed the case, the governor's perceptions could not help but weigh against the affirmation of DOE's request.

Members of the Clinch River Task Force, in contrast to the negative perception of federal performance held by members of the state review team, found the DOE "most cooperative."¹¹ Committee members remarked that the DOE officials who attended CRTF meetings were quite helpful, and

¹¹ Clinch River MRS Task Force, **Recommendations on the Proposed Monitored Retrievable Storage Facility: 3**; personal interview with Mr. Larry Dickens, Former Oak Ridge City Councilman and Chair, Socioeconomic Study Group of the Clinch River Task Force, Oak Ridge, September 1987; and personal interview with Mr. Roy Pruett, Mayor of Oak Ridge and Executive Committee Member of the Clinch River Task Force, Oak Ridge, September 1987.

that concessions made by the agency in terms of compensation were precedent-setting. This more productive relationship may have induced the local community to be more favorable toward the acceptance of the MRS proposal. Positive perceptions of agency performance during the review, may have contributed to the conditional acceptance of the federal installation by at least one of the local communities. Thus, there is some support for the fifth proposition.

Finally, the preponderance of evidence presented in the MRS case study fails to support Proposition Six which states that the more open system of environmental decision making will enhance the implementation of nuclear waste siting policy. The rejection of this proposition is based on the subnational component of the open decision making model. In the MRS case, greater involvement of state officials in the evaluation process may have actually **decreased** the likelihood that the facility would be sited. Access to the DOE's MRS studies made it easier for the state's technical review panel to dismiss the reports as inadequate. The citizen participation aspect of the more open system yielded more favorable results. Oak Ridge area residents were able to gather information assuring them that the MRS could be operated safely, thus inducing the CRTF to conditionally accept construction of the facility. Despite this conditional acceptance, the apparent inability of the more

open system to promote siting merits rejection of the proposition.

The model of science and technology policy outcomes provides a preliminary conceptual framework examining the relationship between open decision making and the successful implementation. The model is useful in this respect, yet its use is limited; its components are not detailed enough to discount other factors that possibly facilitate or hinder policy implementation. Little attention was given to the social or cultural phenomena that could possibly serve as constraints in implementing technical solutions. In addition, the definitions of **open** and **closed** decision making need to reflect the continuum between full citizen and subnational government participation, and no participation. The MRS case appears to fall somewhere in between the two extremes. Future studies may show that a truly open system could enhance implementation. Likewise, how one determines policy **success** needs clarification. Questions arise as to whether implementation of a poorly designed policy actually constitutes success. Although adequate for a study of this scope, our model of science and technology policy needs further development, refinement, and testing.

3. OPEN SYSTEMS OF ENVIRONMENTAL DECISION MAKING: IMPLICATIONS AND PROSPECTS

The findings of this study suggest that open systems of decision making do not automatically ensure successful implementation of science and technology policy. Rejection of this assumption, however, ostensibly raises questions pertaining to the open model. These questions are relevant to the case study as well as to broader applications of the model in the science and technology policy domain. We turn first to an assessment of participation in the MRS siting process, then to a discussion of the implications of, and prospects for the open system.

Openness and the MRS Evaluation

Was the Process Open? It depends on what is meant by "open." There are those, especially among environmental groups and staff members of the state evaluation team, who argue that the DOE was not especially "open" about the MRS. Environmentalists complained that DOE's idea of a public hearing was simply the presentation of its case without significant opportunity for citizens to criticize--even constructively--its MRS proposal.¹² Staff members on the state evaluation team complained that the DOE had opened the decision too late for meaningful involvement by the state;

¹² Personal interview with Ms. Mayo Taylor, former Executive Director, Tennessee Environmental Council, Nashville, January 1987.

moreover, their inability to obtain prompt DOE responses to requests for additional information and documents led state staffers to question the DOE's good faith, as well as to feel that the quality of the state's review was thereby compromised.¹³ Yet, at the highest levels, the federal and state officials involved considered, overall that the process was open, constructive, and effective--especially before the state filed suit in federal court.¹⁴ The variation in perceptions of openness between the state officials and the CRTF members can, in part, be attributed to the differences in how the DOE dealt with state officials and the affected locality. As one observer notes, "in dealing with the state DOE decided, announced, and defended; with the locals it negotiated."¹⁵ Whether or not the DOE was open enough, thus, is likely to depend upon the perspective of those making the judgment. Nevertheless, it is clear that--in contrast to the traditional mode of

¹³ Personal interview with Mr. Dan Shilstat, Planner, Department of Conservation, State of Tennessee, Nashville, November 1986; and personal interview with Ms. Fran Wallas, Staff Attorney, Department of Conservation, State of Tennessee, Nashville, November 1986.

¹⁴ Personal interview with Mr. Ben Rusche, former Director, Office of Civilian Radioactive Waste Management, U.S. Department of Energy, Tucson, March 1987; personal interview with Mr. Roger Hilley, Associate Director, OCRWM, U.S. DOE, Washington, February 1987; personal interview with Mr. Wayne Scharber, Department of Health and Environment, State of Tennessee, Nashville, December 1986; and Word interview.

¹⁵ Personal interview with Mrs. Elizabeth Peelle, Advisor to the Clinch River Task Force, Oak Ridge, March 1987.

radioactive waste management decision making--the MRS case was an exercise in more open decision making. But was it effective?

Was Openness Effective? If "effective" is taken to mean that policy goals are met, and that decisions are accepted by the public, from the standpoint of the original DOE plans and schedule for the MRS, it largely was not. The open process, with its public meetings, state evaluation, gubernatorial and legislative disapproval, and lawsuit, delayed the MRS proposal to Congress by more than a year. Also, from the DOE's standpoint, the open process and delays associated with it allowed nuclear power opponents in general, and MRS opponents in particular, the time and opportunity to politicize the issue and rally support for their cause. For environmentalists and other critics of the nuclear power program, however, this is precisely the purpose of openness. At the same time, the process was effective in that the DOE's final proposal appears to have been improved by the state's criticisms as well as by the recommendations of the Clinch River Task Force.¹⁶ Further, the extensive number, and in-depth nature of public meetings and hearings during the period, certainly provided Tennessee's citizens and local officials with ample opportunity to become informed about, and voice their opinions about, the MRS project.

¹⁶ Rusche, Hilley, E. Peelle interviews.

In the long term, openness can be viewed as having been very effective from the DOE's view. In many respects the state and local reviews confirmed much of what the DOE itself contended regarding the MRS. Although the state ultimately rejected the DOE need argument, and raised certain feasibility questions, it also agreed with the DOE that the MRS could be built and operated safely. Under the NWPA, it is ultimately up to the Congress to judge the MRS case, and now, thanks to the more open system of decision making, the national legislature has a voluminous body of state and local, as well as federal material upon which to base its final judgment. From the state's perspective, openness proved effective in allowing an independent evaluation of the MRS and in providing a vehicle for informing the public about the project. But insofar as openness was expected to change DOE's decision to proceed with the MRS, obviously this did not occur.

The MRS case study must be viewed with respect to the uniqueness of the situation. The DOE selected a state that it thought was ripe politically for accepting the waste facility--Alexander shares the same party affiliation as the Reagan Administration, and Oak Ridge residents are among the most pro-nuclear in the country. The grant offered Tennessee was intended to be a gesture of "openness" on the DOE's part. The NWPA requires that candidate repository states be given funds, but the provision is not applicable

to the MRS. The DOE failed to calculate, however, the scrutiny with which the state would examine its proposal and also erred in its assumption that Tennessee would be satisfied with a peripheral role in the MRS evaluation process.

It would be delightful to conclude a study of this magnitude by enumerating recommendations for successful implementation of technical, environmental policy. One investigation of limited scope, however, cannot possibly solve the complications inherent to science and technology policy formation in democratic societies. As we have observed, the nuclear waste siting dilemma is multi-dimensional, involving not only technical, but also socioeconomic and ethical questions. The problem is exacerbated because the method for safe and permanent storage of highly radioactive waste remains untried; the experiment will last thousands of years.

The goal of this research, then, is not to choose the "one best solution" to the problem of radioactive waste disposal. Rather, this study has created a framework for the systematic examination of science and technology policy issues so that an assessment of, and improvements to the more open system of environmental decision making can be made. Future studies can build upon this foundation.

Case studies, such as the MRS, are beneficial for a couple of reasons. Policy implementation is a phenomenon

that can be understood only in a situational context. In other words, policy implementation is defined by culture in which the process occurs. Traits that are revealed in a single study may develop into patterns as the model is tested over time. Both explanatory and prediction powers are enhanced. Second, a case study can help elected officials and public managers, both those working in federal agencies and at the state and local levels, better understand the operation of technical policy processes. Hopefully, better decisions will be the result, ones that accomplish the goals as mandated.

Implications of and Prospects for Openness in the Science and Technology Policy Process

The underlying theme of this study is that the trust citizens and subnational governments once had in federal officials to make complex technical decisions on their behalf has been severely compromised. Studies examining this lack of faith in government arrive at similar conclusions. The decline in confidence is:

[G]enerally associated with American **leadership**, not American **institutions**. [emphasis added] . . . The leadership elite of the administrative state is in question. This eroding confidence is a major symptom of the decline in perceived legitimacy of the people who run American government.¹⁷

¹⁷ Terence R. Mitchell and William G. Scott, "Leadership Failures, the Distrusting Public, and Prospects of the Administrative State," **Public Administration Review** 47 (November/December 1987): 445-446.

This distrust of national government officials poses a serious threat to American democracy. The possibility exists that authority will be undermined if citizens no longer have confidence in elected and appointed leaders charged with formation and implementation of complex, technical policies.

Because of the legitimacy and confidence crises in American government, representative democracy is gradually being replaced by participatory democracy. Failures associated with technologies have prompted citizens and subnational governments to seek greater involvement in the policy process, resulting in a system whereby legitimate decisions are equated with those made in a more open environment. Some scholars claim that a "new administrative culture" has evolved in which legitimacy is based on public participation in administration.¹⁸ As Goggin observes:

One response, especially to the crisis of legitimacy, is to democratize governing institutions by including either members of the public or advocates for the public interest in the policy making process. Several statutes mandate public participation in policy deliberations; and citizens can be found on committees that give advice to government agencies in virtually every policy area, including nuclear energy, hazardous waste, pharmaceutical products, or engineering projects.¹⁹

¹⁸ David H. Rosenbloom, "Public Administrators and the Judiciary: The 'New Partnership,'" **Public Administration Review** 47 (January/February 1987): 81.

¹⁹ Malcolm L. Goggin, ed. **Governing Science and Technology in a Democracy** (Knoxville: The University of Tennessee Press, 1986): 23.

It is true that a lack of leadership has contributed to the emergence of a more open system of decision making. One could argue, however, that increased involvement by previously excluded actors may actually inhibit the ability of officials to exert leadership. As the number of participants rises and the scope of conflict widens, it can become exceedingly onerous to exercise political or administrative leadership. Hence, poor leadership may be viewed as both the **cause** and **consequence** of greater participation. That is, participatory democracy, by definition, is neglectful of the need to have strong leadership in government.²⁰

A logical solution to the deterioration of confidence in American government, therefore, is more effective leadership in Congress and the administrative state. Calling for better leadership is easy. Making recommendations about how to produce effective leadership is exceedingly difficult when those in leadership positions are expected to make controversial technical decisions, such as siting undesired facilities, in the name of the "public interest."

At any rate, if public officials are to become leaders and create policies that represent the "public interest," it is imperative to reach a consensus as to what the "public

²⁰ Jack H. Nagel, **Participation** (Englewood Cliffs, NJ: Prentice-Hall, Inc., 1987): 75.

interest" really is. Walter Lippman defines the public interest as "what men would choose if they saw clearly, thought rationally, acted disinterestedly and benevolently."²¹ Translating the public interest into policy, according to several scholars, is not a simple task. Norton Long observes that "no problem is more monumental for the modern democratic state than its capacity to develop rational, responsible, goal-oriented policy."²² Louis Gawthrop adds:

The public interest in its organic splendor is a persistent theme in our political rhetoric and is an essential component of our democratic ethos. In the objective world of practical, pragmatic politics, however, it is purely a mechanistic contrivance designed to justify the outcomes of balance of power coalition building and decision making.²³

Finally, Mathews concludes that the public interest is "a hopelessly romantic concept of uniformity and consensus that is incompatible with our pluralistic pragmatism."²⁴ These comments suggest that the "public interest" does not exist, that there are scores of "public interests", that the number

²¹ Walter Lippman, **The Public Philosophy** (Boston: Little, Brown and Company, 1955): 42.

²² Norton E. Long, "Public Policy and Administration: The Goals of Rationality and Responsibility," in Alan A. Altshuler, ed. **The Politics of the Federal Bureaucracy** (New York: Dodd, Mead & Co., 1974): 433.

²³ Louis C. Gawthrop, "Civis, Civitas, and Civilitas: A New Focus for the Year 2000," **Public Administration Review** Special Issue (March 1984): 105.

²⁴ David Mathews, "The Public in Practice and Theory" **Public Administration Review** Special Issue (March 1984): 122.

of "public interests" is continuously growing, and that policy makers represent what they perceive as the most important "public interest."

If disagreement occurs in the definition of "public interest" during the policy formation stage, it is small wonder that science and technology decisions are rarely successfully implemented. Congressional decision makers, unable to define a single public interest, incorporate as many interests as are needed to secure passage of legislation. The legislative product is typically vague; the result is that public agencies are thwarted in their efforts to implement controversial policy like the Nuclear Waste Policy Act. Oftentimes in the science and technology policy domain, citizens, perceiving that their political representatives are not adequately guarding the public interest as they are charged to do, become the "ultimate guardians of the public interest."²⁵

The crux of this argument is that once large numbers of citizens and subnational government officials become involved as guardians of the public interest, political and administrative officials can rarely exert the leadership necessary to overcome public opposition to policies not perceived to be in the public interest. In order to alter

²⁵ See Bruce Jennings, "Representation and Participation in the Democratic Governance of Science and Technology," in Malcolm L. Goggin, ed. **Governing Science and Technology in a Democracy** (Knoxville: The University of Tennessee Press, 1986: 223-230.

the outcome, Congress, as the democratic rulemaking body, must decide whether science and technology policy should be created by public officials, emulating representative government, or if cumbersome implementation problems associated with participatory democracy can be overcome.

Whatever Congress chooses to do, its decision will likely affect the implementation of technical policies by public agencies. If the legislative body decides that open systems of decision making are impractical, public managers must be prepared to face charges of poor bureaucratic responsiveness and accountability. If, on the other hand, Congress continues to enact legislation that requires participation, the national bureaucracy must adapt to the more open system by fostering participation "throughout all stages of the decision making process; and informal, interactive . . . channels of communication must be kept open and operational [emphasis added]."26 The emerging political process must balance political demands with the appropriate scientific expertise, presented "in a spirit of openness, available for scrutiny and criticism."27 One choice or the other will have to be made. The Congress must exert the leadership to make the difficult choice; the bureaucracy must exert the leadership to implement it.

26 Elizabeth Peelle and Richard Ellis, "Beyond the 'Not-In-My-Backyard' Impasse," **Forum for Applied Research and Public Policy** 2 (Fall 1987): 75.

27 Riley: xi.

How the Congress reconciles technical policy formation with principles of democratic government remains to be seen. The Congress provides the forum that, not only makes substantive science and technology policy choices, but also defines the **procedures** by which technical policies are reached. Congress ultimately decides, as in the case of radioactive waste management, which "public" carries the burden for rest of society. In its governance of science and technology, the Congress must decide whether democracy means "the right to speak", or "the right to be heard."

The decline of public confidence in government, nevertheless, is real, and efforts to rebuild this confidence must be made. Successful endeavors are contingent upon the willingness and ability of elected officials to exert leadership, and to reaffirm their responsibilities as the "guardians" of the public interest. Time will tell how, and if this reaffirmation is to occur. In the meanwhile, as Pierce, Hill, and Haefele speak of radioactive waste management: "we may . . . expect to see the best, and the worst, examples of how we choose to govern ourselves before the process has worked itself out."²⁸

²⁸ B. Pierce, D. Hill, and E.T. Haefele, "High-Level Radioactive Waste Management: A Means to Social Consensus," in **Radioactive Waste Management, Vol. 5**, proceedings of an international conference on radioactive waste management held by the International Atomic Energy Agency, Seattle, May 16-29, 1983. (Vienna, Austria: International Atomic Energy Agency, 1983): 52.

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