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THE POLITICS OF LONG-TERM HIGHLY RADIOACTIVE WASTE DISPOSAL

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Abstract

Nuclear waste disposal is a political problem, not a technical problem.

Dr. Edward Teller

Highly radioactive waste disposal has become one of the most controversial aspects of nuclear technology. Paradoxically, as the need for action has become more acute, the conflict generated by the politicization of the issue has delayed progress on developing a long term solution to the problem. The politicization of nuclear waste disposal is especially evident in the site selection process for a permanent national repository.

In 1982, Congress passed legislation (Nuclear Waste Policy Act of 1982) which began the process of establishing a deep, underground permanent national storage repository for highly radioactive waste. However, due to political maneuverings, Congress passed the Nuclear Waste Policy Amendments Act of 1987 which amended the original Act and singled-out Yucca Mountain, Nevada, as the only site to be studied. Congress chose Nevada, over that state's objections, undoubtedly because Nevada had limited political influence. However, there are a number of geologic problems associated with the region that could make it unsuitable for the permanent storage of highly radioactive waste (e.g., volcanic and earthquake concerns, rapid groundwater movement and hydrothermal activity).

The problem of scientific uncertainty over the geologic suitability of the area has intensified the political conflict. Nevada and a coalition of environmental groups have been highly critical of the selection of the Yucca Mountain site. On the other hand, mounting pressure from the nuclear power industry, other states that may be potential targets for a national radioactive waste repository, the Department of Energy and the federal courts will force policy makers to find a solution to the problem as soon as possible.

In response to this increased pressure, Congress has more recently introduced legislation which not only continues work on the Yucca Mountain site, but also singles out Nevada for an interim nuclear waste storage facility as well. While the future of this legislation is uncertain since it is opposed by the White House, current political realities are such that Congress likely will attempt to continue the process of establishing a national nuclear waste disposal facility in Nevada—regardless of its suitability and that state's opposition.

Introduction

The problem of how to safely dispose of radioactive waste generated minimal concern in the early years after the discovery of nuclear fission.¹ In essence, it was not perceived by policy makers to be an issue that required immediate attention. Rather, the disposal of nuclear waste generally was considered a problem that could be addressed sometime in the future. This mind set delayed any real progress on developing a long term solution, essentially allowing policy makers to avoid the issue until it be-

came a real problem. Even after it became evident that the disposal of highly radioactive waste demanded more immediate action, effective policies to cope with the problem were rather slow to develop.

Eventually, the problem of highly radioactive waste disposal became one of the most controversial aspects of nuclear technology. As the amount of spent nuclear fuel from commercial nuclear reactors and high-level radioactive waste from defense-related processing plants continued to mount, the issue became increasingly contentious and politicized. Paradoxically, as the need for action has become more acute, the conflict generated by the politicization of the issue has delayed progress on developing a long term solution to the problem. This paper is a case study of highly radioactive waste disposal with an emphasis on the politics associated with the site selection for a permanent repository. The basic premise is that politics has been the major driving force in the site selection process for a national highly radioactive waste repository rather than the overall suitability of the proposed disposal facility.

As early as 1957, the National Academy of Sciences recommended the disposal of radioactive waste in deep underground rock as the best means of protecting public health and safety (DOE, Dec 1992). However, it was not until 25 years later that the federal Nuclear Waste Policy Act of 1982 began the process of establishing a deep, underground permanent national storage repository for highly radioactive waste. The 1982 Act mandated that the Department of Energy (DOE) would study multiple sites in the West and select one to be ready to serve as the first national repository by January 31, 1998.² A second site in the East, where the majority of highly radioactive material is generated, would be designated later. The site selection process was slow and arduous due to opposition generated by states identified as potential hosts for the facility. In 1983, nine sites in six states (Louisiana, Mississippi, Nevada, Texas, Utah, and Washington) were identified as the most promising areas for the permanent storage of nuclear waste. The following year, after environmental impact assessments were conducted by DOE, the list was narrowed to five potential locations: Richton Dome, Mississippi; Yucca Mountain, Nevada; Deaf Smith County, Texas; Davis Canyon, Utah; and, Hanford, Washington (Kraft 1996, 114). Finally, in 1986, DOE narrowed the field to three sites: Yucca Mountain, Deaf Smith County and Hanford. The fact that each of these locations had a prior involvement with nuclear technology probably contributed to their selection since DOE likely concluded that any opposition to establishing a radioactive waste repository would be relatively muted.³

The site selection process in the East was even more difficult. As Michael Kraft, Professor of Environmental Studies, points out:

Controversies similar to those in the West emerged during the second siting process in the East. In January 1986, DOE announced that 12 locations in seven states in the upper Midwest and East had been selected from its original list of 235 potential sites in seventeen states. Once again DOE defended its choices in terms of the official siting guidelines. ...That process led to a proposal to study further the final sites in Wisconsin, Minnesota, Maine, New Hampshire, Virginia, Georgia, and North Carolina. ...Intense public opposition and fears of political repercussions in an election year led the Reagan White House in late May 1986 to halt the siting process in the East (1996, 115).

The removal of eastern locations from radioactive waste site consideration intensified criticism of the entire site selection process. Eventually, under pressure from DOE,

the nuclear power lobby and congressional members from states targeted for a possible repository, Congress passed the Nuclear Waste Policy Amendments Act of 1987 that amended the original Act and singled-out Yucca Mountain, Nevada, as the only site to be studied.

Concerns About the Site Selection Process

Many observers have criticized the site selection process. Some members of Congress have openly admitted that the 1987 legislation was driven by political, not environmental, considerations. Representative Al Swift (Democrat, Washington) reportedly stated that the process of selecting Yucca Mountain as the national repository for highly radioactive waste was purely political, and summed up the process by saying, "I am participating in a nonscientific process—sticking it to Nevada" (Erickson 1994, 36). And even Senator J. Bennett Johnston (Democrat, Louisiana), sponsor of the 1987 legislation to single-out Yucca Mountain, conceded that Nevada was victimized by "a cruel trick on Christmas Eve: the waste and no goodies" (Shapiro 1988, 264). In addition to Congress, the Director of DOE's Civilian Radioactive Waste Management Program also commented on the political nature of the process and stated that the selection of Yucca Mountain "slam-dunked Nevada" (Suplee 1995, A18). It is clear that the 1987 Act violated provisions of the original legislation which mandated that several locations be studied in order to find the most suitable site. Congress chose Nevada, over that state's objections, undoubtedly because Nevada had a small population and limited political influence. Clearly, Nevada had less political power than the other two finalists (Texas or Washington) which had larger and more influential congressional delegations.⁴

In addition to concerns over the political nature of the site selection process, there are a number of geologic problems associated with the region that could make it unsuitable for the permanent storage of highly radioactive waste. For example, there are concerns about volcanic disturbances, potential earthquakes, rapid groundwater movement and hydrothermal activity at the site. The mountain was formed millions of years ago by a series of explosive volcanic eruptions that deposited ash and material that compressed together to create layers of rock. While the explosive type of volcano is extinct, scientists are studying seven small, dormant volcanoes in the area. Two of these volcanoes may have been active within the last 10,000 years, a relatively short time ago in geologic terms (DOE, Dec 1992, 9). The area also contains over 30 known earthquake fault lines. In 1992, an earthquake measuring 5.6 on the Richter Scale caused considerable damage to the Yucca Mountain project field operations center.⁵ There also is concern about the movement of groundwater that could transport any radioactive material that may leak from the disposal facility. More recent evidence indicates a possible flow rate in excess of what is considered desirable, prompting further testing (DOE, Apr 1997, ES 8-11). Moreover, a number of scientists (a former DOE scientist, as well as scientists working for the State of Nevada) believe that there is renewed evidence of hydrothermal activity at the site. Perched water (geothermal water that has risen to the surface and drained back down) was found in a borehole 1600 feet deep as late as March 1995. Similar pockets of perched water were found in 1993 and 1994 at similar depths; as well as in the 1980s, before the present studies of Yucca Mountain began (DOE 1995, 1-2). It is important to note that one of the former DOE hydrology scientists resigned from DOE because he viewed the Yucca Mountain project as environmentally unsafe (Lowry 1993, 32 and Rosenbaum 1992, 10).

In contrast, DOE scientists currently studying Yucca Mountain believe that, at this point, none of the previously stated problems give cause for declaring the site unsuit-

able for the permanent disposal of highly radioactive waste. First, they assert that the probability of a volcano erupting in the region over the next 10,000 years is very remote—calculated to be about 1 in 70 million per year (DOE, Sep 1996, 1). Second, they believe that the risk of damage to underground facilities from faults in the region is small because the amount of movement on local faults has been small, with possibly many thousands of years between movements. Moreover, experience with earthquakes throughout the world has shown that underground structures can more easily withstand the ground motion generated by earthquakes. Additionally, in actual nuclear weapons tests at the nearby Nevada Test Site, mine tunnels have withstood ground motion from underground nuclear explosions that are greater than any ground motion anticipated at the Yucca Mountain site (DOE, Sep 1996, 8). Finally, while there is some concern about the rate of groundwater movement, testing is being conducted to measure the scope of the problem. According to DOE, "The water may flow down through a fault or crack, stopping before it reaches the repository horizon..." (DOE Yucca Mountain Project Studies (YMPS), Winter 1996, 134).

Politicization of the Issue

Scientific uncertainty over the geologic suitability of the area for the disposal of highly radioactive waste has intensified the political conflict. Ever since Yucca Mountain was first designated as a possible repository, Nevada has been highly critical of the site selection process. While enhanced citizen awareness over the perceived costs associated with radioactive waste disposal (potential economic, environmental, health and safety problems) has spawned an active and vibrant "not in my backyard" (NIMBY) movement in the states designated as a potential nuclear waste repository, opposition has been especially intense in Nevada. Many Nevadans believe that the political and economic incentives influencing the federal government and other proponents of the Yucca Mountain project are too great to allow for an objective evaluation. Nevada is concerned that the time and energy spent on the site study, as well as the investment of more than six billion dollars prior to any suitability determination, will create an irresistible incentive to proceed with the project in spite of its flaws. In addition, according to Nevada, the credibility of some DOE scientists is questionable since many work for employee profit-sharing companies that are working on the project (State of Nevada, "Concerns...", 1). The longer these companies work on the highly radioactive waste storage project, the more these scientists profit financially. In addition to potential safety problems, Nevada is concerned that a radioactive waste dump could stigmatize Nevada as a "nuclear waste state" which could adversely impact tourism—the main source of revenue for the state. Public opinion polls commissioned by the state have shown that this concern may be justified.⁶ Further intensifying the conflict, not only has Nevada been singled out for a permanent repository at Yucca Mountain, but DOE also has proposed that the nearby Nevada Test Site be turned into "the largest low-level nuclear waste disposal site in the nation" (State of Nevada, "Why Opposed...", 2).

Even if the Yucca Mountain site is approved as a permanent repository, it is unlikely that it would be able to accept radioactive waste until 2010—at the earliest. First, the site must undergo more than 10 years of comprehensive scientific studies (known as "site characterization") to determine: the effects that volcanic activity and earthquakes might have on the repository and ground-water table, how much water there is in the rock and how it moves through the rock, and whether the development of a repository would have acceptable environmental impacts (DOE, Dec 1992, 8-9). In addition to the actual site characterization work, environmental, socioeconomic and transportation stud-

ies will be conducted to forecast potential impacts of the project on the region surrounding the site and develop steps to mitigate problems as much as practical (DOE, Sep 1992, 21). If, after the review of these studies, the Nuclear Regulatory Commission (NRC) agrees that the site is suitable and approves the license application, repository construction could begin around 2004. According to the current schedule, after approximately six years of construction, the repository would begin accepting nuclear waste in 2010--twelve years behind the schedule originally established by the 1982 Act. However, even that schedule has been placed further in doubt by recent funding reductions imposed by Congress. For example, funding for radioactive waste disposal programs was reduced from \$530 million for Fiscal Year (FY) 1995, to \$400 million for FY 1996 (DOE, "OCRWM Receives...", Winter 1996, 21). Funding was further reduced to \$382 million for FY 1997 (Humpries 1996, 5). More recently, the Clinton administration only requested \$380 million for FY 1998 for radioactive waste disposal. (Holt 1997, 2).

The delay in establishing a national repository for highly radioactive waste has only served to intensify conflict. In June 1994, 20 states and 14 utilities filed lawsuits against DOE to force the government to uphold its promise to accept nuclear waste by the original 1998 deadline (Holt and Davis 1996, 7). As former Energy Secretary Hazel R. O'Leary reportedly stated:

I am mandated under the law to continue to explore Yucca Mountain to see if it should be the repository for our high-level nuclear waste... I have been sued by 24 states saying, "Look, lady, you've got a legal—and I say moral—commitment to take our spent nuclear fuel in 1998" (Nixon 1995, 4)

A federal appeals court agreed. In July 1996, a three-judge panel ruled that the government must begin accepting radioactive waste from U.S. nuclear power plants in 1998 as originally mandated by the 1982 Act even though a permanent storage facility will not be ready until at least 2010 (Associated Press 1996, A1). In spite of the federal court ruling, DOE has notified the utilities that it would not be able to meet the 1998 deadline. In response, a second round of lawsuits has been filed to force action on the anticipated non-compliance.⁷

The continued delay in establishing a national nuclear waste repository has led to more recent attempts to modify the 1982 Act (See Legislative History Table). In 1996, the Senate attempted on two occasions (S. 1271 and S. 1936) to amend the Nuclear Waste Policy Act.⁸ Both bills would have continued the process of establishing a permanent national repository at Yucca Mountain as well as designating an interim nuclear waste facility in Nevada. However, the House failed to pass similar legislation due to a threatened presidential veto. The White House has opposed establishing an interim facility until the feasibility of a permanent storage facility has been determined.⁹ In April 1997, the Senate passed the Nuclear Waste Policy Act of 1997 (S. 104) with a 65-34 majority.¹⁰ One of the major provisions of this Act would be to require DOE to build an interim storage facility at the Nevada Test Site (which is near Yucca Mountain). A similar bill passed the House (H.R. 1270) in late October 1997 with a 307-120 majority. However, since the Senate bill did not have a two-thirds majority, the fate of this legislation is uncertain due to a possible veto by the White House.

LEGISLATIVE HISTORY OF HIGHLY RADIOACTIVE WASTE DISPOSAL			
YEAR	LEGISLATION	SITES TO BE STUDIED	DEADLINE FOR ACCEPTING NUCLEAR WASTE
1982	Nuclear Waste Policy Act (NWSA)	Study multiple sites in the West, select one as a permanent repository. Later study sites in the East for a second repository (nine sites in LA, MS, NV, TX, UT, & WA were studied).	Jan 31, 1998
1986	Nuclear Waste Policy Act amended	Studies narrowed to three sites: Yucca Mt., NV; Deaf Smith, TX; and Hanford, WA.	Jan 31, 1998
1987	Nuclear Waste Policy Act amended	Designated only Yucca Mountain (but deadline for permanent storage would be extended to 2010).	2010
1996	Federal Appeals Court ruling	Federal government must comply with 1982 NWSA timeframe.	Jan 31, 1998
1996	Senate bill S. 1271 House bill H.R. 1020 stalled due to threatened presidential veto	Rename original law to the Nuclear Waste Policy Act of 1996; interim storage facility to be constructed at Nevada Test Site. Presidential veto threatened.	Nov 30, 1999
1996	Senate bill S. 1936 House version stalled due to threatened presidential veto	Establish interim storage facility at Yucca Mountain. Presidential veto threatened.	Nov 30, 1999
1997	Senate bill S. 104 House bill H.R. 1270	Rename original law to the Nuclear Waste Policy Act of 1997; interim storage facility to be constructed at Nevada Test Site. Presidential veto likely.	Nov 30, 1999 (Senate version) Jan 31, 2000 (House version)

The delay in establishing a permanent nuclear waste repository has prompted policy makers to search for alternative solutions to the vexing problem of how to store nuclear waste safely. Currently, commercial utilities are storing the spent nuclear fuel on-site (either in cooling ponds or in above-ground storage casks). The primary benefit of this strategy is that further decisions on the permanent disposal of nuclear waste can be postponed. This extra time could allow for a more thorough evaluation of the costs and benefits of any proposed action. Ultimately, this could minimize conflict and the concomitant politicization of the site selection process. The problem with this proposal, however, is twofold. First, the courts have ruled that the federal government must begin accepting nuclear waste in 1998 as originally mandated by the Nuclear Waste Policy Act of 1982. Second, suitable storage space at existing commercial nuclear facilities is running out. Thus, continued on-site storage of highly radioactive waste is not an acceptable long term alternative.

One proposal that seeks a more immediate solution, is to establish an interim storage facility until a permanent repository is ready to accept highly radioactive nuclear waste. An interim storage facility, also known as a monitored retrievable storage (MRS) facility, is a temporary above-ground facility that would receive spent fuel from commercial nuclear reactors and the nuclear waste from defense facilities. The MRS facility would store the radioactive waste in special canisters for a limited time, until shipment to a permanent repository. While a number of options have been advanced, lawmakers

primarily have focused on two possible interim storage sites in Nevada—the Nevada Test Site and Yucca Mountain. As expected, Nevada has vehemently opposed establishing such a facility within the state, citing the same arguments used against a permanent nuclear storage facility. There also have been negotiations with U.S. Native Americans to site an interim storage facility on tribal lands. While negotiations with the Mescalero tribe in New Mexico broke down, a consortium of utilities signed an agreement in December 1996, with a Utah tribe to develop a private interim nuclear waste storage facility (Holt 1997, 9).

There has been considerable opposition to the concept of even establishing an interim storage facility. Opponents of an interim nuclear waste storage facility have voiced concern that any MRS facility could become a *de facto* repository for highly radioactive waste. They argue that once an interim facility is established, political realities might preclude building a permanent repository (Pulsiper 1993, 799). Clearly, any interim storage solution would make it easier for decision makers to delay further action on building a permanent repository and avoid the contentious and politicized nature of the process.

Conclusions

In the final analysis, the politics involved in establishing a national repository for the disposal of highly radioactive waste likely will intensify in the future. In spite of political and geologic concerns, the nuclear power industry and DOE undoubtedly will continue to pressure Congress to locate the permanent storage facility at Yucca Mountain since any effort to remove the site from consideration will only serve to delay the opening of a permanent disposal facility. There also will be great pressure to locate any interim facility in Nevada—either at Yucca Mountain or at the adjacent Nevada Test Site—for the same reason.

There are also a number of economic incentives to establish a national disposal facility for highly radioactive waste in Nevada. First, under the current storage regimen, the nuclear power industry is forced to spend increased resources to store spent nuclear fuel on-site. As suitable storage space runs out, more expensive storage methods (e.g., dry-cask storage) are needed to cope with the problem. Second, as surpluses in the Nuclear Waste Fund continue to accumulate, there will be increased pressure by the nuclear power utilities to force the government to accept responsibility for the storage of highly radioactive waste. The utilities are continuing to bear the brunt of current on-site storage costs in spite of establishing a special fund (Nuclear Waste Fund) to pay for disposal costs.¹¹ To date, the government has collected more than \$12 billion for this purpose.¹² The utilities point out that although they have been charged with funding the operational costs of storing nuclear waste, they are still saddled with on-site storage costs. Third, until the controversy over highly radioactive waste disposal is resolved, government approval for the construction of any additional nuclear power reactors is unlikely. Thus, if the nuclear power industry hopes to survive, it must be able to build new reactors since current facilities are nearing the end of their useful life expectancy.¹³

In addition to the economic incentives, there are political pressures to locate the national highly radioactive waste repository in Nevada. First, as previously discussed, Nevada's political influence is limited due to its smaller population and less influential congressional representation. Second, other states that have been identified as possible hosts for a national nuclear waste repository likely will continue to support current legislation establishing the radioactive waste disposal facility at Yucca Mountain in or-

der to prevent their state from being targeted.

On the other hand, the State of Nevada, environmental groups and the grassroots NIMBY movement will continue to actively oppose the present siting and approval process. At this time, for a number of reasons, it would be difficult for Nevada's politicians to support the Yucca Mountain project. First, due to the intense opposition within the state, it would be political suicide to support establishing a nuclear waste disposal facility in Nevada. Second, concern over the potential negative impact on tourism provides a strong incentive for continued opposition to establishing any nuclear waste repository in the state. Moreover, environmental groups will likely continue to oppose the current siting process due to concerns over potential geologic instability (volcanic activity, earthquakes, ground water movement and hydrothermal activity). Finally, due to the political, economic and environmental concerns outlined above, the grassroots NIMBY movement likely will remain active and vibrant. This will ensure continued pressure on Nevada's lawmakers to oppose any nuclear waste disposal facility.

Time is running out for the federal government to honor its commitment to accept responsibility for the disposal of highly radioactive waste. Although politicization of the issue has caused significant delays in establishing a permanent national repository, mounting pressure from the nuclear industry, DOE and the federal courts likely will force Congress to continue the process of establishing a national nuclear waste disposal facility in Nevada—regardless of its suitability and that state's opposition.

Notes

1. The term "radioactive waste" includes a wide range of radioactive material. For the purposes of this paper, "highly radioactive waste" includes spent nuclear fuel from commercial nuclear power plants and the high-level radioactive waste by-product from nuclear weapons production at defense-related facilities.
2. See The Nuclear Waste Policy Act of 1982, Title II, Sect. 213.b.1. The 1982 Act also mandated a number of other actions such as technical assistance for spent fuel storage and disposal to non-nuclear states for spent fuel storage and disposal (Title II, Sect. 223), the study and evaluation of dry-cask storage at civilian nuclear reactor sites (Title II, Sect. 225) and created the Nuclear Waste Fund to offset expenditures for radioactive waste disposal activities (Title III, Sec. 302).
3. Yucca Mountain, Nevada (adjacent to the Nevada Nuclear Test Site); Deaf Smith County, Texas (Pantex Assembly Plant); and Hanford, Washington (Nuclear Weapons Production Facility). See Michael E. Kraft, "Democratic Dialogue and Acceptable Risks," pp. 114-15.
4. At the time, Nevada had only two Representatives, and its Senators were relatively junior. In contrast, Texas had 30 Representatives and influential Senators such as Republican Phil Gramm. Washington had 9 Representatives and its Senators were more senior.
5. There have been differing opinions on the extent of damage associated with the 1992 quake. See, Friends of the Earth, "Haste Makes Waste," Yucca Mountain High-Level Nuclear Repository (Nevada), p. 2., for a critique of the siting location because of earthquake damage. However, DOE states that much of the funding for construction at the site field office after the 1992 quake included refurbishing which was not associated with the quake damage. See DOE Yucca Mountain Project Studies,

"Damage to FOC from '92 quake less than first cited," *Of Mountains & Science*, Winter 1996, p. 132.

6. See State of Nevada, "State of Nevada Socioeconomic Studies: Biannual Report, 1993-1995," State of Nevada Nuclear Waste Project Office, p.9. Also see series of studies released by Nevada's Nuclear Waste Project Office (available on Internet) concerning adverse socioeconomic impact of nuclear waste disposal facility.

7. The situation is somewhat clouded by the fact that the court ruling did not specify how DOE would meet the deadline. It is possible that, in the end, DOE will take "possession" of the nuclear waste (i.e., be responsible for oversight and costs of the storage) but leave the waste on-site until a longer term storage option is available. See Holt, "Civilian Nuclear Waste Disposal," March 28, 1997, p. 4.

8. See U.S. Congress (S. 1271), "Nuclear Waste Policy Act of 1996," Congressional Record, 104th Congress, 2d Session. Also see U.S. Congress (S. 1936), "Nuclear Waste Policy Act of 1996," Congressional Record, 104th Congress, 2d Session.

9. See U.S. Congress, "Statement of Hazel R. O'Leary, Secretary, U.S. Department of Energy Before the Committee on Energy and Natural Resources, Senate," December 14, 1995, for a discussion of the White House's specific concerns with the legislation.

10. See U.S. Congress (S. 104), "Nuclear Waste Policy Act of 1997," Congressional Record, 105th Congress, 1st Session.

11. The utilities are assessed one-mill (i.e., one-tenth of one cent) per kilowatt hour of nuclear generated electricity. See 1982 Nuclear Waste Policy Act, Title III, Sect. 302.a.2. 1

12. Further complicating the situation, the Nuclear Waste Fund surplus may have been caught up in the politics associated with the balanced budget battle. Since any surpluses in the Fund can be used to off-set the deficit, lawmakers may be reluctant to authorize spending from the Fund, since any reduction in the Fund balance will force policy makers to find savings in other areas. See Nuclear Energy Institute (NEI), "Summary of Nuclear Waste Fund Payments," March 1996, p. 1.

13. The importance of this issue goes far beyond just the nuclear power industry. Nuclear power accounts for slightly over one-fifth of the total U.S. electricity generation. Thus, as the current facilities near the end of their life expectancy, there will be increased pressure for the construction of additional electric power generation sources to off-set the expected loss in nuclear generated electricity. If additional nuclear power facilities are not constructed, then either fossil fuel plants or alternative energy sources (e.g., geothermal, solar, wind, tidal) will need to be brought on-line to prevent any significant reduction in electricity generation nationally. Since fossil fuel power generation has substantial environmental costs (e.g., air pollution, acid deposition and CO₂ contribution to global warming) there likely will be opposition to building additional plants. While alternative energy sources may be more environmentally friendly, there still are unresolved technical and cost-effectiveness problems. Thus, policy makers will find that difficult choices will be required to ensure sufficient electricity for the future. Under these circumstances, the nuclear power option may appear more attractive which will add pressure to resolve the nuclear waste storage problem.

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