

Chapter 2

Federal Legislation and State and Compact Response

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Federal Legislation and State and Compact Response

FEDERAL LEGISLATION

Low-Level Radioactive Waste

Po&y Act of 1980

In the fall of 1979, a series of transportation and packaging incidents¹ prompted the Governors of the three States with operating commercial low-level radioactive waste (LLW) disposal facilities to take action to protect public health and safety. The Governors of Washington and Nevada temporarily closed their sites, and the Governor of South Carolina instituted a program to reduce by one-half the amount of waste disposed of at the site, which had received more than 80 percent of the Nation's waste during the preceding year.

All three existing sites—as well as three former commercial sites that were closed² for various licensing and environmental reasons (see ch. 6)—had been established by private LLW disposal companies and were operated without any formal interstate agreements governing waste acceptance. While the initial motivation behind the newly imposed disposal restrictions was to protect health and safety, the three States with sites, referred to as sited States or host States, were also signaling their unwillingness to continue to accept the entire country LLW indefinitely.

Alarmed by the potential loss of all commercial LLW disposal capacity, several committees of the U.S. House of Representatives held hearings in November 1979 on future Federal LLW waste disposal policy. Initially, these committees considered adopting legislation that would have made commercial LLW disposal a Federal responsibility. Immediate congressional action of this type was opposed by the Governors of the three sited States, who testified in favor of allowing States an opportunity to examine alternatives to Federal disposal. Because Washington and Nevada had reopened their sites and, because the congressional session was nearly over, the committees agreed to defer consideration of LLW legislation until the following year.

During the next 3 months, a number of interested organizations established task forces or review groups to explore alternate ways to assure disposal capacity for commercial LLW. The Conservation Foundation formed a dialogue group on LLW in November 1979. The next month, the National Governors' Association (NGA) created an eight-Governor task force on LLW disposal. The same month, the Department of Energy (DOE) named a task force to deal with LLW issues and created a Program Review Committee to provide broad-based guidance to DOE's LLW management program. In February 1980, President Jimmy Carter established the State Planning Council to deal with all nuclear waste issues. All of these entities examined various ways to address the disposal of LLW, and, by the summer of 1980, all had agreed that a State-oriented solution was the best means of assuring new capacity.

A number of considerations supported a State rather than Federal solution. Chief among them was the concern that the new sites not pose a threat to public health and safety. States were convinced that they were better qualified than the Federal Government to assure the protection of their citizens and the environment. While subsequent revelations have confirmed that many Federal facilities have not taken adequate care of nuclear and hazardous materials in the past, many States—especially those with Federal facilities in their boundaries—were convinced even in 1980 that it was a sound environmental policy decision to give States the responsibility for providing for new commercial LLW disposal capacity. States wanted to be involved in decisions regarding siting, technology selection, operator choice, regulation, fee schedules, and public participation. State representatives believed that States had the political, technical, and economic resources to handle LLW disposal. For these reasons, State-oriented organizations such as the NGA, the National Conference of State Legislatures, and the State planning Council all endorsed a State-oriented solution in the summer of 1980. The DOE LLW task force and Program Review Committee and the Conservation Foundation Dialogue

¹ For example, in 1979, the Beatty, NV site was temporarily closed when a fire occurred in a truck carrying low level radioactive waste and contaminated liquids leaked from the truck. Similar incidents occurred at the Richland, WA site in 1979, causing it to be temporarily shut down as well. Incidents included a shipment of cobalt leaking and a truck exceeding allowed weight limits.

² A LLW disposal facility in Maxey Flats, KY, operated from 1963 to 1977. In West Valley, NY a LLW facility operated from 1963 to 1975. Finally, a LLW facility operated in Sheffield, IL from 1967 to 1978.

Group also recommended that the States be given the lead role on this issue.

In August 1980, the NGA task force issued a 75-page report containing 17 recommendations (48). This report reflected in greater detail the sentiments of the other entities mentioned above. The principal findings of the report were:

- LLW could be managed most efficiently at the State level.
- Each State should be given the responsibility to provide for disposal capacity for the commercial waste generated within its borders.
- States should be encouraged to form regional compacts, since fewer than 50 sites were needed to dispose of the Nation's anticipated volume of commercial LLW.
- To foster compact formation, regional compacts should be allowed to exclude waste generated outside their borders after a specified date.

Interstate compacts requiring congressional approval were recommended as the preferred form of interstate agreement for several major reasons. First, States cannot customarily restrict the importation of waste to commercial facilities within their borders and to do so would violate the interstate commerce clauses. To exercise the exclusionary powers suggested in the Federal legislation would require consent by Congress. Thus, only interstate compacts would meet this requirement. Second, since interstate compacts are Federal law as well as State law, they have a permanence and enforceability that other forms of agreement lack. Since LLW waste sites are built to operate for several decades and most compacts anticipate establishing a series of LLW sites, it is advisable to have these facilities governed by statutes that cannot be as readily changed as other types of interstate agreements.

Given both the broad-based support for delegating responsibility for new disposal capacity to the States and the unanimous endorsement of the NGA, Congress ratified the Low-Level Radioactive Waste Policy Act (LLRWPA) in December 1980—just 13 months after the issue had first gained national attention. The legislation had three major provisions which were included in the NGA task force report:

- Each State was made responsible for providing for the availability of disposal capacity for the commercial waste generated within its borders.
- States were encouraged to form interstate compacts to collectively meet their obligation to provide disposal capacity.
- As an inducement to form compacts, States were encouraged to include authority to exclude LLW generated outside their borders in the compact legislation they adopted and submitted to Congress.

Following congressional action, States began discussions on creating regional compacts. Among the first compacts to be submitted to Congress were three that included the three existing host States—Washington, Nevada, and South Carolina. One of the prime motivations of these States in supporting the adoption of the LLRWPA was their desire to reduce the quantity of waste being shipped to their sites. Given that the 1980 Act invited regions to submit compacts with the authority to exclude out-of-region waste after January 1, 1986, the sited States quickly negotiated compacts with their neighbors and sent the proposals to Congress for ratification. The member States party to a compact with an existing site are referred to as sited States. States without access to a site also recognized the advantages of compacts and negotiated compacts as well. By late 1984, nearly 40 States had joined 7 compacts and submitted them to Congress. A detailed discussion of these compacts and how they evolved is provided below, under “State and Compact Response to Federal Legislation.”

Low-Level Radioactive Waste Policy Amendments Act of 1985

Despite the progress in forming compacts, the prospect of the three sited States being able to exclude all out-of-region waste after January 1, 1986, caused the Senators and Representatives of States and compacts without access to a site to oppose granting congressional consent to the sited States' compacts. States and compacts without access to a site were unwilling to allow the sited States' compacts to pass Congress unless there were some assurances that the LLW from their States would continue to be accepted at the sited States' facilities until new sites were operating. The sited

³The Commerce Clause is in the United States Constitution, Art. 1, sec. 8, cl. 3. It states that “The Congress shall have Power . . . To regulate Commerce . . . among the several States. . . .” Many cases have interpreted this clause, and in particular several have been concerned with a State's right to exclude waste generated in other States.

States for their part threatened to shut down their facilities altogether if their compacts were not adopted by Congress. This impasse continued until late 1984. Seven compacts were pending before Congress, but there was no prospect for approval.

With the January 1, 1986, exclusionary date less than 15 months away, some Members of Congress once again turned their attention to Federal LLW policy. While the 1986 date was perhaps mainly symbolic in value, key committee chairs recognized that the impasse over consent to the compacts represented a threat to the success of the LLRWPA of 1980. With an eye to breaking the deadlock, Representative Morris Udall of Arizona, Chair of the House Committee on Interior and Insular Affairs, introduced legislation in October 1984 amending the LLRWPA. Although the draft legislation was skeletal in nature, it did indicate to all interested parties—particularly the States and compacts—that Congress was intent on preserving the LLW system that had been established 4 years previously.

Less than 5 weeks after the introduction of the Udall bill, representatives of States and compacts held a series of meetings under the aegis of the NGA. The goal of the meetings was to negotiate a compromise between the sited States and compacts and the unaffiliated States⁴ and compacts. Representatives of the States and compacts were convinced that they could achieve a satisfactory solution to the problem. Congress, for its part, was willing to accept the compromise developed by the States and compacts if it was acceptable to the key interested parties and if it promised to promote the goals of the 1980 LLRWPA.

Throughout 1985, States and compacts met frequently to discuss amendments to the LLRWPA. Representatives of other interests, including congressional staff, waste generators, site operators, insurance companies, and environmental groups also participated. The legislation eventually adopted by Congress in December 1985 largely reflected the concerns of the States and compacts. The legislation formed a compromise between States and compacts without access to a site and sited States and compacts. This compromise was needed to further progress in constructing new LLW disposal facili-

ties. Since the legislation contained the compromise provisions endorsed by the States and compacts, Congress was also able to consent to the seven compacts that had been pending for several sessions. These seven compacts—the Northwest, the Rocky Mountain, the Central Interstate, the Central Midwest, the Midwest, the Southeast, and the Northeast compacts—were adopted as Title 2 of the 1985 Amendments. Subsequently, two other compacts—the Appalachian and the Southwestern—have received congressional consent.

The chief features of the Low-Level Radioactive Waste Policy Amendments Act (LLRWPA) of 1985 were a 7-year extension of the date by which the sited States could exclude waste outside their regional boundaries, coupled with a series of milestones and enforceable penalties to assure progress in establishing new facilities during the 7-year transition period.

Key Elements: Low-Level Radioactive Waste Policy Amendments Act of 1985

The LLRWPA of 1985 establishes a set of incentives and conditions that allows access to existing disposal facilities through the end of 1992 (see table 2-1). Milestones and deadlines are established in the LLRWPA to ensure that new disposal capacity is available to compacts without access to a site and to unaffiliated States until the early 1990s. Failure to meet the milestones can lead to the imposition of penalty surcharges and possibly to denial of access to the disposal sites.

Main features of the LLRWPA include:

- a 7-year interim access period consisting of a 4-year transition period and a 3-year licensing period,
- disposal site volume limits and reactor volume allocations,
- escalating surcharges to encourage volume reduction and disposal facility development,
- milestones and deadlines for new disposal facility development,
- surcharge rebates to encourage disposal facility development, and
- penalties for failure to meet milestones.

⁴States that do not belong to a compact are known as unaffiliated States.

Table 2-I-Milestones and Deadlines in the Low-Level Radioactive Waste Policy Amendments Act of 1985

| Milestone | | Deadline | |
|--|---|--|--|
| Requirement | Penalty | Requirement | Penalty |
| <p>July 1, 1966 Each unaffiliated State must join a compactor indicate the intent to develop a site for LLW within the State.</p> | <p>2 x the surcharge (\$20/cubic foot) for the period July 1, 1986, through Dec. 31, 1986</p> <p>Access to existing disposal sites may be denied after Jan. 1, 1987.</p> | <p>January 1, 1993 Each compact without an operating facility and unaffiliated State must provide for the disposal of all applicable LLW, including mixed LLW generated within such State or compact region, or the rebate monies due the State may be returned to generators incrementally.</p> | <p>1/36 of the rebates collected for the period Jan. 1, 1990, through Dec. 31, 1992, returned to generators monthly with interest.</p> <p>Rebates to generators continue until Jan. 1, 1996, or until State provides for disposal.</p> |
| <p>January 1, 1988 Each compact without an operating disposal facility must identify a host State or select a facility developer and location-and must have developed a siting plan. Each unaffiliated State must also have developed a siting plan.</p> | <p>2 x the surcharge (\$40/cubic foot) for the period Jan. 1, 1988, through June 30, 1988.</p> <p>4 x the surcharge (\$80/cubic foot) for the period July 1, 1988, through Dec. 31, 1988.</p> <p>Access to existing disposal sites may be denied after January 1, 1989.</p> | <p>January 1, 1996 Each compact without an operating facility and unaffiliated State must provide for the disposal of all applicable LLW, including mixed LLW, generated within the State or compact region, or each State must assume title, possession, and liability for the LLW generated within the State.</p> | |
| <p>January 1, 1990 Each compact without an operating facility and unaffiliated State must submit a complete LLW license application to operate a disposal facility, or the Governor of each State must provide a written certification to the NRC that the State will provide for storage or disposal of LLW generated after December 31, 1992.</p> | <p>Access to existing disposal sites may be denied after Jan. 1, 1990.</p> | | |
| <p>January 1, 1992 Each compact without an operating facility and unaffiliated State must submit a complete license application to operate a LLW disposal facility.</p> | <p>3 x the surcharge (\$120/cubic foot maximum) for the period Jan. 1, 1992, until complete application is filed or until Dec. 31, 1992.</p> | | |

SOURCE: Afton Associates, 1989.

As a result of the LLRWPA of 1980, the LLRWPA of 1985, and the subsequent compact consent legislation, there are now 9 compacts with a total membership of 43 States. Seven States are presently unaffiliated with a compact, as are the District of Columbia and the Commonwealth of Puerto Rico, both of which are given the same responsibilities as States under the Federal legislation. The State of Washington has decided to continue as the host State for the Northwest Compact and plans to continue using the existing LLW disposal site near Hanford, WA, as the region's disposal facility. The existing disposal facilities in Barnwell, SC, for the Southeast Compact and in Beatty, NV, for the Rocky Mountain Compact are scheduled to close on or before January 1, 1993. Prior to their closure, a new disposal facility is

planned to be operational in each compact (i.e., in North Carolina and Colorado respectively).

Except for a compact's selection of a host State, all other major decisions regarding facility development and regulation are the responsibility of the host State or site operator, depending on host State requirements. As a result, most host States have devised unique approaches to siting that are tailored to address State-specific concerns. In many cases, the resultant State laws and regulations have been developed with extensive public input and are more stringent and comprehensive than Federal requirements. Because of this diversity of approaches and requirements, each host State's progress must be evaluated within the context of its individual requirements, procedures, and timetables.

STATE AND COMPACT RESPONSE TO FEDERAL LEGISLATION

The history of each compact's formation and the efforts of each compact and unaffiliated State to develop new LLW disposal facilities is traced below. Unique aspects of each compact's and State's siting program are highlighted, such as benefit packages and compensation measures that were particularly influenced by public input. Each compact and unaffiliated State is proceeding on different internal schedules for having disposal capacity available by the January 1, 1996, deadline.

Sited Compacts

Northwest Compact

Member States: Alaska, Hawaii, Idaho, Montana, Oregon, Utah, Washington

Host State: Washington

The Richland, WA disposal site has operated since 1965. Through the work of the Radioactive Waste Committee of the Western Interstate Energy Board, Washington and other Western States negotiated a compact that eventually included five Northwestern States plus Alaska and Hawaii. With the seven compact States' total waste volume constituting about 7 percent of the Nation's total in 1980,⁵ Washington agreed to serve as the host State for an indefinite period, providing certain assurances were met by the other member States. The Northwest Compact was ratified by the compact States in 1981, submitted to Congress in 1982, and approved by Congress shortly thereafter.

The Northwest Compact set criteria under which it would consider entering into a contract with an unaffiliated State to dispose of its waste. The criteria include that a State cannot be a member of any compact that was ratified as of April 23, 1987; it cannot generate more than a 1,000 cubic feet of LLW annually; and it must be contiguous to a Compact member State.

The operator of the Northwest Compact's disposal site, US Ecology, Inc., explored the profitability of adding a mixed LLW disposal facility to the Hanford, WA site, to receive the Compact's mixed

LLW and out-of-region mixed LLW. However, with Washington's policy to accept no out-of-region LLW, including mixed LLW, after 1992, US Ecology, Inc. found that the Compact would generate insufficient volumes of mixed LLW to justify the development and operating costs. The Compact is currently studying other options for managing its mixed LLW. It has conducted two regional surveys of potential mixed LLW generators to determine the volumes of mixed LLW generated and stored and to determine waste minimization and treatment practices used by the generators.

As of November 1989, the Compact had made no provisions for mixed LLW disposal. Since the milestones in the LLRWPA are for States that do not have access to a site, Governors' certifications from the Northwest Compact States will not be required. The State is working on the national mixed LLW problem, to understand and resolve the problems that are hindering States from managing their mixed LLW.

Recognizing that at some point its LLW disposal site will be closed and to ensure that the necessary funds are available for its closure, the State of Washington commissioned a two-phase study to develop design specifications and cost estimates for closure. The State has studied financial assurance requirements for liability and cleanup associated with LLW management activities. The State is also attempting to ascertain the volumes, types, and curie content of the LLW disposed of at the site, which has been operated since 1965.

Rocky Mountain Compact

Member States: New Mexico, Wyoming, Colorado, Nevada

Current Host State: Nevada

Future Host State: Colorado

The State of Nevada used to some degree the Western Interstate Energy Board, as did Washington, to assist in the negotiation of a compact. Prior to passage of the LLRWPA, Nevada had taken about 8 percent of the Nation's total LLW—the smallest percentage of the three sited States. Nevada was interested in taking an even smaller amount of waste and, therefore, selected as compact partners several of the lowest volume producers in the

⁵This 7 percent volume does not represent [the total waste volume from the Nation being accepted at the Richland site in 1980; the site w&s accepting about 12 percent of the Nation's LLW.

country. While Nevada agreed to continue to serve as the host State temporarily, the compact did include a mechanism for selecting a successor host State. Nevada required that only States that generate more than 20 percent of the compact's waste would be required at some point to serve as the region's host State. Arizona, Colorado, Wyoming, Utah, and New Mexico were all originally eligible to join the Compact.

Arizona decided not to join the Rocky Mountain Compact. Arizona had several large nuclear power plants scheduled to come online in the late 1980s; therefore, it would be generating large volumes of LLW and would doubtless have been designated as one of the region's successor host States. Colorado, as the largest producer of commercial LLW among the member States, was selected as the next host State. Nevada intends to close the Beatty site at the end of 1992, when Colorado will take over as host State for the Compact.

During the transition period through 1992, the Rocky Mountain Compact has agreed to take waste from small unaffiliated States. In 1987, the Compact signed contracts with Rhode Island and the District of Columbia to accept their waste through 1989. In August 1989, the Compact Board approved the renewal of its contracts with Rhode Island and the District and approved new contracts with Vermont, New Hampshire, Maine, and Puerto Rico to accept their LLW through 1992.

The future host State, Colorado, has adopted siting legislation, and the State Geologic Survey has completed an initial study of the entire State which indicates that six areas of the State appear suitable for further investigation.

In 1988 the Umetco Corp., a subsidiary of Union Carbide, announced its proposal to develop a disposal site near Uravan, CO, for the radium waste from the cleanup of Superfund sites in Denver. At the same time, Umetco also submitted a conceptual design for a LLW disposal facility to be co-located with the radium waste disposal site. The LLW site would accept Class A, B, and C LLW for disposal in mined tunnel cavities in a shale formation. Umetco proposed to license these facilities in two phases; first it would seek a license for the radium disposal in an above-grade disposal facility, and second it would pursue a license amendment to develop the mined cavity disposal site for Class A, B, and C LLW. The second phase would only occur if the

company determined that sufficient quantities of LLW were generated in the region to make the operation economically feasible.

Since receiving this proposal, the State of Colorado has issued a license for the radium waste facility. However, because the Rocky Mountain Compact legislation defines LLW to include radium waste, any site licensed to accept radium waste generated in the Compact must also be designated as a regional LLW facility by the Compact Board. The Colorado Department of Health petitioned the Compact Board to designate the Umetco site as a regional facility and on May 8, 1989, the Compact Board approved Colorado's petition. However, the facility will likely not be constructed because the Environmental Protection Agency (EPA), which is responsible for deciding where to dispose of the radium waste from the Denver Superfund sites, has contracted to ship it to a site in Utah,

Other private companies have been interested in developing a LLW disposal facility in Colorado, but no formal proposals have been made as of November 1989. The State and Compact are reviewing other options for providing disposal capacity for the region's LLW after the Nevada site closes at the end of 1992, but no decisions have been made. Both Colorado and the Compact Board are concerned that the region does not generate enough commercial LLW to justify development of a new LLW disposal facility.

As of November 1989, the Compact had made no provisions for mixed LLW disposal. Since the milestones in the LLRWPA are for States without access to a site, Governor certifications from the Rocky Mountain Compact States will not be required.

If a LLW facility is developed in Colorado, the site operator will pay the host county or municipality a 2 percent gross receipt tax. Since the State government would own the property, the licensee would not be paying any property taxes. The gross receipt tax would be in lieu of such property taxes. One percent of the gross receipts are to be paid to the State's General Fund.

Southeast Compact

Member States: Alabama, Florida, Georgia, Mississippi, Tennessee, Virginia, South Carolina, North Carolina

Current Host State—South Carolina

Future Host State—North Carolina

In 1980, South Carolina received 80 percent of the Nation's commercial LLW. Intent on reducing both the amount of waste accepted and the time during which the State would have to continue serving as a host State, South Carolina initiated compact negotiations with other Southeastern States. Prior to these discussions, South Carolina announced that it was reducing by 50 percent the volume of waste it would accept annually at the site in Barnwell. Furthermore, it announced that it would close the site at Barnwell on December 31, 1992. Provisions to select a successor host State were, therefore, included in compact negotiations. Host State selection was based on criteria such as the volume and radioactivity of commercial LLW generated over a set number of past years, projected future waste volumes, and transportation distances. After lengthy negotiations, in September 1986 the Southeast Compact Commission chose North Carolina as the successor host State.

North Carolina's designation has been hotly debated in the State's General Assembly as anti-compact groups have lobbied heavily for North Carolina to withdraw from the Compact. Numerous bills have been introduced which, if passed, would require North Carolina to withdraw from the Compact and develop a LLW disposal facility only for North Carolina's LLW.

To help persuade North Carolina to remain within the Compact and to host the disposal facility, the Compact amended its legislation to limit the term of the host State to 20 years or 32 million cubic feet of LLW received for disposal, whichever comes first, and restrict to 30 days the ability of party States to withdraw from the Compact after commencement of disposal operations. As a condition for remaining in the Compact, this legislation requires that the party States adopt these amendments as part of their Compact legislation by 1990 and requires congressional approval of these amendments to the Compact by 1992. The legislatures of each member State have adopted the required changes, and congressional action is expected on the amendments during 1989.

North Carolina agreed to remain in the Compact and passed legislation establishing the North Carolina LLW Management Authority and a process for siting a LLW disposal facility for the Southeast

Compact. The Authority is responsible for site selection and facility development, operation, and closure. It has selected a facility developer/operator—Chem-Nuclear Systems, Inc.—to design, operate, and close the facility. North Carolina has passed legislation prohibiting shallow-land burial as a disposal design (see ch. 6 for a description of shallow-land burial). Furthermore, the design must use engineered barriers, and the bottom of the waste disposal facility must be no less than 7 feet above the seasonal high water table.

While Chem-Nuclear Systems, Inc. will be responsible for site characterization, the Authority will select candidate sites and the preferred site on which the developer will base the license application. As of June 1989, the Authority had conducted two phases of its preliminary site screening work with the assistance of a private contractor and had eliminated all but 9.5 percent of the State land area as potentially suitable. The Authority plans to name at least two candidate sites for characterization by late 1989. A final site is to be selected in November 1990. The target date for facility operation is January 1, 1993.

As of November 1989, the Compact had made no provisions for mixed LLW disposal. Since the milestones in the LLRWPA are for States without access to a disposal site, Governor certifications from the Southeast Compact States will not be required.

The North Carolina Radiation Protection Commission adopted regulations for LLW disposal in 1987 with considerable input from statewide environmental groups and LLW generators. The regulations will be used by the Division of Radiation Protection in the Department of Environment, Health, and Natural Resources to license and regulate the disposal facility since North Carolina is an Agreement State.

The State siting legislation provides extensive opportunities for public participation and gives potential host communities the option of appointing local review committees to receive grants from the State of up to \$50,000 per site, to review the State's siting efforts. Once a final site is selected and a license application submitted, the host community may appoint a local review committee, which is eligible to receive \$100,000 from the State to hire independent experts to review the license application. The legislation provides for a 2.5 percent gross

receipts tax and for payments in lieu of property taxes, since the land would be owned by the State. The governing body of the host community may also impose a privilege license tax on the facility to cover any costs incurred due to the presence of the facility. Finally, the local government may submit concerns it has to the Governor's Waste Management Board for arbitration.

The Authority has hired a number of public information and public participation staff members and has sponsored over 25 community forums throughout the State. The Authority is also encouraging communities to volunteer for consideration as a host community and has received inquiries from several local governments.

To cover all costs incurred by the State related to the LLW disposal facility, disposal fees will be set and collected by the Authority. Until the disposal facility is operational, however, it is unclear how North Carolina will finance facility development. Monies have been appropriated from the State's General Fund and the Authority has proposed a surcharge of Southeast Compact generators to cover preclicensing expenses. The Compact also granted North Carolina \$200,000 in 1988 to offset the Authority's operating expenses,

Compacts Without Access to a Disposal Site

The majority of States that did not become members of one of the three sited State compacts have formed compacts with States in a similar position rather than remain unaffiliated. States without access to a site saw three main advantages to this approach. First, by being in a compact, States have the absolute legal authority to exclude waste from outside of their compact. Second, there are substantial economic advantages with larger disposal sites (see ch. 6 on disposal costs). Third, compacts may rotate among members the role of host State, while going it alone commits a State to hosting a site indefinitely.

Appalachian Compact

Member States: Delaware, Maryland, West Virginia, Pennsylvania

Host State: Pennsylvania

The Commonwealth of Pennsylvania was a long-time participant in negotiations for a Northeast Compact, but the State decided to withdraw because

it saw the compact as unwieldy given its size and the number of competing political concerns. Recognizing that it was a major generator of LLW, Pennsylvania decided to host a disposal facility. Initially, Pennsylvania negotiated a compact with bordering States with the provision that any States joining the new compact would have to develop a site at some point if the State generated more than 25 percent of the compact's LLW. Agreeing to this provision, Delaware, Maryland, and West Virginia (all LLW-generating States) signed on to the Appalachian Compact.

The Appalachian Compact was adopted by Pennsylvania in December 1985 and was adopted shortly thereafter by the other member States. The Compact was submitted to Congress and signed into law on May 19, 1988. Even prior to congressional ratification, Pennsylvania began preparing for site selection and the choice of a suitable technology.

With much input from a Public Advisory Committee, public meetings, and submitted public comments and suggestions, Pennsylvania passed its Low-Level Radioactive Waste Disposal Act in February 1988. This law establishes the process for developing a LLW disposal site and assigns overall program responsibility to the Department of Environmental Resources (DER). These responsibilities include regulatory development; operator selection; oversight of facility development, licensing, regulation, inspection, operation, and closure; and approval of transferring the disposal facility responsibility, on closure, to the Commonwealth Custodial Agency.

To enable DER to license and regulate a LLW disposal site in Pennsylvania, the Commonwealth plans to apply to the Nuclear Regulatory Commission (NRC) for the regulatory authority. The Commonwealth initially plans to apply for limited Agreement State status for regulating only LLW disposal (not treatment or storage) and expects NRC to delegate this authority to DER in the near future, pending final adoption of State LLW disposal regulations. These regulations were proposed in July 1988 and were finalized in April 1989. They conform to NRC's LLW disposal regulations where necessary and include requirements on site selection procedures, siting criteria, facility design criteria, operator licensing, permitting and licensing fees, and financial assurance and liability mandated by the LLW Disposal Act.

The Pennsylvania Low-Level Radioactive Waste Disposal Act also assigns the responsibility for adopting the regulations proposed by the DER to the Pennsylvania Environmental Quality Board (EQB). This adoption is the final step needed for the State to apply for limited Agreement State status. Once this step is completed the EQB must determine whether the three potentially suitable sites meet these siting regulations before a detailed siting study can begin. To help review proposed regulations, operator selection, and other program decisions, the law also establishes a permanent 23-member LLW Advisory Committee comprised of citizens, public interest groups, generators, and legislators.

The DER selected an operator-license designee, responsible for site selection; license application preparation; and facility construction, operation, and closure in July 1989. Once a contract has been signed, the site operator will begin screening the State for potentially suitable areas. The DER estimates that three potentially suitable sites will be selected by December 1990 for submission to the EQB. Therefore, the Appalachian Compact member States will have to submit Governors' certifications for their LLW, including their mixed LLW, to meet the LLRWPA January 1, 1990, milestone. Following the selection of three potential sites, the operator will characterize them and choose one on which to base its application for a LLW disposal facility license. The final site is expected to be selected and a license application to be submitted to DER by mid-1992. After issuance of the license in mid-1994, facility construction will begin. The facility is expected to be online in mid-1995.

All costs for facility development and operation are to be borne by the generators. DER has proposed legislation in Pennsylvania to assess fees on generators in each member State to help offset the costs of Phase 1 of facility development--costs incurred until the license application is submitted.

The Pennsylvania LLW Disposal Act and the LLW Management and Disposal Regulations include several unique requirements that reflect extensive public input and the General Assembly's goal to go beyond the minimum Federal requirements regarding technology selection, financial assurances and liability, and benefits to host communities. Specifically, the statute prohibits the use of shallow-land burial and requires that the facility be above-grade unless other designs provide significant im-

provements in protecting public health and the environment. The statute establishes a goal for a "zero release capacity" facility, which will be implemented through ALARA (as low as reasonably achievable) considerations and through a regulatory requirement for corrective action to abate the source of radiation in the event that off site radiation measures exceed natural background levels. The DER has developed regulations and design criteria that provide for enhanced containment and recoverability.

With respect to financial assurances and liability, the Pennsylvania LLW Disposal Act requires the facility operator to maintain insurance coverage or some other financial assurance approved by DER to provide third-party liability coverage for damage claims resulting from facility operations. The minimum amount of liability specified in the law is equal to the capital cost of the facility. There is no limit to the operator's liability if it can be shown that the operator acted in a negligent, willful, reckless, or intentional manner. In all other claims for damages, the operator's cumulative liability is limited to \$100 million plus the amount of insurance required by the DER. The operator is also required by statute to collect a disposal surcharge during operation of the facility to contribute to the Regional Facility Protection Fund (specified at \$100 million) which will be used to cover any third-party damage claims against the facility. Most significantly on liability, the statute includes the controversial "rebuttable presumption" provision which presumes that the operator is liable and responsible for all damages and radioactive contamination within 3 miles of the facility boundary without proof of fault, negligence, or causation. To rebut the presumption of liability, the operator must prove that: 1) the operator did not contribute to the damage, 2) the radioactive contamination existed prior to any disposal operations, 3) the landowner refused to allow the operator to conduct a pre-operational survey, or 4) the contamination occurred as a result of some cause other than facility operations. American Nuclear Insurers, which insures the three currently operating LLW disposal sites against third-party claims, has expressed reservations about providing insurance coverage under these circumstances.

The law offers benefits and compensation to local host communities. It provides for direct economic incentives to potential host municipalities and counties and benefits for affected municipalities or

counties, as well as extensive local involvement and oversight in facility development and operation. When the site developer submits three potentially suitable sites to the EQB, the DER is required to provide up to \$100,000 per site to each host municipality and county to evaluate the proposed sites. The DER then presents its findings to the EQB for consideration. On receipt of a license application, DER must provide funds up to \$150,000 to the host municipality and county to conduct an independent evaluation of the license application. The statute also provides for the host municipality and county to appoint one representative each to the LLW Advisory Committee created by the law. Other municipalities may also petition the DER to be designated as an affected municipality, or the DER may designate affected municipalities in the absence of a petition.

The law further requires that the operator establish a reasonable disposal surcharge, with the approval of DER, to provide monies for local oversight and control and direct payments to the host municipality, host county, and affected municipalities.

The governing bodies of the host and affected municipalities are granted exclusive power and authority to determine how the funds are to be spent. For example, monies are available to hire two full-time inspectors for both the host municipality and county; these inspectors are given the right of independent access to inspect any and all records and activities at the site and to carry out joint inspections with DER officials. DER must respond immediately to any emergency complaint of the host inspector and within 24 hours to any written complaint. The local inspectors also have the authority to temporarily shut down the facility pending an investigation by DER, which will retain the ultimate authority for requiring the facility to cease operations. Monies are also available to train and to equip first-responders to handle emergencies at the facility or on the transportation routes serving the site. Monies are also available to support affected county emergency planning, training, and central dispatch facilities to handle emergencies at the facility.

Also included in the law is a property purchase program that guarantees property owners, within 2 miles of the facility boundary, the property value established immediately prior to the operator's submission of potentially suitable sites. This prop-

erty value is guaranteed for a 2-year period starting on the date the facility license is issued and must be paid by the site operator if a landowner decides to sell his or her land. In addition, school district and property taxes for individuals whose primary residence is within 2 miles of the facility will be paid for the duration of the facility's operational life.

In addition to these compensations, the law requires the operator to provide for an independent surface water, plant, and soil sampling program for areas within 3 miles of the site boundary and independent continuous air, well water, surface water, and soil sampling at the facility boundary. Results from these sampling programs must be provided to the host county and municipality, to affected municipalities, landowners, home-owners, and to DER. Furthermore, prior to waste acceptance at the facility, and every 3 years thereafter, the operator must provide health surveys related to cancer and other disease rates and to birth defects for the population within a 5-mile radius of the facility. The operator is also required to offer, free of charge, whole-body radioactivity readings and other tests for the presence of internal radioactive emitters to all permanent residents within the host municipality or within a 5-mile radius of the facility boundary.

Central Interstate Compact

Member States: Arkansas, Kansas, Louisiana, Oklahoma, Nebraska

Host State: Nebraska

The membership of the Central Interstate Compact is composed of States that generally were not included in the membership of other compacts surrounding the region. While several member States of the Central Interstate Compact are affiliated with the Southern States Energy Board, South Carolina was not interested in including them in the Southeastern Compact. Other Central Interstate Compact members were not included in the Midwest Compact or the Rocky Mountain Compact. The Southern States Energy Board did, however, assist the Central Interstate members in negotiating the provisions of their compact.

The Central Interstate Compact was ratified by its five member States in 1982 and submitted to Congress. It was ratified along with six other compacts with the passage of the LLRWPA in 1985. **The** Central Interstate Compact was unique among all compacts in the powers that it gave the

compact commission and the site developer. As originally envisioned, the compact commission would have reviewed site-specific plans submitted by commercial site developers. In other words, in choosing a site developer, the commission would simultaneously select the host State and the host community. Opposition to this one-step process and a desire for more participation by the public and the member States led to a revision of the original procedures. Under the revised plan, the commission would select a site developer, and the site developer in turn would recommend a host State. After these decisions, the designated host State and the site developer would work together to nominate host sites.

In accordance with this plan, the Central Interstate Compact Commission picked US Ecology, Inc. in June 1987 as the site developer for the region. US Ecology, Inc. recommended Nebraska for the region's host State. The Compact Commission approved this recommendation and named Nebraska as the host State in late 1987. Nebraska Governor Kay Orr established several conditions under which the State would accept this responsibility. These conditions were enacted into law by the State legislature as part of the Nebraska Low-Level Radioactive Waste Disposal Act in April 1988, which was amended in May 1989.

The legislation designates the Nebraska Department of Environmental Control (DEC) as the lead agency for overseeing the siting and licensing of the LLW disposal facility, including the development of siting criteria and disposal facility design requirements. The Radiological Health Division of the Department of Health is also assigned responsibility, as the State's designated Agreement State agency, for regulating the facility in coordination with DEC. The two agencies will jointly monitor and inspect the facility once operational. US Ecology, Inc. is responsible for promoting facility development, including site characterization, site selection, facility design, license application preparation, and facility operation and closure.

Legislation failed to pass that would have required local voter approval of any LLW disposal facility sited in Nebraska. This legislation was an outgrowth of a 1988 statewide ballot initiative for a binding referendum which, if passed, would have required the State to withdraw from the Compact and would have required that any LLW disposal site in

Nebraska be approved by voters at both the statewide and local levels. Compact and siting opponents were successful in putting the initiative on the November 1988 ballot. They failed, however, to generate sufficient support to pass the referendum, which was defeated by a 64 to 36 percent margin. During this political activity, US Ecology, Inc. formed a Citizens Advisory Committee to provide input into the development of site selection criteria and the site selection process.

Since the Nebraska LLW Disposal Act directs the site developer/operator to seek sites actively in areas where the community has expressed positive interest in hosting the facility, US Ecology, Inc. began its search by asking for interested communities to volunteer for preliminary site screening. Twenty-one counties and 54 communities responded by passing resolutions asking to be considered in the preliminary siting study. In January 1989, US Ecology, Inc. narrowed down the number of potential sites to three, where detailed characterization studies would be conducted. The three sites are located in Nemaha, Nuckolls, and Boyd counties and were selected based on their technical merits as determined by preliminary site studies of their geology, topography, groundwater, surface water, and other environmental characteristics. US Ecology, Inc. has obtained options to purchase the sites, and field work for their characterization began in April 1989.

Nebraska's most recent timetable for facility development indicates that a license application will be submitted to the DEC in mid-1990. Therefore, the Central Interstate Compact member States will have to submit Governors' certifications for their LLW, including their mixed LLW, to meet the LLRWPA January 1, 1990, milestone. Once the license application has been submitted, it is expected to take approximately 1 year to review it, with license approval expected by mid-to-late 1991. Construction by US Ecology, Inc. will commence following license approval, and the facility is expected to be operational by the beginning of 1993.

As with Pennsylvania's law, the Nebraska LLW Disposal Act as amended includes several requirements that reflect extensive public input regarding technology selection, financial assurances and liability, and benefits to host communities. Specifically, the law prohibits the use of shallow-land burial (as practiced prior to 1979) as a disposal technology

in Nebraska and requires that the disposal cells be built above-grade and that they be designed to meet the State's zero-release objectives. Regulations issued by the DEC require the site developer/operator to submit a design for an above-grade disposal unit that incorporates one or more engineered barrier(s) to isolate the waste from the environment.

US Ecology, Inc. submitted a conceptual disposal design for reinforced below-ground concrete vaults (see ch. 6 for a description of this type of design) in its original proposal. The design was reviewed by all member States and was considered an important factor in selecting a developer/operator. Following the Compact's selection of US Ecology, Inc. and the designation of Nebraska as the host State, workshops were conducted in the State to review US Ecology, Inc.'s conceptual design. Public comments received during the workshops indicated strong preferences for an above-grade facility, concrete engineered barriers, and extensive monitoring requirements to ensure immediate detection of any releases from the disposal unit. These suggestions and others have been incorporated as regulatory requirements and as part of US Ecology, Inc. final facility design. Nebraska intends to develop disposal capacity for mixed LLW using a very similar disposal technology design, which key State officials feel will adequately address disposal requirements of the Resource Conservation and Recovery Act (RCRA).

As in other States where shallow-land burial is prohibited by law, public input has been a crucial element in the disposal technology selection process in Nebraska. According to State officials, the effort to address public concerns regarding disposal technology designs has increased public acceptance of the facility's design and reduced public concerns regarding the adequacy of the technology.

Public input resulted in the inclusion of several other technical requirements in the Nebraska LLW Disposal Act. For example, no decommissioning waste may be disposed of at the regional facility without DEC's special approval; Class C LLW must be managed separately and stored or disposed of in a retrievable form, and mixed LLW must be treated to the maximum extent practicable prior to disposal.

With respect to liability, the law requires that the Legislature's Judiciary Committee conduct a study of liability issues related to the disposal of LLW and report its recommendations by November 1, 1989.

In addition to Nebraska's community consent policy and its efforts to solicit public input on disposal facility designs, the State has adopted additional provisions establishing local oversight committees (called monitoring committees), benefits packages, and compensation measures for potential host communities:

- \$100,000 per site is provided to fund the activities of local monitoring committees during site characterization, and \$100,000 per year is provided for the local monitoring committee in the county selected to host the site.
- Local monitoring committees have access to all monitoring data and have authority to contract with independent technical experts during site characterization and with a qualified inspector (with independent access to the facility) during operations.
- A formula is established for allocating the Community Improvements Fund, monies that are provided by the Compact member States and are used as incentives to compensate potential host municipalities, neighboring municipalities within 6 miles of the proposed site, and the remaining political subdivisions of the counties in which proposed sites are located.
- The developer/operator will collect \$2 million annually through waste disposal fee surcharges to fund the Community Improvements Fund during the operational life of the facility.
- The DEC must annually offer to sample and analyze well and surface water and any domestic water supply and to test agricultural products at no cost to landowners adjacent to the facility boundary.
- Property owners within 3 miles of the disposal site are guaranteed compensation for any loss in property values caused by the location of the facility for up to 5 years after the site becomes operational.

While the State legislature is still refining the role of the local monitoring committees and the allocation formula for the benefit packages, both the State and site operator are committed to these innovative programs to increase public acceptance. Another incentive to hosting the disposal site is its impact on **the** local economy, US Ecology estimates that the local economy could be stimulated by as much as \$3 million to \$6 million annually.

Central Midwest Compact

Member States: Illinois, Kentucky

Host State: Illinois

The first negotiations for a compact in the Midwest involved a large number of States, with attendance sometimes including representatives from as far away as North Dakota and Maryland. Eventually, a core group of States emerged to pursue final negotiations.

Since there was no operating commercial LLW disposal facility in the Midwest, a major topic of discussion was the criteria for choosing the region's host State. Because Illinois generated most of the region's waste and was centrally located, most observers assumed that Illinois would be selected as the first host State. Influential members of the Illinois Legislature made that assumption and amended the compact to reflect their concerns. They insisted that if other Midwestern States wanted Illinois to remain as a participant in the compact, the other member States should adopt the Illinois version of the compact, especially the provision requiring shared liability among all party States in the event of site-related remediation costs. None of the other Midwestern States, however, would adopt the Illinois amendments,

The result of the impasse between Illinois and the other Midwestern States was the submission to Congress of two compacts—a Central Midwest Compact composed of Illinois and Kentucky and a Midwest Compact consisting of eight other Midwestern States (see following discussion of the 'Midwest Compact'). The Central Midwest Compact agreed that Illinois will always serve as its host State as long as Kentucky disposes of less than 10 percent of the total LLW from the compact.

The Illinois LLW Management Act, passed in 1983, designated the Illinois Department of Nuclear Safety (IDNS) as the lead agency for site development in Illinois, with responsibility for site selection, licensing, and regulation of the facility. IDNS began the siting process by requesting counties to indicate their interest and, then, by screening potentially suitable areas in 21 counties for exclusionary and favorability factors. By early 1988, IDNS had announced 60 candidate sites in 17 counties from the original 21. Under Illinois law, IDNS can study any site, but a site cannot be selected without approval of the affected county or municipality,

After results of the initial screening activity were published, all of the 21 counties withdrew from the process. However, outside of the 21 counties screened, the Martinsville City Council, the Wayne County Board, and community leaders in Monmouth (Warren County) requested that IDNS select and study potentially suitable sites within their jurisdictions. Martinsville is located in Clark County, where the County Commissioners voted 4 to 3 against further siting studies by IDNS. However, because some potentially suitable Clark County sites fell within the City of Martinsville's jurisdiction, IDNS was able to select sites in the area based on the City Council's request.

IDNS ultimately identified two sites near Martinsville and two sites in Wayne County for detailed study. One Wayne County site was dropped from consideration because IDNS was unable to reach voluntary agreements with local landowners for access to the site and was unwilling to exercise its statutory authority to enter properties with only written notice. Field work has been completed at one site adjacent to Martinsville and at the remaining site in Wayne County, and the second Martinsville site has been held in reserve. The Director of IDNS plans to select a final site by November 1989, based on the findings from the site studies.

In May 1988, IDNS entered into a contract with Westinghouse Electric Corp. as the facility developer/operator. In early May 1989, however, Westinghouse Electric Corp. expressed concern over the issues of facility financing, operator liability, and facility ownership, and Westinghouse Electric Corp. notified IDNS of its intention to cease work. IDNS subsequently contracted with Chem-Nuclear Systems, Inc. to design, finance, construct, and operate the facility. IDNS expects to receive a license application from Chem-Nuclear Systems, Inc. in time for the January 1, 1990, milestone. To meet this milestone, however, Governors' certifications for mixed LLW will be required from both Illinois and Kentucky. Once the license is issued, Chem-Nuclear Systems, Inc. will be responsible for constructing, operating, and closing the facility. IDNS's current schedule calls for the license to be issued in 1991 with the facility construction to begin shortly thereafter. The facility should be operational well before the January 1, 1993, deadline.

Illinois law prohibits the use of shallow-land burial as a disposal technology for LLW generated

in the Central Midwest Compact. In March 1988, IDNS promulgated stringent regulations pertaining to the design, construction, and operation of a LLW disposal facility. Particularly significant among these regulations is a 1 millirem per year exposure limit, which is more stringent than the 25 millirem per year exposure limit established by NRC regulations for LLW disposal. To meet these requirements, Chem-Nuclear Systems, Inc. will build an above-grade concrete vault (see ch. 6 for a description of this design) with the waste packaged in modular concrete containers. The vaults will be equipped with leachate collection systems and extensive monitoring systems to allow for prompt detection of any releases of radioactivity from the individual disposal units. As in Nebraska, this design is also intended to meet RCRA requirements for the disposal of mixed LLW.

To build public support for its siting initiatives, IDNS has invested considerable resources and staff time working with statewide environmental groups, local community leaders, and the media. These efforts have produced positive results. Environmental groups in the State have generally been supportive of IDNS's siting program, since they were involved in developing siting policies and disposal regulations through their participation in the statewide Citizens' Advisory Group on LLW. The Citizens' Advisory Group, which consisted of representatives from a variety of groups interested in LLW, employs facilitators from the Conservation Foundation to build consensus on approaches for siting and regulating a LLW disposal facility.

IDNS has opened field offices in Martinsville and Fairfield in Wayne County to establish a presence in the community and to provide information to interested citizens. IDNS has adopted a strict policy of local purchasing for its contractors and itself and has hired several staff employees from the potential host communities. IDNS has also supplied local libraries with a large number of publications and videotapes on LLW management and has sponsored tours of operating LLW facilities for interested members of the community.

IDNS and the Compact have also provided substantial benefits and compensation packages to the potential host communities. IDNS officials have worked closely with locally appointed citizens' advisory committees in Martinsville and Wayne County to promote public involvement in the siting

process. In 1988, IDNS approved grants of \$500,000 each to Martinsville and Wayne County to hire consultants to independently review the site characterization work being performed by IDNS's contractors. The compact Commission also provided grants of \$100,000 to each community to study the potential socioeconomic impacts associated with a LLW disposal facility. In addition to the grants for local review, Martinsville and Wayne County each received \$400,000 in "immediate needs" grants from IDNS to be used at the discretion of the local governing bodies. The grant Martinsville received for the second site under consideration was originally offered to Clark County, which turned it down due to continued vocal opposition from a local group opposed to siting the facility in Clark County.

The community ultimately selected to host the site will receive approximately \$800,000 per year in direct economic benefits during construction and, subject to negotiation with IDNS and the facility operator, over \$1 million per year from waste disposal surcharges collected during the operating life of the disposal facility. The annual compensation will be adjusted to keep up with inflation.

In addition to the benefit packages, Illinois State law includes several provisions concerning local approval and oversight of the disposal facility operations. In 1988, the LLW Management Act was amended to clarify the procedures by which the IDNS must secure the approval of the host community governing body before selecting a final site. The amendments also give the host community governing body the statutory power to close the facility if the facility accepts any waste except LLW or mixed LLW for disposal. IDNS is working with the communities to negotiate contracts for additional economic benefits, safeguards, and provisions for local oversight with the State. The host community may also hire local inspectors to monitor activities at the disposal facility.

IDNS's LLW program and related site development activities are funded by an assessment on nuclear reactors and nonreactor generators of LLW in Illinois. IDNS anticipates spending over \$50 million by the end of 1992 in program and facility development costs. A portion of the assessments is currently being placed in the State's long-term care fund, which is expected to reach \$4 million to \$5 million before the facility opens.

As a result of IDNS's comprehensive LLW management program and its efforts to promote opportunities for public participation in the siting process, the siting effort has advanced rapidly in the State, with IDNS enjoying good relations with most of the local leaders in the Martinsville community. While efforts to build working relationships in Wayne County have been less successful, the majority of County Commissioners still supports the ongoing siting activities being conducted by IDNS and its contractors. A lawsuit requesting an injunction to halt the siting activities in Wayne County was filed by individual members of a citizens' opposition group in Wayne County but does not appear to have the potential to delay the siting efforts. In late August 1989, the plaintiffs in that case moved to dismiss their action. Local nonbinding referenda in Wayne and Clark counties, held in November 1988, saw voters in both counties opposing the location of a LLW disposal site in their counties, but the voters in the City of Martinsville voted in favor of hosting the LLW disposal facility.

IDNS has used a combination of statutory and regulatory requirements supplemented by an active public involvement program to build a significant measure of public support for siting a LLW disposal facility for the Central Midwest Compact in Illinois. State officials have noted that the up-front benefits packages, grants for local review, and the local veto over final site selection have enabled local leaders in Martinsville and Wayne County to view the siting process in a positive light. In addition, public tours of operating facilities have been an important part of IDNS's program.

Midwest Compact

Member States: Indiana, Iowa, Minnesota, Missouri, Ohio, Wisconsin, Michigan

Host State: Michigan

Based on waste generation volumes and transportation factors developed by the Midwest Compact, Michigan was chosen as the first host State for the Compact in June 1987.

Efforts to establish a LLW disposal facility in Michigan began with the enactment of the Michigan LLW Authority Act in late 1987. The Act created the Michigan LLW Authority and set up requirements for establishing a disposal facility. Unlike most State siting authorities or commissions, the Michigan Authority does not have an appointed membership.

Instead, the Authority is headed by a single Commissioner appointed by the Governor with the consent of the State Senate. To implement the provisions of the Act the Commissioner is empowered to hire the necessary staff and contractors.

Under the law, the Authority is responsible for site selection, license application, facility design, construction, operation, and closure. To fulfill these responsibilities, the Authority plans to contract with a site developer/operator who will prepare the license application and operate and close the site. The Department of Public Health (DPH) has also been instructed by the legislature to consider applying to the NRC to obtain limited Agreement State status in order to license and regulate the LLW disposal facility. If DPH does not obtain Agreement State status, the disposal facility will be licensed by NRC.

The Authority has developed exclusionary screening criteria that eliminated over 95 percent of the State from further consideration during the first phase of the siting process. A Public Advisory Committee was appointed to assist the Authority in screening the candidate areas and in identifying three candidate sites on the basis of technical favorability factors. Three candidate areas were chosen on October 4, 1989.

The second phase of the process will concentrate on analyzing these areas and will address technical requirements for siting, as well as aspects of public acceptability. Representatives of the Authority plan to meet with local citizens of the candidate areas to explain the subsequent site screening steps and to discern citizens' concerns. The selection of three candidate sites for characterization is scheduled for January 1990. Therefore, the Midwest Compact member States will have to submit Governors' certifications for their LLW, including their mixed LLW, to meet the LLRWPA January 1, 1990, milestone. Based on information collected during site characterization and preliminary performance assessments, an Environmental Impact Statement (EIS) will be prepared, which will serve as the basis for selecting a preferred site. If the legislature approves of the preferred site, the Authority or its designated site developer/operator will prepare a license application incorporating the EIS. The application will be submitted to DPH and/or NRC depending on whether or not the State has obtained Agreement State status for regulating LLW.

The activities of the Authority are currently funded by the Compact Commission, which levies an export fee on waste shipped to the three operating disposal sites from the region's nuclear utilities. The Compact Commission approved \$3 million in export fees to partially fund the Authority's activities budget for fiscal year 1988 and \$3.6 million for fiscal year 1989. In the event that Michigan withdraws from the Compact, the Compact and the utilities have negotiated a guaranty agreement requiring the Michigan utilities to repay export fees collected by the Compact Commission from utilities in other member States. Although the affected parties have agreed to the guaranty agreement, the Michigan Public Service Commission has yet to approve provisions for collecting the money for repayment of the export fees if Michigan withdraws. The terms of the negotiated guaranty agreement require that it be in place before additional export fee funds collected by the Compact are disbursed by the Compact Commission to the Authority. As of September 1989, the Commission had transferred \$3 million to the Authority. Future transfers are pending final action by the Michigan Public Service Commission.

Michigan did indeed threaten to withdraw from the Compact. On January 30, 1989, Michigan Governor James Blanchard announced that he planned to introduce legislation to withdraw Michigan unless his fellow compact State Governors agreed to join him in requesting congressional action to reduce the number of LLW sites currently planned and to support amendments to the Midwest Compact to address Michigan's concerns regarding shared liability, financial assurances, and institutional stability. The Governor also announced that he was directing the Michigan LLW Authority to immediately halt the State's siting activities until these issues were resolved.

In response to Governor Blanchard's actions, officials in the sited States of Washington, Nevada, and South Carolina informed the Governor of their intent to immediately deny Michigan's LLW generators access to the currently operating sites on the grounds that suspension of the siting activities put the State and Compact out of compliance with the 1988 milestone. The three sited States said that before denying access to generators in the other Midwest Compact States, they would allow these States additional time to either address Michigan's

concerns or to take other action necessary to bring the Compact back into compliance.

In making his announcement, Governor Blanchard argued that Federal policy for managing LLW needed reconsideration because significant reductions in LLW volumes coupled with advances in LLW reduction, treatment, and disposal technologies meant that the 13 sites currently planned for development were no longer needed for safe disposal of LLW. Regarding amendments to the Midwest Compact, the Governor stressed the need to amend the Compact legislation to limit the ability of member States to withdraw from the Compact and to impose substantial penalties for withdrawal. The Governor also called for Compact amendments to ensure that the party States would share equally in any financial responsibilities and/or liabilities associated with the construction, operation, closure, and maintenance of the regional disposal facility.

In response to Governor Blanchard's request, the Governors of the Midwest Compact member States agreed to amend the Compact legislation in areas suggested by Governor Blanchard. The member State Governors also agreed to consider any proposals Michigan might advance aimed at reducing the number of LLW sites currently planned for development around the United States. After receiving the commitment of his fellow Governors, Blanchard agreed to resume the activities of the Michigan LLW Authority. Although this interruption did delay the siting process in Michigan, the Authority is still confident that it can meet its January 1990 target date for identifying three suitable sites for characterization. The Authority is currently reviewing its time line for facility licensing and construction as well as other technical criteria and incentive packages provided for in the legislation. The Authority expects to develop legislative proposals to update these requirements and to amend the Compact legislation.

As is true in many States, Michigan Legislation prohibits the use of shallow-land burial as a disposal technology for LLW and requires that the waste be disposed of in concrete canisters in above-ground or below-ground engineered vaults (see ch. 6 for a description of these designs).

If problems occur at the site, the legislation establishes a Remedial Action Fund of \$10 million to be collected during the operating life of the facility and a Imng-Term Liability Fund with annual

payments of not less than \$500,000 to cover third-party liability claims. The legislation requires that \$600,000 be deposited annually into the State's Long-Term Care Fund.

To provide benefits to the host State and host community, the legislation requires the Authority to establish a fee system for the disposal site. Revenues from this system are to be sufficient to cover any and all costs associated with the site development, operation, maintenance, institutional control, and other expenses incurred by the Authority. In addition, these revenues are to cover the costs of regulating the facility, the expenses of the Compact Commission, costs incurred by local monitoring committees in reviewing facility siting, construction and operations; and direct, unrestricted economic benefits to the host State of \$500,000 annually and to the host community amounting to \$800,000. The legislation also provides for collection of disposal fees to finance an International LLW Research and Education Institute in the host community. The Authority has accepted a joint proposal from the University of Michigan and Michigan State University to develop the Institute.

In addition to the disposal fee, the Authority is required to impose a 20 percent surcharge on waste disposal fees to provide additional benefits and compensation to the State and host community. Under the legislation, the host community is to receive, in addition to the direct economic benefits listed above, 35 percent of the surcharge revenues or \$400,000 per year, whichever is greater, and the host county is to receive 15 percent of the surcharge revenues or \$300,000, whichever is greater. The surcharge will also provide equal benefits to municipalities that share a boundary with the host community. Provisions are also made for compensating the host community and county for any costs associated with the facility's development and operation; since the State will own the property, the licensee will make payments in lieu of property taxes. The Michigan Environmental Response Fund and the Clean Michigan Fund are also to receive 15 percent each of the 20 percent surcharge.

The Midwest Compact gives final authority over funding of these incentives to the Compact Commission. The Commission has objected to the magnitude of incentives provided for in the Michigan statute, and the Commission and the Authority are currently discussing alternatives,

Northeast Compact

Member States: Connecticut, New Jersey

Host States: Connecticut, New Jersey

Soon after passage of the 1980 LLRWPA, States in the Northeast began discussions to create a regional compact. Initially, participants in the discussions represented all States from Maine to Maryland. State representatives envisioned a large-volume compact along the lines of the Southeast Compact. Negotiating a Northeast Compact, however, presented a unique challenge in terms of trying to balance the benefits and obligations of large-volume States versus small-volume States.

Within the Northeast region were three States—New York, Massachusetts, and Pennsylvania—that frequently ranked among the top 10 generating States in the Nation. On the other hand, the region also contained a number of States that generated comparatively low volumes of LLW. Considerable effort was spent trying to arrange an equitable sharing of the waste disposal and management burden among the various parties. Large-volume generating States were concerned that, under any one-vote/one-State arrangement, the small States would control the process by which a regional host State was chosen. Small States for their part worried about joining a compact where they potentially could be selected as a host State and would have to accept volumes of waste annually that were hundreds of times what they would generate in a year.

Some small-volume generating States proposed that the Northeast Compact draft contain a provision restricting the siting of a regional waste facility to States generating more than 20 percent of the region's waste. Despite repeated efforts, however, the majority of participants could not agree on a mutually acceptable resolution.

Although the Northeast Compact text had been negotiated, only four States enacted it—Connecticut, New Jersey, Delaware, and Maryland. Since the Compact did not contain any language exempting small generating States from hosting a disposal facility, the northern New England States of Maine, New Hampshire, Vermont, and Rhode Island did not ratify the Compact. The Northeast Compact was ratified by Congress in 1985, and Delaware and Maryland chose to withdraw from the Compact and join the Appalachian Compact. Subsequently, the two remaining States—Connecticut and New Jersey—

have examined various ways of equitably distributing the responsibility of establishing a regional disposal facility. Because each State generates approximately the same volume and radioactivity of waste and has similar environmental characteristics, there was no easy way to choose the initial host State. The Compact Commission reviewed four management options for LLW:

1. siting a separate disposal facility in each State for all classes of LLW,
2. siting a disposal facility in one State for Class A LLW and a facility in the other State for Class B and C LLW,
3. developing LLW treatment facilities in one State and a disposal facility in the other State for all classes of LLW, and
4. establishing a mixed waste disposal facility in one State and a disposal facility in the other State for all classes of LLW.

In spring 1989, the Northeast Compact Commission chose the first option, requiring both States to develop separate disposal facilities for all classes of LLW, including mixed LLW. In anticipation of this choice, both Connecticut and New Jersey had already named State authorities and siting boards to establish new LLW disposal sites.

Connecticut-Connecticut has adopted disposal facility siting legislation and has designated several State agencies to play a role in the siting process. Legislation directs the Connecticut Hazardous Waste Management Service (CHWMS) to develop a LLW management plan, to characterize the amounts and types of LLW generated in the region, and to select the disposal technology for the facility. The CHWMS is also responsible for selecting a private firm to develop and operate the facility and for selecting candidate sites and one preferred site for licensing. Site selection and licensing will be based on criteria established by State and Federal agencies, including the Connecticut Siting Council and the Connecticut Department of Environmental Protection (DEP). The law requires the Siting Council to issue a certificate of public safety and need and requires DEP to issue permits before a LLW disposal facility can be developed on the site selected by CHWMS. The CHWMS plans to select a facility developer/operator to prepare the certification document and license and permit applications. The Commissioner of Environmental Protection is responsible for adopting regulations for the construction, operation,

closure, and long-term care of the facility. The Siting Council is responsible for developing regulations on siting. Because Connecticut does not plan to apply for Agreement State status, NRC will be responsible for licensing and regulating the site.

The CHWMS hopes to issue a request for proposal for a facility developer/operator in April 1990 and hopes to select a final site for characterization by July 1990. Therefore, Connecticut will file a Governor's certification for its LLW waste, including mixed LLW, to meet the LLRWPA January 1, 1990, milestone. The State's schedule calls for a license application to be submitted by the January 1, 1992, deadline and for the site to be online by April 1994.

Legislation has been adopted that establishes a policy for funding Connecticut's facility development program. The legislation allows the State to assess LLW generators a fee (based on volumes of LLW shipped for disposal) that will produce sufficient revenues to cover the State's facility development costs incurred until construction begins. The legislation also includes reporting requirements for LLW generators and civil penalties for not reporting or for reporting inaccurate information.

Connecticut saw oversight as critical to site development and passed legislation establishing an 11-member Radioactive Waste Advisory Committee to monitor the siting process. The legislation also provides for a local project review committee to represent the host municipality during the facility development process. Furthermore, it directs the facility developer to deposit \$100,000 with the Connecticut Siting Council on submission of the application for a certificate of public safety and necessity; the money is to be used by the local project review committee to obtain technical assistance as necessary to review the facility license application. The facility operator is also responsible for providing sufficient funds for the host municipality to hire a full-time inspector; in addition, the operator must pay for annual sampling of drinking water wells within 1 mile of the facility. The DEP is responsible for overseeing the drinking water sampling program. Finally, this legislation grants full access to the facility and to all records to the chief elected official of the host municipality or his or her designee.

Provisions are also made in Connecticut's legislation for incentives and compensation to the host

municipality. The law provides for an adjustable gross receipts tax of up to 10 percent on facility revenues to be paid to the host municipality and requires the facility operator to negotiate a compensation package of up to **\$150,000** to mitigate any socioeconomic impacts associated with the facility. The legislation also requires the facility operator to make payments to the host municipality in lieu of property taxes, since the property would be State-owned. The operator must also guarantee local residents, within 2 miles of the site, the property values of their land as they were assessed prior to site selection. This guarantee lasts 5 years after the site becomes operational.

New Jersey--In December 1987, the New Jersey State Legislature passed its Regional Low-Level Radioactive Waste Disposal Facility Siting Act which established the New Jersey LLW Disposal Facility Siting Board as an independent agency housed in the Department of Environmental Protection. The Board is authorized to administer the LLW siting process, including the selection of a firm to construct, operate, close, and monitor the regional disposal facility. The law also establishes the New Jersey LLW Advisory Committee to advise the Facility Siting Board in its activities. New Jersey law prohibits the use of shallow-land burial as a disposal technology and establishes a standard of strict, joint, and several liability for the facility operator.

Members of the Facility Siting Board and Advisory Committee were appointed by Governor Thomas Kean and confirmed by the State Senate in late 1988. Since that time, the groups have been working to implement their responsibilities under the State siting law and the Compact legislation. The Advisory Committee has drafted siting criteria for review by the Board, and the Board is in the process of hiring staff and has a contractor to provide technical assistance and to develop a public education program. As required by State law, the Department of Environmental Protection has surveyed LLW generators in New Jersey to provide information needed to update the regional management plan. Official dates and time lines have not been established for selecting candidate sites or for other critical elements of facility development. New Jersey will have to file a Governor's certification for its LLW, including mixed LLW, to meet (the LLRWPA January 1, 1990, milestone. Funding for the State's activities is being provided from discretionary funds

in the State budget and from general revenue appropriations.

The Regional Low-Level Radioactive Waste Disposal Facility Siting Act provides for compensation to the host municipality. Since the disposal site land will be State-owned, the site operator must make payments to the host municipality in lieu of property taxes. The municipality is also to receive a gross receipts tax of 5 percent to cover costs associated with the facility. The Act also exempts the LLW disposal site host municipality from being considered as a site for a solid waste facility or a major hazardous waste facility. In addition, municipalities that currently host solid waste or hazardous waste facilities are exempted from hosting a regional LLW disposal facility.

Southwestern Compact

Member States: Arizona, California, North Dakota, South Dakota

Host State: California

Policy makers in California concluded that no other State was likely to take California's large volume of waste and that California should plan to build its own site. In 1983, California adopted siting legislation and began the process of establishing a LLW disposal facility.

As siting efforts progressed, other unaffiliated Western States, notably Arizona, looked on with interest. Arizona saw major benefits in a compact with California because California was already committed to building a facility and because Arizona had three nuclear reactors coming online in the next decade. Without access to the California site, Arizona would probably have to build its own facility.

Negotiations between California and Arizona spread over several years. During this time, the California Legislature debated, at length, the features of a compact. Meanwhile, the Arizona Legislature passed several alternate compacts which included either South Dakota or North Dakota or both as members.

In July 1988, the California Legislature passed legislation to create the Southwestern Compact, which offered membership to Arizona, North Dakota, and South Dakota. After some debate about Arizona succeeding California as the region's host State in 30 years, Arizona agreed to succeed as the

host and the Arizona Legislature ratified the compact in June 1988. With two States as members, the compact was submitted to the Congress for consent. Congress adopted the Southwestern Compact later in 1988. In early 1989, both South Dakota and North Dakota joined the Compact.

Prior to a resolution on these compact negotiations, the State of California passed legislation in 1983 designating the State Department of Health Services (DHS) as the agency responsible for licensing and overseeing the development of a LLW disposal facility. In 1985, the DHS selected US Ecology, Inc. as its licensee designee to site, construct, operate, and close the State's LLW disposal facility. US *Ecology*, Inc. began the site selection process by focusing on 18 desert basins identified as technically suitable⁶ for the safe disposal of LLW. Then, US Ecology, Inc., with the assistance of a Citizens' Advisory Committee (CAC) managed by the League of Women Voters of California, developed siting criteria to exclude portions of these basins from further consideration and to designate high avoidance areas. Based on the input of the CAC and comments from the general public, the criteria were evaluated for relative importance and were used by US Ecology, Inc. to select candidate areas. Public meetings were held in each of these candidate areas to hear local citizens' views.

In February 1987, US Ecology announced the selection of three candidate sites in the southeastern part of the State. After additional site suitability studies, US Ecology, Inc. selected a site in Ward Wiley, 25 miles west of Needles, California, as its preferred site. DHS expects to receive the license application from US Ecology, Inc. in November 1989. The Southwestern Compact member States, therefore, will meet the LLRWPA 1990 milestone but will have to submit Governors' certifications for their mixed LLW since licensing activities for it have been deferred. The facility for the nonmixed radioactive LLW is expected to open in mid-1991.

US Ecology, Inc. has proposed to construct a shallow-land burial facility with certain enhancements required by DHS. Since the preferred site is also in a habitat of the threatened desert tortoise, DHS has organized an ad hoc working group to

identify potential impacts and to recommend measures to protect the tortoise population.

Prior to the choice of Ward Valley, local residents near the three candidate sites were in favor of hosting the disposal facility because of its direct and indirect economic benefits (e.g., jobs and associated businesses brought to the area). Neither the State nor US Ecology, Inc. however, offered any special incentive packages to the candidate host communities other than compensation for emergency response needs and equipment. The Ward Valley community and statewide environmental groups have voiced some opposition to the site.

Unaffiliated States

States With Siting Plans: Maine, Massachusetts, New York, Texas

Maine—In June 1985, an Advisory Commission was created to advise the Governor and the legislature on radioactive waste management. Despite the small volume of LLW generated in Maine, legislation was passed in 1986 declaring Maine's intent to develop a LLW disposal facility if other means to satisfactorily manage the State's LLW are unavailable. In 1987, the State legislature created the Maine LLW Authority to develop a LLW management plan and siting process for developing a LLW disposal facility only for Maine's LLW. The Authority is responsible for all aspects of site selection, facility development, and operation. The Advisory Committee commented on technical siting criteria developed by the Department of Environmental Protection.

In March 1989, the Authority hired a consultant to develop a statewide site screening methodology for the collection and analysis of existing geologic and environmental data within the State. State law prohibits shallow-land burial as a disposal technology. The Authority is responsible for evaluating disposal technology designs and for selecting a final design in late 1990. The Authority hopes to select a final site by the end of 1991. The majority of the Authority's activities are funded by an assessment on the State's one nuclear utility, Maine Yankee.

Maine's process for selecting a site is unique—it requires local voter approval of the final site within 60 days of the Authority's site selection decision. State law requires that the governing body of the

⁶These basins were identified by US Ecology, Inc.'s consultant—Harding Lawson & Associates—as “hydrologically closed” basins, meaning that all surface drainage within each basin is confined within that basin.

selected host municipality hold a special election to approve the site. Unless 60 percent of the voters approve the site, the Authority must find another location,

Following local voter approval, the facility must receive a favorable recommendation from the State Board of Environmental Protection (BEP). The BEP is required to hold hearings on the technical feasibility and environmental and socioeconomic impacts of the facility and can either deny permission to develop the facility or make a recommendation to the legislature to approve the facility. If the BEP approves the facility, then the State Legislature must also vote to approve its location. Following legislative approval, the facility must be approved by a majority of State voters in a statewide referendum. The facility would also have to be licensed by the NRC, since Maine is not an Agreement State.

Considering the approvals required by Maine law, the Authority estimates that it will not have a disposal facility online until the end of 1995. Maine will file a Governor's certification for its LLW, including mixed LLW, to meet the January 1, 1990, LLRWPA milestone. So that the Authority can develop a strategy for managing LLW between 1992 and the time when the Maine facility opens, the legislature amended the LLW Authority Act to provide for interim storage of LLW. Interim storage would ensure the continued operation of utilities, industries, hospitals, and research facilities that generate LLW in the event that these generators are denied access to the three currently operating facilities. Storage would either occur onsite or at an offsite storage facility. According to law, onsite storage would last from 1996-2001. If disposal capacity cannot be found by 1996 and onsite storage is not available for all LLW, by law the Authority may begin to develop a storage facility.

In early 1989, Maine presented a proposal to Texas offering financial incentives in exchange for LLW disposal and compact membership. Authority officials have specified in the January 1989 revisions to Maine's siting plan that if a satisfactory compact arrangement can be made, it will be the preferred option for managing the State's LLW. Any plans for Maine to form a compact must be approved by the legislature and Governor and by a majority of the State's voters in a statewide referendum.

If a disposal site is developed in Maine, the law provides for benefits to the host municipality.

Specifically, the law requires the site operator to make payments in lieu of property taxes to the host municipality, since the land would be owned by the State. The law also directs the Authority to develop criteria for determining further compensation to be paid to the host municipality. Also, the Authority is in the process of developing a Community Impact Program to evaluate the various benefit packages that could be offered to potential host communities. The Authority has formed a Citizens' Advisory Group to assist in establishing policy and development of the site selection criteria.

In August 1989, Maine entered into a contract with the Rocky Mountain Compact for the Compact to dispose of Maine's LLW through 1992. Maine has to pay the Compact an additional \$50 per cubic foot surcharge for disposing of its LLW during this period. This contract will enable Maine to meet the LLRWPA January 1, 1990, milestone. However, if Maine generates or plans to generate mixed LLW, it will have to file a Governor's certification to satisfy the January 1, 1990, milestone.

Massachusetts-The Commonwealth of Massachusetts has chosen to manage its own waste and not join a compact. Like Maine, Massachusetts has not rejected the option of joining a compact. Massachusetts enacted the Massachusetts Low-Level Radioactive Waste Management Act in December 1987. The law created the LLW Management Board and assigned it primary responsibility for coordinating the State's LLW program and for developing a LLW management plan, selecting a site, and certifying potential facility operators. The law included an initial appropriation of \$600,000 from the State's General Fund to cover start-up costs of the program.

The law assigns responsibility to the Department of Environmental Protection (DEP) for developing siting criteria and disposal regulations and to the Department of Public Health (DPH) for developing licensing procedures and requirements. Massachusetts has passed enabling legislation to allow the State to apply for Agreement State status, in which case the DPH would be responsible for licensing the facility.

The LLW Management Board has hired a contractor to assist in the development of a management plan. The Board has appointed a subcommittee to study funding options for waste management activities. The DEP and DPH are in the process of developing and finalizing siting and licensing regu-

lations. A site development timetable has not been finalized by the LLW Management Board.

There are extensive requirements for public involvement in the siting process. Most significantly, the law requires the establishment of a Community Supervisory Committee (CSC) in communities where the LLW Management Board has identified candidate sites for preliminary site characterization. The CSCs are to assist the LLW Management Board in developing site characterization plans and in interviewing potential operators from a pool of qualified candidates certified by the LLW Management Board. After the LLW Management Board selects a site and it is approved by DEP, the CSC in the host community is responsible for selecting a facility operator and a disposal technology. If CSC fails to select an operator within 90 days of site approval, the LLW Management Board selects the operator by a vote of its members. Regarding disposal technology selection, the DPH is prohibited by law from licensing a shallow-land burial facility.

The law establishes a standard of strict liability for any damages resulting from any activity involving LLW management. During operation, closure, and post-closure, the site operator has primary legal responsibility for site cleanup, stabilization, and restoration. During the institutional control period, the primary legal responsibility for these tasks is transferred to the LLW Management Board.

The law also provides compensation to the host and neighboring communities, such as payments in lieu of property taxes, since the disposal site property will be owned by the State, and a gross receipts tax, both paid by the site operator. Furthermore, the Waste Management Board is to make a direct payment of \$100,000 annually to the host community during facility construction. The host community is also to receive \$1 per curie and \$1 per cubic feet of LLW or \$200,000 per year, whichever is greater, for 5 years after issuance of the license. The CSCs are also to receive funds for technical assistance to participate in the review of the siting process.

Massachusetts will have to file a Governor's certification for its LLW, including its mixed LLW, to comply with the LLRWPA January 1, 1990, milestone.

New York—Although New York has not categorically rejected a compact, the State has yet to join

one and intends to move forward with its own plans to build a facility for its own waste. In early 1989, the legislature passed a resolution asking Congress to extend the 1993 date for shutting off acceptance of out-of-region waste at the Nation's three currently operating facilities and to redefine LLW to exclude Class C LLW. Congress has taken no action on this request.

In July 1986, the State adopted comprehensive siting legislation in its Low-Level Radioactive Waste Management Act and has since appointed a siting commission and has begun a number of activities required by the law to establish a disposal facility in New York. The five-member New York State LLW Siting Commission is responsible for selecting a site and a disposal technology for New York's facility. Under the law, the Department of Environmental Conservation (DEC) is required to develop LLW disposal and transportation regulations and to certify the site and disposal technology selected by the Siting Commission. The New York State Energy Research and Development Authority (NYSERDA) is assigned to prepare the facility license application and to construct and operate the State's LLW disposal facility. The DEC will license the disposal facility since New York is an Agreement State. The law also establishes a LLW Advisory Committee and assigns responsibility to the Department of Health to develop public information materials on LLW management and the siting process in New York.

Before the facility is constructed, the State's nuclear utilities will be assessed fees covering the State's up-front costs for facility development. The utilities will receive credits for the up-front payments to be applied toward disposal fees once the facility is operational.

The DEC has promulgated regulations for LLW disposal and transportation requirements and is developing additional regulatory requirements for financial assurances, facility design, construction, operation, safety plans, closure, and post-closure. The transportation regulations require transporters of LLW to obtain a permit for each trailer used to haul LLW into, within, or through New York State, and require that each shipment be accompanied by a State manifest form. The regulations also require each truck hauling LLW to carry insurance in the amount of \$5 million for a large truck and \$1 million for a small truck.

After applying exclusionary screening criteria, the Siting Commission announced in December 1988 the selection of 10 candidate areas for a LLW disposal facility. These areas were selected based on criteria in the Commission's site selection plan developed with the input of the LLW Advisory Committee and local government officials. In September 1989, the Commission issued a staff report on its evaluation of the candidate areas and identified 5 sites within 2 of the 10 candidate areas for further consideration. At least two sites will be selected for characterization in January 1990, and a final site is expected to be chosen in the latter half of 1991.

The Siting Commission has developed a process for selecting a disposal technology with input from the LLW Advisory Committee. The law prohibits using shallow-kind burial and requires that the Commission investigate above-grade and below-grade disposal methods as well as mined cavities. The disposal technology selection process also requires that the Commission consider design features that allow for waste recoverability and retrievability. The Siting Commission, with the assistance of a contractor, plans to develop five conceptual designs in 1989, three of which will be selected and developed in more detail as preliminary designs. To select the appropriate technology for the preferred site, the Siting Commission plans to integrate the three preliminary designs with data from characterizing the four candidate sites. The Siting Commission must then submit this site and the disposal design to the DEC for certification. Finally, NYSERDA will submit a license application to DEC. The schedule for issuance of the license and subsequent facility operation is under review. Since a license application will not be completed by January 1, 1990, New York will have to file a Governor's certification for its LLW, including its mixed LLW to meet this LLRWPA milestone.

The Siting Commission has conducted public meetings in the 10 candidate areas and is currently reviewing potential local impact assistance and incentive packages. Although the law provides for assistance to the host community, the law does not contain specific requirements but does instruct the Siting Commission to recommend appropriate incentive and compensation measures. The Commission has encountered strong public opposition to its activities at several of the public meetings held in the 10 candidate areas.

Texas—In response to the LLRWPA of 1980, Texas decided to build a facility to dispose of its own waste. The siting legislation which Texas adopted in 1981 indicated that Texas did not intend to pursue a compact with other States at that time. However, the possibility of a compact was not rejected altogether.

In 1987, the Texas Legislature instructed the Texas LLW Authority to prepare background materials on joining a compact. The report was presented to the legislature in 1988, and the House Committee on Environmental Affairs held a hearing in October of the same year. The States of Maine and Vermont testified at that hearing, showing their interest in negotiating a compact with Texas. However, the Committee endorsed the long-established Texas policy of taking care of only its own waste, but suggested that the policy could be reviewed if other States offered significant fiscal incentives to cover the costs of constructing a LLW site. In early 1989, both Maine and Vermont submitted proposals for compacts for Texas' consideration. The Authority has also discussed the possibility of forming a small compact with the Commonwealth of Puerto Rico.

The 1981 legislation established the six-member Texas LLW Disposal Authority. The Authority is responsible for siting, facility design, construction, operation, maintenance, and closure. The legislation directed the Bureau of Radiation Control within the Department of Health to develop regulations and licensing procedures for the facility. As the Agreement State agency, the Bureau of Radiation Control will be responsible for licensing and regulating the facility.

The activities of the Authority and related facility development costs are currently funded by appropriations from the State's General Fund. Once the facility is operational, the law requires the Authority to establish a fee system that will be adequate to recover all facility development costs incurred by the State from facility users. The Authority is also considering issuing revenue bonds to fund construction after a license is granted.

The Authority began the siting process by screening the entire State for potentially suitable areas. In 1985, the legislature amended the Authority's statute to give preference to State-owned land. The amendment focused the Authority's site selection efforts on western Texas, where most suitable State-owned lands are located. A more detailed study of these areas resulted in the identification and

evaluation of several potentially suitable sites in Hudspeth County.

The Authority selected two sites for further analysis. In 1987, the Authority planned to name a site near Fort Hancock, Texas, in Hudspeth County as its preferred site for characterization, but El Paso County, which is adjacent to Hudspeth County, obtained a temporary injunction to halt the siting activities. The injunction was later overturned by the El Paso County Court of Appeals. A subsequent request for a writ of error was denied by the Texas Supreme Court in January 1988, thus allowing the Authority to proceed with site characterization. When site characterization is complete in late 1989, the Authority plans to designate the Hudspeth County site as its preferred site. The Authority intends to submit a license application by the LLRWPA January 1, 1990, milestone for its LLW and to file a Governor's certification for its mixed LLW. If construction starts during 1991 as planned, the facility is scheduled to be online by the end of 1992.

Public opposition to the site characterization continues in El Paso County, which has spent over \$500,000 to hire geologists and other technical and legal consultants to review the Authority's selection of the Hudspeth County site. One point of El Paso County's lawsuit, regarding the site's proximity to a reservoir, is still outstanding, but the appeals court has ruled that it is inappropriate to consider this issue until site characterization work is complete and the final site named. The Hudspeth County Commissioners have withdrawn from their inter-local government agreement to cooperate with El Paso County in pursuing the lawsuit and intend to use consultants provided by DOE's Nuclear Energy LLW Management Program to independently review the Authority's site characterization work. The consultants for El Paso County have identified several areas of concern regarding the site's geology and proximity to a 100-year floodplain. The Authority is currently discussing these issues with the County's consultants. Further opposition and potential litigation may delay the State's facility development efforts.

With respect to disposal technology selection, the legislation passed in 1987 prohibited shallow-land burial and required containment in concrete or other materials technically superior to unlined trenches. Based on the evaluation of three conceptual designs,

the Authority has chosen a preliminary disposal technology design incorporating below-ground concrete canisters and vaults. The Authority has also developed a separate preliminary design for a mixed LLW disposal unit incorporating liner and leachate collection systems necessary to meet RCRA requirements.

The 1987 legislation also approved incentives and a compensation package for the host community. The law authorizes paying the host county 10 percent of the disposal facility revenue, projected at \$400,000 to \$750,000 annually, for impact assistance. The county may use this money to offset any adverse financial impacts caused by the location of the facility. This compensation and jobs provided by the facility, combined with the Authority's commitment to purchase goods and services locally whenever possible, are intended to provide economic benefits to the host county. The Authority has opened a field office in Fort Hancock where it offers numerous community services and public information programs. The Authority also plans to establish a local advisory committee to study the impacts of the disposal facility, to oversee the distribution of impact assistance funds, and to independently monitor the site.

**States and Territories Without Siting Plans:
District of Columbia, New Hampshire, Puerto Rico, Rhode Island, Vermont**

None of these States or entities has joined a compact, though all prefer to join an existing compact or to contract with a large-volume-generating State to take their relatively small volumes of waste.

District of Columbia-Under the LLRWPA of 1985, the District of Columbia is considered a State and is required to meet the milestones established by this law. In 1987 the District of Columbia entered into a contract with the Rocky Mountain Compact. Under this contract, the District, like Rhode Island, has been paying an additional \$20 surcharge to the Rocky Mountain Compact regardless of which of the three national disposal sites receives the LLW for disposal. In August 1989, the District of Columbia as well as Maine, New Hampshire, Rhode Island, and Vermont, have a contract with the Rocky Mountain Compact for their waste to be accepted through 1992. Under the terms of this new contract, the District will be assessed an additional \$50 per

cubic foot on LLW shipped for disposal (a \$30 increase from its previous contract).

Because of this recent contract with the Rocky Mountain Compact, the District will be in compliance with the LLRWPA January 1, 1990, milestone, unless it generates or expects to generate mixed LLW, in which case it will have to submit a 'Governor's certification' for this waste. The District will still need to examine, however, its options for post- 1992 disposal of its LLW, including its mixed LLW, when it will be under the same constraints faced by the other unaffiliated States not planning to develop disposal facilities. The District is also interested in compact options but has not been a party to any recent negotiations.

New Hampshire—New Hampshire is not currently planning to develop a LLW disposal facility. As alternatives, State officials have sought compact membership or a contract for waste disposal with the Rocky Mountain Compact. Initially, in 1987, the Rocky Mountain Compact Board rejected the New Hampshire bid for access to its disposal site, but in August 1989 the Compact Board approved to contract with New Hampshire to dispose of its waste through 1992. Under this contract, New Hampshire must also pay the additional surcharge of \$50 per cubic foot for its LLW disposal.

New Hampshire's LLW generators have in the past been denied access to the Nation's three currently operating disposal facilities because the State did not meet the 1988 milestone which required each unaffiliated State either to submit a siting plan for developing disposal capacity or to have a contract in place with a sited compactor State for LLW disposal. Since the State finalized its contract with the Rocky Mountain Compact before January 1, 1990, New Hampshire will be considered in compliance with both the 1988 and 1990 milestones. However, if New Hampshire generates or expects to generate any mixed LLW, the State will have to submit a Governor's certification for this waste to meet the LLRWPA January 1, 1990, milestone. Moreover, because the Rocky Mountain Compact's disposal site in Nevada is scheduled to close at the end of 1992, New Hampshire must pursue other options for disposing of its LLW, including its mixed waste, after 1992. State officials are interested in forming a compact with other unaffiliated States or joining an existing compact.

No formal negotiations, however, have begun as of November 1989.

Puerto Rico—Puerto Rico is considered a State under the LLRWPA and is required to meet the milestones. Puerto Rico failed to meet the 1986 and 1988 milestones and has been denied access to the three currently operating sites.

Puerto Rico is a small producer of LLW, which is generated in the Commonwealth primarily by medical and research facilities, Puerto Rican officials have discussed compacting options with Texas and are interested in negotiating a contract with a sited compact to meet the 1990 milestone.

Rhode Island—As mentioned, Rhode Island has a contract with the Rocky Mountain Compact to dispose of its LLW through 1992. Under terms of the new contract, Rhode Island is also assessed an additional \$50 per cubic foot on LLW shipped for disposal.

Since the contract with the Rocky Mountain Compact enabled the State to meet the 1990 milestone for nonmixed radioactive waste, its generators still have access to all of the three currently operating LLW disposal facilities. If the State generates or expects to generate mixed LLW, it will have to submit a Governor's certification for this waste to meet the January 1, 1990, milestone.

The State will need to examine its options for post-1992 disposal of LLW, including mixed LLW. Although a few new sites may open by the end of 1992, which may consider a contract, two of the three currently operating commercial sites will be closed and the third is not planning to accept LLW from outside the Northwest Compact after 1992. The State is interested in pursuing compact options and has passed legislation for creating a two-State compact with Massachusetts. Massachusetts, however, has not responded favorably to this proposal.

Vermont—Vermont's generators were denied access to the three currently operating disposal facilities because the State failed to meet the 1988 milestone. The State's largest generators had developed adequate storage capacity, and the remaining generators did not produce enough LLW to require expanded storage capacity. As noted, Vermont, however, is now in compliance with both the 1988 and the 1990 milestone (with respect to nonmixed LLW) because it has contracted with the Rocky Mountain Compact to take its waste through 1992,

Vermont as well will have to pay an additional surcharge of \$50 per cubic foot for disposing of its LLW. If the State generates or expects to generate mixed LLW, it will have to submit a Governor's certification for this waste to meet the January 1, 1990, milestone.

During the 1989 session of the Vermont Legislature, the House Natural Resources and Energy Committee considered legislation to create a State LLW siting authority but as of November 1989 had not taken any action. The Governor's Office has also submitted a proposal to Texas, similar to the proposal submitted by Maine, to offer financial incentives in return for compact membership.

SUMMARY

States are using a wide range of approaches to develop new disposal capacity for LLW. As envisioned by Congress, the compacts and host States have used the flexibility provided by the LLRWPA of 1980 and the LLRWPA of 1985 to create programs that will both meet specific compact and State needs and build public support for host State siting efforts.

In developing LLW siting legislation amid growing public awareness about health and environmental risks, State officials draw from previous experience of siting hazardous and solid waste treatment and disposal facilities. Thus, public input has been sought in LLW siting legislation, especially in the areas of disposal technology requirements and the role of potential host communities in the siting process. Most States have worked closely with advisory committees representing diverse interest groups to promote opportunities for public participation and to build consensus on how to manage LLW safely.

The results of these efforts are clearly demonstrated in 10 future host States that have enacted statutory bans on the use of shallow-land burial as a disposal technology even though the Federal regulations consider shallow-land burial a technically suitable disposal method. Despite the technical feasibility of shallow-land burial, public preference for greater isolation of LLW from the environment through the use of engineered barriers and structures has been overwhelming, especially in areas with humid climates. In an attempt to build public confidence and support, the majority of host States

have agreed to this preference and are committed to go beyond minimum Federal standards to address public concerns regarding disposal technology. Some States have even gone so far as to establish design goals for "zero release" facilities.

Another area where the public has played a crucial role in developing State LLW siting programs is in expanded public participation in the siting process and increased local oversight of facility siting and operation. Public involvement has also resulted in larger benefit packages and host community guarantees. Most host State siting legislation includes provisions and resources for local review of facility siting plans and oversight and monitoring of facilities once operational. Some States require local approval of sites selected for LLW disposal, and others have granted authority to local officials to hire inspectors and, if necessary, shut down facilities. State siting programs include provisions for mitigating any adverse financial impacts incurred by local host governments from the facility's location and offer substantial economic benefits and guarantees through various means. The overriding philosophy reflected in State LLW siting legislation is that the users of the facility will bear whatever costs are necessary to develop a safe and publicly acceptable facility.

In several States that have advanced to site selection and characterization, efforts to address public concerns have produced positive results. By acknowledging the need for compensation and incentives to offset real or perceived risks, and by recognizing the need for local involvement and oversight, these State programs have enjoyed considerable public support in potential host communities. Although these programs do not guarantee success in the highly emotional and politically charged arena of waste facility siting, they establish a foundation for understanding the Not-In-My-Backyard syndrome.

Of further concern to most States is developing disposal capacity for their mixed LLW. For the most part, States' progress in this area lags behind their progress in developing disposal capacity for non-mixed LLW. All States that generate or expect to generate mixed LLW and are not members of one of the three sited compacts plan to submit Governors' certifications for this waste to meet the LLRWPA January 1, 1990, milestone.

CHAPTER 2 REFERENCES

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