

# PROGRESS IN DEVELOPING NEW COMMERCIAL LLRW DISPOSAL FACILITIES AND DOE ASSISTANCE

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## ABSTRACT

This paper reports state and regional progress in developing new commercial low-level radioactive waste disposal facilities. Specifically the paper addresses DOE determination of state and regional compliance with the 1988 milestone requirements of the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPA). In addition, the paper summarizes the assistance provided by the Department of Energy (DOE) to the states and regions in their efforts to develop new disposal facilities as mandated in the LLRWPA.

### STATE AND REGIONAL PROGRESS

The January 1986 enactment of Public Law 99-240, the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPA), provided a series of milestones, incentives, and penalties to encourage states and compact regions to fulfill their responsibilities to safely dispose of the low-level radioactive wastes generated in their states. The Act ensures that LLW generators will have continued access to the three existing commercial LLW disposal sites through 1992 as long as their states or regions are in compliance with milestones prescribed in the Act for development of new disposal facilities.

Compliance with the milestones in the LLRWPA is necessary for "non-sited" compact regions and "non-member" states to receive rebates, avoid payment of penalty surcharges, and ensure continued access to the existing disposal sites. Seven independent entities are eligible to determine whether a given non-sited compact region or non-member state has complied with the milestones. The Department of Energy (DOE) determines milestone compliance for the purpose of disbursing rebates from the Surcharge Escrow Account. The three "sited" states of South Carolina, Washington, and Nevada may independently determine milestone compliance for the purpose of imposing penalty surcharges or denying access to their regional disposal facilities to generators in noncompliant states and regions. The three sited compact regions (Southeast, Northwest, Rocky Mountain) may independently determine milestone compliance for the purpose of denying access to their regional disposal facilities to generators in noncompliant states and regions.

Currently, forty-one states have joined nine compact regions to provide for the disposal of low-level waste generated within their borders. Six states (California, Maine, Massachusetts, New York, Texas, Vermont) have declared their intentions to develop their own individual

disposal sites. Two states (District of Columbia, Rhode Island) have contracted with a sited compact region (Rocky Mountain) to dispose of their waste through 1989, and North Dakota is negotiating a waste disposal contract with the Northwest Compact Commission. Two states (New Hampshire and Puerto Rico) still have not declared their intentions for management of their low-level waste. The nineteen states that are members of the three compact regions that have existing operating disposal facilities (Southeast, Rocky Mountain, and Northwest) are not subject to the milestone requirements of the Act.

### 1988 Milestone Compliance

The Amendments Act requires that by January 1, 1988 each non-sited compact region shall identify the state in which its low-level waste disposal facility is to be located, develop a siting plan for such facility, and delegate authority to implement such plan. States that do not have operating disposal sites and that are not members of a compact must develop a siting plan for their facility and delegate authority to implement such plan. In fulfilling its responsibilities under the Amendments Act to disburse rebates from the Surcharge Escrow Account, DOE evaluated the 1988 Milestone compliance status of six non-sited compact regions and eleven non-member states. Table I summarizes DOE's findings.

All six of the non-sited compact regions submitted documentation to DOE in response to the 1988 milestone requirements: Central, Central Midwest, Midwest, Northeast, and Western. Host states have been named in all six of the unsited compact regions as shown in Table II. Note that two host states have been named in the Northeast Compact Region. Although not required by the Amendments Act, both the Southeast and the Rocky Mountain Compact Regions intend to close their existing facilities at the end of 1992. Successor host states have also been selected for both these regions. Colorado has been named to replace Nevada

TABLE I

## Milestone Compliance Determinations

Compact Regions	1986		1988	
	DOE	Sited States	DOE	Sited States
Appalachian	C	C	C	C
Central	C	C	C	C
Central Midwest	C	C	C	C
Midwest	C	C	C	C
Northeast	C	C	C	C
Northwest	E	E	E	E
Rocky Mountain	E	E	E	E
Southeast	E	E	E	E
Western	C	C	C	C
<u>Non-member States</u>				
California	C	C	C	C
District of Columbia	N	N	C	C
Maine	C	C	C	N
Massachusetts	C	C	C	C
New Hampshire	O	C	N	N
New York	C	C	C	C
North Dakota	O	C	N	N
Puerto Rico	O	N	N	N
Rhode Island	N	C	C	C
Texas	C	C	C	C
Vermont	C	C	N	N

C = Compliant  
 N = Noncompliant  
 E = Exempt  
 O = Not evaluated

in the Rocky Mountain Region, and North Carolina will supplant South Carolina in the Southeast Compact Region. The Northwest Compact Region does not intend to close its existing facility.

DOE has found all of the six non-sited compact regions in compliance with the 1988 milestone requirements.

Of the eleven non-member states, seven states (California, District of Columbia, Maine, Massachusetts, New York, Rhode Island, Texas) have been found to be in compliance with the 1988 milestone requirements.

Both Rhode Island and the District of Columbia submitted documentation indicating that they had contracted with the Rocky Mountain Compact Region to dispose of their low-level waste through 1989. Section 5(e)(1)(F) of the Amendments Act states that a state may "...be deemed in compliance..." with the milestones if it enters into "...an agreement with the compact commission of a region in which a regional disposal facility is located to provide for the disposal of all low-level radioactive waste generated within such state..." On the basis of this provision of the Amendments Act, DOE determined Rhode Island and the District of Columbia to be in compliance.

Three of the non-member states (New Hampshire, North Dakota, and Puerto Rico) did not submit the 1988 milestone documentation and were found to be noncompliant. Vermont issued a letter advising that the state would not meet the 1988 milestone requirements, and was also found noncompliant. Vermont acknowledged that it was working "...diligently towards complying with Federal law and milestone criteria," but that it could not finalize a siting plan without passage of legislation to provide direction and delegation of authority.

The three sited states have completed their evaluation of 1988 milestone compliance and have determined that New Hampshire, North Dakota, Puerto Rico, Vermont, and Maine were not in compliance. The remainder of the non-sited compact regions and nonmember states were found in compliance. The findings of the sited states are summarized in Table I.

Based upon the current regional configurations and the number of declared "go-it-alone" states, the nation is facing the prospect of developing fifteen new low-level waste disposal facilities to complement continued operation of the existing Richland, Washington site. Several states and compact regions have already expressed concern about their ability to meet the milestones mandated by the

TABLE II

## State/Regional Summary

<u>Compact Region</u>	<u>Host State</u>	<u>Facility Operational</u>
Appalachian	Pennsylvania	July 1994
Central	Nebraska	January 1993
Central Midwest	Illinois	January 1993
Midwest	Michigan	September 1993
Northeast	New Jersey and Connecticut	September 1994
Northwest	Washington (existing)	July 1994 N/A
Rocky Mountain <sup>(a)</sup>	Nevada (existing)	N/A
	Colorado	January 1993
Southeast	South Carolina (existing)	N/A
	North Carolina	January 1993
Western	Arizona	January 1993
Independent	California	July 1990
Independent	Maine	July 1995
Independent	Massachusetts	September 1993
Independent	New York	January 1993
Independent	Texas	January 1992
Independent	Vermont	Unknown <sup>(b)</sup>

NOTE: New Hampshire and Puerto Rico are undeclared.

- a. District of Columbia and Rhode Island have contracted with the Rocky Mountain Compact Board to dispose of their low-level waste through 1989. North Dakota is negotiating a waste disposal contract with the Northwest Compact Commission.
- b. Vermont has not issued a siting plan.

Amendments Act (see Table II). Not counting the two replacement facilities in the Rocky Mountain and Southeast Compact Regions, only six of the thirteen proposed new disposal facilities being developed under the requirements of the Amendments Act may be operational by the January 1, 1993 deadline, according to the information. Therefore, beginning in 1993, the low-level waste generators in twenty-one states may not have access to available disposal facilities. These affected states will be required to provide for the management of the low-level waste generated within their borders until their new state or regional disposal facility is available.

#### Issues Impacting Progress

Siting disposal facilities for low-level radioactive waste is a complex problem, composed of many technical, economic, political, institutional, and environmental issues. As a result, the development of new disposal facilities is taking longer than expected. No new waste disposal facility has been sited in the United States since 1971, and no license application for any disposal site (including the three existing sites) has ever been filed under requirements of 10 CFR 61, "Licensing Requirements for Land Disposal of Radioactive Waste," which was promulgated in 1983. Some of the major issues affecting state and regional progress today include: site development costs, mandate for alternative disposal technologies, stability of compact regions, availability of liability insurance, public and political opposition to siting low-level waste disposal facilities, and the limited availability of state and compact region resources.

#### DOE TECHNICAL ASSISTANCE

The Amendments Act of 1985 charges DOE to assist the states and compact regions in fulfilling their responsibilities to provide for disposal of LLW generated within their borders. In the last year, DOE has completed several major activities to assist the states and compact regions in discharging their responsibilities.

#### Alternative Disposal Technologies

DOE completed the development and assessment of six LLW disposal concepts: shallow land disposal, intermediate-depth disposal, below-ground vaults, above-ground vaults, earth-mounded concrete bunkers, and modular concrete canister disposal. Analyses were conducted to assess each concept for radiological safety, industrial safety, total life-cycle costs, and schedules for development.

The designs and evaluations were published in a conceptual design report that was distributed to the states and regions and served as the basis for a national seminar on alternative LLW disposal concepts sponsored by DOE. Approximately 130 representatives of states, compact regions, industry, environmental groups, and federal agencies attended the seminar. Scale models of each of the conceptual designs were built to assist seminar participants in learning about these alternative concepts. These models were also made available to the states and compact regions to be used in their public involvement and legislative interface programs.



DOE also initiated a task to further assess two alternative LLW disposal concepts earth-mounded concrete bunker and below-ground vault. A preliminary design and a quantitative performance assessment of each of the concepts is being conducted. This information will be presented in a Safety Analysis Report that will be prepared in accordance with the applicable provisions of NRC NUREG 1199, Standard Format and Content for a License Application for a Low-Level Radioactive Waste Disposal Facility, and NUREG 1200, Standard Review Plan for the Review of a Low-Level Radioactive Waste Disposal Facility. The report will be submitted to the NRC in the fall of 1988 for review and comment. In 1989, the final evaluation reports for each concept, along with NRC's comments, will be issued to states and compact regions for their information and use.

#### Assistance Workshops

In 1987, DOE developed and implemented three two-day workshops to assist states and compact regions with various aspects of developing new low-level waste disposal sites. The "Site Selection Workshop" provides information concerning various aspects of screening and selecting a potential LLW disposal site, including defining the approach, identifying major participants, contingency planning, criteria development, and public participation programs. The "Quality Assurance Workshop" was designed to assist states and compact regions in developing and implementing a quality assurance program in accordance with 10 CFR 61. A "Project Management Workshop" was developed to assist states and/or compact regions in developing basic project management skills. The project management workshop provides an overview of general project management techniques, including project planning, project control, and project performance analysis.

DOE is also developing a handbook that will provide guidance to states and compact regions on the various aspects of characterizing a potential LLW disposal site to support a license application. The handbook will provide information on the key elements necessary for developing a comprehensive site characterization program, including the types of characterization data that are required by federal regulations and the types of technical activities and studies that can be used to obtain the necessary data.

#### Information

DOE has completed production of a videotape series and handbook entitled, "Understanding Low-Level Radioactive Waste Management." The videotapes will be issued shortly to states and regions to use in training new staff and educating legislators concerning the management of low-level radioactive waste. DOE has also issued a series of fact sheets on LLW management.

In addition, DOE develops and maintains comprehensive data systems pertaining to LLW management for use by states, compact regions, and DOE in analysis, decision-making, and special applications. The system is currently being enhanced to include additional LLW disposal data and improve analytic capabilities. A revised economics model has been developed to provide states and compact regions a tool for conducting trade-off studies concerning the costs of developing, operating, closing, and monitoring a LLW disposal facility.

#### Other Assistance

In addition to these specific initiatives, DOE continues to sponsor a nationwide forum of states and regions to meet quarterly to discuss and resolve problems and issues of mutual interest and an annual LLW Management Conference to provide a platform for discussing current issues relating to the management of the nation's low-level radioactive waste.

### CONCLUSION

The objective of the Amendments Act of 1985 is to ensure the development of an effective, safe, and environmentally acceptable nationwide system for the disposal of low-level waste by 1993. The Department of Energy is assisting the states and regions to achieve that objective and ensure that the system developed provides for the safe management and disposal of low-level waste at reasonable costs. Furthermore, the Department is working with the states and compact regions to ensure that, while the new system is being developed, there are no disruptions in the current LLW management and disposal practices and that the public continues to receive the benefits of the industries that rely on nuclear materials to deliver their services.

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